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This year we have two excellent articles which are better presented in a full page format rather than the two-column format that we usually employ. The first is a student article by Tomás Curtis, winner of the 2017 Flenniken Award. Congratulations Tomás for outstanding work in northeast Ohio! The second paper is by Dr. James Lendemer, who was a featured speaker at the 2017 Ohio Botanical Symposium. James visited Ohio a few days early and botanized several areas of southeast Ohio.

A STUDY OF THE MACROLICHENS OF NORTHEAST OHIO

Introduction

From early 2016 to early 2017 the macrolichen flora in Northeastern Ohio was studied intensively. The goals of the study were to locate as many species as possible and improve representation of the current lichen flora in local herbaria.

Materials and Methods

In this study, Northeast Ohio was defined as the following counties: Ashtabula, Columbiana, Cuyahoga, Lake, Lorain, Mahoning, Medina, Portage, Stark, Summit, Trumbull, and Wayne. Most of the study area is within the Erie Drift Plain ecological region but parts of the Eastern Great Lakes and Hudson Lowlands and Western Allegheny Plateau ecological regions are also within these Northeast Ohio counties, providing a wide range of habitats.

During this study, a variety of parks, preserves, natural areas, and cemeteries were inventoried for macrolichens. Some of these properties include the Cuyahoga Valley National Park, Camp Ravenna, West Branch State Park, Beaver Creek State Park, and many of the Medina parks, Summit Metro parks, Lake Metro parks, Cleveland Metro parks, Portage parks, and State Nature Preserves. Collecting permits were acquired when necessary.

Lichens were identified primarily by using keys in the book *The Macrolichens of Ohio* (Showman & Flenniken 2004) but other books were used as well such as *The Macrolichens in West Virginia* (Flenniken 1999); *The Macrolichens of New England* (Hinds & Hinds 2007); *The Lichens and Allied Fungi of the Great Smoky Mountains National Park* (Lendemer, Harris, & Tripp 2013); and *Keys to Lichens of North America* (Brodo 2016). In addition, the following

websites were helpful: North American Lichen Checklist, Ohio Moss and Lichen Association, and Lichen Portal.

Difficult specimens were sent to the New York Botanical Garden to be verified by Dr. James C. Lendemer. A personal voucher collection is maintained by the author and many other specimens have been donated to the Kent State University herbarium, the North Dakota State University Herbarium, and the New York Botanical Garden. Scientific names are based on Esslingers 2016 North American Lichen Checklist cited at the bottom.

Results

The following table lists the 137 species of macrolichens that were found during this study. Of these, 40 species were new to Northeast Ohio and 7 were new to the state.

Macrolichen species found in Ashtabula, Columbiana, Cuyahoga, Lake, Lorain, Mahoning, Medina, Portage, Stark, Summit, Trumbull, and Wayne counties in 2016-2017. SP = found by Shaun Pogacnik, P = previously reported, N = new county record, NS = new state record (also underlined on list).

Species	AS	CO	CU	LA	LO	MA	ME	PO	ST	SU	TR	WA
Anaptychia palmulata	P	N	P	P				P				
Bryoria furcellata	P		P					P		N		
Candelaria concolor	P	P	P	P	P	P		N	P	P	P	P
Canoparmelia caroliniana		N										
Canoparmelia texana		N						N	N	N	N	
Cetrelia chicitae		N										
Cladonia apodocarpa	N			N				N		P	P	P
Cladonia caespiticia		P	P	P	P		P	P	P	P	P	P
Cladonia chlorophaea	P						P		P		P	P
Cladonia coniocraea	P	P	P	P	P		P	P	P	P	P	P
Cladonia cristatella	P	P	P	P	P	P	P	N	P	P	P	P
Cladonia cryptochlorophaea	P	P	P	P	P		P			P	P	P
Cladonia cylindrica				N			P	N	P	P		P
Cladonia fimbriata	P		P	P				N	N	P		
Cladonia furcata	P	N	P	P	P		P	N	P	P	P	P
Cladonia grayi	P	P	P		P	P		N	P	P	P	P
Cladonia humilis			P	P			P					P
Cladonia incrassata								N				P
Cladonia macilenta	N	P	P	N	P	P	P	N	N	P	P	P

Cladonia parasitica	P	P	P		P			N	P	N		P
Cladonia peziziformis	P	P	P	P	P		P	N	P	P	P	P
Cladonia pleurota		P		P		P	P	N	N	N	P	P
Cladonia pyxidata		P	P	P			P	N		P		P
Cladonia ramulosa		N						N				P
Cladonia rangiferina	N	N	P					N		N		P
Cladonia rei	P	P	P	P			P	N	P	N		P
Cladonia squamosa	P	P	P	P		P		P		P	P	P
Cladonia strepsilis						P		N		N		P
Cladonia subcariosa	P	P		P	P	N	P	N	P	P	P	P
Cladonia subtenuis				P		P		N		N		P
Cladonia uncialis		P		N								
Cladonia verticillata	P	P	P		P	P	P	P	P	P	P	P
Collema subflaccidum	P	N	P		P							
Crespoa crozalsiana	N	P		N	P			N	N	N	N	
Dermatocarpon luridum		P				N				P		
Dibaeis baeomyces				N								
Enchylium bachmanianum				N						N		
Enchylium tenax	N									P		
Endocarpon pallidulum		N	P			N		N				
Evernia mesomorpha		N	P	N				N	N	N	N	
Flavoparmelia baltimorensis		P										
Flavoparmelia caperata	P	P	P	N	P	P	P	P	P	N	P	P
Flavopunctelia flaventior	N	N	N	N	P	N	P	N	N	N	N	P
Flavopunctelia soredica	P	P	N	N		P		N	N	N	N	P
Heterodermia obscurata		N	P						N	N		P
Heterodermia speciosa		P	P					N	N	N		P
Hyperphyscia adglutinata			P					N	P	N		P
Hyperphyscia syncolla										N		

Hypocenomyce scalaris				N				N		N		
Hypogymnia physodes	P	N	P	N			P	N	N	N	P	P
Hypotrachyna afrorevoluta								**NS**				
Hypotrachyna livida			P					N	N	N		P
Hypotrachyna minarum	N	P		N				N	N	N	N	
Hypotrachyna showmanii		N	N	N				N	N	N	N	
Imshaugia aleurites		P	P	N				N		N		
Imshaugia placorodia								N				
Lecanora muralis						N		N		N		
Leptogium austroamericanum						N						
Leptogium cyanescens		P	P			N		N		N	P	P
Melanelixia subaurifera	P	P	P	P		N	P	P	N	N	N	P
Menegazzia subsimilis								N				
Multiclavula mucida				N						N		
Myelochroa aurulenta	N	P		N	P	P	P	P	P	N	N	P
Myelochroa galbina	P	N	P				P	P		N		P
Myelochroa metarevoluta								N		N	N	
Myelochroa obsessa		N										
Parmelia squarrosa		P	P				P	N	N			P
Parmelia sulcata	P	P	P	P	P	P	P	P	P	P	P	P
Parmotrema austrosinense			N			N		N	N	N	N	
Parmotrema gardneri		N						N		N	N	
Parmotrema hypotropum	N	P		P		N		N	P	P	P	P
Parmotrema perforatum								N				
Parmotrema perlatum		N	P					N		N		

Parmotrema reticulatum	N	N		P			P	N	N	N		P
Parmotrema subisidiosum								N	N			
Parmotrema ultralucens									N			
Peltigera canina	P		P		P		P			P		
Peltigera didactyla SP			P	N								
Peltigera evansiana		P					P			N		
Peltigera polydactylon			P							P		
Peltigera praetextata										N		
Peltigera rufescens										**NS**		
Phaeophyscia adiastola		P		N	P	P	P	P	P	P	P	P
Phaeophyscia ciliata	P		P	P			P	N	N		P	
Phaeophyscia decolor		P						N		N		
Phaeophyscia hirsuta	N	P		N				N	N	N	N	P
Phaeophyscia hirtella								N				
Phaeophyscia orbicularis						N						
Phaeophyscia pusilloides	N	N		N			P	N	N	P	N	
Phaeophyscia rubropulchra	N	P		N		P		P	P	P	P	P
Physcia adscendens	P	P		P	P	P		P	P	N	P	P
Physcia aipolia	P	P	P	P	P	P	P	P		P		P
Physcia americana	P	N	P	N				N	N	N		P
Physcia caesia								N				
Physcia dubia								**NS**	N			
Physcia millegrana	P	P	P	P	P	P	P	P	P	P	P	P
Physcia phaea	N							N				
Physcia pumilior								N		N		
Physcia stellaris	P	N	P	P	P	P		N	P	N	N	P
Physcia subtilis		N										
Physciella chloantha	N	P				P		N		N		
Physciella melanchra								N		N		

Physconia detersa	P	P		N				N	N	N		
Physconia leucoleiptes							P	N				P
Platismatia tuckermanii			P					N		P		
Punctelia borreri								N	N			
Punctelia caseana	N	P		N		N		N	N	P	N	
Punctelia missouriensis		N		N				N	N	N	N	
Punctelia rudecta	P	P	P	N	P	N	P	P	P	P	P	P
Pyxine sorediata		P						N	N	N	N	P
Pyxine subcinerea		N		N		N		N	N	N		P
Ramalina americana			P				P	P		N		
Ramalina intermedia			P	N								
Scytinium juniperinum		P	P	N		N				N		
Scytinium lichenoides		P	P			N						
Scytinium subtile										N		
Tuckermanella fendleri								N				
Tuckermannopsis americana								N				
Tuckermannopsis ciliaris	P		P					N				
Tuckermannopsis sepincola								NS				
Umbilicaria mammulata		N										
Usnea cornuta								N		N		
Usnea dasaea								**NS**				
Usnea hirta								N	N	**NS**	N	
Usnea mutabilis		P						N	N	N	N	
Usnea rubicunda	P	N		P				N		N		
Usnea strigosa	P	N						P	N	N	N	
Usnea subfloridana	P							N	N	N		
Usnocetraria oakesiana		N		N				N	N			
Xanthomendoza fallax				P				N	N	N		P
Xanthomendoza hasseana	P			P				N		N		P

Xanthomendoza ulophyllodes	N	P		P				N	N	N		
Xanthomendoza weberi								N	N	N		
Xanthoparmelia conspersa		N						P		N		P
Xanthoparmelia cumberlandia						N		N				
Xanthoparmelia plittii		P	P			P		N		N		
Xanthoria parietina									**NS**			

Significant finds

Canoparmelia caroliniana: Primarily a southern species, *C. caroliniana* is rare throughout Ohio and considered a state endangered species. The NE Ohio record is the most northerly record of this species in North America.
Enchylium bachmanianum: *E. bachmanianum's* range extends through most of the United States where it is uncommon. In Ohio, it is considered endangered. This may be due to the scarcity of its habitat.
Hypotrachyna afrorevoluta: This lichen is found primarily in the Appalachians as well as in small portions of the East and West coast where it is uncommon. It was discovered in Ohio for the first time in Portage County.
Leptogium austroamericanum: Primarily a southern species, *L. austroamericanum* is rare in Ohio and was recorded for the first time in Northeast Ohio during this study. For this reason, it is considered noteworthy here.
Menegazzia subsimilis: Both stunning and uncommon, *M. subsimilis* is known to exist throughout most of the eastern United States and along the Pacific coast. With only one old record in Ohio (from 1877), it was presumed to be extirpated from the state until its rediscovery in Portage county during this study.
Parmotrema ultralucens: Primarily found south of the Appalachians, *P. ultralucens* is quite rare in Ohio and was recorded for the second time in the state in Stark County during this study.
Peltigera rufescens: Though generally common from the arctic to the equator, *P. rufescens* seems to become less abundant between the Great Lakes and the Appalachians. It was found for the first time in Ohio in Summit County during this study.
Physcia dubia: Common in the north, *P. dubia* has likely been under-recorded in Ohio due to previous lack of inventorying in northern counties. It was found in Ohio for the first time in Portage County during this study.
Ramalina intermedia: Primarily found in the Appalachians and around the Great Lakes, records of *R. intermedia* are scattered throughout the continental United States. It is uncommon throughout its range and is an endangered species in Ohio.

