OBELISK

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

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LEFT HAND CORNER

Learning mosses is a lot easier if someone shows you some. Unfortunately, there are no mosses in the child's picture book. Words are a wonderful human capacity, but the "seeing is believing" capacity is more primal and potent. Occasionally an adult will ask me, "how can you tell it's a moss?" There is the vascular/non-vascular notion, the difference between roots and rhizoids, and the no flowers in reproduction. These are words. But - that's not really how I know it's a moss. I just know. I have seen them, and I would no more mistake a moss for wild licorice than a child with a picture book would a cow for a horse. Corralling the concept of moss entity with words can be a slippery and evasive job. Mosses are not in the child's picture book, but I learned them young. Adults must have shown them to me as we passed by patches during our walks.

People who are unaware of a subject at a level we ourselves consider commonplace, surprise us with the realization that general knowledge is not universal knowledge. The differences in knowledge could be called scale. In plants there is a broad scale and a fine scale of familiarity. To clear up matters for the uninitiated we need do nothing more than be outdoors with them and point out some mosses. Once we have all seen what moss is, the scale can be tightened with questions like - is it a single stem with leaves or is it branching and rambling? Now we look again more closely. With one easy step, our eye is trained to take in more with the same glance. The more we discern, the readier we are for the next question - splitting hairs finer and finer.

So after we leave childhood, it's our acquaintances who become our picture books, and the scale of our awareness gets finer and finer. Be generous with world knowledge and, with a few moments of demonstration, become the picture book that speeds anyone who asks about mosses to a clear grasp of one more facet of the world.

- Janet Traub

Following is the winner of the Flenniken Award for the best student article. Congratulations Maggie for an excellent article, and good luck with your continuing research!

THE "ENLICHENMENT" OF INDIANA: A THESIS IN THE MAKING

A long, long time ago in a county not too far away…a professor and bryologist from DePauw University named Winona Welch promised the renowned lichenologist, Bruce Fink, she would collect lichens, one of the most poorly documented groups of flora in Indiana. Winona Welch, her students, and several other individuals collected hundreds of specimens from the 1870s to the 1960s for the DePauw University Herbarium. Clifford Wetmore and James Bennett also developed a checklist of over sixty lichens

found at the Indiana Dunes National Lakeshore, while Bruce McCune studied the impacts of sulfur dioxide on sensitive species in Indianapolis in the 1980s. Unfortunately, this research and the small amount of herbarium specimens at DePauw is all that is known about the lichens of Indiana. In an age where taxonomic research is developing phylogenetic trees based on genetic information, it is time for the "enlichenment" of Indiana to commence.

As a first step towards furthering the documentation of the lichen flora in Indiana, my master's thesis work focuses on recording the species of corticolous macrolichens found at Salamonie River State Forest in Wabash County. The goal of this research is to provide information about the lichen flora present in the forest for the use of the district foresters in their management plans. I will also be comparing the difference in the percent lichen coverage and presence of lichen species on different tree species. It will be interesting to see if there are some species of lichen that only colonize certain tree species.

Originally planted by men in the Civilian Conservation Corps (CCC) during the 1930s, Salamonie River State Forest is composed of a myriad of tree species, several of which are not normally found in the naturally-occurring oak-hickory forests in this area. Rock chestnut oak is one such species that is further north than its normal range for Indiana. Eastern white pine was heavily planted throughout the state forest, but it is now being replaced by trees typically found in the eastern deciduous forest.

Sampling of the state forest includes documenting trees within seven 20-meter radius sampling plots. For each tree, the diameter at breast height, the bark crevice depth, and the macrolichen species present are recorded from 0.5 meters to 2.0 meters on the trunk. The percent coverage of macrolichens is also recorded and the percent coverage of crustose lichens and bryophytes is estimated for the purpose of evaluating their potential for competition with the macrolichens. Qualitative observations are recorded for the macrolichens found on fallen trees; these are species that may not be found within the sampling parameters of the trunk, but indicate a higher biodiversity than what is being recorded quantitatively.

While the field research is still in progress, it can be easily observed that the biodiversity is fairly low for this study area. The most common species found include *Phaeophyscia rubropulchra, Phaeophyscia pusilloides, Candelaria concolor,* and *Physcia millegrana.* One pollution-sensitive species, *Flavoparmelia caperata*, has been recorded in the qualitative observations of each sampling plot that has been completed, however, and some *Cladonia* species have also been sighted along the trails in the state forest. The identification of these species would not be possible without the intensive teaching efforts of Ray Showman. His familiarity with the lichen species in comparable counties of Ohio has helped focus the attention of my lessons in identification for this thesis project. Perhaps his enthusiasm for documenting the lichens of Ohio with his colleague, Don Flenniken, is spilling over to Indiana and leading lichenologists in the Hoosier State towards a much-needed "enlichenment."

- Maggie Kubina, Taylor University, MES Candidate.

Far and away the best prize that life has to offer is the chance to work hard at work worth doing. – Theodore Roosevelt

MOSS MUSINGS – DECIDING WHAT IS RARE

Diane Lucas introduced me to a new book by Ron D. Porley titled *England's Rare Mosses and Liverworts: Their history, ecology and conservation* (Princeton University Press, 2013). This book provides thoughtful information regarding rarity and conservation. Eighty four threatened species are discussed, and a few of England's rare species are common in Ohio (e.g. *Anomodon attenuatus*, *Atrichum angustatum*, *Philonotis marchica*).

England has one of the best studied bryofloras. It has an active group, the British Bryological Society, which has numerous activities and collecting opportunities. British bryologists use a mapping technique that relies on a grid-square recording system where the area covered is smaller than Ohio counties.

Due entirely to the OMLA forays, Ohio is among the best studied states for bryophytes and lichens. We have conducted forays in 21 of the 88 counties. While these forays are limited to one or two days of actual collecting, at least a dozen pair of eyes search for cryptogam diversity in areas that usually represent the least disturbed and/or most diverse areas within the counties. Species lists from these forays are in previously published editions of *OBELISK*.

Numerous bryophyte species are widespread globally. From recent studies, I have found that *Blindia magellanica* is found throughout the Southern Hemisphere whereas *B. robusta* is known from southern Chile, New Zealand, and southern Australia (Andreas, B.K. 2013. A revision of *Blindia* (Seligeriaceae) from Southern South America. *The Bryologist*: 116(3):263-280). These types of distributions are often explained by a) long-distance spore dispersal by wind, 2) plate tectonics separating existing populations over time, or 3) extirpation of parts of a once continuous population.

What about rare species? Porley cites a common definition of rarity where a rare species has a narrow or limited geographical range and/or a consistently low population size. Porley develops the concept of two types of rarity: 1) natural rarity, which is habitat limited and survives in small stable populations; and 2) human-induced rarity, where bryophytes are rare because their ability to disperse has been reduced due to landscape fragmentation. He believes that in order for species to survive there needs to be an interaction between habitat patches.

For the most part, bryophytes grow in predictable assemblages that are part of the plant community. To preserve rare bryophytes, communities need to be preserved. Many of Ohio's rarest plants occur in peatlands, but Ohio's peatlands are limited to the glaciated region of the state. Since the beginning of the 20th century, these peatlands have been reduced by 98%, mostly through draining for agriculture (Andreas, B.K., and J.D. Knoop. 1992. 100 years of changes in Ohio peatlands. *Ohio Journal of Science* 92(5): 130-138). "Patch dynamics" has always been a factor in limiting the distribution of Ohio's plants.

Rare Ohio Mosses. If the criteria for rarity used for vascular plants were applied to Ohio mosses, 50 % of the mosses would be listed. This would be entirely unrealistic. Since so few bryologists have studied and collected in Ohio, discretion has always been used to add mosses to the rare plant list. The Rare Native Ohio Plant List was established in 1980. Currently there are 26 mosses on the list. These have been added gradually, with most added in the 1990's. Of

those mosses presently listed, some species may have their status changed due to the efforts of the OMLA forays.

Below are the mosses listed on the 2012-2013 Rare Native Ohio Plant List with their "rarity" ranking (X = extirpated, E = endangered, T = threatened), the counties from which the moss is documented, and type of documentation (H = historical record, not collected in the past 20 years, and M = modern record, collected within the past 20 years). These data are followed with a brief statement about their habitats in Ohio.

