# OBELISK

**Ohio Bryology *et* Lichenology, Identification, Species, Knowledge**

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## LEFT HAND CORNER
## COME TO THE CRUM – OR THE TUCKERMAN!

Each year there are two workshops in eastern North America that focus on cryptogams. These workshops are the Tuckerman Lichen Workshop, started in 1994, and the Crum Bryology Workshop, started in 2004. These workshops accomplish three functions: 1) to collect cryptogams that may fill in distribution ranges, 2) to collect specimens from an area with which participants may not be familiar, and 3) to give dedicated amateurs a chance to work with professionals. Since I am a bryologist, I will concentrate on the Crum Bryology Workshop. These bryology workshops have been held twice in Pennsylvania, Vermont, and New York; and once each in Ohio, Maine, West Virginia, Michigan, Kentucky, and North Carolina. There have been Canadian workshops in Ontario, Québec, and New Brunswick.

In September 2019, the 16th Crum Bryology Workshop was held in Miramichi, New Brunswick, Canada. Stephen Clayden, Curator Emeritus and Research Associate at the New Brunswick Museum, organized the workshop. From Ohio, it took three driving days to reach Miramichi. New Brunswick is not a heavily populated area. Instead of houses along the roads, there are many rock outcrops and forests of white pine, spruce and red maple. Driving there made me think of the movies *The Blair Witch Project*, and G*roundhog Day*. For miles, it was the same scene over and over again: forests and signs that read "Attention: Moose".

Each workshop requires a place to stay and a place to serve as a lab where the group identifies specimens. For the 16th workshop, most participants stayed at the Rodd Miramichi Hotel. The "lab" was in an exhibition building that was part of the regional fairgrounds. The first day of the workshop, participants set up their scopes, dissecting equipment, and books. For the next four days, field collections were made in diverse habitats. For the 16th workshop, we collected in raised bogs, exposed wet rocks along a river, and mixed cedar and northern hardwood forests. Collections were made in the morning, and the afternoon and evenings were spent working on collections. Consistent with previous Crum Bryology Workshops, this was our schedule: day 1, set up; day 2 – 4, field work and identification; day 5, pack up and leave. A dinner with all the workshop participants is planned for one evening.

Long hours are spent looking at specimens. Participants help each other with materials. It is not uncommon to see four or more hovering around a microscope, trying to make a determination. I often take "troublesome" Ohio specimens with me.

These are bryophytes that I either can't identify, or am unsure of its identity. There often is laughter about our mistakes.

At least once during the workshop I take a specimen to Bill Buck, retired Senior Curator at the New York Botanical Garden. I know that I will suffer humility—his teaching technique. He looks at the specimen and says "Everyone knows what this is." I am chagrined, and he roars with laughter. He then examines the material and we work on its identity.

**2019 Crum Workshop Participants**. Row 3: Marc-Frédéric Indorf, Nils Ambec, Dr. Sean Haughian, Dr. Richard Harris, Dr. Tom Phillips, Dr. Stephen Clayden, Dr. Bill Buck. Row 2: Dr. David Malloch, Chris Ward, Jerry Oemig, Jean Gagnon, Jennifer Doubt, Dr. Nancy Slack, Dr. Barb Andreas, Linda Ley, David Mazerolle. Row 1: (kneeling) Dr. Alfredo Justo, Frances Anderson, Anne Mills, Kendra Driscoll, Amanda Bremner).

**Photo by Donald McAlpine**

The Crum Bryology Workshop (as well as the Tuckerman Lichen Workshop) is by invitation only. However, the only criterion necessary to be invited is that you have your own microscopes, as well as a commitment to learning more about bryophytes. The workshop is a wonderful opportunity to meet fellow amateur and professional bryologists. The 2020 Workshop is planned for the state of Delaware, on November 5-10. If you are interested in learning more about bryophytes, send your e-mail address to Bill at bbuck@nybg.org.

The Tuckerman Workshop is set up with a similar format as the Crum. For those interested in lichens, e-mail James Lendemer at jlendermer@nybg.org.

**– Barbara K. Andreas**

## 2019 FLENNIKEN AWARD

For the third straight year the Flenniken Award goes to Tomás Curtis for an excellent paper on northeast Ohio lichens. Congratulations Tomás!

### A STUDY OF THE LICHENIZED, LICHENICOLOUS, AND ALLIED FUNGI OF NORTHEAST OHIO


#### Abstract

Since the late months of 2016, the author has extensively surveyed the natural areas throughout Northeast Ohio for all lichenized, lichenicolous, and allied fungi. This was done in order to create the first comprehensive baseline list for the region. As a result, a total of 405 recognized species have been discovered, and of these, 112 are being reported for the first time in Ohio.


#### Introduction

Northeast Ohio is an example of a region that is both heavily impacted by development and biologically diverse (Crooks et al., 2004; Tuovinen & Hsu, 1982). Though there has been much fragmentation of natural areas through urbanization and suburbanization, it still holds a plethora of unique and diverse habitats (Scheiring & Foote, 1973). This

diversity in habitat likely contributes to the relatively large number of species that reside within the region. One group in particular, lichens, has been largely overlooked even by the naturalist community and much about them has been hidden beneath a veil of obscurity. Many of them, up to this point, have been passed by unnoticed for centuries and only now are beginning to be reported.

Nevertheless, Ohio has a relatively rich and distinguished history of lichen collection and documentation (Lendemer, 2017). In more recent decades, most information regarding lichens in Ohio has been collected and managed by Ray Showman who, himself, has done much work with the study (Showman & Rudolph, 1971; Showman, 1997; McClenahen et al., 2012; Showman, 1972A; Showman, 1972B; Showman, 1981; Showman, 1975). However, during this time, macrolichens were the primary focus for these scientists as the literature for these species was much more developed (Andreas et al., 2007).

The microlichens (crustose lichens) were notoriously difficult and not much literature was available (Wadleigh & Blake, 1999; Thomson, 1984). Only in recent years have microlichens been given significant attention by taxonomists, and now Ohio is ready to add these to its list of known biological diversity.

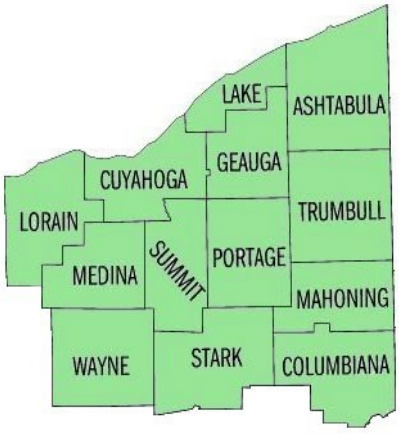
Since the late months of 2016, the author has been conducting numerous surveys throughout the region in order to document lichenized, lichenicolous, and allied fungi and form the first comprehensive baseline list for Northeast Ohio. This work is the kind that never really ends, but here, an attempt is made to form a list that can be referenced in the future by other experts and enthusiasts with the same mission. It is meant to be a continuation of "A STUDY OF THE MACROLICHENS OF NORTHEAST OHIO" (Curtis, 2017) published in the 2017 OBELISK newsletter. Most of the noteworthy findings of this continuation are crustose lichens, lichenicolous fungi, and lichen allies which have never been thoroughly surveyed in the region before. Ultimately, this information could be used in legislation to protect these delicate organisms from further harm.

## Materials and Methods

For this study, Northeast Ohio has been defined as 13 counties clumped within the Northeast portion of the State and are indicated by the map featured in Figure 1. These counties are Ashtabula, Columbiana, Cuyahoga, Geauga, Lake, Lorain, Mahoning, Medina, Portage, Stark, Summit, Trumbull, and Wayne. All the counties within the study area have been visited at least once except for Lorain County which features very few natural areas. Some counties, such as Portage and Summit, have been explored extensively, and nearly every natural area within them has been visited.

As a casual study, there is undoubtedly some bias regarding area visitation. Most of the study area is within the Glaciated Allegheny Plateau, but parts of the Lake Plain and Unglaciated Allegheny Plateau are also within the study area. It is no surprise that many Appalachian species are only known from the small portions of Unglaciated Allegheny Plateau in Columbiana County. This is also true for Great Lakes species where they are only known from counties that border Lake Erie.

**Figure 1. Map of Study Area**




When surveying for lichens, the author targeted high quality natural areas and obtained collecting permits when necessary. The areas were then inventoried by foot. Various types of surveys were conducted including plots or meander surveys and including all-species inventories or merely collecting notable and/or interesting finds. Lichens were collected using various rock chisels (1/2”-3/4”) and a 2.5 lb. sledgehammer or a 2” wood chisel and hammer depending on the substrate. Collections were then transported in polyethylene bags and taken to a lab to be examined. Specimens were identified through studying morphological characters, microscopic characters (using a dissecting and/or compound microscope), or through studying chemistry (using spot test reagents).

Nomenclature adhered primarily to Essinger’s most recently published North American checklist (Esslinger, 2018), though special attention has been given to genera not well understood in NA such as *Verrucaria*. In this case, European literature (Krzewicka, 2012 and Orange, 2013) was used to name species. Many of the *Verrucaria* species reported here likely represent new occurrences for North America, though not all of them matched the description of any described species.

Results of microscopic and chemical analyses were recorded on herbarium labels where appropriate. All specimens collected were deposited at the Tom S. and Miwako K. Cooperrider Herbarium (KE) at the Kent State University main campus. The specimens are in the process of being digitized and are now mostly accessible through an online database. Over 2,200 specimens collected during this study within Northeast Ohio have now been databased by the author, and numerous others await digitization.

## Results

The current number of recognized species found during this study is 405, including 19 lichenicolous fungi (fungi which grow on lichens) and 22 allied fungi (fungi related to lichenized counterparts). Of these, 112 have never been collected in Ohio before (based on the Consortium of North American Lichen Herbaria database) and are, therefore, new to the state. Most of the new species found during this study are microlichens, although 11 macrolichens were also new. All of the recognized species are included in the following comprehensive list, though several apparently undescribed species found are not included here and are under investigation. In addition, a list of errors discovered by the author in the 2017 article are included.