Tuckermannopsis sepincola: Primarily a northern species, *T. sepincola* was found for the first time in Ohio in Portage County during this study. It can resemble *T. fendleri* but differs in the position of the apothecia and the color of the thallus when it is wet.
Usnea dasaea: Rare throughout its range, *U. dasaea* was found for the first time in Ohio in Portage County during this study. Its other eastern records consist of a handful from Arkansas, Illinois, and the Appalachians.
Usnea hirta: Common in the north, *U. hirta* has likely been under-recorded in Ohio due to previous lack of inventorying in northern counties. It was found for the first time in Ohio in Summit County during this study, and since its original discovery, it has been found at numerous other locations throughout Northeast Ohio.
Xanthoria parietina: This species can be found in abundance along the coast of New England as well as the Pacific Coast, but many disjunct specimens and populations have been found across the continent. This is the first record of *X. parietina* for Ohio.

Conclusion

Lichens have not been systematically collected in Northeast Ohio since Taylor's work more than 50 years ago. In that time, many species that were once recorded within the inventoried counties have disappeared, but even more species seem to be recolonizing or moving into the areas where they once didn't exist. Though impacted by industrialization, Northeast Ohio seems to be experiencing a rebound in macrolichen biodiversity. This study has provided meaningful data that represents the current lichen flora in Northeast Ohio well.

Summary

An extensive survey of macrolichens in Northeast Ohio counties found 305 new county records. This study shows that a concentrated effort can dramatically add to the known lichen flora of an area, particularly one that has not been studied for some time.

Acknowledgements

Special thanks to Ray Showman, Dr. Barbara Andreas, and Robert Curtis for mentoring and encouraging me through my studies.

Literature cited

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Lendemer, J., Harris, R., and Tripp, E. (2013). *The Lichens and Allied Fungi of the Great Smoky Mountains National Park*. Bronx, NY: The New York Botanical Garden Press.
Showman, R. and Flenniken, D. (2004). *The Macrolichens of Ohio*. Columbus, OH: Ohio Biological Survey.

Websites

Lichen Portal: http://lichenportal.org/portal/
Ohio Moss and Lichen Association: http://ohiomosslichen.org/
North American Lichen Checklist: https://www.ndsu.edu/pubweb/~esslinge/chcklst/chcklst7.htm

- Tomás J. Curtis, 8/17/2017

NEW AND INTERESTING RECORDS OF LICHENS AND LICHENICOLOUS FUNGI FROM OHIO

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Abstract. – New records of *Bacidia sorediata* are reported, expanding the known distribution of the species in Ohio. The following species are reported for the first time from Ohio: *Fuscidea recensa, Halecania pepegospora, Lecanora minutella, Leprocaulon adhaerens, Opegrapha corticola, Placynthiella hyporhoda, Pyrenidium aggregatum* (on *Phaeophyscia rubropulchra*), and *Scoliciosporum pensylvanicum*.

Keywords. – Appalachian, biodiversity, floristics, new records, North America, temperate.

Introduction

The state of Ohio has a long and distinguished history of lichenological study spanning nearly two centuries (Andreas et al. 2005; Bogue 1893; Claassen 1895, 1912, 1917; Fink 1921; Fischer 1895; Fulford 1937; Hambleton 1906, 1910; Kaucher & Snider 1982; Rudolph 1974; Showman 1975, 1977, 1981; Tuckerman 1849; Washburn 2005; Wolfe 1940). Macrolichens have been particularly well studied in the state, and were the focus of multiple published guides or treatments (Carrington 1921; Fink & Richards 1915; Flenniken & Showman 1990; Showman & Flenniken 2004; Showman & Klips 2015; Taylor 1967, 1968). In contrast, the crustose lichens of Ohio remain relatively poorly known, with the majority of records in modern times having been derived from a Tuckerman Workshop held in the southern portion of the state in 2006 (Andreas et al. 2007). Recently the author had the opportunity to spend several days in the field in Ohio with Ray Showman, Tomás Curtis and Mark Zloba prior to the Ohio Natural History Symposium in 2017. During this trip several species were located that had not been previously reported from the state. These reports are presented here.

Materials and methods

Specimens cited in this study were deposited in the herbarium of the New York Botanical Garden (NY). They were examined dry using an Olympus SZ-STB dissecting microscope. Sections of the ascomata and thalli were made by hand using a razor blade, mounted in water, and

examined using an Olympus BX53 compound microscope. Chemistry was studied using standard spot tests following Brodo et al. (2001). Thin Layer Chromatography (TLC) was also performed on selected specimens using Solvent C following Culberson and Kristinsson (1970) but as modified for the peanut butter jar by Lendemer (2011).

New and interesting records

Bacidia sorediata Lendemer& R.C. Harris

Notes. – *Bacidia sorediata* was recently described from numerous sites throughout of temperate eastern North America (Lendemer et al. 2016). In addition to the Ohio records of the species reported in the original publication, several new records are provided here. The species is almost certainly common and widespread throughout much of Ohio, but overlooked because it is sterile. It can be recognized by its occurrence on bark, especially the bases of trees, and dark greenish thallus with lighter green diffuse soralia. Although *B. sorediata* grows on bark, there is a strong tendency for it to overgrow bryophytes on bark, and in those cases the soralia are typically formed on the bryophytes rather than the bark substrate.

Specimens examined. – **U.S.A. OHIO.** ADAMS CO.: Edge of Appalachia Preserve, SW of Chalet, above Brushy Creek, 1.0 mi S of Abner Hollow Rd., 24 April 2015, on *Carya* base, *J.C. Lendemer et al. 44502* (NY). GALLIA CO.: Wayne National Forest, Symmes Creek Natural Area, 19 May 2006, on *Quercus* base, *R.C. Harris 52629* (NY); Chesire Township, Gavin Mitigation Wetland, 23 March 2017, on *Salix*, *J.C. Lendemer et al. 50358* (NY). MEIGS CO.: Shade River State Forest, S of CR265/Number 9 Rd., 1.3 mi NE of jct w/ CR46/Success Rd., 23 March 2017, on *Aesculus*, *J.C. Lendemer et al. 50351* (NY). SCIOTO CO.: Shawnee State Forest, at southern junction of Forest Service Roads 3 & 6, ~1.6 miles west of Bear Creek Lake, 21 May 2006, on *Quercus*, *J.C. Lendemer 7208* (NY), *J.C. Lendemer 7221* (NY). VINTON CO.: Madison Township, Vinton Furnace Experimental Forest, Watch Rock, 22 March 2017, on large *Carya base*, *J.C. Lendemer et al. 50300* (NY).

Fuscidea recensa (Stirt.) Hertel et al.

Notes. – This is a sorediate crustose lichen that produces divaricatic acid and occurs on rocks throughout the Appalachians (Fryday 2008). Fertile, esorediate populations with divaricatic acid have been treated by Fryday (2008) as an infrapsecific taxon under *Fuscidea recensa*, however pending studies with molecular data I have continued to treat these as a distinct species (e.g., Lendemer 2008, 2009). This is the first report of the species form Ohio.

Specimen examined. – **U.S.A. OHIO.** VINTON CO.: Madison Township, Vinton Furnace Experimental Forest, Watch Rock, 22 March 2017, on sheltered rock, *J.C. Lendemer et al. 50307* (NY).

Halecania pepegospora (H. Magn.) v.d. Boom

Notes. – *Halecania pepegospora* is an inconspicuous crustose lichen that grows on strongly to moderately sun exposed non-calcareous rocks and has a distinctive dark greenish-black colored blastidiate thallus that produces argopsin (Lendemer 2008, Lendemer et al. 2013, van den Boom et al. 2004). The species is widespread in the Appalachian Mountains of eastern North America and this is the first report from Ohio.

Specimen examined. – **U.S.A. OHIO.** VINTON CO.: Madison Township, Vinton Furnace Experimental Forest, Watch Rock, 22 March 2017, on vertical rock, *J.C. Lendemer et al. 50310* (NY).

Lecanora minutella Nyl.

Notes. – As the name implies, *Lecanora minutella* is a minute and inconspicuous species. It was originally described from Lookout Mountain in Hamilton County, Tennessee more than a century ago. (Nylander 1890). More recently it was recognized as being much more widespread in temperate eastern North America, mostly often occurring on the scales of year-old cones of various pine species, as well as more rarely on the bark itself (LaGreca & Lumbsch 2001, McMullin & Lendemer 2016). This is the first report of the species from Ohio. It is likely much more widespread and simply overlooked because of its small size and unusual substrate.

Specimen examined. – **U.S.A. OHIO.** MEIGS CO.: Shade River State Forest, N of CR265/Number 9 Rd., 0.5 mi E of jct w/ CR46/Success Rd., 23 March 2017, on *Pinus virginiana* cone, *J.C. Lendemer et al. 50343* (NY).

Leprocaulon adherens (K. Knudsen, Lendemer & Elix) Lendemer & B.P. Hodk.

Notes. – *Leprocaulon adherens* is a very distinctive leprose lichen that was originally described from western North America (Knudsen et al. 2007) and subsequently found at numerous sites throughout eastern North America (Lendemer unpublished data). It is easily recognized by its dark blue-gray color, which is similar to the soredia of *Normandina pulchella* (Borrer) Nyl. or some species of Pannariaceae, and the production of both pannarin and zeorin. These are the first reports of the species from Ohio. Although it is typically found on non-calcareous rocks in sheltered overhangs, *L. adherens* also rarely occurs on the bark of trees in humid microhabitats.

Specimens examined. – **U.S.A. OHIO.** ADAMS CO.: Chaparral Prairie State Nature Preserve, 22 May 2006, on *Carya*, *J.C. Lendemer 7363* (NY). VINTON CO.: Madison Township, Vinton Furnace Experimental Forest, Watch Rock, 22 March 2017, on rock in overhang, *J.C. Lendemer et al. 50311* (NY).