Andreaea rupestris (Andreaeaceae) (**X**) (H: Hocking). Seasonal rivulets draining over sandstone.

Anomobryum filiforme (Bryaceae) (**E**) (H: Hocking; M: Scioto). Moist sandstone rocks, either in rock houses or along streams.

Anomodon viticulosus (Anomodontaceae) (**E**) (M: Adams and Pike). Shaded limestone/dolomite boulders, rarely on bark at the base of trees.

Barbula indica (Pottiaceae) (**E**) (M: Adams, Erie and Hocking). Calcareous soils in disturbed habitats.

Buxbaumia aphylla (Buxbaumiaceae) (**T**) (H: Athens, Holmes, Lake, Licking, Perry; M: Ashtabula, Summit, Trumbull. Bare, sandy soil along banks.

Buxbaumia minakatae (Buxbaumiaceae) (**X**) (H: Champaign). Decaying white cedar logs.

Campylostelium saxicola (Ptychomitriaceae) (**E**) (H: Athens, Pickaway, Scioto and Hocking. M: Gallia, Morrow, and Vinton). Moist shaded rock (sandstone) outcrops.

Dichelyma capillaceum (Fontinalaceae) (**E**) (H: Ross; M: Ashtabula, Gallia and Jackson). Bases of shrubs in vernal buttonbush swamps.

Diphyscium mucronifolium (Buxbaumiaceae) (**X**) (H: Jackson and Hocking). Shaded, moist to wet vertical rock (sandstone) faces.

Fissidens hyalinus (Fissidentaceae) (**E**) (H: Lake; M: Hocking). Clay soil in moist, sheltered ravines.

Hypnum pratense (Hypnaceae) (**E**) H: Cuyahoga, Franklin, Summit, Wood). M : Clark, Geauga, Portage). Shaded *Sphagnum* mats in the edges of fens.

Hylocomium splendens (Hylocomiacae) (**X**) (H: Cuyahoga, Delaware, Lake). Humic soil and rock in shaded ravines, boggy areas.

Neckera pennata (Neckeraceae) **(X**) (H: Champaign, Cuyahoga, Hocking, Lake, Jackson, Vinton). Tree bark in moist, shaded ravines.

Philonotis fontana var. *caespitosa* (Bartramiaceae) (**E**) (M: Hocking, Jackson, Portage). Wet soil, scattered among other vegetation.

Plagiomnium drummondii (Mniaceae) (X) (H: Cuyahoga and Jackson) Humic soils, often under conifers.)

Plagiothecium latebricola (Plagiotheciaceae) (T) (H: Champaign, Jackson, Summit; M: Ashland, Champaign, Crawford, Cuyahoga, Hocking, Medina, Portage, Williams). On rotten logs, stumps and humus in moist to marshy habitats.

Pohlia elongata (Bryaceae) (E) (H: Columbiana, Geauga, Jackson, Lake; M:

Hocking, Portage). Shaded crevices in sandstone rocks in sheltered ravines.

Ptychomitrium drummondii (Ptychomitriaceae) (**X**) (H: Preble). On tree trunks, rarely on rocks.

Rhytidiadelphus triquetrus (Hylocomiaceae) (**X**) (H: Adams, Ashtabula, Champaign, Cuyahoga, Greene, Jackson, Lake, Licking, Ottawa, Pickaway). Humic soil in dry to moist forests.

Scorpidium scorpioides (Amblystegiaceae) (**X**) (H: Champaign). In water and marly calcareous marshes and fens

Sphagnum bartlettianum (Sphagnaceae) (**X**) (H: Adams). On sandy and peaty soils in shrubby bogs and bases of shrubs in peaty areas.

Sphagnum riparium (Sphagnaceae) (**E**) (M: Athens, Stark, Summit). Wet ditches or small streams in peaty wetlands, including strip-mined areas.

Thuidium allenii (Thuidiaceae) (**E**) (H: Champaign; M: Adams). Soil, logs, stumps, often in swampy areas.

Tomenthypnum nitens (E) (M: Geauga, Portage). Sedge meadows in weakly and strongly minerotropic peatlands, often associated with other "brown mosses."

Tortella inclinata (Pottiaceae) (E) (M: Ottawa County). Exposed calcareous alvars and sandy openings.

Weissia sharpii (Pottiaceae) (E) (H: Greene; M: Adams, Pike). Open dry bare soil in limestone and dolomite flats in cedar glades.

Future Listing. In order to keep the rare moss (and lichen) list from being flooded with endangered or threatened species, a list of criteria have been proposed to guide future listings. These criteria, or guidelines, were approved by the Rare Plant Committee of the Division of Natural Areas and Preserves at its 2012 meeting. These are the criteria:

1. Lichens and mosses that are known from one or two extant populations in the state with records no more than 20 years old may be proposed for endangered listing. No listings for [the rankings of] threatened or extirpated will be proposed, although a moss or lichen already listed as endangered [or threatened] may become extirpated if records become older than 20 years.

2. Be very parsimonious. When in doubt, wait for more information. Once listed, species are hard to remove.

3. List only lichens and mosses that have limited U.S. range (near endemics), or are uncommon throughout their range.

4. Preference will be given to lichens and mosses that grow in uncommon habitats (therefore there is some vulnerability to the population or the habitat).

5. Favor larger, easy to recognize species. It is much easier to define populations for protection or avoidance. It is also easier to update records later.

6. List only lichens and mosses that are found growing on natural substrates.

7. Ephemeral mosses, which are often limited to early successional habitats that disappear within a short time, will not be listed.

The Rare Plant Committee will meet again in February 2014. Several mosses meet the

above criteria and will be recommended for listing. They are *Cyrtomnium hymenophylloides* (Huebener) T. J. Koponen, collected from Vinton County; *Forsstroemia producta* (Hornschurch) Paris, from Pike County; and *Loeskeobryum brevirostre* (Bridel) M. Fleischer, from Washington County. These mosses are known from one modern record, are rare in the Midwest, and occur in counties where there have been forays by OMLA**.**
- Barbara K. Andreas

BRYOPHYTE DIVERSITY

Bryophytes can be difficult,
there's not just one simple plan;
liverworts and mosses,
together make up the clan.

Mosses have two basic forms,
depending on how they grow;
pleurocarps creep along the ground,
while acrocarps stand up you know.

Liverworts also have two types,
they don't look the same at all;
the thalloid form is flat and lobed,
while the other is leafy and small.

So bryophytes take some study,
to know all their different kinds;
but if you have some persistence,
You'll celebrate all of your finds!
- Ray Showman

ALLEN COUNTY 2013 FORAY

We met at Kendrick Woods in Allen County, northwest Ohio, for our summer 2013 foray on a wonderful sunny Saturday, June 15. The preserve is part of the Johnny Appleseed Metropolitan Park District and is also designated as a State Nature Preserve. We are very grateful to the Park District and Director Vince Sarno for giving us permission to collect here in search of new records for Allen County, which previously had only 24 kinds of mosses and 9 kinds of lichens reported.

Geographically, Kendrick Woods is in the Central Ohio Clayey Till Plain region of the Central Lowland physiographic province. The area is underlain primarily by carbonate rocks of Lower Paleozoic age. The surface geology of the county was formed during the Wisconsonian glaciation, 14,000 to 24,000 years ago, and consists mainly of ground and ridge moraines. The topography of the area is generally flat, with a few low ridges and shallow valleys. The glacial deposits are fairly thick in the Kendrick Woods area. No bedrock outcrops were evident.

With a total area of 472 acres, Kendrick Woods is the largest remaining contiguous woods in Allen County, which is largely agricultural. The Auglaize River, Sixmile Creek and several other streams flow through Kendrick Woods, so there are some significant floodplain areas in the preserve. The soils are primarily silt loams and silty clay loams. The preserve is mostly hardwood forest. There is a flowing sulfur spring in the southern part of the preserve. The preserve also includes a mitigated wetland area established in 1995 near the confluence of Sixmile Creek and the Auglaize River.

Plenty of rain in the weeks before the foray made for lush vegetation, but surprisingly few mosquitoes. Some of these heavy rains caused lowland flooding in the park, but the floods had receded by foray day.

