

OBELISK

Ohio Bryology et Lichenology, Identification, Species, Knowledge

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LEFT HAND CORNER

(This Forum was started by Don Flenniken as a place where anyone can submit ideas, opinions and editorials.)

THE VALUE OF AMATEURS

Much of what we know about species distributions, migrations, phenology, life cycles, nest building, predator-prey relationships, etc., etc., is due to the observations of amateur naturalists.

Webster defines amateur as “a person who does something for the pleasure of it rather than for money.” These unpaid and largely unsung people study nature for the love of it. Amateur birders have been especially successful in adding to the knowledge base in this area. But the amateurs in OMLA have also been very successful in adding to the knowledge of moss, liverwort, and lichen distribution in Ohio. They have established numerous new county records and have added several new lichen and moss species to the state list since OMLA was organized.

What can amateurs do to improve their value in the study of their particular field? I think first of all become active. Don't just be a nature groupie who is entertained by meetings, workshops and field trips, but never progresses to do anything on their own. Develop a passion for nature study. Cultivate a

curiosity about your natural surroundings. Try to observe the details of things that you see and discern differences between things. Nature study is fun but it also takes dedication and hard work.

One of Ohio's premier naturalists, Jim McCormac, once told me that “most people see plants as a ‘fuzzy green wall’ rather than seeing individual plants.” This analogy also works for other organisms – how many times have you heard “all lichens (mosses) look the same to me.” Once you get beyond that ‘fuzzy green wall’, develop your expertise through books, internet resources, and networking with other amateurs and professionals. Join an organization devoted to the study of what interests you. Record and photograph your observations. Keep a list of species that you have found. Write an article for *OBELISK*.

But most importantly, make sure that the results of your study are available to others, particularly mainstream scientists (university professionals). A very important aspect of lichen and bryophyte study is to properly collect and curate specimens (see Andreas, 2009. *OBELISK* 6:1. Making Useful Specimens). Collect good specimens with enough material to show all the

diagnostic features. If possible, collect enough material for a duplicate packet if verification by an expert is required. Make sure that accurate location and substrate descriptions accompany every specimen. And last, put your collections in a university herbarium where they can be studied by others. – **Ray Showman**

FOUND ALIVE!

I had already written a **WANTED (ALIVE)** article for this issue featuring *Teloschistes chrysophthalmus*, the Gold-eye Lichen. This is a Great Plains species with only two very old Ohio records. Then I received an e-mail from Brian Riley, a forester already known for his curiosity and sharp eyes. Here follows his story. - **Ray Showman**

BEGINNER'S LUCK

It has been said that it is better to be lucky than good. I think my recent discovery of a lichen not seen anywhere in Ohio for 101 years certainly reinforces this figure of speech. The story of this fascinating find takes place on April 7 of this year when I was inspecting two green ash trees in my brother's backyard outside of Plain City in Union County for signs of emerald ash borer infestation. During my survey, I noticed an unusual, somewhat grotesque, yet striking, fruticose lichen growing on the southwest side of the trunk of one of the two ash trees that had been there since the mid to late 1990s.

But wait, there's more! Upon closer inspection I was pleasantly surprised to find a second, smaller individual of the same kind growing next to its parent. To be honest, if I had found this mysterious lichen on any other property, I most likely would not have aggressively pursued having it positively identified.

But since it was growing on a tree in a yard that I frequent often and would therefore see regularly, I could not stand to go another day without knowing what it was. As a result of my intense curiosity, lichenologist and friend, Ray Showman, was going to get another e-mail from me, only this one was going to come with pictures attached.



Teloschistes chrysophthalmus Photo by Brian Riley – ODNR Division of Forestry

Two days after my find, I sent Ray digital images of the lichen for his examination. Even though they were by no means professional grade, he was still able to arrive at a fairly certain conclusion just by observing the overall thallus structure. Several days later, after sending him much higher quality pictures taken on a camera I had just received the previous Christmas, Ray quickly wrote back to inform me that his initial suspicion was now a firm conclusion. The verdict: *Teloschistes chrysophthalmus*, otherwise known as golden-eye lichen, a presumed extirpated species not seen in Ohio since it was last collected in Erie County in 1910!

I guess the moral of this incredible story is that we all need to be taking a closer look at our nearby trees because you

never know what you may end up finding, even in your own backyard.