Opegrapha corticola Coppins & P. James

Notes. – This species was first reported from North America by Tønsberg (2002) on the basis of collections from Arkansas and Oklahoma. It has subsequently been found to be widespread

throughout much of temperate eastern North America (Lendemer unpublished data) where it is common on the bark of hardwoods, as well as certain conifers such as juniper (*Juniperus*). *Opegrapha corticola* can easily be recognized by its immersed and inconspicuous thallus and yellowish or bronze-colored soredia whose coloration is presumably derived from the carotenoid content of the *Trentepohlia* photobiont. Although easily overlooked in the field, thalli of *O. corticola* with particularly brightly colored soredia can be mistaken for a species of *Caloplaca* (these are easily separated by their K+ purple thalli). These are the first reports of the species from Ohio.

Specimens examined. – **U.S.A. OHIO.** ADAMS CO.: Edge of Appalachia Preserve, SW of Chalet, above Brushy Creek, 1.0 mi S of Abner Hollow Rd., 24 April 2015, on *Carya*, *J.C. Lendemer et al. 44501* (NY). VINTON CO.: Madison Township, Vinton Furnace Experimental Forest, Watch Rock, 22 March 2017, on large *Carya*, *J.C. Lendemer et al. 50301* (NY).

Parmotrema hypotropum (Nyl.) Hale

Notes. – *Parmotrema hypotropum* is a common and conspicuous macrolichen that differs from *P. perforatum* (Jacq.) A. Massal. in having a sorediate thallus (vs. esorediate in *P. perforatum*) (see Lendemer et al. 2015). Although apothecia are rare in *P. hypotropum*, a single fertile thallus was found during the recent trip to Ohio. The ascospores were found to be subglobose, 6-9 x 5.4-9 µm in size and the conidia were hyaline, rod-like, and 10.6 $\pm$1.2 µm long. Interestingly the conidia are markedly shorter than those reported for *P. perforatum* (12.9 $\pm$1.7 µm *fide* Widhelm et al. 2016).

Specimen examined. – **U.S.A. OHIO.** GALLIA CO.: Chesire Township, Gavin Mitigation Wetland, 23 March 2017, on *Salix*, *J.C. Lendemer et al. 50381* (NY).

Placynthiella hyporhoda (Th. Fr.) Coppins & P. James

Notes. – Like most other members of the genus, *Placynthiella hyporhoda* is a relatively inconspicuous species that grows on humus and organic matter (Coppins & James 1984). It is most similar to *P. uliginosa* (Schrad.) Coppins & P. James, but differs in having apothecia with a dark brown pigmented hypothecium that reacts strongly K+ purple, with the reaction being so intense that the purple bleeds out into the surrounding mount under the microscope. The species appears to be very rare in North America and the small number of times that the author has seen it, it was found on moist soil along old roads and trail banks. This appears to be the first report of the species from Ohio.

Specimen examined. – **U.S.A. OHIO.** VINTON CO.: Madison Township, Vinton Furnace Experimental Forest, Watch Rock, 22 March 2017, on humus, *J.C. Lendemer et al. 50308* (NY).

Pyrenidium aggregatum

Notes. – *Pyrenidium aggregatum* is a lichenicolous fungus that forms conspicuous galls of host thalli, especially of *Phaeophyscia rubropulchra* (Degel.) Essl. It can easily be recognized by these galls, which contain multiple perithecia with 4-celled brown ascospores (Knudsen & Kocourková 2010). The species is known from throughout much of temperate eastern North America, where it appears to be common. These are the first reports for the species from Ohio.

Specimens examined. – **U.S.A. OHIO.** ADAMS CO.: Chaparral Prairie State Nature Preserve, 22 May 2006, on *Phaeophyscia rubropulchra* on *Acer*, *J.C. Lendemer 7270* (NY), Edge of Appalachia Preserve, NE of Chalet, 1.0 mi S of Abner Hollow Rd., 24 April 2015, on *P. rubropulchra* on fallen *Quercus*, *J.C. Lendemer et al. 44479* (NY). MEIGS CO.: Shade River State Forest, S of CR265/Number 9 Rd., 1.3 mi NE of jct w/ CR46/Success Rd., 23 March 2017, on *P. rubropulchra* on *Aesculus*, *J.C. Lendemer et al. 50352* (NY); rest area on W side of US30, 1.4 mi S of Darwin, 23 March 2017, on *P. rubropulchra* on *Acer*, *J.C. Lendemer et al. 50312* (NY).

Scoliciosporum pensylvanicum R.C. Harris

Notes. – This species was first described from Pennsylvania (Harris 2009) and subsequently discovered at scattered sites in the central and southern Appalachians of eastern North America (Lendemer unpublished data). It is easily recognized by its granulose, esorediate, greenish thallus with small, light brown biatorine apothecia, needle-shaped colorless spores, and the production of lobaric acid (KC+ fleeting purple, UV+ bright blue-white). The species is widespread and common in humid habitats such as stream ravines, where it occurs on the bark of hardwoods. It also occurs in the deep bark grooves of large chestnut oaks (*Quercus prinus*). These are the first reports for the species from Ohio.

Specimens examined. – **U.S.A OHIO.** MEIGS CO.: Shade River State Forest, S of CR265/Number 9 Rd., 1.3 mi NE of jct w/ CR46/Success Rd., 23 March 2017, on *Aesculus*, *J.C. Lendemer et al. 50350* (NY). VINTON CO.: Madison Township, Vinton Furnace Experimental Forest, Watch Rock, 22 March 2017, on large *Quercus prinus* in bark grooves, *J.C. Lendemer et al. 50293* (NY).

Acknowledgements

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LEFT HAND CORNER

STRANGE BEDFELLOWS

Not long ago I was talking to someone with little botanical knowledge about the OMLA, and he asked: "Why are lichens and mosses grouped together, are they similar plants?" After a moment's thought I replied: "No they are very different organisms, but they are both botanical orphans, so they are sometimes lumped together."

Later, after some reflection, I thought what a great question, one I had never been asked before, or even heard asked and answered. While there are fundamental differences between lichens and mosses, there are also some similarities. Both are cryptogams, reproducing by spores. Both frequently require a microscope for identification. And both grow on the same substrates – tree bark, soil and rock. While lichens prefer sunnier locations, they are frequently found with mosses.

In addition, the folks studying these botanical orphans are fewer than those interested in other plants. An organization of both lichen and moss enthusiasts is larger and more viable than separate groups for each organism would be. The early workers who established the American Bryological and Lichenological Society in 1898 wisely decided to include both groups into their organization.

Likewise, the Ohio Moss and Lichen Association welcomes both disciplines with open arms. I have enjoyed learning about mosses and liverworts, and the friendship and comradery of our members is a reward in itself. **– Ray Showman**

2017 SUMMER FORAY, LICKING COUNTY

The 2017 OMLA Summer Foray was held on June 17th at Dawes Arboretum. Dawes is a nearly 2000-acre facility with an outstanding collection of woody plants from all over the world. The property also contains native woodlands and a pioneer cemetery dating from the early 1800's. Moss and lichen habitat includes soil and tree bark. There are a few glacial boulders on the surface but no bedrock outcrops.

Lichens collected or observed included 59 species. Of these, 21 were crustose and 38 were macrolichens. Fourteen of the macrolichens were new county records. Two of these species deserve special note. The first Ohio record of ***Phaeophyscia insignis*** was for Adams County by James Lendemer in 2015 (see Crustose Lichen Workshop at the Edge of Appalachia, p.5, 2015 OBELISK). This collection at Dawes is only the second record for Ohio.

Phaeophyscia orbicularis is a mainly western species that was recorded once from Ohio as a somewhat questionable record (see **WANTED (ALIVE)** *Phaeophyscia orbicularis* in Ohio, pp. 10-11, 2010 OBELISK). Don Flenniken searched for this species for several years without success. It was found earlier this year in Mahoning County by Tomás Curtis and was confirmed by Dr. Ted Esslinger. The Dawes collection was made from a headstone in the pioneer cemetery.

Lichens of the 2017 Summer Foray.
N = New for Licking County, * = **Crustose Lichen**

*Acarospora fuscata**
*Amandinia punctata**
Anaptychia palmulata
*Arthonia caesia**
*Buellia stillingiana**
Candelaria concolor
*Candelariella aurella**
*Candelariella efflorescens**
Canoparmelia crozalsiana **N**
Canoparmelia texana **N**
Cladonia coniocreaa
Cladonia parasitica
Cladonia squamosa
Flavoparmelia caperata
Flavopunctelia flaventior
Flavopunctelia soredica **N**
*Graphis scripta**
*Gyalolechia flavovirescens**
Hyperphyscia adglutinata
Hypotrachyna livida **N**
Hypotrachyna minarum
Hypotrachyna showmanii **N**
*Lecanora appalachensis**
*Lecanora hybocarpa**
*Lecanora strobolinia**
*Lecanora thysanophora**
*Lecidella stigmatea**
*Lepraria finkii**
Melanelixia subaurifera

Myelochroa aurelenta
*Myriolecis dispersa**
*Ochrolechia arborea**
Parmelia sulcata
Parmelinopsis minarum
Parmotrema austrosinense **N**
Parmotrema hypotropum
Parmotrema reticulatum **N**
Phaeophyscia adiastola **N**
Phaeophyscia hirsuta **N**
Phaeophyscia hirtella
Phaeophyscia insignis **N**
Phaeophyscia orbicularis **N**
Phaeophyscia pusilloides
Phaeophyscia rubropulchra
Physcia adscendens
Physcia millegrana
Physcia stellaris
Physciella cloanthla **N**
Physconia detersa
Punctelia caseana **N**
Punctelia missouriensis
Punctelia rudecta
*Pyrrhospora varians**
Pyxine sorediata
Pyxine subcinerea **N**
*Ropalospora viridis**
*Trypethelium virens**
*Verrucaria nigrescens**
*Xanthocarpia feracissima**

Prior to the foray to the Dawes Arboretum, 86 mosses and seven liverworts had been reported from Licking County. While the Dawes Arboretum offered numerous trees as substrates, few boulders, and no rock outcrops were available for bryophytes. In all, 41 moss species and three liverworts were collected. Of these, 15 mosses were newly reported for Licking County. The most significant was *Trematodon longicollis*, collected by Carole and Bill Schumacher (*Schumacher 061717-08* (KE). Previously known from four Ohio counties, it was collected during the OMLA foray to Brown County (*Andreas 18919* (KE)) (*OBELISK*, Vol. 12, p. 7).

Bryophytes of the 2017 Summer Foray. N = New for Licking County.