We identified a total of 42 moss taxa, 31 of which are new for the county (marked with "N" after the name).

Mosses
Abietinella abietina **N**
Amblystegium varium **N**
Anomodon attenuatus
Anomodon minor **N**
Anomodon rostratus **N**
Atrichum altecristatum **N**
Atrichum angustatum
Atrichum tenellum **N**
Brachythecium laetum **N**
Brachythecium salebrosum **N**
Bryhnia novae-angliae **N**
Bryum argenteum **N**
Bryum caespiticium **N**
Bryum capillare **N**
Bryum flaccidum **N**
Bryum lisae var. *cuspidatum* **N**
Callicladium haldanianum
Calliergonella (Hypnum) lindbergii **N**
Campylium chrysophyllum **N**
Ceratodon purpureus
Dicranella heteromalla **N**
Ditrichum pusillum **N**
Entodon cladorrhizans **N**
Entodon seductrix
Eurhynchium hians
Fissidens taxifolius
Haplocladium microphyllum **N**
Haplocladium virginianum **N**
Leptodictyum riparium **N**
Leskea gracilescens
Lindbergia brachyptera **N**
Orthotrichum pumilum **N**
Orthotrichum stellatum **N**
Plagiomnium ciliare **N**
Plagiomnium cuspidatum
Platygyrium repens
Rhynchostegium serrulatum
Schistidium apocarpum **N**
Sematophyllum adnatum **N**
Syntrichia papillosa **N**
Taxiphyllum deplanatum **N**
Tortella humilis **N**

Liverworts
Frullania eboracensis
Lophocolea heterophylla
Porella platyphylla

Lichens were recorded at Kendrick Woods and a nearby churchyard and cemetery. Habitat for lichens at Kendrick Woods was limited with most of the area too dense and shady. Open trees in the parking area were examined but many consisted of non-native nursery stock. These yielded several hitch-hiker species, designated with *****. Even so, a total of 18 macrolichens were recorded with 12 new records for Allen County.

Lichens
Candelaria concolor
Cladonia cristatella **N**
Cladonia macilenta **N**
Flavoparmelia caperata
Myelochroa aurulenta **N**
Parmelia sulcata **N**
*Parmotrema hypotropum**
*Parmotrema stuppeum**
Phaeophyscia adiastola **N**
Phaeophyscia cernohorskyi **N**
Phaeophyscia decolor **N**
Phaeophyscia pusilloides **N**
Phaeophyscia rubropulchra **N**
Physcia adscendens **N**
Physcia millegrana
Physcia stellaris
Physciella chloantha **N**
Physconia detersa **N**
Punctelia rudecta
*Ramalina celastri**
*Usnea strigosa**
Xanthomendoza fallax
Xanthomendoza ulophyllodes **N**
Xanthomendoza weberi **N**
- Jim Toppin

Was there ever a stroll when you didn't see
A beautiful moss on the trunk of a tree?
No matter where or the time of year,
Our intrepid plants are always here!
– Jim Toppin

DYEING WITH LICHENS

Long ago people discovered that some lichens could be used to dye fabrics. Examples usually given are Harris Tweeds from Scotland and Navajo weavings from the southwestern US. I decided to experiment with common Ohio lichens to see if they could also be used. I used raw wool and white cotton string as my test materials to be dyed. For convenience, both were tied into small bundles with fishing line and one bundle of each material was wrapped in a coffee filter to exclude dirt and lichen particles.

There are two methods for dyeing with lichens: boiling water dyes and fermentation dyes. The first method uses lichens containing chemicals which turn red or yellow with the KOH spot test. The Ohio lichens that I chose from this category were *Parmelia sulcata* (salazinic acid), and *Parmotrema hypotropum* (norstictic acid). Both are very common species and I collected a handful of each from downed tree limbs in my woods. The lichen thalli were placed in cleaned tin cans with the test bundles, covered with water and boiled for approximately 4 hours. Water was added as needed.

The fermentation method uses lichens containing chemicals which react C+ red. For this category I chose *Punctelia rudecta* (lecanoric acid), another common Ohio species. The traditional method used stale urine but I tried household ammonia instead. The lichens, test bundles and ammonia were placed in a cleaned can, covered and allowed to stand for 12 days. After dyeing, the test materials were thoroughly rinsed in cold water and allowed to dry.

Both methods were successful and produced colors in both test materials. Colors were much more vivid in the wool, while colors in the cotton were muted and appeared more dirty than colorful.

Lichen dyed cotton. Top down: untreated, *P. rudecta, P. sulcata, P. hypotropum.* **Photo by Ray Showman**

Lichen dyed wool. Top down: untreated, *P. rudecta, P. sulcata, P. hypotropum.* **Photo by Ray Showman**

This was an interesting experiment which showed that common Ohio lichens can be used for dyeing. It is pretty amazing that you can get colors this vibrant (at least with wool) from little gray lichens. The traditional fermentation method required several weeks to complete the dyeing. However, by using ammonium hydroxide the process was greatly accelerated and I suspect that a day or two would have given the desired results.

After completing this experiment I was struck with a couple thoughts. First, how did primitive people with no knowledge of chemistry develop these lichen dyeing methods? It must have taken an awful lot of trial and error (and stale urine). And second, this is a messy and time consuming process. Unless you have a special interest in traditional methods, synthetic dyes win hands down! **- Ray Showman**

MOSS AS A GEOLOGIC DATING TOOL

In 2012, Stein Bondevik and colleagues reported finding mosses, still green, buried seven meters beneath a Norwegian bog. The mosses were aged to 8120–8175 BP (years before present, that is, 1950 (Bondevik 2012), considered the starting point of the atomic testing era). This data will help narrow down many interrelated geologic questions about climate and geological history in the northern hemisphere.

In the 1970s natural gas explorers using explosive sparker systems in the Norway Sea to inspect the nature of the sea-bottom stratigraphy, detected a bottom surface morphology indicating a massive undersea landslide starting near Storegga, Norway (Bugge 1987). From interpreting seafloor core samples and studying images revealing sea-bottom stratigraphic density, researchers have developed a scenario of three recent (in the last 50 thousand years) marine slides in the same area. These are vast events of sea-shelf collapses. The transported debris of these slides has been mapped westward from the Norway coast to about two-thirds of the way to Iceland (Bugge 1987).

Geologists have been keenly interested in the Storegga slide for several reasons aside from its enormity and that they had been unaware of it until recently. From the financial and environmental safety perspective, oil and gas firms want to determine if wells they drill in the area, which does hold gas reserves, are subject to or might even trigger a violent new collapse with resulting rupture of their extraction lines (Bryn 2005). On the climate change side, investigators are considering whether a new similar disruption will cause methane clathrates locked in concentrated deposits under the sea bottom to lose their special molecular integrity and be released into the atmosphere as potent greenhouse gas. The possibility of such methane releases has sometimes been postulated as having provided a lubricant during the previous slides which allowed the debris material to carry so far out into the Atlantic Ocean (Micallef 2008).

In the field of Quaternary climate studies, scientists are trying to narrow down the date of the undersea slides to clarify how they relate to what is termed the “8.2 ka cold event” (“ka” meaning thousand years ago) which was an interruption lasting around 150 years of a warming phase and the general retreat of glaciers. If the two events are related causally, interpreters will have to knit the latest Storegga episodes into the whole Quaternary climate puzzle.

Upon the revelation of this massive slide, investigators searched for other evidence in the geologic record to buttress the finding and elucidate the sequence of events. Across the North Sea and northern Europe they have found plentiful evidence of astounding tsunami run-ups along coastlines (Bondevik 2005).

At the time of the most recent Storegga slide, the moss deposition site would have lain in shallow sea waters in basins 8 to 20 meters deep and up to one hundred meters off the coast. Due to isostatic rise since the last glaciers retreated, the same locale is now in bogs or lake bottoms near Hommelstø and Stormyra, Norway. From a core extracted from the bottom of a modern bog, a distinct sandy layer at 6.5 to 7 meters below present bog bottom, blobs of soil embedded and patches of peat are between two sections of marine mud (Bondevik 2012). Large segments of detached soil in old sediments are a sign of tsunami action since storms cannot transport soil material intact. This sandy debris layer is part of the same evidence mentioned that is expressed all along the European Atlantic coastline (Bondevik 2005).

