

OBELISK

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LEFT HAND CORNER

Traveling the World Through Herbariums

Many people enjoy travelling to far-flung places, to explore areas very different than where they live. How about doing the same for bryophytes and lichens?

I have been studying bryophytes for 12 years, and am getting to the point that I would like a fuller picture of these amazing organisms. I must admit that, while I still have much to learn about the bryophyte flora in my back yard, a chance to see more of the morphology and diversity of the world's bryophytes coming from many different ecosystems excites me.

I enjoy collecting bryophyte specimens and keying them out. Most of my specimens have come from the eastern United States. However, I have a desire to explore further. I would like to learn the bryophytes of the western United States. I would like to go even further, and explore areas far, far from home such as Central and South America, Africa, Asia or New Zealand.

One way to do that would be to get permits and explore these places in person. Having made collections, I could then labor over keys trying to figure what I had, and then check with an expert to make sure that I had keyed out correctly. That is how, in part, I learned bryophytes in my part of the world.

As much fun as that sounds, how plausible is it really? It could be a real pain getting permits in unfamiliar places. I do not have the time or money to explore a lot of far away places. Learning new taxonomies from scratch would take lots of time. But there are other ways to see and learn exotic bryophytes or lichens, if one has an interest - major bryophyte and

lichen research herbariums.

Even if I did have an opportunity to collect in some far-flung place, say Central America or India, checking on and working through named specimens from those regions would still be invaluable to help learn their taxonomy.

Less than an 8 hour drive from where I live in Columbus, Ohio are 2 major research bryological herbariums with collections from around the world. To the east is the New York Botanical Garden (NYBG) and its Steere Bryophyte Herbarium, located in the Bronx in New York City; and to the west is the Missouri Botanical Garden (MBG), located near St. Louis.

According to the latest statistics on the bryophyte portal, the New York Botanical Garden has 449,957 specimen records including 225 families, 1,375 genera, 16,884 species; 18,372 total taxa (including subsp. and var.). Most areas of the world are represented in its collections.

According to the latest statistics on the bryophyte portal, the Missouri Botanical Garden has 384,194 specimen records including 197 families, 1,335 genera, 13,064 species; 14,767 total taxa (including subsp. and var.).

In addition to the huge variety of specimens collected and identified by some of the world's top bryologists, there are keys and flora developed to aid in going through the specimens. For example, I have a moss flora of Central America that I am just itching to use. While there are many resources now on the web and in the literature to help understand the world's bryophyte and lichen flora, to me there is nothing like looking at specimens through a microscope, while reviewing a good flora, to help you really understand them in an intimate manner.

I contacted both herbariums. Both are open to visitors who would like to look at specimens. While many of these may be professional researchers, amateur bryologists are also welcome. Both offer places to stay at reasonable prices (especially useful for an urban area like NYC where it is difficult to find reasonably priced places to stay). Person(s) interested in exploring these collections should contact the curators of the herbariums beforehand.

Information can be found for the MBG at <https://www.missouribotanicalgarden.org/plant-science/plant-science/resources/herbarium.aspx>.

Information for the NYBG can be found at <http://sweetgum.nybg.org/science/collections/bryophytes/>.

While I've focused mainly on bryophytes, places for the study of lichens around the world are also available. Again, the New York Botanical Garden is one of the largest and most diverse in the country, with the portal for the Consortium of North American Lichen Herbaria showing it has 245,698 specimen records in 219 families, 835 genera, 6,455 species, and 6,700 total taxa (including subsp. and var.).

There are of course numerous other smaller herbariums worth exploring, especially for more regional studies; although some also have significant international collections. Most will allow you to look at their collections. They can be explored on The Consortium of North American Lichen Herbaria <https://lichenportal.org/cnalh/> and The Consortium of North American Bryophyte Herbaria <https://bryophyteportal.org/portal/collections/misc/collprofiles.php?collid=3>.

-- Bill Schumacher

MOSS MUSINGS

Leratia exigua (Sull.) Goffinet – New to Ohio, but Is It Native?

In September 2019, during the Fall Foray in Ashtabula County, I collected *Platygyrium repens* from the bark of a red maple tree (*Acer rubrum*). While examining the material with the dissecting scope, I noticed a small moss that I assumed was a member of the family *Pottiaceae*. Unable to give it a name, I put the specimen aside, marked "to be determined". During the past couple of years, I went back to the collection but quickly gave up because I made no progress.

This fall, I took the specimen to my moss mentor, Dr.

William Buck, retired curator at the New York Botanical Garden. He pointed out all the reasons that it was not in the *Pottiaceae*, but in the *Orthotrichaceae*. Although the specimen was sterile, members of the genus *Orthotrichum* that have superficial stomata also have elongate and somewhat nodulose basal cells. This helped narrow down the group (capsules with superficial or immersed stomata) to which the specimen belonged. The plants were claviform because of the appressed leaves, and the leaves had an abundance of brood bodies. Bill identified this material as *Orthotrichum exiguum* Sull., now *Leratia exigua* (Sull.) Goffinet.

Needless to say, I'm always excited about finding a bryophyte species new to Ohio. Upon checking the distribution in the Consortium of North American Bryophyte Herbaria (<https://bryophyteportal.org>) (accessed 16 November 2021), I found that this species had been collected in North America only 12 times. Between 1850 and 1951, there are collections from Tennessee, North Carolina, South Carolina, Georgia, and Oklahoma. Crum and Anderson (1981. *Mosses of Eastern North America, Vol. 2*, Columbia University Press), added a specimen from Virginia. Crum and Anderson make no mention of the Oklahoma specimen.

The Ohio locality is disjunct from the southern populations. It was found growing on a red maple tree in a parking lot for a boat launch along Lake Pymatuning. Wind currents, typically blowing from the south toward the northeast, probably would not have transported spores. A possibility could be birds, or it could have been on a boat or boat trailer. Another possibility is that the red maples in the parking lot (probably planted) came from a nursery within the region where the moss is native.

Is *Leratia exigua* native to Ohio? Are there overlooked populations between Tennessee and northeastern Ohio? For now, Andreas 19801 is housed in the herbarium at the New York Botanical Garden. In the future, I'll spend more time examining *Platygyrium* populations on red maple trees.

-- Barbara K. Andreas

"There is an ancient conversation going on between mosses and rocks, poetry to be sure."

—Robin Wall Kimmerer, *Gathering Moss: A Natural and Cultural History of Mosses*

NEWS AND NOTES

OMLA Annual Meeting

The annual meeting will be held Saturday, February 5, 2022, starting at 10 am. Please join us at the Zand Education Center at Dawes Arboretum (7770 Jackson-town Rd, Newark, OH).

Barb Andreas Award

One of our OMLA founding members had the honor of induction into the ODNR Hall of Fame this summer. Their writeup of Barb's contributions to Ohio says it better than I can, so here it is:

“Dr. Andreas has dedicated more than 40 years of her professional life to the preservation of Ohio’s natural lands. While focusing her research efforts on the distribution of mosses, Dr. Andreas also conducted plant inventories of public lands and contributed to the overall knowledge of the state’s flora and natural environment. She discovered several significant natural areas that later became state nature preserves, including Flat Iron Lake Bog and Gallagher Fen.



Photo by Larry Burfield. Note the artistic rendition of a lichen on Barb's award certificate.

Alongside her work within Ohio's public lands, Dr. Andreas' research efforts were instrumental in developing the Floristic Quality Assessment Index, now used statewide and federally to assess a site's biological quality. She currently serves on the board of the Ohio Natural Areas and Preserves Association and is a Fellow of the Ohio Academy of Science.

She is co-founder of the Ohio Moss and Lichen Association, was on the board of the Ohio chapter of the Nature Conservancy for 22 years and served several other notable botanical and conservation-related organizations. Additionally, she has been a leader in

conservation at many higher education institutions, including Kent State where she received multiple awards for her work. Dr. Andreas' conservation legacy includes the gift of her mentorship to numerous botany and biology students whom she inspired through her fascination for and commitment to the natural world.”

In addition to these more academic pursuits, I know Barb has also spent hours of backbreaking work pulling garlic mustard, stilt grass, surveying and treating hemlock wooly adelgid and other necessary maintenance at numerous natural areas. This is indeed a well-deserved award. Congratulations Barb!

- Ray Showman

Lake County Metroparks – THANK YOU!

OMLA wishes to thank the Lake County Metroparks for the use of the Environmental Learning Center for the Fall Foray, September 24 – 26. Their generous contribution saved OMLA \$1,446.00. OMLA is also grateful to its member, John Pogacnik, for making the arrangements for the use of the Environmental Learning Center, and for planning the localities from which collections were made.