**Comprehensive List of Northeast Ohio Lichenized, Lichenicolous, and Allied Fungi.** * denotes an "allied" fungus, ** denotes a lichenicolous fungus, **NS** denotes a new state record

*Absconditella lignicola* Vězda & Pišút **NS**
*Acarospora americana* H. Magn. **NS**
*Acarospora canadensis* H. Magn. **NS**
*Acarospora fuscata* (Schrader) Arnold
*Acarospora moenium* (Vainio) Räsänen **NS**
*Agonimia flabelliformis* Halda, Czarnota & Guzow-KremiÕska **NS**
*Agonimia gelatinosa* (Ach.) Brand & Diederich **NS**
*Alyxoria varia* (Pers.) Ertz & Tehler
*Amandinea dakotensis* (H. Magn.) P. May & Sheard
*Amandinea polyspora* (Willey) E. Lay & P. May
*Amandinea punctata* (Hoffm.) Coppins & Scheid.
*Anaptychia palmulata* (Michaux) Vainio
*Anisomeridium biforme* (Borrer) R.C. Harris
*Anisomeridium carinthiacum* (J. Steiner) R. C. Harris **NS**
*Anisomeridium distans* (Willey) R. C. Harris
*Anisomeridium leucochlorum* (Müll. Arg.) R. C. Harris
*Anisomeridium polypori* (Ellis & Everh.) M. E. Barr
*Arthonia apatetica* (A. Massal.) Th. Fr. **NS**
*Arthonia caudata* Willey* **NS**
*Arthonia helvola* (Nyl.) Nyl. **NS**
*Arthonia lapidicola* (Taylor) Branth & Rostrup **NS**
*Arthonia punctiformis* Ach.*
*Arthonia quintaria* Nyl.*
*Arthonia radiata* (Pers.) Ach.
*Arthonia ruana* A. Massal.
*Arthonia susa* R. C. Harris & Lendemer
*Arthopyrenia cerasi* (Schrader) A. Massal.* **NS**
*Aspicilia laevata* (Ach.) Arnold **NS**
*Athallia holocarpa* (Hoffm.) Arup, Frödén & Søchting
*Athallia pyracea* (Ach.) Arup, Frödén & Søchting
*Bacidia circumspecta* (Nyl. ex Vainio) Malme
*Bacidia granosa* (Tuck.) Zahlbr.
*Bacidia sorediata* Lendemer & R. C. Harris
*Bacidina arnoldiana* (Körber) V. Wirth & Vězda **NS**
*Bacidina assulata* (Körber) S. Ekman **NS**
*Bacidina brittoniana* (Riddle) LaGreca & S. Ekman **NS**
*Bacidina delicata* (Leighton) V. Wirth & Vězda **NS**
*Bacidina egenula* (Nyl.) Vězda
*Bacidina inundata* (Fr.) Vězda
*Biatora longispora* (Degel.) Lendemer & Printzen
*Biatora pontica* Printzen & Tønsberg **NS**
*Biatora printzenii* Tønsberg
*Bilimbia sabuletorum* (Schreber) Arnold
*Botryolepraria lesdainii* (Hue) Canals, Hernández-Mariné, Gómez-Bolea & Llimona
*Brianaria bauschiana* (Körber) S. Ekman & M. Svensson **NS**
*Bryobilimbia ahlesii* (Körber) Fryday, Printzen & S. Ekman
*Bryoria furcellata* (Fr.) Brodo & D. Hawksw.
*Buellia badia* (Fr.) A. Massal.**
*Buellia erubescens* Arnold
*Caeruleum heppii* (Nägeli ex Körber) K. Knudsen & L. Arcadia
*Calicium tigillare* (Ach.) Pers.
*Caloplaca ahtii* Søchting **NS**
*Caloplaca albovariegata* (B. de Lesd.) Wetmore **NS**
*Caloplaca atroalba* (Tuck.) Zahlbr.
*Caloplaca cerina* (Ehrh. ex Hedwig) Th. Fr.
*Caloplaca microphyllina* (Tuck.) Hasse
*Caloplaca pratensis* Wetmore **NS**

*Caloplaca reptans* Lendemer & Hodkinson **NS**
*Caloplaca sideritis* (Tuck.) Zahlbr.
*Caloplaca soralifera* Vondrák & Hrouzek **NS**
*Caloplaca ulcerosa* Coppins & P. James **NS**
*Caloplaca ulmorum* (Fink) Fink
*Candelaria concolor* (Dickson) Stein
*Candelariella aurella* (Hoffm.) Zahlbr.
*Candelariella efflorescens* R. C. Harris & W. R. Buck
*Candelariella lutella* (Vainio) Räsänen **NS**
*Candelariella vitellina* (Hoffm.) Müll. Arg.
*Candelariella xanthostigma* (Ach.) Lettau
*Canoparmelia caroliniana* (Nyl.) Elix & Hale
*Canoparmelia texana* (Tuck.) Elix & Hale
*Catillaria nigroclavata* (Nyl.) Schuler
*Catinaria neuschildii* (Körb.) P. James **NS**
*Cetraria arenaria* Kärnefelt
*Cetrelia chicitae* (W. L. Culb.) W. L. Culb. & C. F. Culb.
*Chaenotheca brunneola* (Ach.) Müll. Arg.
*Chaenotheca ferruginea* (Turner ex Sm.) Mig. **NS**
*Chaenotheca furfuracea* (L.) Tibell
*Chaenotheca xyloxena* Nádv. **NS**
*Chaenothecopsis debilis* (Turner & Borrer ex Sm.) Tibell*
*Chaenothecopsis nana* Tibell* **NS**
*Chaenothecopsis nigra* Tibell* **NS**
*Chaenothecopsis perforata* Rikkinen & Tuovila* **NS**
*Chaenothecopsis pusilla* (Ach.) A.F.W. Schmidt*
*Chaenothecopsis pusiola* (Ach.) Vainio* **NS**
*Chaenothecopsis savonica* (Räsänen) Tibell* **NS**
*Chrismofulvea dialyta* (Nyl.) Marbach **NS**
*Chrysothrix caesia* (Flotow) Ertz & Tehler
*Chrysothrix xanthina* (Vainio) Kalb
*Cladonia apodocarpa* Robbins
*Cladonia caespiticia* (Pers.) Flörke
*Cladonia chlorophaea* complex
*Cladonia coniocraea* (Flörke) Sprengel
*Cladonia conista* (Nyl.) Robbins
*Cladonia cristatella* Tuck.
*Cladonia cylindrica* (A. Evans) A. Evans
*Cladonia fimbriata* (L.) Fr.
*Cladonia furcata* (Hudson) Schrader
*Cladonia incrassata* Kristinsson
*Cladonia macilenta* Hoffm. var. *bacillaris* (Ach.) Schaerer
*Cladonia macilenta* var *macilenta* Hoffm.
*Cladonia mateocyatha* Robbins
*Cladonia ochrochlora* Flörke
*Cladonia parasitica* (Hoffm.) Hoffm.
*Cladonia peziziformis* (With.) J. R. Laundon
*Cladonia piedmontensis* G. Merr.
*Cladonia pleurota* (Flörke) Schaerer
*Cladonia polycarpoides* Nyl.
*Cladonia pyxidata* (L.) Hoffm.
*Cladonia ramulosa* (With.) J. R. Laundon
*Cladonia rangiferina* (L.) F. H. Wigg.
*Cladonia rei* Schaerer
*Cladonia sobolescens* Nyl. ex Vainio
*Cladonia squamosa* (Scop.) Hoffm.
*Cladonia strepsilis* (Ach.) Grognot
*Cladonia subtenuis* (Abbayes) Mattick
*Cladonia uncialis* (L.) F. H. Wigg.
*Cladonia verticillata* (Hoffm.) Schaerer
***Clypeococcum hypocenomycis* D. Hawksw. **NS**
*Coenogonium pineti* (Ach.) Lücking & Lumbsch
*Collema subflaccidum* Degel.
*Cornutispora pyramidalis* Etayo** **NS**
*Crespoa crozalsiana* (B. de Lesd. ex Harm.) Lendemer & Hodkinson
*Cresponea chloroconia* (Tuck.) Egea & Torrente **NS**
*Cryptodiscus pallidus* (Pers.) Corda.* **NS**
*Cystocoleus ebeneus* (Dillwyn) Thwaites
*Dermatocarpon luridum* (With.) J. R. Laundon

*Dermatocarpon muhlenbergii* (Ach.) Müll. Arg.
*Dibaeis baeomyces* (L. f.) Rambold & Hertel
*Dictyocatenulata alba* Finley & E. F. Morris **NS**
*Diploschistes muscorum* (Scop.) R. Sant.**
*Diploschistes scruposus* (Schreber) Norman
*Distopyrenis americana* Aptroo **NS**
*Enchylium bachmanianum* (Fink) Otálora, P. M. Jørg. & Wedin
*Enchylium tenax* (Sw.) Gray
*Endocarpon pallidulum* (Nyl.) Nyl.
*Endocarpon petrolepideum* (Nyl.) Nyl.
*Endococcus perpusillus* Nyl.** **NS**
*Epicladonia stenospora* (Harm.) D. Hawksw.** **NS**
*Erythricium aurantiacum* (Lasch) D. Hawksw. & A. Henrici** **NS**
*Evernia mesomorpha* Nyl.
*Fellhanera fallax* R. C. Harris & Lendemer **NS**
*Fellhanera granulosa* R. C. Harris & Lendemer **NS**
*Fellhanera minnisinkorum* R. C. Harris & Lendemer
*Fellhanera silicis* R. C. Harris & Ladd **NS**
*Flavoparmelia baltimorensis* (Gyelnik & Fóriss) Hale
*Flavoparmelia caperata* (L.) Hale
*Flavoplaca flavocitrina* (Nyl.) Arup, Frödén & Søchting
*Flavopunctelia flaventior* (Stirton) Hale
*Flavopunctelia soredica* (Nyl.) Hale
*Fuscidea arboricola* Coppins & Tønsberg **NS**
*Fuscidea recensa* (Stirton) Hertel, V. Wirth & Vězda
*Graphis scripta* (L.) Ach.
*Gyalideopsis moodyae* Lendemer & Lücking **NS**
*Gyalolechia flavovirescens* (Wulfen) Søchting, Frödén & Arup
*Halecania pepegospora* (H. Magn.) van den Boom
*Halecania rheophila* R.C. Harris & Ladd ined. **NS**
*Herteliana schuyleriana* Lendemer **NS**
*Hertelidea botryosa* (Fr.) Kantvilas & Printzen **NS**
*Heterodermia albicans* (Pers.) Swinscow & Krog
*Heterodermia casarettiana* (A. Massal.) Trevisan
*Heterodermia obscurata* (Nyl.) Trevisan
*Heterodermia speciosa* (Wulfen) Trevisan
*Hyperphyscia adglutinata* (Flörke) H. Mayrhofer & Poelt
*Hyperphyscia confusa* Essl., C. A. Morse & S. Leavitt
*Hyperphyscia syncolla* (Tuck. ex Nyl.) Kalb
*Hypocenomyce scalaris* (Ach. ex Lilj.) M. Choisy
*Hypogymnia physodes* (L.) Nyl.
*Hypotrachyna afrorevoluta* (Krog & Swinscow) Krog & Swinscow **NS**
*Hypotrachyna livida* (Taylor) Hale
*Hypotrachyna minarum* (Vainio) Krog & Swinscow
*Hypotrachyna revoluta* (Flörke) Hale **NS**
*Hypotrachyna showmanii* Hale
*Imshaugia aleurites* (Ach.) S. F. Meyer
*Imshaugia placorodia* (Ach.) S. F. Meyer
*Ionaspis alba* Lutzoni
*Ionaspis lacustris* (With.) Lutzoni
*Japewiella dollypartoniana* J. L. Allen & Lendemer
*Julella fallaciosa* (Arnold) R. C. Harris*
*Lecania croatica* (Zahlbr.) Kotlov **NS**
*Lecania naegelii* (Hepp) Diederich & van den Boom
*Lecanora appalachensis* Lendemer & R. C. Harris
*Lecanora caesiorubella* Ach.
*Lecanora cinereofusca* H. Magn.
*Lecanora hybocarpa* (Tuck.) Brodo