Several still-green moss specimens were found in the tsunami rip-up deposits: *Hylocomium splendens*, *Racomitrium*, *Rhytidiadelphus triquetrus*, and *Pleurozium schreberi*. The finding of green chlorophyll in the mosses, aside from being amazing, is valuable in dating the deposition of tsunami deposits on the sea mud. Carbon dating returns ratios between different carbon isotopes in organic materials. Isotopes taken in by living beings are in ratio to the isotopes in their environment while they are alive and, upon death, the ratio changes as one isotope degrades over time. The common problem in using carbon dates to age a subsurface level is that the researcher can bracket the time the organism died, but cannot be sure how long it was dead before it was buried in the medium where it was recovered. With these Storegga tsunami mosses, researchers know they were not dead, but living, at the moment of the tsunami backwash because they were found with active chlorophyll as revealed by high performance liquid chromatography of samples. Therefore, whatever time bracket is concluded for the date of moss demise is the same date of the tsunami event (Bondevik 2012).

The carbon dated and calibrated moss age outcome of 8120–8175 BP falls near the coldest ebb of the 8.2 ka cold event, which might be interpreted to mean that Storegga slide likely did not provoke the cold period. It's not as obvious in the other direction—whether a 150 year cold period might have precipitated a slide along the area of the Norway shelf, or if the slide played a part in the rewarming phase, by many possible mechanisms (Beget 2007). **– Janet Traub**

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Wanted (Alive)!

LASALLIA PENSYLVANICA

Most people who have explored the rock cliffs of southern Ohio have seen the Common Toadskin lichen (*Lasallia papulosa*). This umbilicate foliose species prefers sunny, dry sandstone and has been found in 13 counties. However, there could be another species, the Blackened Toadskin (*Lasallia pensylvanica*), found in the same habitat. This lichen was present in a very old collection with the location given only as "somewhere in Ohio."

Blackened Toadskin lichen (moist). **Photo by Ray Showman**

The Blackened Toadskin differs from the Common Toadskin by having a coal black undersurface instead of light brown. Locating an extant population in Ohio would be a real find. So the next time you see a Toadskin, be sure to check the undersurface!
- Ray Showman

> In every walk with nature one receives far more than he seeks. – John Muir

COME TO THE CRUM!

The 2014 Crum Bryological Workshop will be held at Blackwater Falls State Park in Davis, West Virginia, from June 1-6, 2014. This event is a time for professional and knowledgeable amateurs to meet to collect and identify bryophytes. The Crum Workshop is expected to attract more than 20 dedicated bryologists from across the United States. Requirements to attend are that you have your own microscopes and a beginning knowledge of bryology. Although designed for bryologists, a few participants may be lichenologists.

William R. Buck (New York Botanical Garden) organized the first Crum Bryological Workshop in 2004. Like its sibling, the Tuckerman Lichenological Workshop, it was established to further the study of bryology, educate interested amateurs by bringing them together with professional bryologists, and to prepare floras for different parts of the US by increasing the knowledge of bryophyte distributions. Since its inception, the following workshops have taken place: 2004 – Pennsylvania (Delaware Water Gap); 2005 – Vermont (north central, Craftsbury); 2006 – Ohio (south central); 2007 – New York (Adirondacks); 2008 Vermont – northeast (Averill); 2009 – Maine (Walpole); 2010 – Ontario (Bruce Peninsula); 2011 – New York (Watertown alvars); 2012 – Pennsylvania (Erie County): and 2013 – Quebec (Gaspé Peninsula).

Meet the organizer: This year's organizer for the Crum Bryological Workshop is OMLA member Sue Studlar

(sstudlar@wvu.edu). She is responsible for selecting the collecting sites and obtaining permits. Sue plans to take the participants to Blackwater Falls, Canaan Valley State Park, and Dolly Sods. These areas offer habitats that are especially species-rich, or are of interest because of elevation gradients, substrate and microhabitat diversity, or known locations of characteristic or unusual species.

Here's the plan: Arrival date is June 1 and field trips will occur from June 2-5, with departure the morning of June 6. The typical scenario is that, with packed lunches and collecting equipment at hand, the group meets in the morning to car pool to a collecting site. By mid-afternoon the group returns to the "scope" room and works until dinner. Dinner is followed by more opportunities to work on specimens.

Collecting is necessary since identification of bryophytes (and lichens) requires laboratory study with microscopes and reference texts. Participants are expected to be ethical bryologists and respectfully collect and do their best to avoid excessive duplication. Documentation of species lists for publication requires the deposition of voucher specimens in herbaria so that they are available to other researchers.

Where to stay: Lodge: Twenty rooms in the lodge have been reserved at a special rate of $77.60 (plus tax) per night. These rooms may be reserved by calling 304-259-5216. A credit card number is required to reserve the rooms.
MAKE RESERVATIONS SOON!
Camping: Beginning February 15, 2014, campsites may be reserved for rates between $20-23 per night. Reservations can be made at www.blackwaterfalls.com.

The 2014 Crum Workshop will be an exciting event for working with knowledgeable bryologists to document the bryophyte diversity of West Virginia. So, to quote a line from the 50's, BE THERE OR BE SQUARE!
- Barbara Andreas

YEA FOR THE OMLA!
The primary mission of the OMLA is to add to the knowledge of lichen and bryophyte distribution in Ohio. Since 2004, the numbers of new county records for these groups has been fantastic. As indicated in the tables below, the total for macrolichens is 281, with 543 new records for mosses and 103 for liverworts. In addition to these new county records, OMLA members have added 3 new state records for mosses: ***Brachythecium velutinum*** (Darke), ***Pohlia bulbifera*** (Lucas), ***Trematodon longicolis*** (Hocking).

New County Records

OMLA Event, County	Moss	Liver wort
04 Fall Foray, Adams	4	0
05 Summer Foray, Lucas	10	5
05 Fall Foray, Lawrence	37	14
05 Fall Foray, Jackson	0	1
06 Summer Foray, Vinton	31	7
06 Fall Foray, Washington	28	11
07 Fall Foray, Pike	7	3
07 Fall Foray, Ross	1	0
08 Summer Foray, Gallia	14	2
08 Fall Foray, Erie	5	0
09 Summer Foray, Darke	57	0
09 Fall Foray, Meigs	41	8
10 Summer Foray, Henry	43	0
10 Fall Foray, Muskingum	65	10
11 Sum. Foray, Defiance	44	1
11 Fall Foray, Crawford	30	8
11 Fall Foray, Morrow	10	6
12 Summer Foray, Fayette	21	2
12 Fall Foray, Monroe	34	10
13 Summer Foray, Allen	31	0
13 Fall Foray, Columbiana	30	15
Total Number	**543**	**103**

OMLA members have also been very successful in finding new lichens for Ohio: macrolichens ***Canoparmelia amabilis*** (Washington), ***Hyperphyscia confusa*** (Defiance), ***Physciella melanchra*** (Darke), ***Usnea cornuta*** (Vinton), ***Usnea substerilis*** (Lawrence), ***Xanthoparmelia angustiphylla*** (Montgomery); and crustose species ***Acarospora obpallens*** (Washington) and ***Acarospora oreophila*** (Trumbull).