Power of Observation



When looking for lichens, you might find the unexpected, like this gray tree frog.

— **Photo by Ray Showman.**

FORAY REPORTS

2021 Summer Foray

The 2021 OMLA Summer Foray was held in Belmont County. On June 19th, members met at Raven Rocks, a private nature preserve with woods, fields, deep ravines with exposed sandstone and small creeks. To add additional habitats, some members also collected at Mount Horab Cemetery, Barkcamp State Park, Hunter Prairie Nature Preserve and Dysert Woods.

A total of 39 macrolichens were recorded, with 20 of these being new records for Belmont County.

Prior to the 2021 foray to Belmont County, 114 species of mosses had been recorded for the county. Many of these records were collected by previous surveys performed by bryologists at Kent State University and Ohio University. Seventy-six mosses were collected on the 2021 foray. Twelve species are new to the county: *Brachytheciastrum velutinum*, *Bryhnia graminicolor*, *Dicranum fulvum*, *Fissidens minutulus*, *Orthotrichum ohioense*, *O. stellatum*, *Pelekium minutulum*, (= *Cyrto-hypnum minutulum*), *Pelekium pygmaeum* (= *Cyrto-hypnum pygmaeum*), *Polytrichum juniperinum*, *Schistidium apocarpum*, *Thuidium recognitum* and *Tortula acaulon*.

Liverworts, in Ohio, are not well-documented. OMLA is always grateful for its member Becky Smucker, who lives in North Carolina and focuses on liverworts, to join us on our forays. She is adding a wealth of knowledge. A total of 20 liverworts were collected, and it appears that three new taxa were added to the county list: *Calypogeia muelleriana*, *Frullania inflata*, and *Solenostoma hyalinum*.

A special collection of *Loeskeobryum brevirostre* was made by Bob Klips. This species had been collected in the same area (Long Run) in 1938 by Mr. Yingling (OS s.n.). It had not been seen in Belmont County in more than 80 years. *Loeskeobryum brevirostre* is listed as endangered on the Ohio Rare Plant List.

Macrolichen and bryophytes species recorded during the 2021 Summer Foray in Belmont County, and subsequent visits by individual OMLA members, are shown in the following tables. BC=Barkcamp St. Park, DW=Dysart Woods, HP=Hunter Prairie, MH=Mount Horab Cemetery, RR=Raven Rocks, N=new for Belmont County.

Macrolichen Names	RR	MH	BC
<i>Candelaria concolor</i>	X	X	X
<i>Cladonia coniocraea</i>	X		
<i>Cladonia cristatella</i>	N		
<i>Cladonia furcata</i>	X		
<i>Cladonia macilenta</i>	N		N
<i>Cladonia pyxidata</i> complex	N		
<i>Cladonia squamosa</i>	X		
<i>Cladonia subcariosa</i>	N		
<i>Cladonia subtenuis</i>	X		
<i>Crespoa crozalsiana</i>			N
<i>Flavoparmelia baltimorensis</i>	X	X	
<i>Flavoparmelia caperata</i>	X	X	X
<i>Flavopunctelia soledica</i>			N
<i>Hypogymnia physodes</i>	X		
<i>Hypotrachyna minarum</i>	X		
<i>Hypotrachyna showmanii</i>	N		
<i>Melanelixia subaurifera</i>	X		
<i>Myelochroa aurulenta</i>	X		X
<i>Parmelia squarrosa</i>	N		
<i>Parmelia sulcata</i>	X		X
<i>Parmotrema hypotropum</i>	X		X
<i>Parmotrema perlatum</i>			N
<i>Parmotrema reticulatum</i>			N
<i>Peltigera canina</i>		N	
<i>Phaeophyscia adiastrum</i>	N	N	
<i>Phaeophyscia hirsuta</i>		N	
<i>Phaeophyscia hirtella</i>		N	
<i>Phaeophyscia rubropulchra</i>	X		
<i>Physcia adscendens</i>		N	
<i>Physcia americana</i>	N		
<i>Physcia millegrana</i>	X		X
<i>Physcia stellaris</i>	X		
<i>Physciella chloantha</i>		N	
<i>Physconia detersa</i>		N	
<i>Punctelia caseana</i>	X		
<i>Punctelia rufecta</i>	X	X	X
<i>Umbilicaria mammulata</i>	X		
<i>Usnocetraria oakesiana</i>	N		
<i>Xanthomendoza weberi</i>		N	
Total Macrolichens (39)	28	12	12

Moss Names	RR	HP	MH	DW
<i>Anomodon attenuatus</i>	X		X	X
<i>Anomodon tristis</i>	X			
<i>Atrichum altecristatum</i>	X			X
<i>Atrichum angustatum</i>	X		X	
<i>Atrichum crispulum</i>	X			
<i>Brachytheciastrum velutinum</i>				N
<i>Brachythecium acuminatum</i>	X		X	X
<i>Brachythecium campestre</i>				X
<i>Brachythecium laetum</i>	X		X	X
<i>Brachythecium rivulare</i>				X
<i>Brachythecium rutabulum</i>	X			X
<i>Bryhnia graminicolor</i>				N
<i>Bryoandersonia illecebra</i>	X	X	X	
<i>Callicladium haldanianum</i>	X			X
<i>Calliergonella curvifolia</i>	X			X
<i>Campyliadelphus chrysophyllus</i>	X			

Moss Names continued	RR	HP	MH	DW
<i>Dicranum fulvum</i>	N			
<i>Dicranum scoparium</i>			X	
<i>Diphyscium foliosum</i>	X			
<i>Entodon seductrix</i>			X	X
<i>Fissidens bryoides</i>	X			
<i>Fissidens minutulus</i>	N			N
<i>Fissidens osmundioides</i>	X			
<i>Fissidens taxifolius</i>	X	X		X
<i>Forsstroemia trichomitria</i>	X			
<i>Gymnostomum aeruginosum</i>	X			
<i>Haplocladium virginianum</i>				X
<i>Hedwigia ciliata</i>			X	
<i>Hygroamblystegium varium</i>	X	X	X	X
<i>Hygroamblystegium varium</i> var. <i>humile</i>	X			
<i>Hypnum imponens</i>	X			
<i>Hypnum pallescens</i>	X			
<i>Isopterygiopsis muelleriana</i>	X			
<i>Leskea gracilescens</i>	X	X	X	X
<i>Loeskeobryum brevirostre</i>	X			
<i>Leucobryum glaucum</i>	X			
<i>Leucodon julaceus</i>			X	
<i>Mnium marginatum</i>	X			
<i>Mnium thomsonii</i>	X			
<i>Orthodicranum flagellare</i>				X
<i>Orthodicranum fulvum</i>	X			
<i>Orthodicranum montanum</i>	X	X		X
<i>Orthodicranum viride</i>				X
<i>Orthotrichum ohioense</i>			N	N
<i>Orthotrichum stellatum</i>		N		
<i>Oxyrrhynchium hians</i>	X			
<i>Pelekium minutulum</i>	N			
<i>Pelekium pygmaeum</i>	N			
<i>Physcomitrium pyriforme</i>				X
<i>Plagiomnium ciliare</i>	X			
<i>Plagiomnium cuspidatum</i>	X			X
<i>Plagiothecium cavifolium</i>	X			X
<i>Plagiothecium laetum</i>	X			
<i>Platygyrium repens</i>	X	X	X	
<i>Pleuridium subulatum</i>			X	X
<i>Pleurozium schreberi</i>	X			
<i>Polytrichum commune</i>	X		X	
<i>Polytrichum juniperinum</i>			N	
<i>Polytrichum ohioense</i>	X			
<i>Pseudotaxiphyllum elegans</i>	X			X
<i>Pylaisiadelpha recurvans</i>	X			
<i>Pylaisiadelpha tenuirostris</i>				X
<i>Rhizomnium punctatum</i>	X			
<i>Rhynostegium serrulatum</i>	X			X
<i>Rhytidium rugosum</i>		X		
<i>Schistidium apocarpum</i>			N	
<i>Sciuro-hypnum plumosum</i>	X			X
<i>Taxiphyllum taxirameum</i>				X

Moss Names continued	RR	HP	MH	DW
<i>Tetraphis pellucida</i>	X			
<i>Thuidium delicatulum</i>	X	X	X	
<i>Thuidium recognitum</i>		N		
<i>Tortella humilis</i>			X	
<i>Tortula acaulon</i>			N	
<i>Trichostomum tenuirostre</i>			X	
<i>Ulota crispula</i>	X			X
<i>Weissia controversa</i>			X	
Total Mosses (76)	51	10	22	31