*Lecanora layana* Lendemer
*Lecanora minutella* Nyl.
*Lecanora nothocaesiella* R. C. Harris & Lendemer
*Lecanora polytropa* (Ehrh.) Rabenh.
*Lecanora pulicaris* (Pers.) Ach.
*Lecanora saligna* (Schrader) Zahlbr. **NS**
*Lecanora strobilina* (Sprengel) Kieffer
*Lecanora subimmergens* Vainio
*Lecanora subpallens* Zahlbr.
*Lecanora symmicta* (Ach.) Ach.
*Lecanora thysanophora* R. C. Harris
*Lecidea cyrtidia* Tuck.
*Lecidea erythrophaea* Flörke ex Sommerf. **NS**
*Lecidea fuscoatra* (L.) Ach. **NS**
*Lecidea varians* Ach.
*Lecidella stigmatea* (Ach.) Hertel & Leuckert
*Leimonis erratica* (Körber) R. C. Harris & Lendemer
*Lepra pustulata* (Brodo & W. Culb.) Lendemer & R. C. Harris
*Lepraria caesiella* R. C. Harris
*Lepraria cryophila* Lendemer **NS**
*Lepraria disjuncta* Lendemer
*Lepraria elobata* Tønsberg **NS**
*Lepraria finkii* (B. de Lesd.) R. C. Harris
*Lepraria harrisiana* Lendemer
*Lepraria hodkinsoniana* Lendemer **NS**
*Lepraria neglecta* (Nyl.) Erichsen
*Lepraria normandinoides* Lendemer & R. C. Harris
*Lepraria vouauxii* (Hue) R. C. Harris
*Lepraria xanthonica* Lendemer **NS**
*Leprocaulon adhaerens* (K. Knudsen, Elix & Lendemer) Lendemer & Hodkinson
*Leptogium cyanescens* (Rabenh.) Körber
*Lichenoconium erodens* M.S. Christ. & D. Hawksw.** **NS**
*Lichenoconium pyxidatae* (Oudem.) Petrak & H. Sydow** **NS**
*Marchandiomyces corallinus* (Roberge) Diederich & D. Hawksw.**
*Melanelixia glabratula* (Lamy) Sandler & Arup **NS**
*Melanelixia subaurifera* (Nyl.) O. Blanco et al.
*Menegazzia subsimilis* (H. Magn.) R. Sant.
*Micarea denigrata* (Fr.) Hedl. **NS**
*Micarea melaena* (Nyl.) Hedl.
*Micarea peliocarpa* (Anzi) Coppins & R. Sant.
*Micarea prasina* Fr.
*Micarea soralifera* B. Guzow-Krzemińska, P. Czarnota, A. Łubek & M. Kukwa **NS**
*Multiclavula mucida* (Fr.) R. H. Petersen **NS**
*Multiclavula vernalis* (Schwein.) R. Petersen **NS**
*Mycobilimbia berengeriana* (A. Massal.) Hafellner & V. Wirth **NS**
*Mycocalicium subtile* (Pers.) Szatala*
*Myelochroa aurulenta* (Tuck.) Elix & Hale
*Myelochroa galbina* (Ach.) Elix & Hale
*Myelochroa metarevoluta* (Asahina) Elix & Hale
*Myelochroa obsessa* (Ach.) Elix & Hale
*Myriolecis dispersa* (Pers.) Śliwa, Zhao Xin & Lumbsch
*Myriolecis hagenii* (Ach.) Śliwa, Zhao Xin & Lumbsch
*Myriolecis sambuci* (Pers.) Clem. **NS**
*Nadvornikia sorediata* R. C. Harris
*Ochrolechia arborea* (Kreyer) Almb.
*Ovicuculispora parmeliae* (Berk. & M. A. Curtis) Etayo**
*Parmelia squarrosa* Hale
*Parmelia sulcata* Taylor
*Parmotrema austrosinense* (Zahlbr.) Hale
*Parmotrema gardneri* (C. W. Dodge) Sérus.
*Parmotrema hypotropum* (Nyl.) Hale
*Parmotrema margaritatum* (Hue) Hale
*Parmotrema perforatum* (Jacq.) A. Massal.
*Parmotrema perlatum* (Hudson) M. Choisy
*Parmotrema reticulatum* (Taylor) M. Choisy

*Parmotrema subisidiosum* (Müll. Arg.) Hale
*Peltigera canina* (L.) Willd.
*Peltigera didactyla* (With.) J. R. Laundon
*Peltigera evansiana* Gyelnik
*Peltigera polydactylon* (Necker) Hoffm.
*Peltigera praetextata* (Flörke ex Sommerf.) Zopf
*Peltigera rufescens* (Weiss) Humb. **NS**
*Pertusaria plittiana* Erichsen
*Pertusaria pustulata* (Ach.) Duby
*Phaeocalicium curtisii* (Tuck.) Tibell*
*Phaeocalicium polyporaeum* (Nyl.) Tibell*
*Phaeocalicium populneum* (Brond. ex Duby)* A.F.W. Schmidt
*Phaeophyscia adiastola* (Essl.) Essl.
*Phaeophyscia ciliata* (Hoffm.) Moberg
*Phaeophyscia decolor* (Kashiw.) Essl.
*Phaeophyscia hirsuta* (Mereschk.) Essl.
*Phaeophyscia hirtella* Essl.
*Phaeophyscia insignis* (Mereschk.) Moberg
*Phaeophyscia orbicularis* (Necker) Moberg
*Phaeophyscia pusilloides* (Zahlbr.) Essl.
*Phaeophyscia rubropulchra* (Degel.) Essl.
*Phaeopyxis punctum* (A. Massal.) Rambold, Triebel & Coppins** **NS**
*Phlyctis petraea* R. C. Harris, Muscavitch, Ladd & Lendemer
*Physcia adscendens* (Fr.) H. Olivier
*Physcia aipolia* (Ehrh. ex Humb.) Fürnr.
*Physcia americana* G. Merr.
*Physcia dubia* (Hoffm.) Lettau **NS**
*Physcia millegrana* Degel.
*Physcia phaea* (Tuck.) J. W. Thomson
*Physcia pumilior* R. C. Harris
*Physcia stellaris* (L.) Nyl.
*Physcia thomsoniana* Essl.
*Physciella chloantha* (Ach.) Essl.
*Physciella melanchra* (Hue) Essl.
*Physconia detersa* (Nyl.) Poelt
*Physconia leucoleiptes* (Tuck.) Essl.
*Piccolia nannaria* (Tuck.) Lendemer & Beeching** **NS**
*Placidiopsis minor* R. C. Harris**
*Placidium squamulosum* (Ach.) Breuss
*Placynthiella dasaea* (Stirton) Tønsberg **NS**
*Placynthiella icmalea* (Ach.) Coppins & P. James
*Placynthiella oligotropha* (J. R. Laundon) Coppins & P. James **NS**
*Placynthium nigrum* (Hudson) Gray
*Platismatia tuckermanii* (Oakes) W. L. Culb. & C. F. Culb.
*Polysporina simplex* (Taylor) Vězda
*Polysporina subfuscescens* (Nyl.) K. Knudsen & Kocourk.** **NS**
*Porpidia albocaerulescens* (Wulfen) Hertel & Knoph
*Porpidia crustulata* (Ach.) Hertel & Knoph
*Porpidia soredizodes* (Lamy ex Nyl.) J. R. Laundon **NS**
*Porpidia subsimplex* (H. Magn.) Fryday
*Protoblastenia rupestris* (Scop.) J. Steiner
*Protoparmelia hypotremella* Herk, Spier & V. Wirth **NS**
*Protoparmeliopsis muralis* (Schreber) M. Choisy **NS**
*Pseudosagedia aenea* (Wallr.) Hafellner & Kalb **NS**
*Pseudosagedia cestrensis* (Tuck. ex E. Michener) R. C. Harris
*Psoroglaena dictyospora* (Orange) H. Harada **NS**
*Psorotichia schaereri* (A. Massal.) Arnold
*Punctelia bolliana* (Müll. Arg.) Krog
*Punctelia borreri* (Sm.) Krog
*Punctelia caseana* Lendemer & Hodkinson
*Punctelia missouriensis* G. Wilh. & Ladd
*Punctelia rudecta* (Ach.) Krog
*Pyrenopsis phaeococca* Tuck.
*Pyrenula laevigata* (Pers.) Arnold
*Pyrenula punctella* (Nyl.) Trevisan
*Pyxine sorediata* (Ach.) Mont.
*Pyxine subcinerea* Stirton
*Ramalina americana* Hale
*Ramalina complanata* (Sw.) Ach.
*Ramalina intermedia* (Delise ex Nyl.) Nyl.

*Ramalina labiosorediata* Gasparyan, Sipman & Lücking
*Rhizocarpon reductum* Th. Fr.
*Rhizocarpon rubescens* Th. Fr. **NS**
*Rinodina buckii* Sheard **NS**
*Rinodina freyi* H. Magn. **NS**
*Rinodina maculans* Müll. Arg.
*Rinodina moziana* (Nyl.) Zahlbr.
*Rinodina oxydata* (A. Massal.) A. Massal.
*Rinodina papillata* H. Magn. **NS**
*Rinodina subminuta* H. Magn. **NS**
*Rinodina subparieta* (Nyl.) Zahlbr. **NS**
*Rinodina tephraspis* (Tuck.) Herre
*Ropalospora viridis* (Tønsberg) Tønsberg
*Rusavskia elegans* (Link) S. Y. Kondr. & Kärnefelt
*Sarcogyne regularis* Körber
*Sarcogyne similis* H. Magn. **NS**
*Sarcopyrenia calcarea* Lendemer & R. C. Harris** **NS**
*Sarea difformis* (Fr.) Fr.* **NS**
*Sarea resinae* (Fr.) Kuntze*
*Scoliciosporum chlorococcum* (Stenh.) Vězda
*Scoliciosporum pensylvanicum* R. C. Harris (Harris 2009)
*Scoliciosporum umbrinum* (Ach.)
*Scytinium dactylinum* (Tuck.) Otálora, P. M. Jørg. & Wedin
*Scytinium juniperinum* (Tuck.) Otálora, P. M. Jørg. & Wedin
*Scytinium lichenoides* (L.) Otálora, P. M. Jørg. & Wedin
*Segestria lectissima* Fr.
*Sphinctrina anglica* Nyl.** **NS**
*Squamulea subsoluta* (Nyl.) Arup, Søchting & Frödén
*Staurothele drummondii* (Tuck.) Tuck. **NS**
*Steinia geophana* (Nyl.) Stein
*Stenocybe pullatula* (Ach.) Stein*
*Stereocaulon saxatile* H. Magn.
*Strangospora moriformis* (Ach.) Stein **NS**
*Strigula jamesii* (Swinscow) R. C. Harris **NS**
*Thelidium minutulum* Körb.
*Thelidium pyrenophorum* (Ach.) Mudd
*Thelidium zwackhii* (Hepp) A. Massal. **NS**
*Thelocarpon intermediellum* Nyl. **NS**
*Thelocarpon laureri* (Flotow) Nyl.
*Trapelia coarctata* (Turner) M. Choisy
*Trapelia glebulosa* (Sm.) J. R. Laundon
*Trapelia placodioides* Coppins & P. James
*Trapeliopsis flexuosa* (Fr.) Coppins & P. James
*Trapeliopsis granulosa* (Hoffm.) Lumbsch
*Trapeliopsis viridescens* (Schrader) Coppins & P. James
*Tremella cladoniae* Diederich & M. S. Christ.** **NS**
*Trimmatothelopsis dispersa* (H. Magn.) K. Knudsen & Lendemer
*Tuckermanella fendleri* (Nyl.) Essl.
*Tuckermannopsis americana* (Sprengel) Hale
*Tuckermannopsis ciliaris* (Ach.) Gyelnik
*Tuckermannopsis sepincola* (Ehrh.) Hale **NS**
*Umbilicaria mammulata* (Ach.) Tuck.
*Usnea cornuta* Körber
*Usnea dasaea* Stirton **NS**
*Usnea glabrata* (Ach.) Vainio **NS**
*Usnea hirta* (L.) Weber ex F. H. Wigg. **NS**
*Usnea mutabilis* Stirton
*Usnea pensylvanica* Motyka
*Usnea strigosa* (Ach.)
*Usnea subfloridana* Stirton
*Usnea subgracilis* Vainio **NS**
*Usnocetraria oakesiana* (Tuck.) M. J. Lai & C. J. Wei
*Verrucaria calkinsiana* Servit
*Verrucaria cernaensis* Zschacke **NS**
*Verrucaria dolosa* Hepp **NS**
*Verrucaria latericola* Erichsen** **NS**
*Verrucaria muralis* Ach.
*Verrucaria myriocarpa* Hepp **NS**
*Verrucaria nigrescens* Pers.
*Verrucaria nigrescentoidea* Fink