New County Records

OMLA Event, County	Macrolichen
04 Fall Foray, Adams	0
05 Summer Foray, Lucas	9
05 Fall Foray, Lawrence	16
05 Fall Foray, Jackson	9
06 Summer Foray, Vinton	1
06 Fall Foray, Washington	20
07 Fall Foray, Pike	9
07 Fall Foray, Ross	6
08 Summer Foray, Gallia	1
08 Fall Foray, Erie	14
09 Summer Foray, Darke	16
09 Fall Foray, Meigs	5
10 Summer Foray, Henry	14
10 Fall Foray, Muskingum	19
11 Sum. Foray, Defiance	25
11 Fall Foray, Crawford	18
11 Fall Foray, Morrow	11
12 Summer Foray, Fayette	24
12 Fall Foray, Monroe	23
13 Summer Foray, Allen	12
13 Fall Foray, Columbiana	29
Total Number	**281**

NEW CRUSTOSE SPECIES FOR OHIO

An excellent new book by James Lendemer, Richard Harris and Erin Trip (The Lichens and Allied Fungi of Great Smokey Mountains National Park, 2013. The New York Botanical Garden Press) is an annotated checklist with comprehensive keys. The book also describes a number of species new to science. Among these are two new species with specimens from Ohio: *Arthonia susa*, Adams Co., and *Lecanora appalachensis*, Scioto Co. Both of these new species were collected during the joint Crum – Tuckerman Workshop in 2006.
– Ray Showman

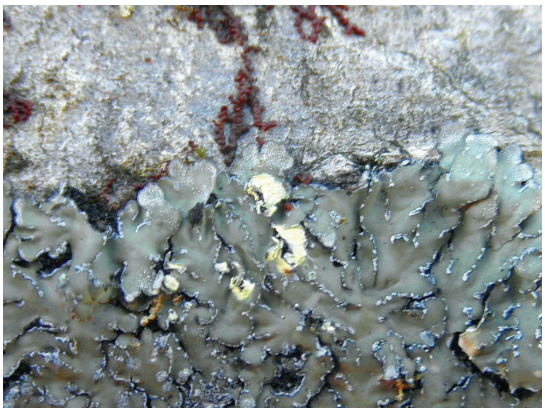
Flooded, mudded, frozen, dried,
Mosses take it all in stride.
Liverworts? Their point of pride
is having a top and bottom side.
– Jim Toppin

***PYXINE* IN OHIO**

The lichen genus *Pyxine* (Button Rosette Lichen) is represented in Ohio by two species: *P. sorediata* and *P. subcinerea*. Both are typical 'little gray lichens', outwardly similar to a number of other members of the *Physcia* family. But if you dig a little deeper (literally) you will find that they are unique in having a light yellow-orange medulla – I like to think of it as peach colored.

Of the two species, *P. sorediata* is more common, presently known from 47 counties scattered across Ohio. It is a gray to blueish-gray lichen with pruinose lobe tips. The lobes are frequently upturned and somewhat concave or spoon-shaped. This species is sorediate with mainly marginal soralia.

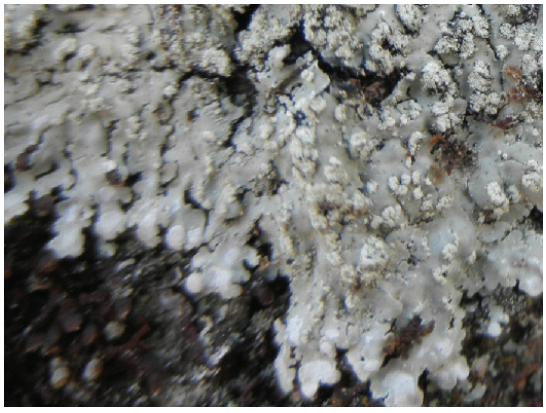
Pyxine sorediata **Photo by Ray Showman**



Closeup showing yellow medulla, scattered pruina and marginal soralia.

Pyxine subcinerea has been found in 28 mainly southern Ohio counties. It is usually smaller, lighter gray and has pruina in discrete circular patches on the lobe tips. It is also sorediate but with pustulate soralia and it is more appressed with flat lobe tips. Both species grow on sunny trees.

Pyxine subcinerea **Photo by Ray Showman**



Closeup showing the rounded pruina patches and pustular soralia.

One unusual feature of *P. subcinerea* is that is fluoresces orange under UV light. This is possibly the only lichen that you can identify in the field in the dead of night!
- Ray Showman

THE WEIRD ONES: MOSSES OF UNUSUAL FORM AND STRUCTURE

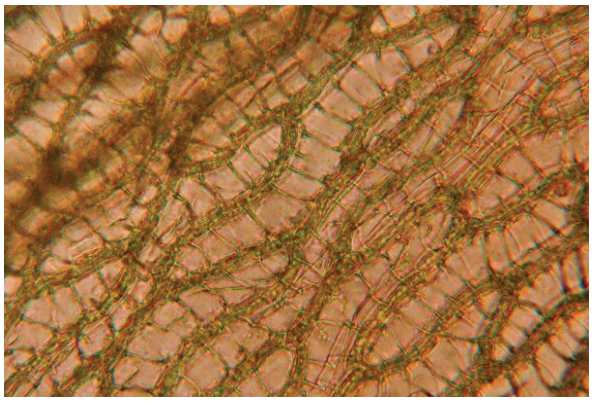
Howard Crum's "Mosses of the Great Lakes Forest" is a terrific guide to mosses that starts out with a well-organized key to genera. To enhance usability, it is an "artificial" key, arranged using readily discerned features rather than being strictly organized along phylogenetic lines. Accordingly, it doesn't explicitly reference the major taxonomic classes of mosses.

Nonetheless, because the classes are so distinctive, the key does in fact separate out several small lineages of mosses that branch from the moss phylogenetic tree before the large, diverse, and evolutionarily advanced class Bryopsida. For ease of use, the key sets apart a few outstandingly peculiar members of the Bryopsida as well. Let's look at several of the standout mosses to which Crum directs our attention in the very beginning of the key, and see what makes them so different from the mundane many.

Sphagnum branches are clustered. **Photo by Bob Klips**

The peat mosses (genus *Sphagnum*) constitute the bulk of a class of mosses, the Sphagnopsida, situated near the base of the Bryophyta evolutionary tree alongside a few other small groups that either lack peristome teeth altogether or have peristomes of a markedly different construction than do the more typical mosses in the class Bryopsida.

Peat mosses have several unique features, including the absence of rhizoids, the occurrence of branches in tufted bundles (capitula) at the top of each stem, and a toothless sporangium that is elevated by a stalk, the pseudopodium, consisting of maternal gametophyte, not sporophyte, tissue. Perhaps the most readily observed *Sphagnum* trait, however, is that the leaf cells are arranged in a network, with narrow green photosynthetic cells surrounding much larger cells that are clear, empty, and have gaping holes in their walls. The holes enable peat mosses to absorb great amounts of water. This helps them occupy vast swaths of acid bogs, and is also why sphagnum moss is appreciated as a soil amendment by gardeners. Twenty-eight species of peat moss have been found in Ohio.



Sphagnum leaf cells form a network. **Photo by Bob Klips**

The rock (sometimes called "lantern") mosses --Class Andreaeaopsida, consisting principally of the genus *Andreaea* –form another well-defined and taxonomically basal group of mosses which have the sporophyte elevated by a pseudopodium.

Rock/lantern moss capsules, however, do not open by a circular opening at the top as do those of nearly all other mosses, but instead they dehisce by four longitudinal slits. Accordingly, they lack peristome teeth. Two species of *Andraea* occur in Ohio, both uncommon, on acid rocks in the unglaciated southern portion of the state.

Andreaea capsules split longitudinally. **Photo by Bob Klips**

Two classes –the Polytrichopsida and the Tetraphidopsida –are fundamentally characterized by having a toothed peristome of a primitive type termed "nematodontous," wherein the teeth are composed of the remnants of entire cells. By contrast, the peristome of most other mosses are "arthrodontous," having one or two rings of teeth composed of the remnants of only portions of the walls of their component cells. In addition to being nematodontous, the polytricaceous peristome is very distinctively formed. Instead of the teeth being wholly separate from one another, they are fused into a central disk, the "epiphragm," such that the spores exit through tiny pores along the circumference of the peristome.

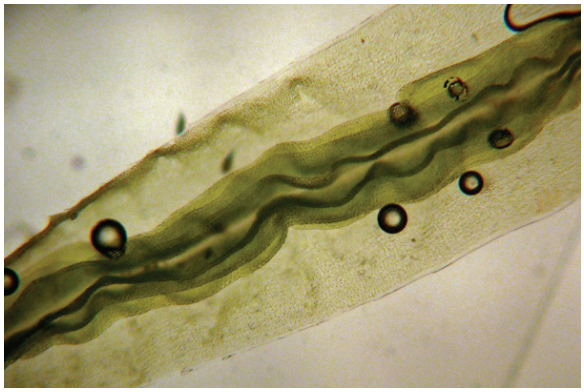
Here in Ohio, we have 15 members of the Polytrichaceae (4 *Polytrichum*, 4 *Polytrichastrum*, 5 *Atrichum*, and 2 *Pogonatum* species), several of which are common and abundant. Below, see the capsules of Ohio haircap moss, *Polytrichastrum ohioense.*

Fused *Polytrichastrum* peristome teeth. **Photo by Bob Klips**

Gametophytically too, members of the Polytrichopsida stand out, as the the midrib of the leaf is covered by ribbon-like sheets of green cells called "lamellae." This is best seen in microscopic cross-section, wherein members of the common genus *Atrichum* display lamelae that look somewhat like the pages of an opened book.