Liverwort Names	RR	HP	MH	DW
<i>Blepharostoma trichophyllum</i>	X			
<i>Calypogeia muelleriana</i>	N			
<i>Cephalozia bicupidata</i>	X			
<i>Cheilolejeunea clypeata</i>	X			
<i>Cololejeunea biddlecomiae</i>	X			
<i>Conocephalum salebrosum</i>	X			
<i>Diplophyllum apiculatum</i>	X			
<i>Frullania eboracensis</i>	X	X		X
<i>Frullania inflata</i>		N		
<i>Lophocolea heterophylla</i>	X	X		X
<i>Metzgeria conjugata</i>	X			
<i>Metzgeria setigera</i>	X			
<i>Nowellia curvifolia</i>	X			X
<i>Plagiochila porelloides</i>	X			
<i>Porella platyphylla</i>	X			
<i>Ptilidium pulcherrimum</i>	X			
<i>Radula obconica</i>	X			
<i>Scapania nemorea</i>	X			
<i>Solenostoma hyalinum</i>	N			
<i>Trichocolea tomentella</i>	X			
Total Liverworts (20)	19	3	0	3

— Barb Andreas and Ray Showman

2021 Fall Foray

The 2021 OMLA Fall Foray was held in northeastern Ohio's Lake County. We were hosted by the Lake County Metroparks, of which we are appreciative for giving us permission to collect on their preserves, and for the use of the Environmental Learning Center. Our principal guides for the 3-day event were John Pogacnik and Shaun Pogacnik. We visited 3 sites: (1) Hidden Lake Metropark (HL), where our main exploration spot was a swamp forest and adjacent open meadow best known as home to a terrific colony of *Cladonia* lichens; (2) Chapin Forest Reservation (CF) where the featured ecosystem was a low-lying abandoned sand quarry where pockets of standing water interrupted by sandy soil mounds support populations of various *Sphagnum* mosses as well as bryophytes and lichens of open nutrient-poor spots; and (3) Erie Bluffs Metropark (EB), featuring an eroding bluff high above Lake Erie that is home to some great rarities.

Prior to the 2021 foray to Lake County, 161 mosses had been recorded for the county, of which 114 were specimen records, and the remaining 47 literature records only according to the OMLA moss atlas that was updated in 2020. Comparable OMLA-derived statistics are not available for liverworts, but the online aggregation of records of specimens housed in member herbaria of the Consortium of North American Bryophyte Herbaria shows 50 species. Lichen-wise, there are 77 macrolichens reported from Lake County many of which (41) are recent, having been collected or observed since 2016.

Sixty-seven mosses, 14 liverworts, and were 63 lichens (including both macrolichens and crustose forms) were collected or observed on the foray dates and on a separate supplementary outing made in mid-December by individual OMLA members.

Noteworthy mosses include the spectacularly rare and distinctive “bug on a stick” moss, *Buxbaumia aphylla* seen at Chapin Forest reservation. One of the few mosses to have a persistent protonema, the gametophyte stage is essentially leafless. As if to make up for that diminutiveness though, the sporophyte is topped with a massive and oddly-shaped capsule (the “bug”). Another rarity, which coincidentally also has a persistent protonema, naked flag moss, *Discelium nudum*, is the only species within its family, the Disceliaceae. It was seen on sandy ground at Erie Bluffs Metro Park. Liverworts to write home about include northern naugehyde liverwort, *Ptilidium ciliare*, a larger more upright species than the similar and more common tree fringewort, *P. puncherrimum*; both were seen on the ground at Chapin Forest. Lichens that were special to see include (at Chapin) cowpie lichen, *Diploschistes muscorum*, a species that, at least early in its life, is parasitic on various *Cladonia* species. And speaking of *Cladonia* species, there were a great many of them seen at the open meadow at Hidden Lake; these were the topic of a beautifully illustrated and informative article by Ian Adams, Tomás Curtis, & John Pogacnik in the 2020 OBELISK. An especial highlight was the very rare *C. gracilis* subsp. *turbinata*.

Bryophytes and lichens recorded during the 2021 Fall Foray in Lake County and later visits by individual OMLA members. HL=Hidden lake, CF=Chapin Forest, EB=Erie Bluffs, N=new for Lake County.

Moss Names	HL	CF	EB
<i>Anacamptodon splachnoides</i>	N		
<i>Anomodon attenuatus</i>		X	
<i>Atrichum crispulum</i>	X	X	X
<i>Atrichum crispum</i>	N		
<i>Aulacomnium palustre</i>	X	X	

Moss Names continued	HL	CF	EB
<i>Barbula unguiculata</i>	X		
<i>Brachythecium falcatum</i>		N	
<i>Bryhnia novae-angliae</i>	X		
<i>Bryoandersonia illecebra</i>	X		X
<i>Bryum argenteum</i>	X	X	
<i>Bryum capillare</i>		N	
<i>Buxbaumia aphylla</i>		X	
<i>Callicladium haldanianum</i>	X	X	
<i>Calliergonella cuspidata</i>			N
<i>Calliergonella lindbergii</i>	X		X
<i>Ceratodon purpureus</i>	X	X	
<i>Climacium americanum</i>	X		
<i>Ctenidium subrectifolium</i>		X	
<i>Dicranella heteromalla</i>		X	
<i>Dicranella varia</i>			X
<i>Dicranodontium denudatum</i>		X	
<i>Dicranum scoparium</i>		X	
<i>Discelium nudum</i>			X
<i>Entodon seductrix</i>	X	X	
<i>Fissidens bryoides</i>		X	
<i>Fissidens taxifolius</i>	X		
<i>Funaria hygrometrica</i>		X	
<i>Hedwigia ciliata</i>	X		
<i>Helodium paludosum</i>	X		
<i>Homomallium adnatum</i>		X	
<i>Hygroamblystegium varium</i>	X		
<i>Hypnum imponens</i>		X	
<i>Hypnum pallescens</i>		X	
<i>Leucobryum albidum</i>	N		
<i>Leucobryum glaucum</i>		X	
<i>Orthodicranum fulvum</i>		X	
<i>Orthodicranum montanum</i>	X	X	
<i>Orthodicranum viride</i>		X	
<i>Orthotrichum anomalum</i>	N		
<i>Oxyrrhynchium hians</i>		X	
<i>Plagiomnium cuspidatum</i>	X		
<i>Plagiothecium cavifolium</i>		X	
<i>Plagiothecium laetum</i>	X		
<i>Platygyrium repens</i>	X	X	
<i>Pleurozium schreberi</i>		X	
<i>Pogonatum pensilvanicum</i>	X	X	
<i>Pohlia nutans</i>		X	
<i>Polytrichum commune</i>		X	
<i>Polytrichum juniperinum</i>		X	
<i>Polytrichum ohioense</i>	X	X	
<i>Polytrichum piliferum</i>		N	
<i>Pylaisiadelphina tenuirostris</i>	X	X	
<i>Rhizomnium punctatum</i>		X	
<i>Rhynchostegium serrulatum</i>		X	

Moss Names continued	HL	CF	EB
<i>Schistidium apocarpum</i>		X	
<i>Sphagnum capillifolium</i>		X	
<i>Sphagnum contortum</i>		N	
<i>Sphagnum fallax</i>		X	
<i>Sphagnum lescurii</i>		X	
<i>Sphagnum palustre</i>	X	X	
<i>Sphagnum recurvum</i>		X	
<i>Sphagnum russowii</i>		X	
<i>Sphagnum subsecundum</i>	N		
<i>Taxiphyllum deplanatum</i>		N	
<i>Tetraphis pellucida</i>	X		
<i>Thuidium delicatulum</i>	X		
<i>Ulota crispula</i>	X		
Total Mosses (67)	31	45	6

Liverwort Names	HL	CF	EB
<i>Blasia pusilla</i>			X
<i>Cephaloziella hampeana</i>		X	
<i>Cephaloziella rubella</i>		X	
<i>Diplophyllum apiculatum</i>		N	
<i>Frullania eboracensis</i>		X	
<i>Lophocolea heterophylla</i>		X	
<i>Nowellia curvifolia</i>	X		
<i>Odontoschisma sphagni</i>		N	
<i>Pallavicinia lyellii</i>		X	
<i>Pellia epiphylla</i>		X	
<i>Plagiochila porelloides</i>		X	
<i>Ptilidium ciliare</i>		X	
<i>Ptilidium pulcherrimum</i>		X	
<i>Radula complanata</i>		X	
<i>Scapania nemorea</i>		X	
<i>Schistochilopsis incisa</i>		X	
Total liverworts (16)	1	14	1