Mosses

Amblystegium humilis **N**
Amblystegium serpens **N**
Amblystegium varium
Anomodon attenuatus
Anomodon rostratus **N**
Atriichum altecristatum **N**
Atrichum angustatum
Aulacomnium heterostichum
Brachythecium acuminatum **N**
Brachythecium campestre **N**
Brachythecium laetum
Brachythecium plumosum
Brachythecium rutabulum **N**
Bryum lisae var. *cuspidatum*
Calliergonella curvifolia
Calliergonella lindbergii
Callicladium haldanianum
Ceratodon purpureus
Desmatodon obtusifolius **N**
Dicranum fulvum
Dicranum montanum
Ditrichum pallidium
Entodon seductrix
Eurhynchium hians
Fissidens taxifolius
Funaria hygrometrica
Hymenostylium recurvirostrum **N**
Leptodictum riparium
Leskea gracilescens
Leucobryum glaucum
Orthotrichum pusillum **N**
Orthotricum stellatum **N**
Physcomitrium pyriforme
Plagiomnium cuspidatum
Platygyrium repens
Pleurozium schreberi **N**
Pylaisiadelpha tenuirostris
Schistidium apocarpum **N**
Thuidium delicatulum

Tortella tortuosa **N**
Trematodon longicollis **N**

Liverworts

Frullania eboracensis
Lophocolea heterophylla
Porella platyphylloidea

- Ray Showman and Barb Andreas

SEVENTEEN MOSSES HAVE BEEN ADDED TO THE OHIO MOSS LIST SINCE 2004 – SIX FROM OMLA FORAYS

The formation of the Ohio Moss and Lichen Association (OMLA) in 2004 (Andreas et al. 2005), and its annual summer and fall forays, have had a significant impact on the knowledge of Ohio mosses. There are 17 species (listed below) new to Ohio (Andreas & Lucas 2017) since the publication of *A Catalog and Atlas of the Mosses of Ohio* (Snider & Andreas 1996). Six of these were discovered on OMLA forays, two were found on the 2006 joint Crum–Tuckerman workshop (Andreas et al. 2007), five were collected by OMLA members on non-OMLA field trips, and four were found by examining herbarium specimens. OMLA forays added numerous county records to the Ohio distribution maps. Between 2004 and 2013, 543 new moss county distribution records were added Showman (2013).

In order to be new to the Ohio moss list, a verified herbarium specimen is necessary. World herbaria are identified by an acronym. Those cited in this article are as follows: CMNH, Cleveland Museum of Natural History; DUKE, Duke University; KE, Kent State University; MO, Missouri Botanical Garden; NY, New York Botanical Garden; and OS, Ohio State University.

1. *Brachythecium acutum*
(BRACYTHECIACEAE). This species, which occurs primarily on wood in woodland seeps or wet depressions, was reported in Allen (2014). In 2015 and 2016, we examined and annotated herbarium records of the genus *Brachythecium* from major Ohio herbaria. Specimens of *B. acutum* were found from the following counties: Ashland, Clark, Geauga, Lorain, Portage, Summit, Wayne, and Williams.

2. *Brachythecium falcatum*
(BRACHYTHECIACEAE). Many Ohio specimens originally identified as *B. laetum*, are actually *B. falcatum*. Allen (2014) noted that the two species can be easily confused, and are separated on the basis of longer, more slender leaf apices and longer median leaf cell length in *B. falcatum*. After examining and annotating herbarium specimens, *Brachythecium falcatum* was reported from a variety of habitats in 27 Ohio counties, primarily in the eastern two-thirds of the state. *Brachythecium falcatum* tends to grow on logs and around the tree bases.

3. *Brachythecium rotaeanum*
(BRACHYTHECIACEAE). *Brachythecium rotaeanum* typically grows on fallen logs and tree bases. The first Ohio record of *B. rotaeanum* was collected by OMLA member Diane Lucas (*Lucas dhl9650* (KE)), during the 2009 Summer Foray to Darke County. *Brachythecium rotaeanum* is now known from collections from Hardin, Henry, Cuyahoga, Geauga, Highland, Miami, Paulding, and Pickaway.

4. *Brachythecium velutinum*
(BRACHYTHECIACEAE). While on an exploratory trip for the OMLA 2009 summer foray to Darke County, *B.*

velutinum was found on a fallen hardwood log by OMLA member Barb Andreas (*Andreas 15318* (KE)). In the same year, a second was made from a sandstone boulder in a moist ravine in Lawrence County (*Andreas & Showman 15626* (KE)). From recent collections and specimen annotations, *B. velutinum* is now recorded from 7 additional counties (Crawford, Delaware, Miami, Meigs, Morrow, Pike, and Ross).

5. *Campylostelium brachycarpum* (PTYCHOMITRIACEAE). Through William Buck's on-going studies of the genus *Campylostelium*, Ohio specimens originally identified as *C. saxicola* were annotated to *C. brachycarpum*. These specimens are from Crawford County (*Andreas 16705* (NY)) (collected on the 2011 OMLA foray), and Gallia County (*Andreas 16475* (NY)) (collected on the joint 2006 Crum-Tuckerman Foray). Additional specimens are reported from Adams, Scioto and Vinton Counties. All specimens were found on moist sandstone outcrops or sandstone boulders.

6. *Dicranum undulatum* (DICRANACEAE). This species was reported from Ohio by Robert Ireland (Ireland 2007). The one Ohio collection of *D. undulatum* was from Jackson County, collected in 1938 by Floyd Bartley (*Bartley s.n.* (MO)). Label data suggest that it was collected on sandstone rocks in White's Gulch. Although typically a species of boreal wetlands, Ireland (2007) reported that it was sometimes found on rocks and cliffs.

7. *Gemmabryum klinggraeffii* (*Bryum radicculosus* subsp. *klinggraefii*) (BRYACEAE). In 2011, OMLA member Bob Klips (*Klips s.n.* (OS)) found this moss in a recently constructed wet prairie on former farmland in Franklin County. At other locations, this species is known from disturbed places such as agricultural fields (Spence 2014).

8. *Grimmia anodon* (GRIMMIACEAE). This species was first found in Ohio in 1999 in Delaware and Fairfield Counties (*Horchler s.n.* (KE)). Shortly thereafter it was found by OMLA members Lucas (from Erie and Lorain Counties) and Roger Troutman (Hancock County). All Ohio collections are from the sandstone base of tombstones in cemeteries.

9. *Oncophorus wahlenbergii* (DICRANACEAE). The only Ohio collection of *O. wahlenbergii* was from a 1912 specimen from Cuyahoga County. The specimen, made by Edo Claassen (*Claassen CR519* (CMNH)) was originally identified as *Dicranum fuscescens* Turn. (Dicranaceae). *Oncophorus wahlenbergii* typically grows on rotting wood in moist or wet conditions.

10. *Physcomitrium collenchymatum* (FUNARIACEAE). In 2011, OMLA member Jeff Rose (*Rose s.n.* (OS)), found *P. collenchymatum* growing with *Gemmabryum klinggraeffii* in a recently constructed wet prairie on former farmland in Franklin County. This species is associated with wet disturbed soil.

11. *Pohlia bulbifera* (BRYACEAE). During the 2005 OMLA foray to the Louis W. Campbell State Nature Preserve in Lucas County, Andreas (*Andreas 13085* (KE)) collected *P. bulbifera* on sandy soil in a parking area. That same year, Lucas (*dhl6944* (KE)) found *P. bulbifera* growing on a shale bank along the Vermilion River, Lorain County. *Pohlia bulbifera* typically grows on soil along

vernal pools, ditches, and roadsides (Allen 2005a).

12. *Schistidium crassithecium* (GRIMMIACEAE). At the 2016 OMLA Fall Foray to Miami County, OMLA member Jim Toppin (*Toppin 3041*(OS)) collected *S. crassithecium* from a sunny limestone outcrop along the Stillwater River. In the Consortium of North American Bryophyte Herbarium (www.http://bryophyteportal.org/portal), *Schistidium crassithecium* was reported in 1945 from the Lake Erie Islands. It is also listed from Ohio by McIntosh (2007). According to Allen (2005b), this species is fairly common in the Great Lakes and Interior Highlands region.

13. *Schistidium lancifolium* (GRIMMIACEAE). During the 2006 joint Crum/Tuckerman Workshop, *S. lancifolium* was collected in Gallia County on sandstone exposures (*Buck 50326* (NY)). Allen (2005b) lists the differences between *S. lancifolium* and *S. apocarpum*. In addition to its being smaller than *S. apocarpum*, its leaves are sharply and irregularly denticulate and has high papillae on the dorsal costal surface. *Schistidium lancifolium* is typically found on boulders and rock surfaces.

14. *Schistidium viride* (GRIMMIACEAE). The Ohio specimen of *Schistidium viride* was collected in Greene County in 1966 by Fred Anliot (*Anliot 3013* (DUKE)). It is similar to *S. apocarpum*, but differs by its smaller size, shorter and less papillose peristome teeth, and vertically-oriented exothecial cells. According to Blom and Darigo (2009), *S. viride* typically grows on calcareous rocks in open and shaded habitats, and is common on artificial substrates.

15. *Sphagnum inundatum* (SPHAGNACEAE). In 2003, Lucas collected *S. inundatum* from Cuyahoga County (*Lucas dhl5741* (KE)). In 2006, OMLA member Jeff Rose (*Rose s.n.* (OS)) collected *S. inundatum* in Erie County. Both collections were from swampy forests. *Sphagnum inudatum* is most similar to *S. lescurii*.

16. *Thuidium delicatulum* var**. *radicans*** (THUIDIACEAE). At the 2014 Summer Foray to Pickaway County, Andreas (*Andreas 18104* (KE)) collected this taxon in a moist, grassy area along a trail (Andreas 2014). *T. delicatulum* var. *radicans* was again collected at the 2016 Fall Foray to Miami County, growing in leaf litter in a swamp forest *Andreas 19192* (KE)).

17. *Trematodon longicollis* (BRUCHIACEAE). *Trematodon longicollis* was erroneously reported from Hocking County as new to Ohio (Klips 2006), and overlooked by Snider and Andreas (1996). In 2005, Bob Klips and Tara Poling (*Klips & Poling s.n.* (KE)) collected *T. longicollis* from freshly disturbed soil along a Hocking County stream bank. It previously had been collected in 1942 in Pike County (*Bartley s.n.* (OS)). During 2015 OMLA Summer Foray to Brown County, *T. longicollis* was found growing in an agricultural field (*Andreas 18919* (KE)). This ephemeral taxon occurs on freshly exposed clayey soil, and has not been found at the same location in subsequent years. This summer, at the OMLA foray to Licking County, *T. longicollis* was collected by Carole and Bill Schumacher (*Schumacher 061717-08* (KE)) on disturbed soil.

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– Barbara K. Andreas and Diane Lucas

I took particular notice of the mosses, what a curious part of the vegetation! Yet I look at the mosses as a cow looks at a pair of new barn doors. My knowledge must be enhanced. **– John Bartram**

[John Bartram was America's first botanist and the moss genus *Bartramia* is named for him.]

WANTED (ALIVE)!
PHAEOPHYSCIA LEANA

In the 1830's, a man named Thomas Lea collected a river bottomland lichen in a "bog" near Cincinnati, Ohio. This lichen was named *Phaeophyscia leana* after the first collector, and few people have seen this lichen since its first discovery. This lichen grows in a particular habitat, one not known for lichen diversity. It grows in floodplains of large rivers, specifically where the spring waters rise and stay for days on end. Most lichens cannot live in this habitat due to the amount of time under water, but this is exactly where *Phaeophyscia leana,* commonly known as Lea's bog lichen, is found.

Lea's bog lichen, *Phaeophyscia leana.* Grey in color when dry, green when wet. This lichen has narrow, strap-shaped lobes and usually has apothecia. **Photo by Mark Zloba.**

Few other locations of Lea's bog lichen were known in the early 1900's and by the 1960's, this lichen was considered extinct. The Cincinnati population was gone and no other populations were known. 20 years later the lichen was re-discovered in Illinois. In the 1990's, surveys were conducted along the Ohio and Wabash rivers and small populations were found in the floodwater areas of Illinois, Indiana, Kentucky and Tennessee. But these are small populations in such a limited habitat.