*Verrucaria praetermissa* (Trevisan) Anzi **NS**
*Verrucaria sublobulata* Eitner ex Serv. **NS**
*Verrucaria umbrinula* Nyl. **NS**
*Vezdaea leprosa* (P. James) Vězda
*Vezdaea schuyleriana* Lendemer **NS**
*Viridothelium virens* (Tuck. ex Michener) Lücking, M. P. Nelsen & Aptroot
*Willeya diffractella* (Nyl.) Müll. Arg.
*Xanthocarpia feracissima* (H. Magn.) Frödén, Arup & Søchting
*Xanthomendoza fallax* (Hepp ex Arnold) Søchting, Kärnefelt & S. Y. Kondr.
*Xanthomendoza hasseana* (Räsänen) Søchting, Kärnefelt & S. Y. Kondr.
*Xanthomendoza ulophyllodes* (Räsänen) Søchting, Kärnefelt & S. Y. Kondr.
*Xanthomendoza weberi* (S. Y. Kondr. & Kärnefelt) L. Lindblom
*Xanthoparmelia conspersa* (Ehrh. ex Ach.) Hale
*Xanthoparmelia cumberlandia* (Gyelnik) Hale
*Xanthoparmelia plittii* (Gyelnik) Hale
*Xanthoria parietina* (L.) Th. Fr.
*Xylopsora friesii* (Ach.) Bendiksby & Timdal

Errors in "A STUDY OF THE MACROLICHENS OF NORTHEAST OHIO (Curtis, 2017)"

- *Cladonia cryptochlorophaea*, *C. grayi*, and *C. chlorophaea* have been combined under the "*C. chlorophaea* complex" since TLC has not been performed on any of these specimens collected during this study and no morphological characteristics separate them.
- *Cladonia humilis* = misidentifications of *C. conista*
- *Leptogium austroamericanum* = misidentification of *L. cyanescens*
- *Parmotrema ultralucens* = misidentification of *P. subisidiosum*
- *Physcia caesia* = misidentification of *P. dubia*
- *Scytinium subtile* = misidentification of *S. dactylinum*

## Conclusion

Through extensive inventorying of lichenized, lichenicolous, and allied fungi in NE Ohio, an entirely new level of understanding of these ubiquitous organisms has been achieved. A total of 112 species are being reported here for the first time in Ohio. The study of lichens in Ohio has reached a new level of depth and, perhaps, could be used for conservation efforts in the future. Representation of the lichens of NE Ohio in herbaria has also been increased considerably and now is more representative of the study, in a comprehensive sense, than ever before. A continuation of this study will undoubtedly yield more new and interesting discoveries in the future.

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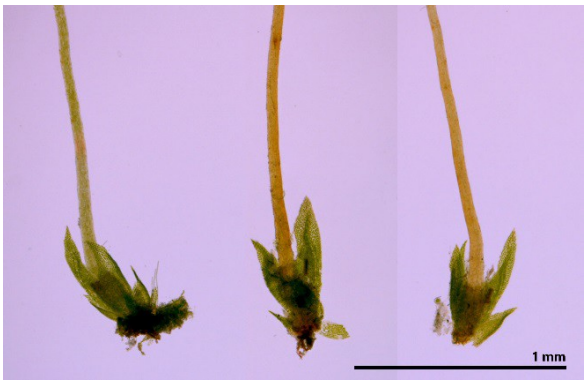
**- Tomás J. Curtis,** Kent State University

### *Fissidens closteri* Aust. – NEW TO OHIO

When bryological sleuth Rebekah Smucker shows up in Ohio, one can be sure that she will find something interesting and small. This year, after the 2019 OMLA workshop to Ashtabula County, Becky stopped by Hocking County on her way home to North Carolina. Although she had a 7-hour drive ahead of her, she wanted to look for a moss that she and Dr. Paul Davison (University of North Alabama) are researching. That moss is *Fissidens closteri*, and to quote Becky "if you can see leaves, it's not *F. closteri*." The plants are minute and stemless. The setae are 1.2 mm long, and the capsules are 0.2 – 0.3 mm long (Crum and Anderson 1982).

After Becky described potential habitats, we began to search a few places around Hocking County. On sandstone pebbles in

an abandoned lane, and again on moist sandstone rocks that had flaked off a small temporary waterfall, Becky found it. She taught me how to look for it: hold the small rock up to the light and look for sporophytes. With her help, I found it and a specimen is now housed in the Kent State University Herbarium (*Andreas and Smucker 19738* KE).


*Fissidens closteri.* **Photos from Internet**

Through conversations with Becky at the Ashtabula County foray, OMLA member and photographer Bob Klips became curious about an odd little unidentified *Fissidens* sample gathered in 2005 from a creek in Hocking County, so he mailed it to her a few days afterwards for identification and it indeed turned out to be *F. closteri*.

OMLA members should search for *Fissidens closteri* in other Ohio counties. Since the publication of *A Catalog and Atlas of the Mosses of Ohio* (Snider and Andreas 1996), 18 species have been added to the list of Ohio mosses. OMLA thanks Becky and Bob for their contributions.

Crum, H.A., and L.E. Anderson 1981. Mosses of Eastern North America. Vol. 2. New York: Oxford University Press.

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**– Barbara K. Andreas**

## 2019 SUMMER FORAY TO WOOD COUNTY

We held our Summer Foray on June 15. It was a relatively cool, overcast day with temperature in the 60s and occasional rain showers.

Like the rest of northwest Ohio, Wood County was entirely covered with ice until the glacier receded from the area about 16,000 years ago. The area was then submerged by various stages of post-glacial lakes. Remnant beach ridges from these lakes formed sandy soils in some places. There are a few scattered areas of dolostone and limestone rock outcrops in the county.

With mostly flat topography and rich soils of glacial origin, Wood County is primarily agricultural: 89% of its land is classified as prime farmland, defined by the U.S. Department of Agriculture as “land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses.”

We visited two very interesting sites, both part of the Wood County Park District. We are very grateful to the district for allowing us to collect there. Sawyer Quarry Nature Preserve, near Perrysburg, is a 57-acre site with an abandoned dry quarry and adjacent woodlands with numerous dolostone rock outcrops and loamy soil. We collected there in the morning and had lunch there.

In the afternoon, we went to Rudolph Savanna, south of Bowling Green. This is an 87-acre oak savanna with sandy soil. Heavier rain showers somewhat hindered our collecting efforts there.

During the Foray we found 42 moss species with 18 new records for Wood County. Liverworts were sparse with only 2 species collected. 29 species of lichens were recorded during the foray and of these, 8 were new county records.

**Species recorded for Wood County. N = new county record, SQ = Sawyer Quarry and RS = Rudolph Savanna.**

| **Moss Species Name** | **SQ** | **RS** |
|---|---|---|
| *Amblystegium varium* | X | X |
| *Anomodon attenuatus* | X | |
| *Anomodon rostratus* | X | |
| *Atrichum altecristatum* | | X |
| *Atrichum angustatum* | | X |
| *Barbula unguiculata* | X | |
| *Brachythecium campestre* **N** | X | |
| *Brachythecium falcatum* **N** | X | X |
| *Brachythecium laetum* | X | X |
| *Bryum algovicum* **N** | X | |
| *Bryum lisae* var. *cuspidatum* | X | |
| *Bryum pseudotriquetrum* N | X | |
| *Callicladium haldanianum* | | X |
| *Calliergonella lindbergii* | X | |
| *Campylium chrysophyllum* | X | |
| *Ceratodon purpureus* | X | |
| *Ditrichum pusillum* **N** | X | |
| *Encalypta procera* **N** | X | |
| *Entodon seductrix* | X | X |
| *Eurhynchium hians* | X | X |
| *Fissidens dubius* **N** | X | |
| *Fissidens taxifolius* **N** | X | X |
| *Funaria hygrometrica* | X | |
| *Grimmia pilifera* **N** | X | |
| *Hymenostylium recurvirostrum* **N** | X | |
| *Hypnum cupressiforme* **N** | | X |
| *Leptobryum pyriforme* **N** | X | |
| *Leskea gracilescens* | X | X |
| *Limprichtia cossonii* **N** | X | |
| *Orthotricum sordidum* **N** | X | |
| *Orthotricum pusillum* **N** | X | |
| *Plagiomnium cuspidatum* | X | X |
| *Plagiothecium denticulatum* | X | |
| *Platydictya confervoides* | X | |
| *Platygyrium repens* | X | X |

| | | |
|---|---|---|
| *Rhynchostegium serrulatum* | | X |
| *Rhodobryum ontariense* | X | |
| *Schistidium apocarpum* **N** | X | |
| *Schistidium rivulare* **N** | X | |
| *Taxiphyllum deplanatum* **N** | X | |
| *Thuidium recognitum* | X | |
| *Tortella humilis* | X | |

| **Liverwort Species Name** | **SQ** | **RS** |
|---|---|---|
| *Frullania eboracensis* | X | |
| *Lophocolea heterophylla* | X | |

| **Lichen Species Name** | **SQ** | **RS** |
|---|---|---|
| *Amandinea dakotensis* | X | |
| *Amandinea punctata* | X | |
| *Bacidia granosa* | X | |
| *Bilimbia sabuletorum* | X | |
| *Candelaria concolor* | X | X |
| *Candelariella aurella* | X | |
| *Candelariella vitellina* | X | |
| *Chrysothrix caesia* | X | |
| *Cladonia chlorophaea* **N** | X | |
| *Cladonia coniocraea* **N** | X | |
| *Cladonia pyxidata* **N** | X | |
| *Lecanora dispersa* | X | |
| *Lecanora polytropa* | X | |
| *Lepraria* sp. | X | |
| *Myelochroa galbina* **N** | X | |
| *Parmelia sulcata* | X | |
| *Parmotrema hypotropum* **N** | | X |
| *Peltigera canina* | X | |
| *Peltigera polydactylon* **N** | X | |
| *Phaeophyscia adiastola* **N** | X | |
| *Phaeophyscia rubropulchra* | | X |
| *Physcia americana* | X | |
| *Physcia millegrana* | | X |
| *Porpidia albocaerulescens* | X | |
| *Punctelia rudecta* | X | |
| *Verrucaria nigrescens* | X | |
| *Xanthomendoza fallax* | X | |
| *Xanthomendoza ulophyllodes* | X | |
| *Xanthomendoza weberi* **N** | X | |

**- James Toppin**

## A DAY TO REMEMBER

Last summer I was visited by two OMLA student members, Tomás Curtis and Chris Poling, for a weekend of botanizing. Any day in the field is better than a day at home, but sometimes everything comes together and you have a day to remember.