Lichen Names	H	CF	EB
<i>Acarospora fuscata</i>	X		
<i>Amandinea polyspora</i>		X	
<i>Athallia pyracea</i>			N
<i>Bilimbia sabuletorum</i>			N
<i>Caloplaca cerina</i>			X
<i>Candelaria concolor</i>	X	X	
<i>Candelariella aurella</i>	X		
<i>Chrysothrix caesia</i>		N	
<i>Cladonia chlorophaea</i> complex		X	
<i>Cladonia crispata</i>	X		
<i>Cladonia cristatella</i>	X	X	
<i>Cladonia cylindrica</i>		X	
<i>Cladonia gracilis</i>	X		
<i>Cladonia macilenta</i>		X	
<i>Cladonia ochrochlora</i>	X	X	X
<i>Cladonia pleurota</i>		X	
<i>Cladonia pyxidata</i>	X	X	

Lichen Names continued	H	CF	EB
<i>Cladonia rangiferina</i>	X	X	
<i>Cladonia rei</i>	X	X	
<i>Cladonia subcariosa</i>	X	X	X
<i>Cladonia subtenuis</i>	X		
<i>Cladonia verticillata</i>	X		
<i>Crespoa crozalsiana</i>		X	
<i>Diploschistes muscorum</i>		X	
<i>Enchylium bachmanianum</i>			X
<i>Evernia mesomorpha</i>	X		
<i>Flavoparmelia caperata</i>	X	X	
<i>Flavopunctelia soledica</i>		X	
<i>Herteliana schuyleriana</i>		N	
<i>Hypocenomyce scalaris</i>	N		
<i>Hypotrachyna minarum</i>		X	
<i>Ionaspis alba</i>	X	X	
<i>Lecania naegelii</i>			X
<i>Lecanora polytropa</i>	X		
<i>Lecanora strobilina</i>	X	X	
<i>Lepraria caesiella</i>	X	X	
<i>Lepraria cryophila</i>		N	
<i>Lepraria finkii</i>	N	N	
<i>Melanelixia subaurifera</i>	X	X	
<i>Micarea peliocarpa</i>		N	
<i>Myelochroa aurulenta</i>		X	
<i>Myriolecis dispersa</i>	N		
<i>Parmelia sulcata</i>	X	X	
<i>Parmotrema hypotropum</i>		X	
<i>Parmotrema reticulatum</i>		X	
<i>Phaeophyscia adiastrata</i>	X	X	
<i>Phaeophyscia ciliata</i>			X
<i>Phaeophyscia rubropulchra</i>	X	X	
<i>Physcia adscendens</i>			X
<i>Physcia millegrana</i>	X	X	
<i>Physcia stellaris</i>	X	X	X
<i>Placynthiella icmalea</i>		X	
<i>Porpidia albocaerulescens</i>		X	
<i>Porpidia crustulata</i>		X	
<i>Punctelia caseana</i>		X	
<i>Trapelia placodioides</i>	X	X	
<i>Trapeliopsis granulosa</i>		X	
<i>Traponora varians</i>	N		
<i>Verrucaria sublobulata</i>		X	
<i>Veizdaea leprosa</i>		N	
<i>Xanthomendoza hasseana</i>			X
<i>Xanthomendoza weberi</i>	X		X
<i>Xanthoria parietina</i>			N
Total Lichens (63)	31	42	13



Summer foray group seated L to R: Megan Osika, Diane Lucas, Cynthia Dassler, Becky Smucker, Elizabeth Ewing; standing L to R: Dean Porter, Carole Schumacher, Jim Topin, Barb Andreas, Trey Scott, Janet Traub, Ray Showman, Autumn Coffey, Susan Nash, Bill Schumacher, Barb Gelderloos, Bob Long, Stephen Bucklin, John Holliger, Bob Klips — photo by Bob Klips



Fall foray group L to R: Tomás Curtis, Chris Poling, John Pogacnik, Tom McCoy, Bill Schumacher, Barb Andreas, Joshua Copen, Megan Osika, Ian Adams, Shaun Pogacnick, Carole Schumacher, Bob Long, Dean Porter, Bob Klips — photo by Bob Klips

BOOK REVIEW

A Book-Lover's Tribute to *Mosses of Eastern North America*

For as long as I can remember, I've always loved books, and still do. There's nothing like a great book to relax with and learn from. Now forty years after the publication of *Mosses of Eastern North America*, by Howard A. Crum and Lewis E. Anderson, it seems like a good time to reflect on one of my favorites.

Along in the 1980s, Janet and I began volunteering at The Nature Conservancy's Kitty Todd Preserve in the Oak Openings region of northwest Ohio and southeast Michigan. We started hiking around and learning the plants of the area. Janet remembered seeing small plants with tiny umbrellas during her field botany class at Bowling Green. The more we looked at the small plants, the more interesting they became.

So what to do but go to the Toledo Public Library and find a good book! Of the few choices, the best seemed to be the older *Mosses with a Hand Lens* and the much newer *How To Know the Mosses and Liverworts*. I chose the newer. Having no experience with mosses or dichotomous keys, it was slow going. I tried identifying a specimen, but kept coming to a dead-end of two Florida mosses. Further effort led to *Schwetschkeopsis fabronia*, but it was hard to tell if that was correct. No fault of the keys, of course, just the user.

The next step was to visit the Bowling Green State University library to look for other books. There were a lot more choices, but after a few minutes of looking through *Mosses of Eastern North America*, I knew I had to have it, despite the daunting technical characteristics and the even-more daunting (to this day) *Conspectus of Taxa*. Somehow the book just drew me in, made me optimistic, gave me confidence and was just fun to read. I checked it out seven times and then bought it for the huge sum of \$140, far more than I'd ever paid for a book, but I knew it was worth it. After many hours of enjoyable reading and thumbing through the glossary and pictures, the mystery moss turned out to be not a Florida endemic, but *Amblystegium varium*. Since then, I've never tired of looking through my now well-worn, taped-together volumes.

Taxonomists have been busy in the last forty years, so newer books are a must. But as valuable and necessary as they are, none has given me such enjoyment or inspiration.

A few years back, I had a revelation. We'd been on a few hikes with the Michigan Botanical Club, but didn't

know anyone very well. I got to chatting with Chris Anderson, and somehow the subject turned to *Mosses of Eastern North America*. It turns out that Chris was a colleague of Dr. Crum at the University of Michigan Herbarium. She said that Howard put great effort into his writing, carefully choosing his words. She said it was really important to him. It struck me then why I like the book so much — it is the outstanding writing. The last paragraph of the genus descriptions is especially helpful and often entertaining. The same is true for the discussions at the end of each species. I never tire of rereading them. I would've never known that *Vesicularia* is “a bad genus consisting of bad species”, or that *Hypnum lindbergii* “was named for Sextus Otto Lindberg, who had only recently given it two illegal names...” I could give other examples from almost any page.

So thank you, Drs. Crum and Anderson for sharing your knowledge and experience, and for taking such pains to present it all to us so well. I've learned so much and enjoyed every minute of it.

—Jim Toppin

TRAVELS

Moss Paradise

This summer my wife and I traveled to Iceland, an extremely scenic and fascinating country. It is called ‘The Land of Fire and Ice,’ fire for the many volcanoes and ice for the glaciers. The volcanoes result in numerous lava fields, and the first plants to colonize these bare areas are mosses. Traveling on the south coast we passed miles and miles (actually kilometers and kilometers) of jagged lava covered with moss.



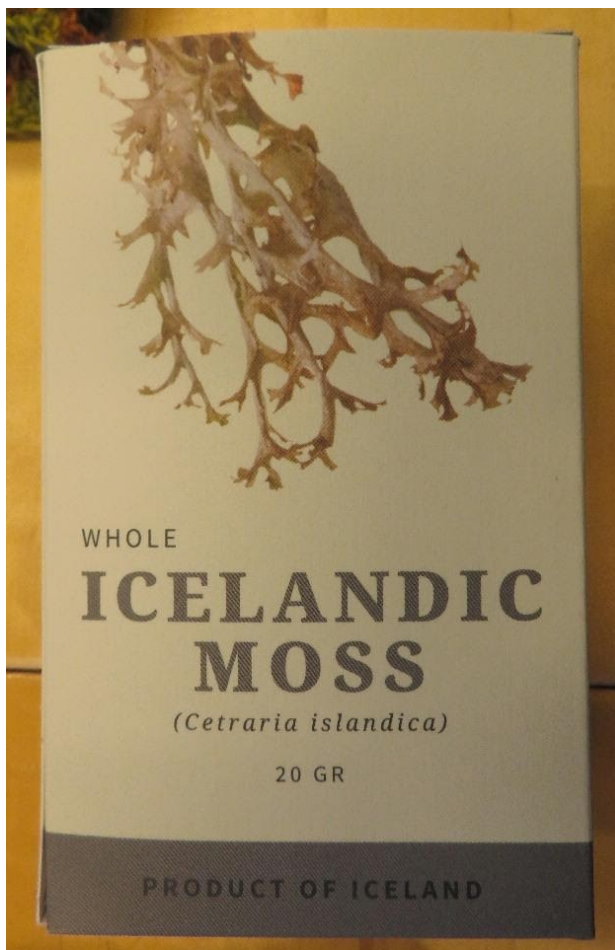
A very small part of the 232 square mile Eldraun Lava Field, covered with moss.