Word got around that this lichen was being found again in river bottomlands of states bordering the Ohio River, but what about Ohio? In the early 2000's, a great botanist named Dan Boone spread the word our way about the potential of this lichen being found in flooded areas of southern Ohio. He knew that the preserve started an inventory of its lichen diversity, and a local naturalist named Barb Lund was actively collecting lichens in Adams County. She went to an area of the Ohio River that appears to flood annually and easily found a lichen growing on tree trunks under the high water mark. She brought me the lichen since she knew I had started identifying lichens and although I think she already knew what it was, we ran chemical tests on it and ran it through the keys. Sure enough, this lichen was *Phaeophyscia leana*.

Soon after, I checked areas of the preserve that were susceptible to flood waters and quickly found 3 separate areas of the preserve with populations of *Phaeophyscia leana.* It was just a matter of knowing where to look, and what to look for. As of now, these are the only known populations in Ohio of this lichen, but I know it is elsewhere.

Lea's bog lichen habitat in The Edge of Appalachia Preserve. This area along Ohio Brush Creek near the Ohio River holds 6 feet of water during floods. **Photo by Mark Zloba.**

It has been a few years since I have found this lichen in a new spot on the preserve, so this year I was excited to hear about a new property the preserve was buying near the Ohio River. A new addition to the preserve called Smokey Hollow is protecting almost 1000 acres of new land. I visited this tract with Rich McCarty specifically to find Lea's bog lichen because the habitat looked perfect. After a short time of searching, we came across a patch of ash trees that contained numerous rosettes of this state endangered lichen. I saw at least 45 trees wearing this lichen, primarily *Fraxinus* sp. (ash), *Acer negundo* (box elder) and some *Acer saccharinum* (silver maple).

Lea's bog lichen with moss on ash tree in Smokey Hollow, a new location for an extremely rare lichen. Unlike other *Phaeophyscia*s, Lea's bog lichen is white on the undersurface instead of black. **Photo by Mark Zloba.**

I believe that a survey of the Ohio River bottomlands will produce more populations of this lichen. But imagine how fragile this habitat could be. Since these lichens are one

of the few to survive under water for days, maybe weeks, they are definitely susceptible to un-natural chemicals added to our waterways. Unfortunately, the majority of trees we found Lea's bog lichen on were ash trees. In our area, the Emerald Ash Borer is probably going to kill most of the ash trees in these flood plains. In fact, many of them we saw were stressed already because of this beetle. No doubt in 5 years most of these ash trees will be gone, along with the lichens growing on them. Because of these threats, and the fact that its habitat is so restricted, there has been talk of listing this species as a federally endangered species.

Ohio River bottomland habitat for Lea's lichen. **Photo by Mark Zloba.**

No matter what its listing, better knowledge of this lichen's range should be known. If you find yourself in the right habitat, and you see a lichen on the trunk of a tree where a river obviously floods, take a picture. This species can be identified by a photo, especially if the habitat is true annual floodplain and no other lichens are found nearby. If you take a picture of something you think is Lea's bog lichen, send it to me at mzloba@cincymuseum.org.
– Mark Zloba

MOSS MUSINGS: THE VALUE 'OF FRESH EYES'

I remember a field trip in the Upper Peninsula of Michigan with Dr. Howard Crum. He wanted to show me an upland/wetland complex that he often used on field trips for his bryology classes from the University of Michigan Biological Station. On that day, I spotted two mosses that he had never before seen at that locality. One, *Homalia trichomanoides*, was growing on the side of a waist-high rock outcrop. He looked at me in exasperation and said "Fresh eyes." The other moss was simply circumstance. Slightly-aged moose pellets had caught on the branches of a shrub. Growing on those pellets was *Splachnum ampullaceum*. *Splachnum* was temporary, but the *Homalia* had been there for years.

In the fall of 2018, our foray will be held at Crane Hollow Preserve, Hocking County. Hocking County is the most bryologically inventoried county in Ohio. Two hundred and fifty of Ohio's approximate 400 – 420 moss species occur in Hocking County. Three American Bryological and Lichenological Association field trips occurred in Hocking County. Drs. Jerry Snider and Si He spent several field seasons inventorying Crane Hollow Preserve. Since

I live in Hocking County, I've been collecting mosses throughout the county, especially Boch, Crane and Scheik Hollows. In March 2017, Joe Moosbrugger, Assistant Preserve Manager at Crane Hollow Preserve, and I, were surveying Hood Hollow in preparation for an up-coming field trip. While on our survey, I found *Loeskeobryum brevirostre* and *Neckera pennata* in Hood Hollow. There was a large population of *Loeskeobryum* on a sandstone boulder next to a stream, and not far from it on the side of a maple tree was *Neckera pennata*.

How could all of those bryologists who previously visited Crane Hollow miss those species? Believe me, it's easy. Simply walking on one side of a tree can make a difference. The point I am making is that there are always surprises lurking on all the various substrates.

One of the goals of OMLA is to visit under-collected counties. Another advantage of going to a well-known site (Hocking County) is that newer members will be able to collect in an outstanding area and see bryophytes not common elsewhere.

Our field trip to Crane Hollow in 2018 won't add many (if any) new county records. However, one never knows what fresh eyes might find. The results of our foray will add to Crane Hollow's on-going inventory of its assets. OMLA will visit Gold Mine and Early Hollows, areas not surveyed by Drs. Snider and He. In 2017, Joe and I collected *Amphidium mougeotii* from Early Hollow. This was particularly exciting for me as I had been searching for that moss for more than 20 years. Jerry Snider had found it in Hood Hollow, which I missed. **– Barbara Andreas**

FOUND (ALIVE)!
MENEGAZZIA TEREBRATA

An early **WANTED (ALIVE)!** featured *Menegazzia terebrata* (OBELISK, 2008, p. 11). This is a very distinctive lichen with a hollow thallus showing perforations in the upper cortex. The U.S. distribution is listed as northeastern and Appalachian where it is relatively rare on roadside trees and in swamps and bogs. It had been collected only once in Ohio (Clark County, 1877) and was presumed extirpated.

Menegazzia terebrata. **Photo by Tomás Curtis.**

Closeup of *M. terebrata* showing holes in the hollow thallus. **Photo by Tomás Curtis.**

Last winter, Tomás Curtis was exploring West Branch State Park in Portage County when he spied a downed white ash tree.

Fallen trees give the opportunity to observe the upper bole, branches and twigs unavailable when the tree is upright.

Knowing this, Tomás examined the tree and found an unusual lichen about 25 feet up the trunk. He quickly determined that he had found *Menegazzia terebrata*. He e-mailed photos of the lichen to me and I concurred with his identification.

After 140 years a rare lichen has returned to Ohio. Great find Tomás!

Menegazzia terebrata has recently been split into two species, *terebrata* and *subsimilis*. After some study, Tomás has determined that his specimen is *M. subsimilis*. Based on distribution notes, the original Ohio record was probably also *subsimilis*, but this is not certain without examining the Clark County specimen. **- Ray Showman**

LICHEN PHOTOGRAPHY WITH A SMARTPHONE

The latest iPhone and Android smartphones have excellent, easy to use cameras that are well-suited to photographing lichens in the field as well as indoors through a microscope. I am most familiar with iPhones (my current model is an iPhone 7 Plus), but the tips and techniques in this article are equally applicable to high-end Android smartphones, such as the Samsung Galaxy and Google Pixel models.

Before your lichen foray, make sure your smartphone battery is fully charged, and check that you have enough memory available for new images. Use a microfiber cloth to remove dust or fingerprints from the camera lens cover. In my vehicle I carry an iFrogz Golite 7800 portable charger, capable of recharging my iPhone several times if I run out of battery power.

I recommend that you set the flash on your smartphone to "Off", and always use natural lighting for your lichen photography. Many lichens have a body (called a thallus) that is very light in color and reflective, and a flash will overexpose the image highlights and wipe out much of the fine detail in the surface of the thallus, which can be an important aid to lichen identification. If your smartphone has an HDR (high dynamic range) setting, turn this feature to "On". This will cause the iPhone's camera to take multiple photos of the lichen at different exposure settings, and blend the exposures together to retain more detail in the highlight areas of the lichen thallus.

When you have found a lichen specimen that you wish to photograph, begin by taking one or two photographs of the substrate (tree bark, rock, soil) that the lichen is growing on, using the wide-angle lens on your smartphone. Make a note of the type of tree or rock, which can help in lichen identification. The latest iPhones have a superb panoramic photography feature, and you may want to shoot a panorama of the lichen habitat using the PANO setting on your iPhone.

Optimal lighting for lichen photography is diffuse light from a cloudy or partly cloudy sky. The *worst* lighting is bright sunlight, which creates inky black shadows and overexposed, washed-out highlights in the image. I also avoid searching for lichens in wooded areas on bright sunny days because it's much harder to locate and photograph lichens in this type of high contrast lighting. If you need to photograph a sunlit lichen,

shade the lichen with your body to create softer lighting.

Common Greenshield and Hammered Shield lichens taken with a smartphone. **Photo by Ian Adams.**

Smartphones have a built-in autofocus and auto exposure facility, but I prefer to set the focus and exposure manually by tapping and holding the subject (e.g. the lichen) on the screen that is most important in the photograph. This will bring up "AE/AF" in yellow on the screen, plus a yellow box surrounding the subject. You can then adjust the exposure (i.e. lighten or darken the image) by using your finger to scroll the yellow line with a sun icon next to the yellow box. My iPhone 7 Plus has a tendency to overexpose some lichen photos by default, and I usually take one or two extra darker exposures to compensate.

Today's smartphones will focus to within 3-4 inches of a subject, so you can take a close-up photo of a lichen thallus with plenty of detail for identification purposes. Some smartphone cameras, including the iPhone 7 Plus, have a dual lens that features a 2X telephoto which serves as a 2X macro lens for close-ups. Position the smartphone so that the lens is at a 90-degree angle to the main surface of the lichen thallus, to maximize depth-of-field. Hold the smartphone firmly with both hands, and if possible lean against a tree or rock to minimize any movement of the phone during the exposure.

Ruffle lichens taken with a smartphone. **Photo by Ian Adams.**

Most smartphones produce accurate color in photos taken in natural light. If you want your lichen photos to have 100% accurate color, carry a Whibal G7 calibrated gray card (get the small keychain model or the 2x3-inch model). Take a photograph with

the gray card placed next to the lichen, then another without the gray card. On your PC/Mac, use Adobe Lightroom or Photoshop to correct the color of the photo with the gray card, and apply the same adjustment to the image without the gray card. Voilà – perfect color!