Atrichum has a lamellose costa. **Photo by Bob Klips**

A careful examination of the upper surface of an intact leaf shows the ribbons, too.



Atrichum lamellae are conspicuous. **Photo by Bob Klips**

Another member of the Polytrichaceae, *Pogonatum pensylvanicum*, sets itself apart from most other mosses by having a persistent protonema. In most mosses, this algae-like network of filaments is a short-lived intermediate stage occurring between spore germination and the gametophyte. In *P. pensylvanicum* the protonema is expansive and persistent, providing nutritional support for the gametophyte and, indirectly, the sporophyte as well. The gametophyte is correspondingly much smaller than of related species that don't have a persistent protonema.

Pogonatum has a persistent protonema. **Photo by Bob Klips**

The Tetraphidopsida is a small class with one quite small family , the Tetraphidaceae (3 species total), composed of mosses

which, like the Polytrichaceae, have a nematodontous peristome, but with a wholly different appearance. The principal genus, *Tetraphis*, is named for its 4 massive, fully separate peristome teeth.

Tetraphis is the 4-toothed moss. **Photo by Bob Klips**

In addition to having a standout type of peristome, the very common *Tetraphis pellucida* can be identified by its bird's-nest like gemmae cups. *Tetraphis* is an interesting moss because it occurs on two two strikingly different substrates: decaying wood, and shaded moist sandstone cliffs.

Tetraphis produces gemmae in cups. **Photo by Bob Klips**

The huge class Bryopsida (95% of all moss species) includes mosses with one or two rings of peristome teeth. The arrangement of orders within the Bryopsida depends to a large degree on details of the outer ring of the peristome, particularly whether each tooth is composed of the remnants of a single tier of cells (haplolepideous) or two tiers (diplolepideous), and, where there are two rings of teeth, whether they are opposite one another, or are alternate. Within the Bryopsida, or perhaps sister to it, is a small strange order, the Diphysciales, with a peristome that is intermediate between the nematdonous and arthrodontous types, oddly pleated, and with the two rings of teeth fused to one another. Besides the distinctive peristome, *Diphyscium* is weird in other ways too. Whimsically called "scared rabbits in the grass" by prominent 20th century bryologist William Steere, the sporophyte capsule is ovoid, asymmetric and sessile, and the leaves surrounding the capsules are thin, pale, and bristle-tipped. Two species of *Diphyscium* occur in Ohio, primarily in the eastern half of the state, on banks and cliffs in forests.

Scared rabbits in the grass! **Photo by Bob Klips**

Squarely within the Bryopsida, a few moss genera are strikingly different from the rest. Because of its growth in concise whitish tufts, the genus *Leucobryum* is called "pincushion moss."

Leucobryum has a leaf anatomy that sets it apart from other North American mosses. Typically, mosses have leaves that are but one cell thick.

Leucobryum is "pincushion moss." **Photo by Bob Klips**

However, those of *Leucobryum* have a very wide costa that is several cell layers thick, of which only the inner layer is green. The outer cells are colorless, giving the moss its striking ghostly pale appearance (at least when dry). Two species of *Leucobryum* are found in Ohio, widely distributed across the state.

Leucobrum leaves are several cells thick. **Photo by Bob Klips**

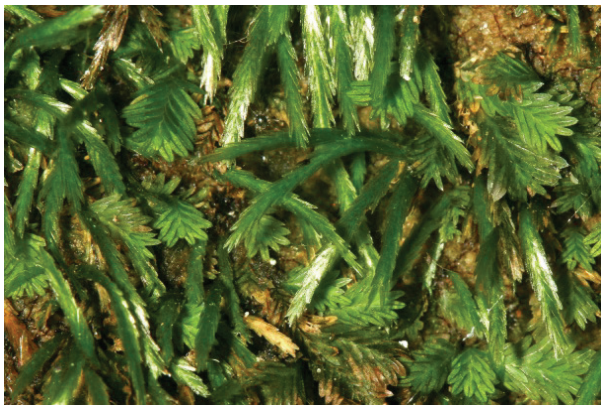
Not just the form of moss leaves, but also their arrangement can be exceptional. Nearly all mosses have leaves arranged in a tight spiral around the stem. Many mosses are somewhat flat (complanate) only because their stems and branches are compressed dorsiventrally, as if they were ironed or stepped on. However, a few moss genera have leaves that are actually arranged in two straight rows directly across from one another. *Fissidens* is such a two-ranked genus, with 13 members in Ohio, several of which are very common.

Fissidens is flat. **Photo by Bob Klips**

Fissidens leaves have another peculiarity. Like the leaves of an iris plant, the base of each leaf that faces towards the stem apex is split, forming a pocket-like groove that clasps the lower base of the leaf just above it. The arrangement is suggestive of the way in which an equestrian's legs clasp a horse, and so the plant is said to have leaves that are "equitant."

Fissidens leaves are equitant. **Photo by Bob Klips**

The leaves of another two-ranked moss aren't split. *Bryoxiphium norvegicum*, the "sword moss," is found only in cool, perennially moist shaded rock faces. Although globally rare, sword moss is frequently encountered in the sandstone grottos of the Hocking Hills. The picture below shows it with *Fissidens*.



Meeting of the flat moss society. **Photo by Bob Klips**
- Bob Klips

On my shopping list today,
A basket of *Atrichum*, if I may,
A dozen capsules, an ounce of spores
And peristome teeth in sixty-fours!
- Jim Toppin

***MARSUPELLA EMARGINATA* – REDISCOVERED IN OHIO**

The leafy liverwort *Marsupella emarginata* (Ehrh.) Dumort. (Gymnomitriaceae) was collected in Athens County in November, 2012 (Andreas 17072, KE 12755), growing in a seepage over a sandstone outcrop. The only other Ohio collections are from Hocking County. Mrs. B.R. Taylor collected *M. emarginata* from sandstone cliffs in Pine Valley on September 2, 1923 (*OS 1120*). Mary S. Tayler [correct spelling on label) collected it from Red Rock Ravine on May 3, 1935 (*OS 1440*), and again on May 7, 1936 (*OS 1391*).

Marsupella emarginata is green to dark brownish or blackish with leaves that are bilobed for about 1/4 to 1/3 their length. The leaves are transverse, succubous, and clasping the stem. Its cell walls are

Marsupella emarginata

uneven, forming pronounced, bulging trigones. There are 2 oil bodies per cell.

Marsupella emarginata could easily be mistaken for *Gymnocolea inflata*, which is similar in color, leaf arrangement, and habitat. *Gymnocolea inflata* has thin evenly thickened cells walls, and 4 to 8 oil bodies per cell. Although both are found on acidic rocks, *Gymnocolea inflata* is also found in boggy habitats.
- Barbara K. Andreas

WANTED (ALIVE)!
SCORPIDIUM SCORPIOIDES

Scorpidium scorpioides (Amblystegiaceae), is a large (up to 25 cm long), sparsely branched julaceous aquatic moss. Its leaves are ecostate, concave, 2-4 mm long with thin-walled alar cells. Its typical habitat is in calcareous wetlands, growing with graminoids in pools of shallow water. The older portions of *S. scorpioides* are covered with limy deposits, but the young growing tips are shiny, golden-yellow to red-brown in color. *Scorpidium scorpioides* has a widespread circumboreal distribution, with scattered populations documented as far south as Venezuela.