— Photo by Ray Showman

One of the most numerous of these pioneering mosses is the woolly fringe moss, *Racomitrium lanuginosum*. Other species are certainly present, along with a

few fruticose lichens. Iceland reports 460 species of mosses, slightly more than Ohio's nearly 400 species. One natural history museum that we visited had a section on mosses with various living examples along with narratives describing their importance. It's not often that you see a moss museum.

In the areas that we visited, lichens were not nearly as abundant or conspicuous. We passed some areas where lichens could be seen but I didn't think the bus driver would interrupt the schedule for a lichen stop. I did find one lichen product, ironically called Icelandic Moss, in a store. This is a fruticose species with several minor uses such as a soup or baking additive. It is sold dried, with a small box costing several dollars (see photo below).



— Photo by Ray Showman

So, if you want to add a moss paradise with many other attractions to your bucket list, I heartily recommend Iceland!

- Ray Showman

WANTED (ALIVE)!

Usnea angulata

Ohio has a number of lichens, known only from early collections, that are now thought to be extirpated. Several have already been featured in the **Wanted (Alive)!** column. Another prime example is *Usnea angulata*, known from one collection in Champaign County by Biddlecome in 1875.



Photo from the Internet

Usnea angulata is a large, abundantly branched and pendant beard lichen. The specific name refers to the winged and ridged branches. According to Tripp and Lendemer (2020. *Field Guide to the Lichens of Great Smoky Mountains National Park*) "*Usnea angulata* is just about as conspicuous and charismatic of a macrolichen as you can possibly get. It forms extensive thalli, often multiple feet, that dangle down from the canopy branches of trees."

This lichen was probably once widespread in the old-growth eastern US forests, but is now rare and restricted to a few extensively forested areas – Smoky Mountains, Ozark Mountains and north central Minnesota.



Closeup showing winged branches. Photo from the Internet.

Chances of finding it again in Ohio are remote, but who knows – lichens thought to be extirpated and species new for the state are regularly found by OMLA members. So be on the lookout for this fantastic lichen.

- Ray Showman

“The black rock was sharp-edged, hot, and hard as corundum; it seemed not merely alien but impervious to life. Yet on the southern face of almost every rock the lichens grew, yellow, rusty-brown, yellow-green...”

— Edward Abbey, *The Brave Cowboy: An Old Tale in a New Time*

HOCKING COUNTY – THE BRYOLOGICALLY RICHEST OHIO COUNTY

*This article is a synopsis of a manuscript, The bryophytes of Crane Hollow Preserve and Hocking County. *Evansia* 37(4): 104 – 124, written by Barbara K. Andreas and Joe Moosbrugger. For more information, or a copy of the article, contact bandreas@kent.edu.*

Hocking County has more documented species of mosses (and liverworts and hornworts) than any other

Ohio county. According to the Ohio Moss atlas (ohiomosslichen.org), there are 241 moss species reported from the county. In the *Evansia* manuscript (Andreas & Moosbrugger 2020), 235 species are reported. The difference in these numbers is based on the fact that the Ohio Moss and Lichen Association moss atlas also includes literature-cited specimens, whereas the manuscript only included verified herbarium records. Jackson County, with similar geology, has 211 moss species. Franklin County, where limestone/dolomite dominate the substrate, has 200 moss species (ohiomosslichen.org). The number of moss species for the remaining 85 counties range from 14 (Putnam County), to 192 (Adams County). Miller (1964) reported 85 liverwort species from Hocking County; for the remaining 87 counties, 0 – 41 species. [Miller’s total species per county is no longer accurate, but his is the last published account of Ohio liverworts.]

The geology of Hocking County is the most important single factor that makes the county unique. With the exception of the extreme western area, approximately 82% of the county is located in the Unglaciated Allegheny Plateau physiographic region of Ohio (Brockman 1998). In terms of geologic time, this means that Hocking County has been available to plant growth while the glaciated portion of Ohio was under ice. Most of the exposed bedrock is sandstone or conglomerate of Pennsylvanian- and Mississippian-age. The dominant geological feature in the Hocking Hills region, and the location of most bryophyte collections, is the Black Hand Sandstone of the Cuyahoga formation. The differential weathering of the Black Hand Sandstone allows for the deep gorges, vertical cliffs, and rock shelters characteristic of the region (Andreas & Moosbrugger 2020). These gorges are dominated by hemlock (*Tsuga canadensis*), cherry (sweet) birch (*Betula lenta*), maples (*Acer rubrum* and *A. saccharum*), and tuliptree (*Liriodendron tulipifera*).

These unique geological features have resulted in much of the county being set aside as parks and preserves. About 5.5% of the county is owned by the State of Ohio, either as state parks or forests (11,000 acres) (www.hockinghills.com, accessed 9 September 2020), or state nature preserves (3500 acres) (Division of Natural Areas and Preserves 1996). Ten percent (50,711 acres) is in the federally-owned Wayne National Forest (personal communication, G. R. Scott, Forest Botanist, 8 September 2020). These government-owned properties are often highly impacted by timber harvests and high visitation. A few of the State nature preserves, such as Robinson Falls, Sheick Hollow, and Little Rocky Hollow, lack trail systems and require permits to enter, and are subject to far lower

levels of anthropogenic disturbance. Crane Hollow Preserve, occupying about 1,988 acres, is the single largest private preserve. In addition, many private landowners have put conservation easements on properties, which will slow down subdivision and anthropogenic disturbances.

The unique geology has attracted many botanists to the county. The oldest bryophyte record collected in Hocking County was made in 1899 by W. A. Kellerman (*Atrichum angustatum* (Bridel) Bruch & Schimper (*Kellerman s.n.* (OS))). Since then, numerous professional and amateur bryologists have contributed to the 5,408 bryophyte herbarium records in the Consortium of North American Bryophyte Herbaria (CNABH) (last accessed 14 September 2021). The first comprehensive list of Hocking County bryophytes was from collections made at Crane Hollow Preserve (Snider & He 1990). Snider and He reported 178 mosses, 42 liverworts, and 3 hornworts. In the fall of 2018, Crane Hollow Preserve was the site for the Fall Foray of the Ohio Moss and Lichen Association (Andreas & Showman 2018). From the foray, 196 moss species, 33 liverwort species, and one hornwort species were collected. Based on herbarium records in the CNABH, in the years 1944, 1968, and 2012, Hocking County was the location for field trips held in association with professional botany meetings. Between the publication of the 2020 manuscript, and 14 September 2021, an additional 440 herbarium specimens from Hocking County have been added to the CNABH. The majority of these are historical records that have been databased.

A total of 3 hornwort, 89 liverwort and 235 moss species were reported from Hocking County (Andreas & Moosbrugger 2020). Table 1 is a summary of the number of bryophytes, by group, found in the State of Ohio and Hocking County. Approximately 73% of Ohio liverwort species, and 60% of Ohio's moss species have been collected in Hocking County.

Hocking County is the only location for three Ohio moss species: *Andreaea rupestris*, *Ephemerum crassinervium* var. *texanum*, and *Fissidens closteri*. Four moss species, *Anomobryum julaceum*, *Campylopus tallulensis*, *Diphyscium mucronifolium*, and *Grimmia olneyi*, are confirmed in Hocking County and one other Ohio county (ohiomosslichen.org). Nine of the 28 mosses listed as rare in Ohio (Division of Natural Areas and Preserves 2019), occur in Hocking County: *Amphidium mougeotii*, *Andreaea rupestris*, *Anomobryum julaceum*, *Campylostelium saxicola*, *Diphyscium mucronifolium*, *Fissidens hyalinus*, *Loeskeobryum brevirostre*, *Neckera pennata*, and *Pohlia elongata*

(Andreas & Moosbrugger 2020).