Closeup of Star Rosette lichen apothecia taken through a dissecting scope with a smartphone. **Photo by Ian Adams.**

In addition to photographing lichens in the field, you can use your smartphone to take close-up photos of lichens through the eyepiece of a dissecting or compound microscope. You will need an adapter to attach the smartphone to the microscope eyepiece. After researching various phone adapters via the Internet, I purchased a Novagrade Microscope Adapter, which can be used with smartphones or mini-tablets up to 4-3/8 inches in width. I adjusted the adapter to center the iPhone's camera lens in the eyepiece of my Motic dissecting microscope, then applied a small amount of digital zoom to fine-tune the diameter of the circular microscope image to fit the rectangular image of the iPhone 7 Plus. To minimize any vibration of the smartphone, I use the volume control on my iPhone's earbuds to trigger the exposure instead of tapping the shutter release button on the iPhone's screen.

The next time you want to photograph a lichen, remember that the best camera is the one that is always with you – your smartphone! **- Ian Adams**

I believe the world is incomprehensibly beautiful – an endless prospect of magic and wonder. – **Ansel Adams**

NEW MACROLICHENS FOR OHIO

HYPOTRACHYNA AFROREVOLUTA

Hypotrachyna is a genus of small to medium -sized foliose lichens that is fairly common in Ohio. *Hypotrachyna afrorevoluta* was discovered in Shaw Woods in Portage County by Tomás Curtis, while working for the Portage Park District. It was found on the bark of a fallen dead branch of *Prunus serotina.* A specimen was collected and sent to the New York Botanical Garden where the identification was confirmed by Dr. James C. Lendemer.

The pustulate thallus and lack of maculae distinguish it from other similar species. *Hypotrachyna showmanii* is close to *H. afrorevoluta*, but that species has maculate lobe tips and generally grows on the bark of deciduous hardwoods while *H. afrorevoluta* typically grows on coniferous tree bark. In difficult cases, thin layer chromatography may be required to separate the two. *Hypotrachyna afrorevoluta* is primarily found in the Appalachians as well as small portions of both the east and west coast.

Hypotrachyna afrorevoluta, Portage Co., Ohio, 6/29/17 **Photo by Tomás J. Curtis**

PELTIGERA RUFESCENS

Peltigera, or Pelt Lichens, is a genus of medium-sized to large foliose lichens that is generally infrequent throughout Ohio. *Peltigera rufescens*, or Field Pelt Lichen, was discovered in Ohio for the first time during the summer of 2017. The new state record was found by Tomás Curtis in the Cuyahoga Valley National Park (CVNP). It was growing on a dry and exposed shale bank. A specimen was collected and sent to the New York Botanical Garden where the identification was confirmed by Dr. James C. Lendemer. Since then another population has been located at Wingfoot Lake State Park in Portage County.

The heavily tomentose lobe margins, brittle thallus, and tufted rhizines of *Peltigera rufescens* are diagnostic. While most pelt lichens grow in moist and shady situations, the field pelt lichen typically grows in dry habitats and under direct sunlight. It is described in textbooks as being "fairly common throughout its range on the soil of lawns, fields, sunny banks, and barrens."

Peltigera rufescens, Summit Co., Ohio, 5/13/17. **Photo by Tomás J. Curtis**

PHYSCIA DUBIA

Physcia, or Rosette Lichens, is a genus of small foliose lichens in the family Physciaceae. Some species, such as *Physcia millegrana*, are extremely common and pollution tolerant, but others are quite rare. Rosette lichens can be found on tree bark, twigs, or rocks in full sun to light shade.

Physcia dubia on a cemetery stone in Portage Co., Ohio, 7/22/17. **Photo by Robert L. Curtis**

Physcia dubia, or the Powder-tipped Rosette Lichen, was discovered by Tomás Curtis on a cemetery stone in Portage County (the

cemetery seemingly being nameless). A specimen was collected (without damaging the substrate) and the identification was confirmed by Dr. James C. Lendemer, New York Botanical Garden.

Labriform soredia and a relatively emaculate upper cortex that reacts K+ yellow are features that can distinguish it from other similar species that one may come across in Ohio. *Physcia dubia* is generally a more northern species that prefers nutrient-enriched calcareous rock, so cemeteries can be a good place to search for it.

XANTHORIA PARIETINA

Xanthoria, or Sunburst Lichens, is a genus of yellow-orange to bright orange, small to medium sized foliose lichens that is new to the state of Ohio. There are only two species of *Xanthoria* known to exist in North America, *X. tibellii* and *X. parietina.*

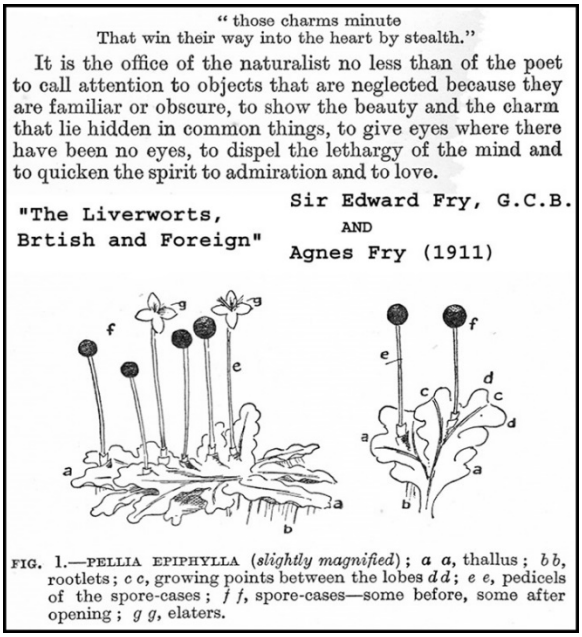
Xanthoria parietina at Wingfoot Lake State Park; Stark co., Ohio, 9/29/17; **Photo by Tomás J. Curtis**

Xanthoria parietina (or Maritime Sunburst Lichen) was discovered by Tomás J. Curtis at Wingfoot Lake State Park in Stark County, during the summer of 2017. The new state record was found growing on the exposed root of *Acer rubrum* on the bank of Wingfoot Lake. The specimen was collected and the identification was confirmed by Dr. James C. Lendemer from the New York Botanical Garden. The collection was submitted to the Kent State University Herbarium.

The lack of true rhizines on the undersurface along with the absence of lichenized diaspores are characteristics that can help distinguish *X. parientina* from other similar species. This lichen is abundant along the coast of New England as well as the Pacific Coast, but many disjunct specimens and populations have been found across the continent around lakes and reservoirs or wherever a maritime habitat is simulated to a degree. **- Tomás J. Curtis**

OHIO LIVERWORT DIVERSITY

In Ohio, liverworts aren't as numerous or important ecologically as the mosses, but they are of great interest to us.


" those charms minute
That win their way into the heart by stealth."

It is the office of the naturalist no less than of the poet to call attention to objects that are neglected because they are familiar or obscure, to show the beauty and the charm that lie hidden in common things, to give eyes where there have been no eyes, to dispel the lethargy of the mind and to quicken the spirit to admiration and to love.

"The Liverworts, Brtish and Foreign"

Sir Edward Fry, G.C.B.
AND
Agnes Fry (1911)

FIG. 1.—PELLIA EPIPHYLLA (*slightly magnified*); *a a*, thallus; *b b*, rootlets; *c c*, growing points between the lobes *d d*; *e e*, pedicels of the spore-cases; *f f*, spore-cases—some before, some after opening; *g g*, elaters.

We log them on our forays and an intensive cataloguing effort has been initiated, as

described in Barb Andreas in her "Wanted Alive: Liverworts" article in the 2011 OBELISK.

This summer I attended an excellent week-long seminar on liverworts taught by Blanka Aguero at Eagle Hill Institute in Maine. This was eye-opening, and an inspiration to join in the effort to further document our state's hepatic biodiversity.

Liverworts comprise the phylum Marchantiophyta, which is divided into three classes, two of which are speciose and occur in Ohio. The less numerous of the two, but better known to the general public whose only experience with bryophytes may be through introductory biology texts, is Marchantiopsida, the complex thalloid liverworts. These have a fairly thick body consisting of multiple cell layers that is flattened and lobed. Their shape is the basis for the name "liverwort," whereby according to the ancient "Doctrine of Signatures" a plant's resemblance to a specific body part was seen as a divine creator's hint the plant could be used to treat ailments of that organ. Many Marchantiopsida produce elevated structures that are not, as one would expect, sporophytes, but are gametangiophores, also called "receptacles," stalks composed of gametophyte tissue within which develop microscopic egg or sperm-producing structures, the gametangia. After fertilization, small and inconspicuous sporophytes develop beneath the female receptacles. The following photo shows a female receptacle with mature sporophytes --the dark fuzzy objects –of *Preissia quadrata*, a pronounced calciphile seen growing on a limestone ledge at Shoemaker State Nature Preserve in Adams County. The reason the sporophytes look fuzzy is that, intermixed with the spores, there are elongate hair-like cells called "elaters" (inset) that unfurl when the spores are ripe, helping to disperse them.

Much more numerous, and not at all liver-like, are members of the class Jungermanniopsida, most of which are leafy and could easily be mistaken for mosses. Jungermanniopsida also includes some simple thallose liverworts, strap-shaped plants that are thin (mostly one cell layer thick) and lack the elevated umbrella-like gametangium-producing structures found on most of the complex thalloid species. Compared with mosses, liverwort sporophytes are simple and delicate, short-lived affairs, consisting of a dark ovoid capsule (the sporangium) supported by a whitish translucent seta. A typical young sporophyte is shown below. At maturity it would be taller, and the sporangium split into 4 segments.

Here are some of Ohio's common liverworts, arranged in the categories set forth in an especially useful introductory work, "Liverworts of New England -A Guide for the Amateur Naturalist, by Mary S.G. Lincoln," published by the New York Botanical Garden Press.

A. Complex Thalloid Liverworts with Elevated Receptacles. The world's most well-known liverwort is *Marchantia polymorpha*. Robust and distinctive, in Ohio it is occasionally found on disturbed sites, but is more frequent as a greenhouse weed, hence its appearance in biology classes and textbooks. The photo below was taken at a native plant nursery in Delaware County.

The flat-topped, scallop-edged receptacles are male antheridiophores, while the more deeply lobed drooping-armed ones are female archegoniophores. After fertilization, small inconspicuous sporophytes develop beneath the lobed arms of the archegoniophores.

In some thalloid liverworts, only the female gametangia are on elevated structures, while the male gametangia are clustered in little button-like pads near the tips of some thallus lobes, denoted by the arrow in the photo below of *Reboulia hemisphaerica* on a limestone ledge in woods alongside the Scioto River in Delaware County.

The most frequently recognized Ohio liverwort (Note the careful word choice here, as it probably isn't the most frequently seen species.) is undoubtedly a robust snake-skin lookalike called *Conocephalum*. The taxonomy of *Conocephalum* is a bit of a mess right now, as various sources will assert either that some or all North American material is *Conocephalum conicum* (the traditional name by which most people have learned it), *Conocephalum salebrosum* (a new name proposed by scientists focusing on European material), or might belong to several cryptic species distinguishable only by molecular methods known as "A-type," "C-type," and "L-type." Let's just call it *Conocephalum* for now. The photo below, with a lime-loving moss, *Timmia megapolitana*, was photographed on a damp limestone ledge at Indian Mound Reserve in Greene County. Scratch and sniff! *Conocephalum* has a most distinctive spicy-citrus aroma. Look for the aromatic liverwort on wet limestone or sandstone bluffs, where it often grows in extensive mats.