Our first day we traveled to the Edge of Appalachia preserve system and met another OMLA member, Mark Zloba. Our goal was to find *Thyrea confusa*, a rare lichen with one old Ohio record in Ottawa County and a recent one for Adams County.

*Thyrea confusa*, jelly strap lichen, is a very small fruticose species which always grows

on bare limestone or dolomitic rock. It has tiny (~3-10 mm), black, strap-shaped and sometimes forked thalli. In *Lichens of North America*, Brodo indicates that it is widely scattered but the distribution is too poorly known to map.

This species was found in an Adams County cedar barren prairie by local naturalist Barbara Lund in 2002, but more recent attempts to relocate it have failed. Mark took us to the site where it was collected earlier and after a little searching we found the jelly strap on two rocks!

*Thyrea confusa*. **Photo by Tomás Curtis**

*Dermatocarpon dolamiticum*. **Photo by Tomás Curtis**

At the same site we also found *Dermatocarpon dolamiticum*, a common Ozark lichen, but a new species for Ohio! This species frequently has overlapping lobes like *D. luridum*, but its thallus is thinner and more brittle and as the name implies, it usually grows on dry alkaline rocks, while *D. luridum* prefers moist rocks.

Next we visited Lynx Prairie and Mark showed us some of the prairie plants for which the area is known. After that we visited one of the sites for *Phaeophyscia leana*, another very rare lichen known from The Edge property (see **WANTED (Alive)! *PHAEOPHYSCIA LEANA*** by Mark Zloba. 2017 OBELISK, p. 23**).**

At the end of our day we were back at The Eulett Center where Tomás was looking at some of the difficult specimens in Mark's lichen collection. Here he found another new for Ohio species, *Peltigera phyllidiosa,* an isidiate pelt lichen. This species is similar to *P. elisabethae*, and the original collection of that species may have been misidentified. This is why we should always collect voucher specimens and why another look at them is always desirable.

*Peltigera phyllidiosa*. **Photo by Tomás Curtis**

So we relocated an extant population of a rare species and found two new lichens for Ohio. Indeed, a day to remember!
**- Ray Showman**

A forest with many lichens is a happy forest. **– James Lendemer**

## MOSS MUSINGS
## MOSS IN NAME ONLY

While moss has a specific botanical definition, members of the class *Musci*, the word in the English language has been used to describe almost any plant with finely divided leaves. We all know that Spanish moss (*Tillandsia usneoides*) is not a moss at all, but an epiphytic angiosperm related to pineapple.

We also have moss phlox (*Phlox subulata*), pyxie moss (*Pyxidanthera barulata*), moss campion (*Silene acaulis*), mossy stonecrop (*Sedum acre*), rock moss (*Sedum pulchelium*), Irish moss (*Sagina subulata*), moss rose (*Portulaca* sp.), and mossy-cup oak (*Quercus macrocarpa*). Sea moss is actually red algae. There are even moss animals. These are tiny aquatic or marine colonial animals belonging to the small phylum Ectoprocta (or Bryozoa). Quite a list of mosses in name only!

There are several lichens that in the past have been commonly called mosses. We all know that reindeer moss is the lichen *Cladonia rangiferina*. But we also have treemoss (*Pseudevernia furfuracea*) and oakmoss (*Evernia* species), lichens that have been gathered in Europe for use in the perfume industry. There is also Iceland moss (*Cetraria ericetorum*), a lichen which was used in early herbalist medicine.

A few inanimate things also have the moss moniker. Moss agate is a quartz mineral with a dendritic pattern. Mossy Oak is a pattern of camo that is popular with hunters. And if you watch Gold Rush on the Discovery Channel, you know that miners' moss is a fibrous material placed in the bottom of a sluice box to retain those very fine particles of gold.

Moss has also found its way into the English language idiom "a rolling stone gathers no moss," although this is certainly not true for our own rolling stone Barb Andreas who has gathered lots of mosses! On the other hand, the term "old mossback" describes a slow moving person who has gathered the proverbial moss. It could be applied to this author even though I much prefer gathering lichens! **- Ray Showman**

## *PLEUROZIUM SCHREBERI* AND NITROGEN FIXATION

I first became acquainted with this moss when I started to take workshops at Eagle Hill Institute in Maine. I would drive down the long gravel drive into Eagle Hill with woods on both sides. In places I would see what looked like monocultures of a mat moss. On closer look all the mosses had a very apparent reddish stem. All I could think was, what is this moss? It of course was *Pleurozium schreberi*.

And indeed, it did cover large swaths around Eagle Hill. It does occur in Ohio in numerous counties, but in much smaller patches than seen in Maine. In large sections of the Boreal Forest, it can account, along with another pleurocarpous moss, *Hylocomium splendens* (stair-step moss) up to 95% of the ground cover.

Why is this moss so common in these boreal areas? Researchers have found that this species commonly is associated with cyanobacteria that assist with N fixation. These mosses may be responsible for much of the N fixation that occurs in boreal areas.

It was found that *Pleurozium schreberi* alone fixes from 1.5 to 2.0 kg N $ha^{-1}$ $yr^{-1}$ in mid- to late-successional forests of northern Scandinavia and Finland. These are areas where otherwise there are very few other N fixing tree or forbs.

Large parts of the boreal area are dominated by infertile acid sandy soils—spodosols. It is in these kind of soil areas naturally low in N where N fixing plants thrive. They, along with possibly *Hylocomium* and associated cyanobacteria, may possibly be the most broadly distributed N fixers on earth.

It is uncertain though how much N fixation occurs in the *Pleurozium* that we find in Ohio, as fixation appears to mainly occur in low N deposition areas such as found in boreal forest areas—very much unlike Ohio.

*Pleurozium schreberi* **Photo from Internet**

One question is what happens to the N in these mosses and associated cyanobacteria? While it makes sense that N would "leak" from them, but whether this is transferred to the soil, and how much, and over how long a time period is unknown.

So the next time you see a patch of *Pleurozium* in Ohio or elsewhere, you can think of the large role it plays in the boreal ecosystem and how much there still is still to be learned about this intriguing moss.

Sources:

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**- Bill Schumacher**

## *CLADONIA CRISPATA* DISCOVERED IN OHIO

*Cladonia* is a widespread and speciose group of lichens in the family Cladoniaceae. They can be found throughout Ohio on a variety of substrates including decaying logs, rocks, soil, and tree bases. *Cladonia crispata* was found by the author in September of 2017 while surveying a property owned by Summit Metro Parks. It was growing on an ecorticate stump in a dry barren with scattered stands of successional hardwoods.

*Cladonia crispata* has a broad range mostly north of Ohio, though it does occur throughout the Appalachians as well. This species is typically found on sun-exposed soil or bryophytes but has been recorded on a number of other substrates as well.

Not surprisingly, the specimen found in Ohio was quite small and seemingly stunted.

Nevertheless, *Cladonia crispata* can be easily distinguished from other *Cladonia* species by noticing a diagnostic combination of characteristics; an exposed stereome inside cups, a lack of lichenized diaspores, inconspicuous primary squamules, and the presence of thamnolic acid (P+ orange, K+ strong yellow).

*Cladonia crispata* at Confluence Metro Park, Summit Cty. Ohio, 9/15/17. **Photo by Tomás Curtis**

The specimen was rediscovered and confirmed by the author over 2 years after the initial collection when reviewing specimens with uncertain determinations.

**- Tomás J. Curtis**

## WANTED (ALIVE)!
### *NEPHROMA HELVETICUM*

There are a number of lichens with a few pre-1945 records, but no recent collections. One of these is *Nephroma helveticum*, fringed kidney lichen. This fairly large, foliose lichen contains a cyanobacterium as the photobiont, giving it a dark brown to gray-brown color. The lichen has squamules or flattened isidia on the lobe margins (the fringed part of the common name), and it usually has kidney-shaped apothecia (the other part of the common name). The undersurface usually has a sparse covering of fine, wooly hair, but no recognizable rhizines.

*Nephroma helveticum*. **Photo by Richard Droker.**

It usually grows on mossy rocks and tree bases. There are three pre-1945 records for Ohio: Butler, Champaign and Greene Counties. So the next time you are botanizing in a shady place where few other lichens grow, keep an eye out for this interesting species.

**– Ray Showman**

### 2019 FALL FORAY – Ashtabula County Ohio and Crawford County Pennsylvania

The OMLA Fall Foray was held at Pymatuning State Parks on both the Ohio and Pennsylvania sides of Pymatuning Reservoir, September 27-29. The weather cooperated and allowed for some collections Friday afternoon near the Birches boat launch area on the Ohio side of Pymatuning. Saturday produced some more good collections at the Padanarum boat launch area on the Ohio side of Pymatuning.

The foray moved to the Pennsylvania side of Pymatuning for Saturday afternoon and Sunday. We had use of the environmental classroom at Pymatuning State Park, and several Pennsylvania State Parks Environmental Educators joined us. Linda Armstrong, recently retired from Pymatuning State Park and Emily Borcz, the new educator at the Park, helped to facilitate the foray with suggestions for collection areas and help in reserving the environmental classroom. Collections and keying of specimens continued Saturday afternoon and evening and we shared a pizza dinner in the classroom.

For those that stayed to Sunday, we were able to investigate a new area on the Pennsylvania side with a hike on a trail below the dam. There were several interesting mosses, fungi, slime molds, and lichens on this short hike.

While we hoped for more Pennsylvania participation, the PA State Parks educators were very helpful and enthusiastic. Dr. Dave Krayesky from Slippery Rock University attended on Saturday and is interested in helping to organize a Pennsylvania foray in the spring with help from Bob Long. Thanks to everyone for making the trip and for coming up with a good list of species on both sides of Pymatuning Reservoir.

Lichens and related fungi species totaled 75 from the Pymatuning State Park in Ashtabula County. Only 14 species were recorded from the park in Pennsylvania (Crawford County). Of the species collected in Ohio, 31 were macrolichens, with 4 new for Ashtabula County. The remaining 43 species were crustose and related fungi with 8 species new for Ashtabula County (based on previous collections by Tomás Curtis).