Hocking County is the only Ohio location for six liverwort species: *Lejeunea lamacerina* subsp. *gemminata*, *Marsupella sphacelata*, *Plagiochila austinii*, *Plagiochila virginica*, *Radula tenax*, and *Tritomaria exsecta* (CNABH).

Table 1. Summary of the number of bryophyte species documented in Ohio and Hocking County. The number for Ohio hornworts and liverworts is from Miller (1964), and the number of mosses is from the atlas of Ohio mosses (ohiomosslichen.org). The number for Hocking County is from Andreas & Moosbrugger 2020.

Group	Species numbers in Ohio	Species numbers in Hocking County
Hornworts	4	3, 2 families, 3 genera
Liverworts	122	89, 33 families 51 genera
Mosses	392	235, 49 families 124 genera

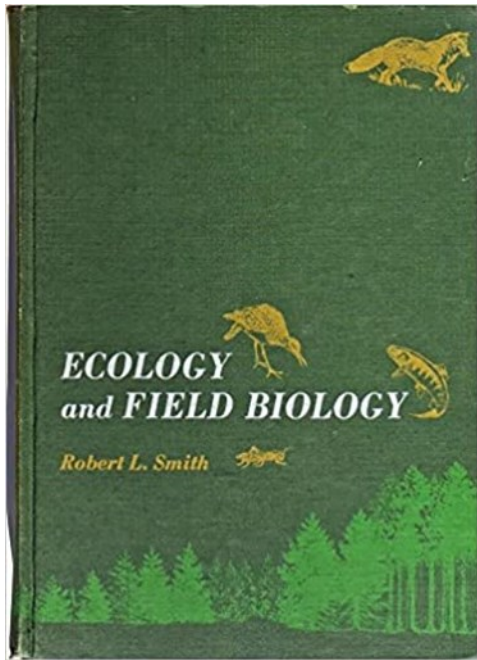
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– Barbara K. Andreas, Joe Moosbrugger

Thoughts on Ecology

When I was in middle school (we called it junior high then) my oldest brother was in college, majoring in biology. I remember him coming home with his ecology book. It was entitled *Ecology and Field Biology*, by Robert Leo Smith.



Its dust cover had a West Virginia stream on the front, reflecting the image of the surrounding woods. I was entranced. I got to browse through the book often and found the contents much more interesting than 8th grade science. Growing up on a wonderful small farm with a wood lot and a small creek and pasture, I could relate to the book. It pretty well cemented a desire to major in some area of the natural sciences when I got to college.

Move forward several decades; I had a good career in soil and environmental sciences and I discovered the study of bryophytes. One thing that drew me to bryophytes is how niche oriented these organisms are. Different bryophytes in different niches, with niches all over the place. My mind went back to how ecology and field biology related to these small plants. But first I had to learn how to identify

them with a fair amount of confidence – no small task!

Good fortune had me work with Brian Gara, who was the wetland ecologist at Ohio EPA where I worked. He brought me in to assist with a large wetland survey in Ohio, because of my soils background. Knowing of my interest in bryophytes, he suggested looking at bryophytes as an indicator of wetland quality in the survey. The rest is history. The study was quite successful, showing a high correlation between wetland quality and the bryophyte community (combination of diversity and FQAI). This, and any ecological study of mosses in Ohio, is greatly enhanced by the development of a Floristic Quality Assessment Index (FQAI) for the state of Ohio by Barb Andreas.

[https://conservationtools-production.s3.amazonaws.com/library_item_files/2006/2290/Ohio_FQAI.pdf?](https://conservationtools-production.s3.amazonaws.com/library_item_files/2006/2290/Ohio_FQAI.pdf?AWSAccess-)

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The study was very interesting to me but a lot of work! Working with soils and identifying all those bryophytes, as well as doing GIS in the office part of my work, was a bit overwhelming at times. A large ecological project where I had to identify each bryophyte, where often 2-4 species occurred in a collected specimen, was quite time consuming.

Now that I am retired from Ohio EPA, I find myself attracted to the idea of exploring more of the ecological

Floristic quality assessment index (FQAI) for vascular plants and mosses for the State of Ohio

Barbara K. Andreas
John J. Mack
James S. McCormac



aspects of bryophytes, but perhaps at a much smaller scale.

I have found myself looking briefly at Janet Glime's e-book, *Bryophyte Ecology*, hoping I can find time to read it soon. So far, I have just skimmed parts of it – it is a huge read. It can be found at: <https://digitalcommons.mtu.edu/bryophyte-ecology/>.

Browse

Table of Contents and Glossary

Volume 1: Physiological Ecology

Volume 2: Bryological Interaction

Volume 3: Methods

Volume 4: Habitat and Role

Volume 5: Uses

Links

Bryophyte Ecology 1-Button
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I am also thinking of some small projects that could look at bryophyte ecology – the interaction of bryophytes with the surround environment. One would be to do a small study of urban mosses, seeing how they change as one goes from neighborhoods on the outer fringe of the city and progress through different neighborhoods to the inner city. Another might be picking out a common species and doing a small field study observing how its growth habits change under different levels of light.

These are just two examples off the top of my head. I think the possibilities are many indeed. One could find new information, if not for the type of study, certainly for the locality it is done in. Results could be for personal interest, or shared here in this annual newsletter, or perhaps another small journal.

This is something I would like to explore in the next year or two. Perhaps some in OMLA would also have an interest in this aspect of bryophytes, or something similar with lichens.

— Bill Schumacher

A Snapshot of Ohio Lichen Diversity 129 Years Ago: The Kellerman Displays for the 1893 Chicago Exposition

Most of the specimens at the Ohio State University Herbarium are tucked neatly into cabinets, not on display. Adorning one long wall are what at first glance look like pictures, artfully arranged, each with a wood frame and glass front. A closer look, however, reveals they are not paintings or any other type of renderings but are in fact real, once-living, plants and fungi.



Framed specimens at The Ohio State University Herbarium

The displays are quite pretty and they're obviously rather old, but I only recently stopped to consider just how old they are, or how they came into being. A modern interpretive sign explains that they, along with larger, more intricate panels of Ohio trees, were assembled for display at the World's Columbian Exposition, a big world's fair held in Chicago for six months in mid-1893.



Write-up by Ronald L. Stuckey about Kellerman's Columbian Exposition mounts

At the top of each 18 x 22-inch panel is a printed heading "Flora of Ohio," and beneath that, in ornate old-style penmanship, are the words "Prepared by Professor and Mrs. W. A. Kellerman." William A. Kellerman and Stella V. Kellerman were botanists (William was a mycologist as well) who were remarkably energetic and wide-ranging in their scientific interests. Making these panels was an appropriate hobby for people whose lives revolved around plants and fungi.

An Ohio native born in 1840, William Kellerman attended Cornell University for undergraduate studies and later received his Ph.D. from the University of Zurich, Switzerland. He taught in schools in several states near Ohio, eventually returning home to become OSU's first botany professor and Chairman of the Department of Botany when it was formed in 1891. That same year, he established the Herbarium in a building aptly named "Botany Hall" that unfortunately no longer exists on OSU's oval. Since then, the Herbarium has moved twice, first to the also aptly named "Botany and Zoology" building (now Jennings Hall) and then to its present location as part of the Museum of Biological Diversity on OSU's West Campus. While his principal research interest was rust fungus diseases of crops, Kellerman's numerous works on the flora of the regions where he lived reveal an extraordinary breadth of knowledge. Not just an ivory-tower academic, he produced, in collaboration with his wife, several works intended principally for use by teachers, and he was the principal author, beginning in 1894 and subsequently updated several times, of a catalogue of Ohio plants. Sadly, while Kellerman was on a research trip to study fungi in Guatemala, he contracted a fever (most likely malaria) from which he died in 1908.