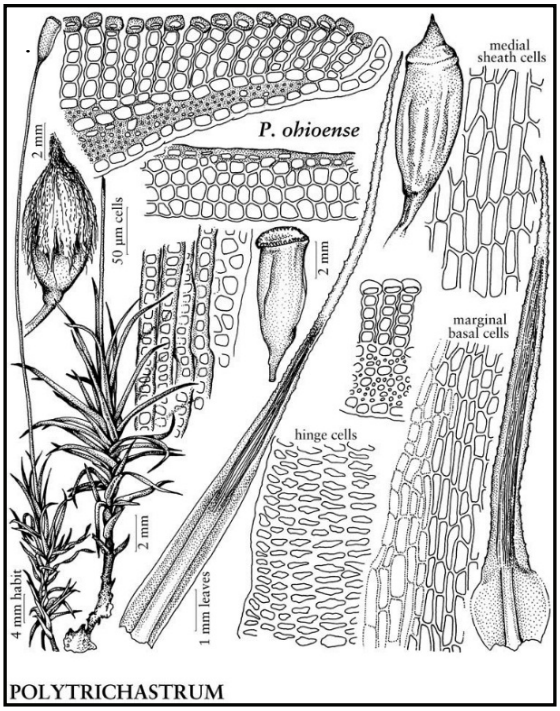
Scorpidium scorpioides

The original Ohio collection was made in the early 1800's by William S. Sullivant. This specimen is in a fascicle housed in the rare book room at The Ohio State University Herbarium. It is assumed that the collection was from Cedar Bog, Champaign County, Ohio. The only other known Ohio specimen is also from Cedar Bog, collected on October 8, 1938, by Floyd Bartley (BHO B1094). In their extensive study of the bryophytes of Cedar Bog, Jerry Snider and Allison Cusick were unable to relocate *Scorpidium scorpioides* (Snider, J.A. and A.W. Cusick. 1989. The bryophyte flora of Cedar Bog. *In* Cedar Bog Symposium II, R.C. Glotzhober, A. Kochman and W. T. Schulz [eds.]. Ohio Historical Society, Columbus, Ohio. 95 p.).

The common name for this moss is Brown Turgid Worm Moss. It would be hard to overlook. In addition to searching the brown moss mats where *Campylium stellatum*, *Limprichtia cossonii*, and *L. revolvens* grow, examine the wetter portions of the fens.
- Barbara K. Andreas

OMLA SPONSORS ILLUSTRATIONS IN FNA

The Flora of North America Editorial Committee offered bryologists the opportunity to help defray publication costs by sponsoring illustrations for volume 27 or volume 28 of FNA. These are the two moss volumes, of which vol. 27 is completed and vol. 28 will appear soon. Individuals and organizations sponsored one or more drawings, at a cost of two-hundred dollars per illustration. Several OMLA members pitched in to sponsor the illustration of *Polytrichastrum ohioense* (Ohio haircap moss) in vol. 27. As a sponsor, OMLA will be acknowledged in the introductory chapter of Volume 28, and is entitled to reproduce the image for its own purposes, including on items for sale or fund-raising. **– Bob Klips**



Equipped with his five senses, man explores the universe around him and calls the adventure Science. ~Edwin Powell Hubble, *The Nature of Science*, 1954

FORAY TIME!
It's the night before Foray
and all through the state,
our members are packing,
so they wouldn't be late!

The car is gassed up,
filled with all kinds of stuff,
books and lenses and packets,
sure hope we have enough!

Morning comes early
and off we all go,
follow the directions,
to the start of the show!

Collect in the morning,
group photo at noon,
more sites in the PM,
it's over too soon!

Then on to the lodging,
with a scope room that's fine,
we sit with our friends,
till we run out of wine!

Our Forays are great,
they're all kinds of fun,
so make a resolution –
don't miss the next one!
- Ray Showman

COLUMBIANA COUNTY 2013 FALL FORAY
The fall foray went to Columbiana County. The county has diverse habitats because half of the county is glaciated and the other half is unglaciated Allegheny Plateau. The foray went to two sites in the unglaciated part of the county – Sheepskin Hollow State Nature Preserve and Beaver Creek State Park. On Saturday September 28, about twenty OMLA members converged at the parking area at Sheepskin Hollow State Nature Preserve to survey the 458-acre preserve on the Ohio-Pennsylvania line. The group set out to different habitats in the preserve to collect as many different species as possible. Sheepskin Hollow's main feature is a hemlock gorge with sandstone cliffs, slump blocks, and waterfalls. Oak-hickory woods inhabit the ridgetops. The preserve also contains a portion of the North Branch of Little Beaver Creek to provide some riparian habitat for the group to explore. Sheepskin Hollow was more for the bryologist than lichenologist but overall both groups did well there.

Sunday morning, the group went to Beaver Creek State Park to survey more hemlock ravines, a picnic area, a canal lock, and other natural and human created habitats.

In addition to the two Foray areas, lichens were also collected at several cemeteries and churchyards to augment the species list for the county. A total of 40 species were recorded with 31 species new for Columbiana County.

Lichens Recorded in Columbiana County, September 27-29, 2013 (N=new county record).
Candelaria concolor **N**
Canoparmelia crozalsiana **N**
Cladonia coniocraea
Cladonia macilenta
Cladonia rei **N**
Cladonia sobolescens **N**
Cladonia squamosa

Dermatocarpon luridum **N**
Flavoparmelia baltimorensis **N**
Flavoparmelia caperata **N**
Flavopunctelia soredica **N**
Heterodermia speciosa **N**
Lecanora symmicta **N**
Leptogium cyanescens **N**
Leptogium juniperinum **N**
Leptogium lichenoides **N**
Melanelia subaurifera **N**
Myelochroa aurulenta
Parmelia squarrosa
Parmelia sulcata
Parmelinopsis minarum **N**
Parmotrema hypotropum **N**
Peltigera evansiana **N**
Phaeophyscia adiastola **N**
Phaeophyscia cernohorskyi **N**
Phaeophyscia decolor **N**
Phaeophyscia rubropulchra **N**
Physcia adscendens **N**
Physcia aipolia **N**
Physcia millegrana
Physciella chloantha **N**
Physconia detersa **N**
Porpidia albocaerulescens **N**
Punctelia rudecta
Punctelia subrudecta
Pyxine sorediata **N**
Usnea mutabilis **N**
Xanthomendoza ulophyllodes **N**
Xanthoparmelia plittii **N**
Xanthoparmelia tasmanica **N**

The Columbiana sites provided a nice variety of habitats and substrates, including rock outcrops, boulders, streams, steep valleys, floodplains, an old railroad right-of-way, and of course plenty of hardwood and conifer trees and logs.

Among the interesting bryophyte finds was *Physcomitrella patens*, a very small moss (2–5 mm high) that grows on soil in wet areas. It is reported to be widespread in eastern North America, but not common (Crum and Anderson, *Mosses of Eastern North America*, 1981). The only other record in Ohio is from Franklin County.

Other noteworthy collections from the foray were: *Fissidens minutulus* (3 other Ohio county records: Erie, Muskingum, Gallia), *Tortula truncata* (4 other counties), *Isopterygiopsis pulchella* (5 other counties), *Herzogiella turfacea* (7 other counties), *Cyrto-hypnum pygmaeum*, and *Herzogiella striatella*. The group also collected six species of *Brachythecium*, including *B. curtum* (synonym, *B. oedipodium*), which is found in only 6 other Ohio counties.

We recorded 70 moss taxa, of which 30 are new county records (marked with "**N**" after the name). We also found 15 liverwort taxa, all new county records. The listing below also includes a few collections from Columbiana County prior to the foray (symbols ◆ and ■)

Bryophytes Recorded in Columbiana County
N=new county record.
S=Sheepskin Hollow State Nature Preserve
B=Beaver Creek State Park
◆ Collected by Jim Bissell at Beaver Creek State Park on 9/13/2013
■ Collected by Diane Lucas with Barb Andreas about 10 years ago, wet ditch just east of US Rte. 7 near Rte. 45 exit.