**Lichenized, Lichenicolous, and Allied fungi found during the 2019 OMLA Fall Foray in Ashtabula County, OH (N = new county record)**

*Amandinea polyspora*
*Anisomeridium polypori*
*Arthonia apatetica*
*Arthonia helvola*
*Athallia pyracea*
*Bacidina egenula*
*Biatora printzenii*
*Brianaria bauschiana*
*Candelaria concolor*
*Candelariella aurella*
*Candelariella efflorescens*
*Chrysothrix caesia*
*Cladonia caespiticia*
*Cladonia chlorophaea complex*
*Cladonia coniocraea*
*Cladonia cylindrica*
*Cladonia fimbriata*
*Cladonia macilenta*
*Cladonia ochrochlora*
*Cladonia peziziformis*
*Cladonia rangiferina*
*Cladonia rei*
*Crespoa crozalsiana*
*Flavoparmelia caperata*
*Fuscidea arboricola*
*Hypocenomyce scalaris*
*Hypogymnia physodes*
*Hypotrachyna minarum*
*Hypotrachyna showmanii*
*Lecanora hybocarpa*
*Lecanora layana*
*Lecanora nothocaesiella* **N**
*Lecanora strobilina*
*Lecanora symmicta*
*Lecanora thysanophora*

*Lecidea cyrtidia*
*Lecidea erythrophaea*
*Lecidea varians*
*Leimonis erratica* **N**
*Lepraria caesiella*
*Lepraria finkii*
*Lepraria hodkinsoniana*
*Lichenoconium erodens* **N**
*Marchandiomyces corallinus* **N**
*Melanelixia subaurifera*
*Micarea prasina*
*Multiclavula mucida*
*Mycocalicium subtile* **N**
*Myelochroa aurulenta*
*Myelochroa metarevoluta* **N**
*Myriolecis dispersa*
*Parmelia sulcata*
*Parmotrema hypotropum*
*Parmotrema reticulatum*
*Phaeocalicium polyporaeum*
*Phaeophyscia pusilloides*
*Phaeophyscia rubropulchra*
*Physcia adscendens*
*Physcia millegrana*
*Physcia stellaris*
*Physconia detersa*
*Placynthiella icmalea*
*Punctelia caseana*
*Punctelia missouriensis* **N**
*Punctelia rudecta*
*Pyxine sorediata* **N**
*Ropalospora viridis*
*Scoliciosporum chlorococcum*
*Scoliciosporum pensylvanicum*
*Trapelia glebulosa* **N**
*Trapeliopsis flexuosa*
*Usnocetraria oakesiana* **N**
*Verrucaria dolosa* **N**
*Verrucaria nigrescens* **N**
*Xanthocarpia feracissima*

**For Crawford County, PA lichen species included the following from Pymatuning State Park**

*Bacidina egenula* (T J Curtis, KE L3747)--**N**
*Ovicuculispora parmeliae* (T J Curtis, KE L3745)--**N**
*Candelaria concolor*
*Flavoparmelia caperata*
*Flavopuctelia flaventior*
*Hypogymnia physodes*
*Melanelixia subaurifera*
*Parmelia sulcata*
*Parmotrema hypotropum*
*Phaeophyscia rubropulchra*
*Physcia millegrana* (T J Curtis, KE L3746)
*Physcia stellaris*
*Punctelia caseana*
*Punctelia rudecta*

The fall foray at Pymatuning State Park in Ashtabula County produced 64 mosses and 8 liverworts. Of the 64 mosses, 15 of them are new records for Ashtabula County.

**Ashtabula County Bryophytes 2019 Fall Foray. N = New county record**

**<u>Mosses</u>**

*Abietinellal abietina*--N
*Amblystegium serpens*
*Amblystegium varium*
*Atrichum angustatum*
*Atrichum crispulum*
*Atrichum tenellum*--**N**
*Aulacomnium palustre*
*Barbula unguiculata*
*Brachythecium curtum*--N
*Brachythecium laetum*
*Brachythecium plumosum*
*Brachythecium populeum*--**N**
*Brachythecium rutabulum*

*Brotherella recurvans*
*Bryhnia novae-anglie*
*Bryum argenteum*
*Bryum capillare*--**N**
*Bryum dichotomum*--**N**
*Bryum flaccidum*--**N**
*Bryum pseudotriquetrum*--**N**
*Callicladium haldanianum*
*Calliergonella lindbergii*
*Campyliadelphus chrysophyllus*
*Ceratodon purpureus*
*Climacium americanum*
*Climacium kindbergii*
*Dicranella heteromalla*
*Dicranum flagellare*
*Dicranum montanum*
*Dicranum scoparium*
*Entodon seductrix*
*Fissidens adianthoides*
*Fissidens taxifolius*
*Hedwigia ciliata*--**N**
*Homomallium adnatum*
*Hypnum imponens*
*Hypnum pallescens*
*Leptodictyum riparium*
*Leskea gracilescens*
*Leskea polycarpa*
*Leucobryum glaucum*
*Orthotrichum ohioense*--**N**
*Orthotrichum stellatum*--**N**
*Philonotis marchica*--**N**
*Plagiomnium cuspidatum*
*Plagiothecium denticulatum*
*Plagiothecium laetum*
*Platygyrium repens*
*Polytrichastrum ohioense*
*Polytrichastrum pallidisedum*
*Polytrichum commune*
*Ptychostomum pseudotriquetrum*--**N**
*Pylaisiadelpha tenuirostris*
*Rhynchostegium serrulatum*
*Schistidium rivulare*
*Schistidum apocarpum*--**N**
*Sematophyllum adnatum*--**N**
*Sphagnum capillifolium*
*Sphagnum fimbriatum*
*Tetraphis pellucida*
*Thuidium delicatulum*
*Ulota crispula*

**Liverworts**

*Chiloscyphus pallescens*
*Frullania eboracensis*
*Frullania inflata*
*Lophocolea heterophylla*
*Nowellia curvifolia*
*Pallavicinia lyelii*
*Ptilidium pulcherrimum*
*Riccia fluitans*

**Crawford County Pennsylvania Mosses**

*Amblystegium serpens*
*Dicranum montanum*
*Hypnum cupressiforme*
*Plagiomnium cuspidatum*
*Thuidium delicatulum*

**Crawford County Pennsylvania Liverworts**

*Lophocolea heterophylla*
*Nowellia curvifolia*
*Palavicinia lyellii*

**- Bob Long**

## HIDDEN LAKE CLADONIA COLONY

On June 7, I joined about 20 other volunteers for a bioblitz at Hidden Lake, a 111-acre Lake Metroparks property in Leroy Township in northeast Ohio. While some volunteers focused on birds, mammals, plants, butterflies, dragonflies and other insects, I decided to search for lichens. Hidden Lake includes a 9-acre man-made lake, constructed sometime during the

period of 1950 to 2000. I hiked a trail around the lake and found several shield and other foliose lichens on the hardwoods that bordered the lake.

Later that morning, I met Lake Metroparks biologist John Pogacnik and his son, Shaun, who were also participating in the bioblitz, at an old field that borders Kniffen Road, east of the lake. The rectangular field is roughly 150 yards wide (east-west) and 570 yards in length (north-south). John and Shaun led me to an open area in the field, near the parking lot for the lake, where they had found several species of *Cladonia* lichens during a previous visit. The attached photo shows this open area, looking south.

**Photo by Ian Adams**

When the Lake Metroparks acquired the property in September 2006, the field where the lichens are was infested with giant reed (*Phragmites australis*). In 2008 and 2009, Lake Metroparks staff began to manage the field to get rid of the invasive species. Herbicide was used on the invasive plants for two years and then the field was plowed. Since that time, invasive species continue to be controlled and the field is occasionally brush-hogged, with the last time being over 5 years ago.

Historical aerial photos of the site show that in 1937 and 1951 the entire area that is now meadow was a farm field. In 2000 the area was an open field. When the lake was created, fill was piled on the northwest corner of the lake. It is possible that some of the fill may have been put at the north end of the field where the lichens are growing, due to the amount of shale in parts of the field.

During the two hours I spent in the field I found and photographed nine *Cladonia* species, most of which were growing in an open area of the field, roughly 50x50-feet in size. During another visit, John and Shaun Pogacnik found a 10$^{th}$ *Cladonia* species, *C. furcata*. I shared samples and photographs of the *Cladonia* lichens with Tomás Curtis, who compiled the following notes on the *Cladonia* species we found at Hidden Lake during the bioblitz.

*Cladonia* is a well-established and speciose genus of lichenized fungi widespread throughout North America. 175 species are known to occur within the continent (Esslinger, 2018), and of these, 38 have been documented in Ohio (Ohio Moss and Lichen Association, 2018). In general, *Cladonia* species seem to be more abundant in the more forested eastern half of the state. Below is a list, including brief descriptions, of the nine *Cladonia* species found during the Hidden Lake Bioblitz held on June 7, 2019.

**Lichen species in the genus *Cladonia* found during the Hidden Lake Bioblitz in Lake County, Ohio, June 7, 2019**

*Cladonia cristatella* Tuck.
In Ohio, this is among a relatively small group of *Cladonia* species that produce red apothecia atop podetia. *C. cristatella* can be distinguished from other red-fruited species by noting the corticate, esorediate podetia which contain usnic acid in the cortex. It has been documented throughout the state but seems to be less abundant than historical collections indicate.

*Cladonia cristatela.* **Photo by Ian Adams**

*Cladonia gracilis* subsp. *turbinata* (Ach.) Ahti

*C. gracilis* was found for the first time in the state during this Bioblitz by Ian Adams. The subspecies *turbinata*, can be distinguished from other species that form cupped podetia by the corticate, esorediate podetia, relatively small primary squamules, and lack of substantial proliferations developing from the podetia. It is likely rare throughout the state and possibly restricted to northern counties.

*Cladonia gracilis* subsp. t*urbinata.* **Photo by Ian Adams**

*Cladonia ochrochlora* Flörke
*C. ochrochlora* is a common and widespread species in Ohio occurring on various substrates but seems to have been under-reported for centuries. This is likely due to past misidentifications where specimens were labeled as similar species (in particular, *C. coniocraea*). However, *C. ochrochlora* can be readily distinguished from other species with pointed podetia and similar chemistry by noting an extended and often patchy corticate region developing above the base of the podetia.

*Cladonia peziziformis.* **Photo by Ian Adams**

*Cladonia peziziformis* (With.) J. R. Laundon
This species is common in Ohio on exposed soil (more rarely on bark or wood) and seems to be indicative of early succession of recently disturbed habitat. It is diagnostic from other species with brown apothecia and esorediate podetia by the massive apothecia that over double the width of the podetia they rest upon. It also forms colonies of small, scale like squamules that almost resemble a crust-forming species.

*Cladonia polycarpoides* Nyl.
This species is among a complex that contains various chemotypes that are often lumped into a single species. *C. polycarpoides* differs from other species/chemotypes known from Ohio by the production of norstictic acid (reacting K+ yellow to red) (Showman and Flenniken, 2004). It is common throughout the state on exposed soil, often in barrens.