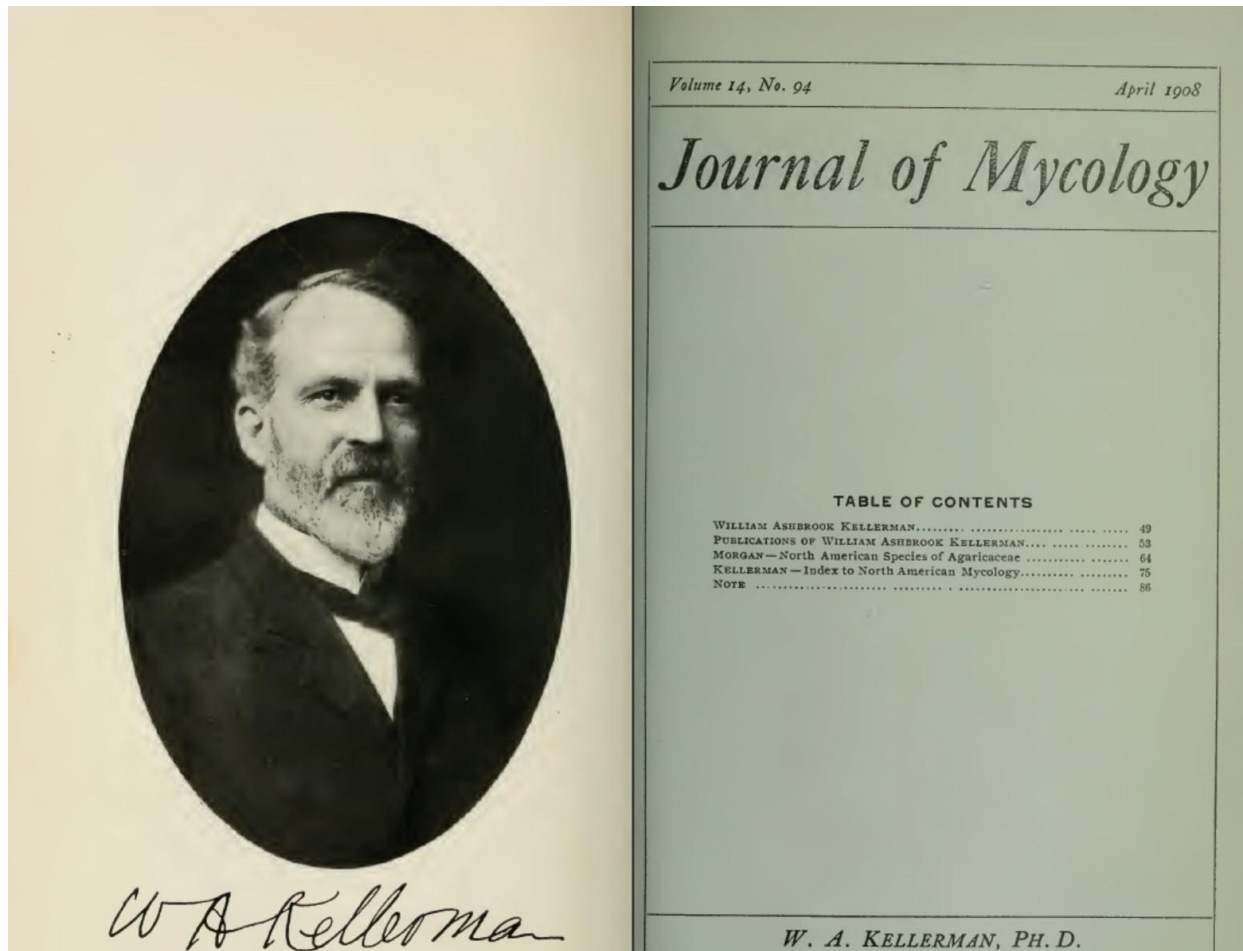


Photo of W.A. Kellerman in the Journal of Mycology

Stella Victoria (Dennis) Kellerman, also Ohio-born, was 5 years younger than William, whom she met in 1867 while a student at an academy in Fairfield County where he briefly taught before going off to Cornell. After both received their degrees (hers a “Mistress of Letters” from an unknown women’s academy) the couple married in 1876. Their honeymoon was at the United States Centennial Celebration in Philadelphia, which may have provided inspiration for them to participate so fully in the Columbian Exposition. Stella was an accomplished botanist and artist/illustrator who produced nearly 300 original drawings for her husband’s textbook *Elements of Botany* (1883), the preface to which includes the words “I have been assisted by my wife in the entire preparation of this book, and to her equally with myself is to be attributed any merit that it may contain.” She had a particular interest in leaf shape variation in vascular plants, publishing over 20 scientific papers on that topic. She also developed theories on the origin of corn. Working as a team, the Kellermans updated the aforementioned botany textbook, and produced a *Spring Flora* book in 1895. They collected specimens for the fledgling State Herbarium (now the OSU Herbarium), focusing on non-indigenous species found in Ohio. An alien plant checklist co-authored by them is aptly described by botanical historian Ronald Stuckey in a 1992 *The Michigan Botanist* article entitled “Botanical and Horticultural Contributions of Mrs. William A. Kellerman (Stella Victoria (Dennis) Kellerman), 1855-1936” as being “of fundamental importance in providing base-line data which all subsequent historical studies of plant invasions into Ohio had to take into account.” One of 5 female charter members of the Ohio Academy of Science, Stella served as its vice-president for two terms, and regularly gave presentations at their annual meetings. After William’s untimely passing, Stella discontinued her botanical studies, but stayed very active in civic and scientific clubs and organizations, including one that she helped found, the Women’s National Science Club.



Mrs. William A. Kellerman. From the Portrait Archives, The Hunt Institute for Botanical Documentation, Carnegie-Mellon University, Pittsburgh, Pennsylvania.

The panels are an interesting snapshot of the flora of Ohio. While aesthetics and enthusiasm for particular plants may have played a major role in their selection by the Kellermans, the panels were indeed portrayed to fairgoers as indigenous representatives of our flora. As there have been substantial changes in the composition of our vegetation, especially for such pollution and disturbance-sensitive organisms as lichens, they arouse curiosity about the past versus present status of these organisms.

There doesn't seem to be a strict organization scheme for the lichen panels; they're not in alphabetical or taxonomic order, except that one panel consists mostly of crustose species, while the few fruticose ones represented are grouped together, sharing space with some foliose ones. I suspect that the paucity of fruticose types is attributable to the display method only being suitable for specimens having dorsoventral morphology, i.e., foliose lichens, and crustose ones with attached substrate. Nonetheless, they show that Ohio was a strikingly different place, lichen-wise, in the late 1890's—very wild, with an abundance of knockout species that we would be amazed to see today.

Each panel includes 9 specimens, with handwritten labels. The classification of lichens has undergone substantial change in the past century and a quarter, hence many of the names written by the Kellermans are not in use today. Fortunately, there exists an on-line database “portal,” called “Consortium of North American Lichen Herbaria” (CNALH). This is a searchable aggregation of specimen records for lichens residing in collections in institutions spanning the continent. Because the specimens are entered by collections managers using whatever data are on the labels, the site takes into account name changes, so that a search for records using an obsolete name will generate a list of all specimens for that species irrespective of what name is on the herbarium packet. This useful “redirection” feature of the portal facilitated the interpretation of this set of 128-year old names, bewildering at first because many are unfamiliar to a 21st-century lichen enthusiast.

The distribution and ecology of lichens in Ohio is well described in *The Macrolichens of Ohio* by Ray E. Showman and Don G. Flenniken, published in 2004 by the Ohio Biological Survey, and by recently revised distribution maps presented on our Ohio Moss and Lichen Association (OMLA) web site. The status of the lichens over a broader geographical area is set forth in the monumental book *Lichens of North America* by Irwin M. Brodo, Sylvia D. Sharnoff and Stephen Sharnoff, published in 2001 by Yale University Press, along with an updated companion volume by Brodo published in 2016 by the Canadian Museum of Nature, *Keys to Lichens of North America: Revised and Expanded*. The data sets used to produce the maps in *The Macrolichens of Ohio*, and their updates on the OMLA web site, did not apparently draw upon all the specimens that reside in herbaria that are members of the CNALH. Conversely, the authors of the Ohio work may have had access to records that are not included in the portal. Consequently, there are some differences, especially with old records such as these, between what comes up from CNALH search results and the published distribution maps. Moreover, and very importantly, the CNALH records are not necessarily in all instances correct, identification-wise. They only reflect what the specimen packet labels say. For simplicity, the specimen record data examined and reported here are all from the CNALH portal, searched during a one-week period spanning late November to early December 2021.

The first panel to catch my eye houses a group of mostly rather large foliose lichens, including several “lungworts,” members of the genus *Lobaria*. These are robust broad-lobed species found on bark. Let’s home in on the 9 lichens on this panel. From upper left to lower right, they are the following:

Physcia obscura synonymizes to ***Phaeophyscia orbicularis* (Necker) Moberg**. This “mealy shadow lichen” has 2468 North American specimen records on the portal, 130 of which are from Ohio, distributed among 47 counties. The most recent Ohio collection was by Tomás Curtis in 2020, from Pickaway County. This is not surprising, but there’s a catch. Before the half-dozen 21st-century collections by him, there were none after the 1970’s. Many were made during the 1950’s and 1960’s by the very active mid-20th-century lichenologist Fr. Conan J. Taylor. The conspicuous lack of collections by several especially active investigators whose work is otherwise well represented in regional herbaria was explained by OMLA co-founder Ray Showman in a “Wanted (Alive)” article in the 2010 OBELISK where he explained that until about 1978 the name *Phaeophyscia orbicularis* was used in a broad sense to include several shadow lichens, some quite common, that are now recognized as distinct species. The name *Phaeophyscia orbicularis* now applies to a distinct species found mainly in the western and northern parts of North America. At the time of the writing of the OBELISK article the only confirmed Ohio records for authentic *P. orbicularis* were from material collected by Paul Kaucher from one Adams County nature preserve in 1978 and 1979. At that time the status of *Phaeophyscia orbicularis* was unknown and it appeared on an Ohio “Lichen Watch List” with hopes that it would be discovered, and happily it was. Most likely though, the Kellerman’s specimen behind the glass is just the common “powder-tipped shadow lichen,” *Phaeophyscia adiantola*.