Other Ohio genera of complex thalloid liverworts with elevated receptacles include *Mannia* and *Asterella*.

B. Complex Thalloid Liverworts with Buried Capsules. Complex thalloid liverworts are somewhat spongey, with air chambers in the tissue. In a few principally aquatic species the sex organs, rather than being borne on raised or otherwise evident structures, are buried in some of the air chambers. One of these, *Riccia fluitans*, grows in interwoven tangles of narrow ribbons floating just beneath the surface of a pond or stranded on mud nearby. This species is a favorite aquarium plant; in the trade it is known as "crystalwort." The photo below was taken in a shallow pond edge at Calamus Swamp in Pickaway County.

Ricciocarpos natans forms rosettes that float on calm water, often alongside *Riccia fluitans* and other aquatic vascular plants, especially duckweeds. Like *Riccia*, it also often grows on mud at the pond edge. The photo below was taken on a shady path adjacent to the buttonbush swamp where the *Riccia* lives.

C. Simple Thalloid Liverworts. These plants are in most instances ribbon-like, and usually just a few cells thick, smaller and more delicate than their complex cousins. *Pallavicinia lyellii* is often found in swampy environments on peaty soil. The specimen shown below was found on a well-rotted stump in a vernal pool depression at Garbry Big Woods Sanctuary in Miami County.

Pellia epiphylla is a large, relatively common simple thalloid liverwort found on bare soil such as road cuts, drainage ditches and streambanks in wooded areas. The individual shown below was seen adjacent

to a stream in Shade River State Forest in Meigs County.

Other Ohio genera of simple thalloid liverworts include *Blasia*, *Moerckia*, *Aneura*, *Metzgeria*, and *Riccardia*.

D. Leafy Liverworts with Finely Dissected (feathery) Leaves. Unlike mosses, which have leaves that are always simple and often are entire-margined, liverwort leaves are often very elaborate. Some have leaves that are ciliate (inset on photo), for example *Ptilidium pulcherrimum*. This is a robust species that forms flat mats on logs. The one shown below was photographed at Cuyahoga Valley National Park in Summit County.

Other Ohio genera of leafy liverworts with feathery leaves include *Blepharostoma* and *Trichocolea*.

E. Leafy Liverworts with Toothed Leaves and Incubous Insertion. Most leafy liverworts are more or less flat, with two opposing rows of sideways-projecting lateral leaves, along with one row of much smaller ventral leaves. As viewed from the side, the lateral leaves are almost always inserted obliquely, i.e., slanted and overlapping one another Venetian blind style. Like Venetian blinds, which can have the upper edges of the slats either above or below neighboring slats depending on how they are adjusted, leafy liverworts with oblique leaf insertion can either be "incubous," i.e., with the forward edge of each leaf lying above the next leaf tip-ward, or "succubous," slanted in the reverse direction. A way to ascertain whether the leaves are incubous or succubous is to imagine a raindrop hitting the plant and assess which way the water would flow after landing on the leaves: backward would be incubous, and forward succubous. This may be clear in the photo below of the most robust and distinctive of our leafies, *Bazzania tribolata*, as seen on the ground in a hemlock forest at a private nature preserve in Hocking County.

F. Leafy Liverworts with Lobed Leaves and Incubous Insertion. Moss leaves are never lobed. Liverwort leaves frequently are. *Lepidozia reptans* is a small liverwort found on stumps and peaty soil with leaves

that are shallowly palmately 4-lobed, looking a bit like the hands of characters on "The Simpsons." The picture below was taken in a bog at Great Waas Island Preserve in Washington County, Maine.

Another Ohio genus of leafy liverwort with lobed leaves and incubous insertion is *Kurzia*.

G. Leafy Liverworts with Entire Leaves and Incubous Insertion. Our only genus with this combination of leaf form and insertion is *Calypogeia*. The most common species here and in Washington County, Maine, where the photo below was taken, is *C. mulleriana*. In Ohio it is often found on damp sandstone in shaded ravines. Note the gemmiparous shoot, ending in a capitate cluster of 2-celled asexual propagules.

H. Leafy Liverworts with Toothed Leaves and Succubous Insertion. A better analogy for leaf insertion might be roof shingles. With a succubous insertion the rain will not run in. *Plagiochila porelloides* is a large liverwort, somewhat suggestive of a wrinkled *Plagiomnium* moss, that is fairly common on vertical rock surfaces, especially near streams. The photo below was taken at Sheick Hollow State Nature Preserve in Hocking County.

I. Leafy Liverworts with Lobed Leaves and Succubous Insertion. One of our most common liverworts, *Lophocolea heterophylla* is easy to see and recognize. It often grows on otherwise barren well-decayed wood, so it stands out visually. The leaves are sharply bidentate, but with the teeth deep enough, and large enough, to be considered lobes. The specimen shown below was growing on a decorticated log at Irwin Prairie State Nature Preserve in Lucas County.

Other Ohio genera of leafy liverworts with lobed leaves and succubous insertion are *Lophozia*, *Harpanthus*, *Nardia*, *Cephalozia*, *Cladopodiella*, and *Geocalyx*.

J. Leafy Liverworts with Entire Leaves and Succubous Insertion. When they lack reproductive structures, as is often the case, these liverworts are sometimes difficult to separate even to the level of genus. The rectangular-leaved species of *Jungermannia* and *Jamesoniella* are the worst! Below, see a more round-leaved species of *Jungermannia* (which some references list as *Solenostoma*), *J. gracillima*. It was observed on thin soil on a sandstone bluff at Conkle's Hollow State Nature Preserve in Hocking County. Occurring in green as well, the red color of this specimen is an adaptation to growth in open sunlight; several liverworts are known to be variable in this way.

Other leafy liverwort genera with entire leaves and succubous insertion include *Mylia*, *Odontoschisma*, *Chiloscyphus*, and *Solenostoma*.

K. Leafy Liverworts with Lobed Leaves and Transverse Insertion. Shingles never do this, except maybe in a hurricane, so perhaps the Venetian blinds are a good comparison after all. Let the sun shine in! Liverworts with leaves perpendicular to the stem are not especially numerous. Our best example has such distinctively shaped leaves that you might not even notice the insertion type. This is *Nowelia curvifolia*, a small dark green (sometimes reddish when in sunny places) wiry plant with leaves that look like billowed sails. The photo below shows it with *Lophocolea* at Mt. Gilead State Park in Morrow County.

Other leafy liverwort genera with lobed leaves and transverse insertion include *Cephaloziella*, *Tritomaria*, *Barbilophozia*, and *Marsupella*.

L. Leafy Liverworts with Complicate-Bilobed Leaves, Larger Lobe on Top. These worts have folded leaves! The undersurface of a common species, *Porella platyphylloidea*, shows considerable intricacy.

That photo was taken at historic Greenlawn Cemetery in Columbus, Ohio where once upon a time somebody made what may not have been not the best choice of building materials for an eternal monument, but is a terrific substrate for bryophytes and lichens. Incidentally, this spot is within shouting distance of the grave of William Starling Sullivant, (1803-1873), the "father" of American Bryology.

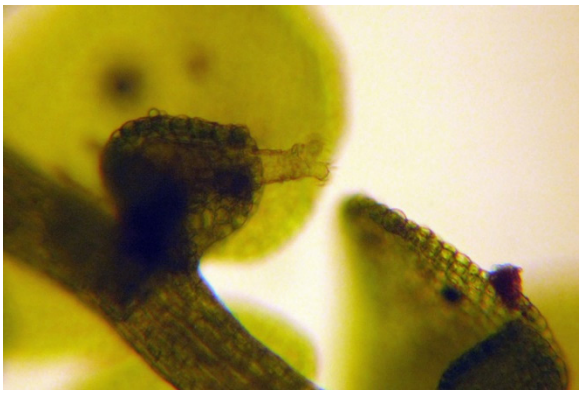
Another example is *Cololejeunea biddlecomiae*, one of our tiniest species, which from any distance except very close appears as an undifferentiated green haze on, typically, a boulder in the woods. It is easily overlooked. The specimen shown below was photographed at Mt. Gilead State Park in Morrow County.

Because it is very common, growing at eye-level on trees throughout the region, *Frullania eboracensis* has probably been seen by every nature-lover, although perhaps without being recognized as a liverwort.

So common that it has been called *Frullania e-**boring**-censis*, this species grows in dark circular patches of wiry stems, tightly adherent, almost lichen-like in aspect. The picture below was snapped in Rothenbuhler

Woods State Nature Preserve in Monroe County**.**

To characterize *Frullania* merely as having small ventral lobes is an understatement. The lobes take the form of amazing inflated urn-like open-mouthed pouches. In the photo below taken though a compound microscope, a minute but complex animal called a rotifer is seen to have taken residence within a lobe, its crown of cilia extending out the orifice. A rotifer's cilia beat in rhythmic fashion, setting up water currents that bring food to its mouth. It's fun to watch. Maybe this liverwort isn't boring after all.



Other Ohio leafy liverworts genera with complicate-bilobed leaves, larger lobe on top include *Leucolejeunea*, *Lejeunea*, *Jubula*, and *Porella*.

M. Leafy Liverworts with Complicate-Bilobed Leaves, Smaller Lobes on Top.

Scapania nemorea is common, almost weedy, in a variety of damp or wet shady woodland environments, especially sandstone cliffs. The leaves are round and sharply toothed all around. In addition to the diagnostic leaf orientation and morphology, it often produces distinctive clusters of green gemmae, visible in the photo below, taken at Blackhand Gorge State Nature Preserve in Licking County.

Another Ohio genus of leafy liverworts with complicate-bilobed leaves, smaller lobes on top, is *Diplophyllum*.

N. Leafy-Thalloid Liverworts. More closely related to the simple thalloid liverworts (i.e., classified with them in the order Metzgeriales), members of the genus *Fossombronia* are annual plants of exposed soil that have leaf-like ruffled lobes. The species are distinguished on the basis of microscopic aspects of spore ornamentation. The specimen below was photographed on the muddy bank of East Fork Queer Creek in Hocking County.

O. Hornworts. Although they constitute an entirely separate phylum, the Anthocerotophyta, liverwort guides invariably include hornworts as well. It's a good thing because a book devoted to Ohio hornworts would be terribly skimpy, as we only have four species here. Hornworts are a small group of approximately 100 species worldwide, most of them tropical. Hornworts are unique plants. They have a liverwort-like thalloid growth form. Some harbor colonies of nitrogen fixing cyanobacteria (*Nostoc*) in chambers in their thalli. The sporophytes have stomata – breathing pores –that are lacking entirely in liverworts, but do occur on moss sporophytes. The spike-like hornwort sporophyte (the basis for the group's common name) grows in a very unusual manner, by adding cells at the base rather than the tip. Although uncommon, hornworts tend to grow in rather unexceptional situations: road banks, edges of trails, farm fields and wet rocks in woodlands. The hornwort below was photographed on ground that was disturbed for the excavation of a buried natural gas pipeline in Hocking County. It's a *Phaeoceros*, one of two quite nearly identical species separated on the basis of sexuality: the sexes are separate in *P. laevis*, whereas *P. carolinianus* is cosexual. The other Ohio hornwort genera are *Notothylas* and *Anthoceros*. **–Bob Klips**

2017 FALL FORAY, MORGAN COUNTY

The 2017 OMLA Fall Foray was held in Morgan County, Ohio. Collection locations included Burr Oak State Park, Wildcat Hollow (part of Wayne National Forest), Ringgold Cemetery, and the farm of OMLA member Julie Tome. The areas in which we collected (western and central Morgan County) offered habitats including mature and secondary deciduous forests, boulders and outcrops, streambeds, flood plains, and man-made substrates. Our scope room in the Burr Oak State Park Lodge included a beautiful view of the lake, and many of us stayed the weekend in the park, whether in the lodge, cabins, or campground.