*Cladonia polycarpoides*. **Photo by Ian Adams**

*Cladonia pyxidata* (L.) Hoffm.
*C. pyxidata* is a stereotypical pixie cup lichen and is relatively common throughout eastern Ohio. It differs from other species with stout, cup-forming podetia by the production of many small, corticate squamules that are plastered to the inside of the cups, and often to the outside.

*Cladonia rangiferina* (L.) F. H. Wigg.
This species is a member of a conspicuous group of branched *Cladonia* species allocated to the subsection Cladinae that generally lack primary squamules. It is diagnostic from other species from Ohio within this subsection by the production of atranorin and lack of usnic acid (which gives the thallus a grayish color) (Lendemer et al., 2013). This species is common in southeast

Ohio, but relatively uncommon elsewhere within the state.

*Cladonia rei* Schaerer
This species is relatively common throughout Ohio on decaying wood. It is diagnostic from other sorediate species with brown apothecia and that produce fumarprotocetraric acid by the formation of tall podetia with a star-shaped and often semi-cup-forming flare at the tip.

*Cladonia verticillata* (Hoffm.) Schaerer
*C. verticillata* is an uncommon species occurring throughout Ohio, though historical collections indicate it was once more abundant. This species can be readily distinguished in the field as it is the only species of *Cladonia* in Ohio to produce proliferations centrally on the podetia which are often > 4-tiered.

*Cladonia verticillata.* **Photo by Ian Adams**

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Notes on the Photographs:

The lichen close-up photos accompanying this article were all taken with a Nikon D7200 camera and a Sigma 150mm APO Macro lens, mounted on a Gitzo tripod used at ground level. Stacked focusing – 6 to10 exposures for each subject – was used, and the separate exposures were merged using Helicon Focus and fine-tuned for tonality and color using Adobe Lightroom Classic CC and Adobe Photoshop CC. I used my body to shade the lichens because the bright sunlight was very contrasty and would have produced blocked shadows and overexposed highlights. I used a calibrated gray card to take reference photos to produce accurate color in the photographs.

**- Ian Adams, Tomás Curtis, & John Pogacnik**

## FLAT, FANTASTIC AND FUN: FISSIDENS!

*Fissidens* is flat. Very flat. Nearly all mosses have their leaves spirally arranged around the stems and branches. While some of them

may have a superficially flattened aspect termed “complanate,” looking as though they were pressed by a miniature iron or trampled by microscopic hikers, only a few mosses are truly two-dimensional, with leaves running in paired straight strictly opposite rows.

*Fissidens* is fairly well represented in Ohio, with 14 species recorded. The one most frequently encountered, known from 70 of our 88 counties, is *Fissidens taxifolius*, which will serve as an introduction to the genus. (Note: distribution data presented here are from the draft records currently in spreadsheet form compiled by OMLA members Barb Andreas and Diane Lucas, that will soon be used to update the moss atlas on our website.) This is a mid-sized species, 4-8 mm high, with leaves 1.5-2.2 mm long. Occurring on damp shaded soil and rock, often in calcareous places, you are likely to see it on the margins of woodland trails. The photo below was taken in a woodlot on the OSU campus in Columbus. (Note: most descriptive and ecological information presented here is from Crum and Andersons’s 1981 manual *Mosses of Eastern North America* published by Columbia University Press.)

*F. taxifolius* is frequent on bare soil along woodland paths.

The sexuality of *F. taxifolius* is autoecious, i.e., monoecious with archegonia and antheridia in separate inflorescences on the same plant. Like many other co-sexual mosses it frequently produces sporophytes. They arise from the base of the gametophyte stem, i.e. are “lateral,” and this position is a useful characteristic to note because some other *Fissidens* species produce their sporophytes terminally. The seta is about 1 cm tall, topped by slightly inclined cylindric capsules overtopped by a cucullate (hooded) calyptra (cap) initially covering a prominently beaked operculum (lid). The peristome teeth (not shown) are each split into two branches, the basis for the genus name from the Latin *fissus*, cleft, and *dens*, tooth. Accordingly, one common name is “fork moss.”

Sporophytes of *Fissidens taxifolius*.

*Fissidens*, our only commonly enountered truly flat genus, and has another peculiarity as well, not seen in any others. Each leaf is

split at the base, forming a neat little pocket into which is fitted the base of the next leaf up (hence the other common name "pocket moss"). Suggestive of how an equestrian's legs clasp a horse, this is called an "equitant" arrangement. Iris leaves are similarly arranged.

*Fissidens taxifolius* through the microscope.

*Fissidens taxifolius* in the field.

Our species range in size from the insanely tiny *Fissidens closteri* (featured elsewhere in this issue) just a few millimeters long found on wet rocks in or near streams, to densely tufted plants of *F. adianthoides*, up to 2 centimeters tall, found on the ground in alkaline prairie-like glades and the even longer strands of the aquatic *F. fontanus* attached to rocks in flowing streams.

While some pocket mosses can be field-recognized with some certainty based on size and substrate, definitive identification often draws on microscopic leaf traits, particularly cell size and shape, presence or absence of a pale margin, leaf-tip serration, and whether the leaf is extended past the costa (mid-nerve) into a claw-like tip. Here I describe Ohio's species, in order from smallest to largest based on the maximum leaf lengths cited in Crum and Anderson.

*Fissidens elegans* (*F. ravenelii* of older works, including Crum and Anderson) is a southern species that just barely makes its way up to Ohio. (Beware that if, like me, you've started using Bruce Allen's *Mosses of Maine* as your principal reference work for local material, this is one of the few Ohio mosses not covered therein.) You'll find it most often on damp bare sandstone cliffs (where it might be mistaken for *F. bryoides* or *F. minutulus*), although it may also occur on the ground (where confusion with *F. bushii* is possible). Its outstanding trait is a microscopic one—the leaf cells are strongly pluripapillose. Also, the leaves are bordered by linear cells along the vaginant laminae (the clasping portion of the leaf). *Fissidens elegans* is known from 10 Ohio counties, all within the Allegheny Plateau.

*F. elegans* on sandstone at Deep Woods, a private nature preserve in Hocking County.

*Fissidens bushii*, inasmuch as it grows on the ground in somewhat disturbed calcareous woodlands, is a bit of a fooler

since that is the usual haunt of the much more common *F. taxifolius*. Look for leaves with a small apiculus (not the claw-like tip of *taxifolius*), and cells of the vaginant laminae that are are pluripapillose, albeit indistinctly so (in contrast to unipapillose in *taxifolius*). *Fissidens bushii* is known from 11 of our counties, primarily in the south-central portion of the state.

*F. bushii* at the edge of a wooded bluff at Mt. Gilead State Park in Morrow County.

If by now you're getting a little discouraged, thinking that a compound microscope is necessary to identify every *Fissidens*, you're going to like the aptly named *Fissidens obtusifolius*. It's a small plant with broad rounded leaf tips, making it absolutely distinctive (though Crum and Anderson say it looks like a small leafy liverwort). An eastern North American endemic, look for *F. obtusifolius* on wet limestone (sometimes sandstone) and thin soil in limestone areas. It often grows on rocks in streams. We have records from 18 widely scattered counties.

*F. obtusifolius* on limestone at Greenville Falls State Scenic River, Miami County.

*Fissidens hyalinus* is a great rarity both in Ohio and across its limited eastern North American and eastern Asian ranges (sorry, no photo), with Ohio specimen records only from the two neighboring south-central counties of Hocking and Vinton, northeast Ohio's Lake County, and the extreme southwestern Hamilton County where, incidentally, the species was first discovered by T.G. Lea in 1839. It's a minute aquatic with ecostate leaves and especially large cells.

*Fissidens exilis* —not only rare (13 Ohio county records), it's easy to miss! A tiny ephemeral growing as scattered but often abundant plants from a persistent protonema, it was first reported in North America by William Steere in a 1950 article in *The Bryologist* from collections made a few years previously by Maurice Walters (described by Steere as a "well known amateur collector") on bare clay soil near the mouth of a ravine at the North Chagrin Reservation of the Cleveland Metropolitan Park System. Steere closes his article with a suggestion, saying "The reexamination of herbarium material under various names, especially *F. minutulus*, *F. viridulus*, and *F. bryoides*, may result in the discovery of further specimens of *F. exilis*." (Note: *F.*

*viridulus* and *F. bryoides* are now regarded as being conspecific.) That being said, a perusal of records on the Consortium of North American Bryophytes portal failed to find any likely instances of earlier specimens found pursuant to Steere's suggestion. A key character differentiating this moss from the various lookalikes lies in two aspects of the vaginant laminae: their upper edges are free (not fused), so they loosely surround the leaf above instead of clasping it tightly; and they are bordered by one or more rows of cells that are merely irregularly elongate, as opposed to being long and narrow as in, say, *Fissidens bryoides*.

Pointing out that the species is now known from over a dozen eastern states, Bruce Allen (in *Mosses of Maine*) posits that it probably represents an inadvertent introduction from Europe!

*F. exilis*, hydrated 15-year old herbarium specimen collected from bare soil alongside an outhouse in rural Hocking County.

*Fissidens bryoides* and *F. minutulus* are two of our more common pocket mosses, recorded from 47 and 19 counties respectively). They are very similar species (*F. minutulus* has been considered a variety of a more broadly circumscribed *F. bryoides*) that occur, often rather abundantly, on wet rocks in or alongside woodland streams.

Boulder in stream at Slate Run Metro Park, Pickaway County, covered with *Fissidens minutulus*.

Because they're tiny, they're easily missed, appearing as an indistinct green coating until a close view reveals their distinctive featherlike form. While the small size is generally a reliable way to differentiate these mosses from our other pocket mosses, the definitive trait is a microscopic one, wherein all or some of each leaf margin is bordered by clear linear cells.

The leaves of *Fissidens bryoides* and *F. minutulus* (the latter pictured here) have a border of long narrow cells, varying in extent from the complete margin, to merely along a portion of a vaginant lamina.

*Fissidens bryoides* is most often found on acid rocks (granite or sandstone), whereas *F. minutulus* has more of an affinity for limestone. Physical differences between the two are microscopic and subtle, with *F. bryoides* having slightly larger cells and a less prominent leaf border. The sexuality of the plants varies but includes forms with both male and female gametangia in the same clusters, so sporophytes are commonly observed, arising from between the uppermost leaves of the wee little plants.

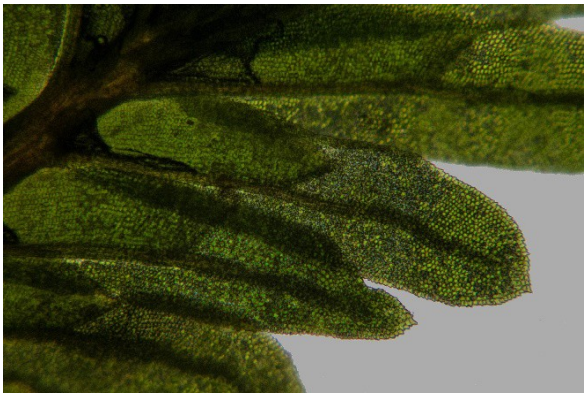
*F. bryoides* on a wet rock in a stream in Hocking County.