***Physcia pulverulenta* (Schreb.) Hampe ex Fűrnr.** (no common name) has only 192 North American records, including 9 Ohio specimens (5 counties). There are no North American records past 1978, and the last OH one was made in 1893 by Ernest Everett Bogue from Franklin County.



Bogue is remarkable for the large number of lichen specimens of his, 1161, that reside in North American Herbaria, and for the fact that nearly all of them are from Ohio. These were collected during the years 1891-1895, while he was a student at Ohio State University (OSU), receiving first a Bachelor of Science in Horticulture and Forestry (1894) and then, also from OSU, a Master of Science in Entomology and Botany (1896). Those dates are contemporaneous with Kellerman's tenure at OSU, thus Bogue was an associate of Kellerman, perhaps even his student.

From observing an image (on the portal) of a specimen label that references a variety *leucoleiptes*, images of other specimens on the portal, substrate data referencing bark and limestone rock, and the framed specimen itself, I suspect this taxon is what would nowadays be called *Physconia leucoleiptes*, a fairly common "frost

lichen” for which there are 57 Ohio records, the most recent by Tomás Curtis in 2020 from Fulton County.

Sticta amplissima, when searched for on the CNALH portal redirects you to ***Ricasolia amplissima* (Scop.) De Not.** (until very recently known as ***Lobaria amplissima* (Scop.) Forss.**). This is a bit of a puzzle. There are 280 North American specimens for this lichen, 15 of which are Ohio ones (from 7 counties). There are no Ohio records after a 1910 collection by E. Lucy Braun from Butler County that was determined by Bruce Fink.

Bruce Fink (1861-1927) was a giant in North American lichenology. He was the first person to write a comprehensive lichen flora of a large part of North America (*The Lichen Flora of the United States*, published posthumously in 1935) and one of the first to argue that lichens are dual organisms. As a side note, Fink was an ardent anti-tobacco activist, writing and speaking on the ill effects of its use. Brought on to serve as Chair of the Department of Botany at Miami University of Ohio, he stayed there from 1906 until his death 21 years later. The Consortium contains just over 20,000 Bruce Fink specimens, about 1500 of them from Ohio. The most common of our dust lichens, *Lepraria finkii*, is named for him.

Save for a brief reference to *Lobaria amplissima* in *Lichens of North America* in connection with its association in Europe with some other lichen, this taxon is not included either in that work or in *Keys to Lichens of North America: Revised and Expanded*. Moreover, the North American herbaria that are members of the Consortium collectively have many more (1777) European specimens of it than they do North American ones. E.E. Bogue, in an 1893 article *Lichens of Ohio*, published in the Journal of the Cincinnati Society of Natural History, states that *S. amplissima* is found “On trunks, common.” It’s not clear to me if *amplissima* is a legitimate taxon so rare as to warrant exclusion from Brodo’s keys, or whether the material is actually represented within a different *Sticta*, or perhaps one of the related genera such as *Lobaria*, *Ricasolia*, *Pseudocyphellaria*, or *Nephroma*. If any readers have insight on this (or any other of these old lichen records) please share them with me for use in the forthcoming online version of this article.

***Pannaria leucosticta* = *Fuscopannaria leucosticta* (Tuck.) P. M. Jorg.**, “rimmed shingle lichen,” is represented by 968 North American specimens on the lichen portal. It is a large subfoliose squamulose lichen found mainly on bark, but occasionally on mossy rocks. Eight are from 3 counties in Ohio. No Ohio collections were made after 1962, when Don Flenniken collected it from Washington County.

***Sticta quercizans* = *Ricasolia quercizans* (Michx.) Stizenb.** Until recently referred to as ***Lobaria quercizans* Michaux**, there are 3463 specimens of this “smooth lungwort” from North America, including 60 Ohio ones distributed among 19 counties. An Appalachian-Great Plains region lichen, it is recognized by the large size, gray color, and smooth surface. The most recent Ohio record showing on the portal is a 1986 collection made by Ray Showman in Hocking County.

***Sticta pulmonaria* = *Lobaria pulmonaria* (L.) Hoffm.** is represented by 7814 North American CNALH portal specimens of “lung lichen,” of which 47 are from Ohio (23 counties). The most recent one shown there was made in 1932 by W.B. Cooke from Highland County.

***Peltigera horizontalis* (Hudson) Baumg.** There are 1822 North American records for “flat-fruited pelt,” among which 23 are from the Buckeye State (11 counties). The most recent record is from 1972, by Ray Showman, who found it in Gallia County. Distinguished by its horizontal apothecia, when sterile (as Ohio specimens frequently are) it is indistinguishable from the upright-fruited *P. polydactylon*. In *The Macrolichens of Ohio*, Showman and Flenniken describe this lichen as “widely distributed in the U.S., primarily in mountainous areas; scattered in Ohio; usually on soil, rarely on decaying wood or soil over rock.”

The three lichens in the lower third of the panel are among the few (< 10 percent) lichens that have a cyanobacterium, not a true alga, as their primary photobiont. These oddities include the gelatinous lichens composed of the so-called jelly lichens (genus *Collema*) and jellyskin lichens (*Leptogium*) which have a gummy consistency caused by swelling of a polysaccharide matrix surrounding the cyanobacteria colonies. The other

common lichens that have a cyanobacterial photobiont are the *pelts*, that is, members of the genus *Peltigera*. Not at all gelatinous, their texture and outward color are not very peculiar except that a cross-section shows a darker photobiont layer than the grass-green one seen in other stratified lichens. They are remarkable lichens though: very large, loosely attached, and found mostly on soil, which is an odd location for broad-lobed foliose types.

***Peltigera polydactylon* (Necker) Hoffm.** There are 1829 North American records for “many-fruited pelt” in North America, 45 of which are from our happy home state, showing up in 20 counties. The most recent collection was by Shirley Tucker, who encountered it in 1968 at Crane Hollow in Hocking County. This pelt has a distribution and ecology similar to its look-alike *P. horizontalis*.

***Leptogium pulchellum* = *Collema pulchellum* Ach.**

There are 433 North American records on the portal for “blistered jelly lichen,” 10 of which are from the state that, as the old pun goes, “is round on the sides and high in the middle” (6 counties). The most recent are 3 from Clermont County during the years 1929-1932, but without any collectors specified. Prior to that we have a Bruce Fink sample obtained in 1913 from Peebles County. It is said by Brodo et al. in *Lichens of North America* to be common on the bark of poplars and other trees, alongside a distribution map showing it to be concentrated in the southeast U.S. but absent from Ohio. Moreover, this taxon is missing from *The Macrolichens of Ohio*. The species is distinguished from a more well documented Ohio species, *C. nigrescens*, by a very technical microscopic feature –the shape of the cells in a specific layer of the apothecium. This could be a case of mistaken identity.

Very large-lobed, loosely attached, with distinctive patterned ridges, and thus among the most easily recognized of all lichens, “lung lichen” was once widely distributed across Ohio, but no more. Ditto for several of the others on this panel. Why are they gone from Ohio? It’s certainly due to a multiplicity of factors that prevailed during the late 19th and early 20th centuries: air pollution and disturbance of old-growth forests. Now that conditions are better for them to grow, perhaps only a lack of propagules is keeping them from reestablishing themselves. While eventually a warbler, thrush, or vireo might fly in from the north woods with a little piece of some lungwort on its foot, these might be good candidates for deliberate reintroduction.

— Bob Klips

Note: The introductory portion of this article draws heavily on a 2018 blog post by OSU’s Museum of Biological Diversity that can be accessed at <https://u.osu.edu/biomuseum/2018/01/17/a-snapshot-of-ohio-lichen-diversity-125-years-ago/>.

An expanded version of this article is available on the OMLA web site at this web address: <https://ohiomosslichen.org/kellerman-lichens/>