Mosses

Amblystegium serpens (S)
Amblystegium varium (S)
Anomodon attenuatus (S)
Anomodon minor **N** (S)
Anomodon rostratus (S)
Atrichum altecristatum **N** (S)
Atrichum crispulum **N** (S)

Aulacomnium palustre (S, ■)
Brachythecium campestre **N** (S)
Brachythecium curtum **N** (S)
Brachythecium laetum (S, B)
Brachythecium plumosum **N** (S)
Brachythecium rivulare (S)
Brachythecium rutabulum (S)
Bryhnia graminicolor **N** (S)
Bryhnia novae-angliae (S)
Bryum flaccidum **N** (B)
Bryum lisae var. *cuspidatum* (B)
Callicladium haldanianum (S)
Campylium chrysophyllum (S)
Clasmatodon parvulus **N** (S)
Climacium americanum (B)
Cyrto-hypnum pygmaeum **N** (S)
Dicranella varia (S, ■)
Dicranum montanum (S)
Dicranum flagellare (S)
Dicranum fulvum (S, ◆)
Dicranum montanum (S)
Dicranum scoparium (S)
Entodon seductrix (S, B)
Eurhynchium hians (S)
Fissidens minutulus **N** (S)
Fissidens obtusifolius **N** (S, B)
Fissidens taxifolius (B)
Gymnostomum aeruginosum **N** (B)
Hedwigia ciliata **N** (S)
Herzogiella striatella **N** (S)
Herzogiella turfacea **N** (B)
Hymenostylium recurvirostrum **N** (S)
Hypnum curvifolium (S)
Hypnum imponens (S)
Isopterygiopsis muelleriana (S)
Isopterygiopsis pulchella **N** (S)
Isopterygium tenerum **N** (S)
Leptodictyum humile **N** (S)
Leskea gracilescens **N** (S)
Leucobryum glaucum (S)
Orthotrichum ohioense **N** (B)
Orthotrichum pumilum (B)
Physcomitrella patens **N** (B)
Plagiomnium ciliare (S)
Plagiomnium cuspidatum (S)
Plagiomnium ellipticum **N** (S)
Plagiothecium cavifolium (S)
Plagiothecium laetum (S)
Platygyrium repens (S)
Platyhypnidium riparioides **N** (S)
Pohlia wahlenbergii (■)
Polytrichastrum ohioense (S)
Polytrichum commune (■)
Pseudotaxiphyllum elegans (S)
Pylaisiadelpha tenuirostris **N** (S)
Rhynchostegium serrulatum (S)
Schistidium apocarpum **N** (B)
Sematophyllum adnatum **N** (S)
Sematophyllum demissum (S)
Sphagnum fimbriatum (■)
Taxiphyllum deplanatum (S)
Tetraphis pellucida (S)
Thamnobryum alleghaniense **N** (S)
Thuidium delicatulum (S, ◆)
Tortula truncata **N** (B)
Weissia controversa (S)

Liverworts

Blepharostoma trichophyllum **N** (S)
Cololejeunea biddlecomiae **N** (S)
Conocephalum conicum **N** (S)
Conocephalum salebrosum **N** (S)
Frullania eboracensis **N** (S)
Jungermannia crenuliformis **N** (■)
Lophocolea heterophylla **N** (S)
Lophozia capitata **N** (■)
Marchantia polymorpha **N** (B)
Metzgeria conjugata **N** (S)
Metzgeria furcata **N** (S)
Nowellia curvifolia **N** (S)
Pellia epiphylla **N** (S)
Plagiochila porelloides **N** (S)
Porella platyphylla **N** (S)
Ptilidium pulcherrimum **N** (B)
Scapania nemorea **N** (S)

- Rick Gardner, Ray Showman and Jim Toppin

Moss now grows at the base of the wall
Where Humpty Dumpty had a great fall.
Had the thick green carpet been there then,
No need for all the king's horses and men!
- Jim Toppin

NEWS AND NOTES

2014 dates to remember: March 1, OMLA Annual Meeting hosted by Linda Fuselier at Antioch College, Yellow Springs. October 3-5, 10-year anniversary Fall Foray at the Edge of Appalachia in Adams County.

Photo by Ray Showman

Our unofficial photographer, Bob Klips, caught in his natural habitat behind the camera. Bob (along with Ray Showman) is presently working on Common Ohio Lichens, a pocket field guide to be published in 2015 by the Ohio Division of Wildlife.

PRESENTATIONS AND PUBLICATIONS BY OMLA MEMBERS:

Andreas, Barbara K. 2013. A revision of *Blindia* (Seligeriaceae) from Southern South America. Bryologist 116(3) 263-280. This paper has detailed descriptions the 8 species of *Blindia* from South America, of which 3 are new species described and named by Barb.

Jim Battaglia, presentation titled Common Lichens of Western New York at the program meeting of the Niagara Frontier Botanical Society, September 10, 2013. Bob Klips assisted by providing many photographs.

Bob Klips presented a poster entitled "DNA microsatellite analysis of sporophytes of the annual moss *Physcomitrium pyriforme* reveals a predominantly self-fertilizing mating pattern" at the annual meeting of the Botanical Society of America, July 27-31, in New Orleans, LA.

James R. McClenahen, Ray E. Showman, Russell J. Hutnik, Donald D. Davis. 2012. Temporal Changes in Lichen Species Richness and Elemental Composition on a Pennsylvania Atmospheric Deposition Gradient. Evansia, 29(3):67-73. This paper details an initial study showing some air pollution effects on lichens and a follow-up study showing lichen improvement with improved air quality.

Bill Schumacher gave a talk titled "Initial results in developing a bryophyte assessment index for Ohio wetlands" to state wetland professions at the Region V EPA meetings on the week of 10/28 at the Kellogg Biological Station near Battle Creek, MI. This talk presented initial findings of Ohio EPA's research project developing a scorecard for Ohio's wetlands. Included in the research is collecting bryophytes. So far 45 wetlands have bryophyte collections.

Ray Showman gave an introduction to lichenology at a continuing education workshop for teachers, June 12 at Camp Oty'Okwa in Hocking County.
Ray also held a one-day lichen introduction and identification workshop for ODNR preserve managers and naturalists at Boch Hollow Preserve, November 7.

Jim Toppin and Janet Traub made the following presentations:
January 5, 2013. Bryophyte hike at Waterloo Recreation Area, near Ann Arbor, Michigan, with the Michigan Botanical Club, Huron Valley Chapter.

April 4, 2013 Bryophyte workshop presentation and hike for Ohio Certified Volunteer Naturalists, Hancock Park District, Findlay, Ohio.

May 15, 2013 Bryophyte hike at Oak Openings Preserve, Toledo Metroparks, as part of "Blue Week" activities in the Oak Openings Region

May 29, 2013 Bryophyte indoor presentation, field trip and identification workshop at University of Akron Biological Station, for field botany class.

June 22, 2013 Bryophyte and local flora hike at The Nature Conservancy's Kitty Todd Preserve, Swanton, Ohio with the Michigan Botanical Club, Huron Valley Chapter.

August 19, 2013 Bryophyte identification workshop at University of Akron Biological Station.

Mark Zloba did a talk on Apr. 11, 2013 for the Cincinnati Nature Center on Tealtown Rd. on Lichens. It was a PowerPoint and ID demonstration about lichens in general and how to identify.

From the editors – a big THANK YOU!, for all of you who stepped up and sent us articles and other information for this issue of OBELISK.

To Fungus from Alga

By Mollie Caird (1922-2000)

I had thought we were lichen
Symbiotic, a wonder,
Two creatures, one life,
And dead if asunder.

Lichen is multiform:
Long-hairy, small-grainy,
Braves ice-caps and sand-dunes,
Climates torrid or rainy.

Its colours astonish:
Sea-green, scarlet, gold.
Slow as granite it grows
And is almost as old.

Fungus dead, bloodless alga
Might linger a week;
So what monstrous fate
Makes me nature's worst freak?

Long ago I thought lichen
True symbol of bliss;
That poem — unwritten —
Would have differed from this.

Happy Holidays to everyone! Ray and Janet

2013 Summer Foray. Left to right: Clea Klagstad, Ray Showman, Maggie Kubina, Tom Lesniewski, Robin Bautista, Jeff Rose, Barb Andreas, Diane Lucas, Janet Traub, Jim Toppin, Bob Klips.

2013 Fall Foray. Back row left to right: Ray Showman, Jim Toppin, Rick Gardner, Brian Dolney, Center row l to r: Jessie Wallace, Steven Nagel, Carole Schumacher, Ed Fuchs, Ed Smith, Cynthia Dassler. Front row l to r: Sara Klips, Bob Klips, Barb Andreas, Janet Traub, Diane Lucas, Linda Fuselier. (Both photos by Bob Klips)