If you explore iNaturalist or NatureServe Explorer—two excellent online repositories of natural history occurrence data and associated information that helpfully include common names for organisms that traditionally haven't had very good ones—they return the spot-on name "tree pocket moss" for *Fissidens subbasilaris*. Indeed, a *Fissidens* growing abundantly on bark is likely to be this species (but don't get skunked by *Anomodon minor*, another high-bark moss having a flattened appearance, even though it is not truly 2-ranked, just complanate). It's known from 11 counties widely spread throughout the state.

*F. subbasilaris* is "tree pocket moss," here seen on an oak tree at Clear Creek metro Park in Hocking County.

*F. subbasilaris* at Glen Helen Nature Preserve in Greene County.

Tree pocket moss is small but not tiny, dark-green, with obtuse leaves that have a singular distinctive trait: the costa (mid-nerve) is covered by short green cells. Although perceptible even with a mere hand lens, it's most obvious under the scope.



The costa of *F. subbasilaris* is covered by short green cells, rendering it opaque.

*Fissidens osmundioides* is a medium-sized moss found in wet shady places, especially sandstone recesses. Most of the 16 Ohio county records are from the Allegheny Plateau.

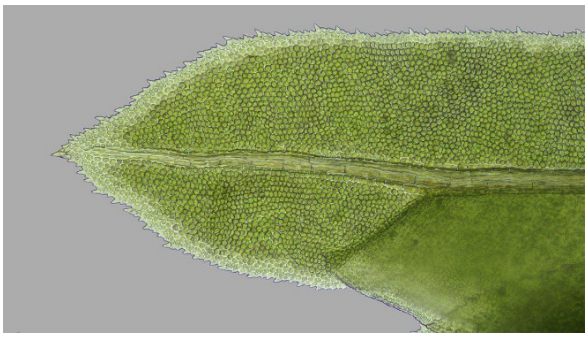
Fraternizing flat friends pose for a picture on a shaded sandstone cliff in Hocking County. These are *Fissidens osmundiodes* and the globally rare "sword moss," *Bryoxiphium norvegicum* (along with a photobombing stem of *Atrichum angustatum*).

Compared with two coarsely serrate lookalikes—*Fissidens dubius* and *F. adianthoides*)—the leaves of *F. osmundioides* are relatively smooth-margined. Another trait that differentiates this species from those two plus *F. taxifolius* is that the sporophytes, instead of arising from the bases of the stems, are attached terminally. Keys that rely on diagnostic features that pertain to sporophytes are often annoying owing to the absence of sporophytes on the specimen at hand. When working with this moss though, look carefully even at seemingly sterile specimens, as they could at least have archegonia (female gametangia from which sporophytes might eventually arise) located in a telling position.

Terminal, not lateral, archegonia (circled) of *Fissidens osmundiodes*.

*Fissidens dubius* (*F. cristatus* in older manuals, including Crum and Anderson) and *F. adianthoides* are both coarsely serrate-leaved pocket mosses with lateral sporophytes and a border of pale cells.

In *Fissidens dubius* the border is very distinct, even discernable in the field under close examination, whereas in *F. adianthoides* it's barely noticeable. (There are also cell size differences, with those of *F. adianthoides* being about half again as large as those of *F. dubius*, a size difference paralleled by the plants themselves as *F. adianthoides* is our largest terrestrial pocket moss.



*F. dubius* leaves have a distinct pale border.

*Fissidens dubius*, known from 38 Ohio counties, has a wide ecological amplitude substrate-wise, occurring on cliffs, boulders, tree bases, rotten wood and soil.

*Fissidens dubius* during a midsummer drought in a raised portion of a calcareous prairie at Possum Creek Metro Park in Montgomery County.

Crum and Anderson report for *Fissidens adianthoides* a similar substrate affinity as *F. dubius*, but seemingly with a greater fidelity towards the wetter end of the spectrum. At Possum Creek Metro Park, where both species occur, *F. adianthoides* is clearly restricted to the lower, more perennially damp portions of the site. We have 31 county records for this big beautiful moss.

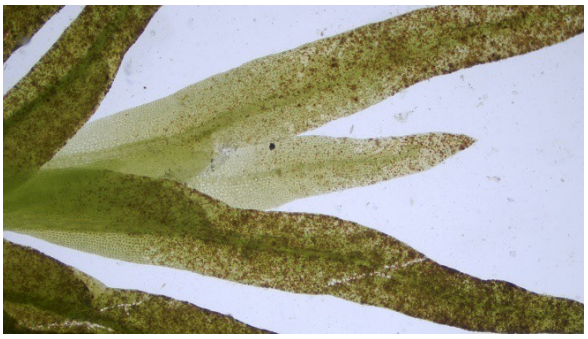
*F. adianthoides* at Possum Creek Metro Park (juniper branch added for scale).

During a recent bio-blitz at Delaware County Preservation Parks Deer Haven Park, sharp-eyed OMLA member Megan Osika spotted "water pocket moss," *Fissidens fontanus*, on some rocks in the stream there. Soon afterwards I posted the record along with this picture on iNaturalist, to which a member of the community disagreed, adding this comment: "*this is defiantely fontialis. no where near fissidens.. this moss doesnt even have the vaginate laminal that fissidens has.*"

*F. fontanus* on a rock in a Delaware County stream. It's known from 17 more counties.

Then came the following tactful intervention by another community member: "*Details on aquatic Fissidens are difficult to see in situ because of the soil and algae that*

*accumulates on them. Vaginate lamellae are not obvious on this specimen, yes but are suggested in the leaves on the left. Leaves are also clearly costate to the apex*." While resisting the temptation to say, "Hold my beer!" I then added this photo of a stem section taken through the microscope.



*F. fontanus*, microscope view.

Soon thereafter our initially skeptical commenter merrily exclaimed "*Oh wow. Thank you for that. I can see it now. It is very cool. See you can study species for 25 years and you still learn stuff*"

Amen to that!

- Bob Klips (photos by the author)

**WRITING COMMON NAMES**

During nearly a decade acting as the second and final editor of OBELISK, i.e., proofreading the assembled manuscript before it gets posted online, I've noticed a suite of common misunderstandings about how to properly write common names. Several changes were made to articles in the current issue, so in the hope that it will be of interest both to those particular authors as well as the rest of us who write about mosses and lichens, here's a rundown of the firmly accepted universal convention for writing common names. In a word: uncapitalized.

Except for North American birds and North American fishes, whose names are officially specified by organizations with authority over the nomenclature of those groups (the American Ornithological Union and the American Fisheries Society, respectively), the common names of organisms are not capitalized. The only exception is when names have proper nouns in them, in which case the proper noun alone is capitalized. Hence, one might report having seen common haircap moss and Ohio haircap moss, but not Common Haircap Moss and Ohio Haircap Moss.

A related difficulty involves the construction of plurals of genera. A genus name is a taxonomic entity distinguished in writing by the use of italics, because it is a foreign (Latin) word. There is a temptation, when speaking of more than one species of a genus, to add an "s" to the genus name, but to keep it in italics, like so: "There were several *Usneas* collected during the foray." Since the only taxonomically recognized genus name is "*Usnea*" it's incorrect to use the artificially pluralized construction as if "*Usneas*" were a taxonomic name. One alternative is to use different phrasing such as "species of *Usnea*" or "*Usnea* species." That can be awkward, so to keep the originally desired syntax, simply use the genus as a common name, uncapitalized and in regular font. "There were so many usneas that we went crazy identifying them all!" There's no ambiguity and it's not really extraordinary to employ a genus name in this manner; you can go to the zoo and see a gorilla (*Gorilla gorilla*) drinking sassafras (*Sassafras albidum*) tea!

-Bob Klips

**NEWS & NOTES**

Thank you to all who contributed articles for this issue!

The 2020 Winter Meeting will be at Dawes Arboretum on Saturday, February 15. We have the same room as last year. The room is available from 9 to 3. Bring a sack lunch. We are not planning a program this year. Please be thinking of where we might have our Summer and Fall Forays.

MOSS COURSE OFFERED AT THE EDGE OF APPALACHIA

Drs. Karl McKnight and Joe Rohrer will teach a course on how to identify mosses using a hand lens at the Edge of Appalachia Preserve. The foundation for the course is *Common Mosses of the Northeast and Appalachians*, by McKnight, Rohrer, McKnight Ward, and Perdrizet (Princeton University Press, 2013). The book includes photos, and illustrations of common mosses. It also includes keys that have been tested by students, and work! The course is offered from June 12 – 14, 2020. For more information, contact Chris Bedel at cbedel@cincymuseum.org, or call 937-544-2880, ext. 11.

EAGLE HILL INSTITUTE MOSS AND LICHEN SEMINARS

Eagle Hill Institute in Steuben, Maine has posted their 2020 week-long seminars including the following of possible interest to OMLA members:

May 24 - 30 Lichens and Lichen Ecology (Troy McMullin)

May 31 - Jun 6 The Lichen Genus *Lepraria* (James Lendemer)

May 31 - Jun 6 Introduction to Bryophytes and Lichens (Fred Olday)

Jun 7 – 13 Mosses in the Field: A New Approach to Identification (Jerry Jenkins and Susan Williams)

Jun 21 – 27 Independent Lichen Studies: Interesting and Challenging Crustose Lichens (Alan Fryday)

Jun 28 - Jul 4 Liverworts and Liverwort Ecology (Blanka Aguero)

Aug 23 – 29 Diversity and Evolution in the Moss Order Funariales (Bernard Goffinet and William Buck)

HELP WANTED ON THE WEB SITE

The OMLA web site ohiomosslichen.org hasn't gotten any new content in a while. Let's keep it current! I've got a few ideas and am eager for suggestions to keep it interesting. Contributors can add content themselves as the site has a very user-friendly interface, or they can send material to me to post. Possible projects include:

Adding links to material elsewhere on the web to the "Links and Fun Stuff" page.

Indexing recent OBELISK issues and converting material there into web pages.

Making a set of liverwort pages like our "Common Mosses of Ohio – Photos and Descriptions." Ditto, for crustose lichens.

Compiling a recommended list of field guides and technical manuals for newcomers to bryo/lichenology.

Blogging about your bryo/lichenological explorations and interests. There could be separate members pages for this.

- Bob Klips, webmaster

**2019 Summer Foray.** Left to right: Dean Porter, Barb Andreas, Ian Adams, Brandon Ashcraft, Janet Traub, Bob Long, Ruth Hart, Julia Wiesenberg, Jim Toppin, Diane Lucas, David Wiesenberg, Bill Schumacher, Bob Klips

**2019 Fall Foray.** Front row left to right: Bill Schumacher, Carole Schumacher, Kathy Long, Becky Smucker, Megan Osika, Barb Andreas, Janet Traub, Diane Lucas, Bonney Harnish, Bob Klips. Back row left to right: Tomás Curtis, Ian Adams, Ray Showman, Chris Poling, Bob Long, John Pogacnik, Ed Fuchs, Dave Krayesky, Barbara Buser, Jim Toppin, Linda Armstrong, and Dean Porter