Lichens found during the Fall Foray totaled 119; 63 macrolichen species and 56 crustose species. Microscopic examination also revealed 2 species of lichenicolous fungi. These fungi which are parasitic upon lichens are sometimes included in a comprehensive lichen list. Most of the macrolichens observed had already been reported for Morgan County but 16 were new county records, bringing the county total to 83. The distribution of crust lichens in Ohio is only

now being studied, so the crustose species are not noted as new.

Lichens found in Morgan county during the 2017 OMLA fall foray. N = new for Morgan County, * indicates lichenicolous fungi. Nomenclature follows the North American Lichen Checklist.

Acarospora canadensis
Acarospora fuscata
Amandinia punctata
Anaptychia palmulata
Arthonia susa
Bacidia ekmaniana
Bacidia shweinitzii
Bacidia sorediata
Biatora printzenii
Bryoria furcellata **N**
Buellia erubescens
Caloplaca pratensis
Candelaria concolor
Candelariella efflorescens
Canoparmelia texana **N**
Chrysothrix caesia
Circinerea caesiocinerea
Cladonia coniocraea
Cladonia cristatella
Cladonia cylindrica
Cladonia furcata
Cladonia macilenta **N**
Cladonia parasitica **N**
Cladonia squamosa
Coenogonium pineti
Crespoa crozalsiana
Dermatocarpon luridum
Dermatocarpon muhlenbergii
Endocarpon pallidulum
Evernia mesomorpha **N**
Flavoparmelia baltimorensis
Flavoparmelia caperata
Flavopunctelia soredica
Fuscidea arboricola
Graphis scripta
Gyalolechia flavovirescens
Heterodermia granulifera
Heterodermia hypoleuca **N**
Heterodermia obscurata **N**
Heterodermia speciosa
Hypocenomyce scalaris
Hypogymnia physodes
Hypotrachyna livida
Hypotrachyna minarum
Julella fallaciosa
Lecania croatica
Lecanora hybocarpa
Lecanora strobilinia
Lecanora subimmergens
Lecanora thysanophora
Lecidea varians
Lecidella carpathica
Lepra pustulata
Lepraria caesiella
Lepraria finkii
Lepraria normandinoides
Leptogium cyanescens
Loxospora elatina
*Marchandiomyces corallinus**
Melanelixia subaurifera
Micarea peliocarpa
*Muellerella lichenicola**
Myelochroa aurulenta
Myelochroa galbina
Myriolecis dispersa
Nadvornikia sorediata
Ochrolechia arborea
Ochrolechia pseudopallescens
Ochrolechia yasudae
Parmelia squarrosa
Parmelia sulcata
Parmotrema gardneri **N**
Parmotrema hypotropum
Parmotrema reticulatum
Peltigera canina
Peltigera evansiana
Pertusaria plittiana

Phaeophyscia adiastola
Phaeophyscia decolor
Phaeophyscia hirsuta **N**
Phaeophyscia hirtella **N**
Phaeophyscia pusilloides
Phaeophyscia rubropulchra
Phaeophyscia squarrosa
Phlyctis petraea
Physcia adscendens
Physcia americana
Physcia millegrana
Physcia phaea
Physcia stellaris
Physciella chloantha **N**
Physconia detersa **N**
Porpidia albocaerulescens
Porpidia crustulata
Protoblastenia rupestris
Pseudosagedia cestrensis
Punctelia caseana
Punctelia missouriensis
Punctelia rudecta
Pyrenula pseudobufonia
Pyxine sorediata
Pyxine subcinerea
Ropalospora viridis
Sarcogyne clavus
Sarcogyne regularis
Sarea difformis
Sarea resinae
Scoliciosporum pensylvanicum
Scytinium juniperinum
Scytinium lichenoides
Squamulae subsoluta
Trapelia glebulosa
Trapelia placodioides
Trypethelium virens
Usnea cornuta **N**
Usnea mutabilis **N**
Usnea strigosa
Verrucaria nigrescens
Xanthocarpia feracissima
Xanthomendoza weberi **N**
Xanthoparmelia plittii **N**

There is not a recent comprehensive list of liverwort records by county for Ohio. The most recent known to us is a 1964 work by Harvey Miller, which shows no records for Morgan County. So the 9 species found during the Fall Foray might all be considered new county records.

Liverworts found in Morgan County during the 2017 OMLA fall foray. N= new county record.

Conocephalum conicum
Frullania eboracensis
Frullania inflata
Geocaylx graveolens
Lophocolea heterophylla
Metzgeria furcata
Nowellia curvifolia
Porella platyphylloidea
Scapania nemorea

Mosses found during the Fall Foray totaled 68, of which 49 are new Morgan County records. This more than doubled the Morgan County moss record count, from 37 to 84.

Mosses found in Morgan County during the 2017 OMLA fall foray. N = new for Morgan County.

Amblystegium varium
Anacamptodon splachnoides **N**
Anomodon attenuatus
Anomodon minor **N**
Anomodon rostratus **N**
Atrichum angustatum
Atrichum crispulum **N**
Aulacomnium heterostichum **N**
Barbula unguiculata **N**
Bartramia pomiformis **N**
Brachythecium acuminatum **N**
Brachythecium campestre **N**

Brachythecium laetum
Brachythecium plumosum
Brachythecium rutabulum
Bryhnia novae-angliae **N**
Bryoandersonia illecebra
Bryum argenteum
Bryum flaccidum **N**
Callicladium haldanianum **N**
Calliergonella lindbergii **N**
Calliergonella curvifolium **N**
Ctenidium molluscum **N**
Cyrto-hypnum pygmaeum **N**
Dicranella heteromalla **N**
Dicranodontium denudatum **N**
Dicranum flagellare **N**
Dicranum montanum **N**
Dicranum scoparium
Didymodon ferrugineus **N**
Entodon seductrix
Eurhynchium hians **N**
Eurhynchium pulchellum **N**
Eurhynchium riparioides **N**
Fabronia ciliaris **N**
Fissidens dubius **N**
Fissidens osmundioides **N**
Fissidens taxifolius **N**
Haplocladium virginianum **N**
Haplohymenium triste **N**
Homalotheciella subcapillata **N**
Homomallium adnatum
Hygroamblystegium tenax **N**
Hyophila involuta **N**
Hypnum curvifolium **N**
Hypnum imponens
Hypnum pallescens **N**
Isopterygiopsis pulchella **N**
Leskea gracilescens **N**
Leucobryum glaucum
Orthotrichum pusillum **N**
Orthotrichum stellatum
Oxyrrhynchium hians **N**
Plagiomnium cuspidatum
Plagiomnium ellipticum **N**
Platygyrium repens **N**
Pogonatum pensilvanicum **N**
Polytrichum ohioense
Pylaisiadelpha tenuirostris **N**
Rhizomnium punctatum
Rhynchostegium serrulatum **N**
Schistidium apocarpum **N**
Schistidium rivulare
Sematophyllum adnatum **N**
Sematophyllum demissum **N**
Taxiphyllum taxirameum **N**
Thuidium delicatulum
Ulota crispa **N**

Our own experience with collecting, in regard to bryophytes is there was considerable diversity. We kept finding new material and it was more the fact that we ran out of time vs. running out of new material to collect. This indicates there are still significantly more species to find for Morgan County and it is still fertile grounds for collecting.
– Bill and Carole Schumacher

Science is the process of revealing the world through rational inquiry. The practice of doing real science brings the questioner into an unparalleled intimacy with nature fraught with wonder and creativity as we try to comprehend the mysteries of the more-than-human world. Trying to understand the life of another being or another system so unlike our own is often humbling and, for many scientists, is a deeply spiritual pursuit.
– Robin Wall Kimmerer

NEWS AND NOTES

Thanks to everyone who contributed articles, this is one of the largest and best issues yet! This is a great reflection of our organization.

Help Database Moss & Lichen Specimens

The Ohio State University Herbarium (OS) is in the process of cataloguing its lichen and bryophyte specimens. Records are being added to two on-line cryptogam "portals": Consortium of North American Bryophyte Herbaria (CNABH), and Consortium of North American Lichen Herbaria (CNALH). This will enable the scientific community to access this important collection. Since there are many thousands of specimens, this is a big project, but one that is very well suited to "crowdsourcing." Help is eagerly sought on both phases of the project: in-herbarium imaging and on-line editing. The software is well designed and a joy to use. Please consider joining us in this endeavor.
–Bob Klips (klips.1@osu.edu**)**

IMPORTANT DATES

The 2018 **Winter Meeting** will be held at Dawes Arboretum on February 10th, 9:00 to 3:00. If you want to look at specimens, please bring your own scopes. Lunch will be brown bag, and feel free to being snacks to share.

The 2018 **Summer Foray** will be in Wayne County on June 9th. Thank you Julia Wiesenberg for planning this event!

The 2018 **Fall Foray**, planned by Barb Andreas, will be in Hocking County on September 29-30. If your schedule permits you are welcome to come on the 28th. The Foray will visit several locations in Crane Hollow, one of the finest nature preserves and wild areas in Ohio. The areas visited are relatively new acquisitions that have not yet been surveyed for lichens and mosses. Free lodging will be available.

As always, we will send out detailed announcements before each of these events.

Yukon Lichens

Last summer my wife and I did a tour of the Yukon Territory of Canada. Much of the northern part is Arctic tundra and soil lichens are everywhere. They are the primary winter food of caribou and they also play a part in peoples' lives, as evidenced by the included photos.

Basket of Arctic lichens as a decoration on the deck of a visitor's center. **Photo by Ray Showman**

Lichens used to decorate a birch bark basket. **Photo by Ray Showman**

2017 Summer Foray. Left to right: Bob Klips, Diane Schrimpf, Chris Poling, Jim Toppin, David Wiesenberg, Tomás Curtis, Barb Andreas, Ray Showman, Julie Tome, Ian Adams, Jerry Greer, Julia Wiesenberg, Bill Schumacher, Carole Schumacher, Bob Long, Dan Stevenson, Janet Traub, Cynthia Dassler. Not pictured, John Holliger.

2017 Fall Foray. Left to right: Bob Klips, Kathy Stevens, Bob Long, Cindy Fischer, Carole Schumacher, Ray Showman, Bill Schumacher, Jim Toppin, Megan Osika, Cynthia Dassler, Helen Hamilton, Harry Stone, Tomás Curtis, Janet Traub. Not pictured: Diane Lucas, Dean Porter and Julie Tome.