Brian Riley, ODNR – Division of Forestry

OHIO MOSS AND LICHEN ASSOCIATIONS

Because lichens and bryophytes have very similar substrate requirements, they often co-occur on a given microsite. Didn't that sound scientific? Yes, but all it actually said was that because lichens and bryophytes occur in the same places, lichens and bryophytes occur in the same places! Perhaps examples will help.

Bryophytes and lichens are "poikilohydric," meaning that they rely completely on the immediate environment for water. Accordingly they are capable of drying out for prolonged periods, only to rehydrate quickly when it rains or is dewy. This enables growth in intermittent bursts. Mosses and lichens can thereby thrive on what would otherwise be barren sites, i.e., ones so stressful that vascular plants cannot overwhelm these smaller, less competitive organisms



Polytrichum ohioense and *Cladonia subtenuis* stand their ground in Hocking County. Photo by Bob Klips

Crawling on the ground in sunny areas such as glades and barrens we are likely to see bryophytes and lichens growing together on the thin dry soil. Expect

various fruticose (shrubby) lichens in the genus *Cladonia*, including those tangled and puffy ones called "reindeer lichens" that were for a few decades relegated to their own little genus, *Cladina*.

(Welcome home, reindeer lichens!)

Several tufted, upright (acrocarpous) mosses also thrive in these places, including certain haircap mosses in the genus *Polytrichum*.

A group of confusingly similar ground-dwelling *Cladonia* lichens are those that produce upright goblet-shaped podetia. Like the reindeer lichens, these "pixie cups" are often mingled with soil acrocarpous mosses such as this *Dicranum flagellare*, a nifty species rendered distinctive by its profusion of fragile sword-like branches that break off to form new plants.



Dicranum flagellare and an unidentified pyxie-cup runneth over in Marion County. Photo by Bob Klips

Perhaps our only easily identified pyxie-cup lichen is *Cladonia pyxidata*, distinguished by its flat, circular corticate "squamules" lining the insides of the cups. A very common Ohio soil moss in open areas, especially on banks where pyxie-cups is found, is a robust "pleurocarp" (carpet moss) with deeply concave leaves, *Bryoandersonia illecebra*.



Cladonia pyxidata and *Bryoandersonia illecebra* hold up a bank in Delaware County. Photo by Bob Klips

The tops of rocks are prime real estate for organisms that don't have roots. *Hedwigia ciliata* is a very common moss with a fairly strict fidelity to acidic boulders in both sunny and shady spots. A sparsely-branched pleurocarp, *Hedwigia* grows in tufts that ape the reindeer lichens they often grow alongside.



Cladonia subtenuis and *Hedwigia ciliata*, shoulder-to-shoulder atop a boulder in Gallia County. Photo by Bob Klips

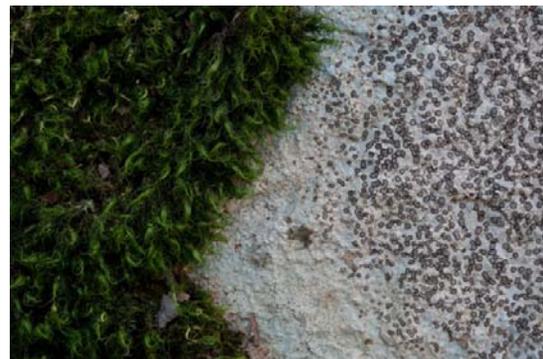
An interesting lichen growth form, intermediate between crustose and foliose, is an uncommon one called "squamulose." Squamulose lichens have a scale-like appearance, but with a partly layered internal structure much like that of foliose lichens (although lacking a lower cortex and rhizines). *Placidium lachneum* is an uncommon squamulose lichen found on limestone or thin

alkaline soil in open areas. This substrate is also a good one for the dark, tufted moss *Schistidium rivulare*, an acrocarp that branches more than is typical, and thus approaches pleurocarpy in its growth form.



Placidium lachneum and *Schistidium rivulare* share the limestone limelight in Marion County. Photo by Bob Klips

Lichens, being generally less shade-tolerant than bryophytes, are correspondingly less frequent in wooded areas. Nonetheless, on hard substrates a few lichen species can gain a foothold. An intriguing crustose lichen, *Porpidia albocaerulescens*, is quite common on siliceous rocks, and so is often seen with mosses such as *Hedwigia ciliata*, and, as shown below, *Dicranum fulvum*.



Porpidia albocaerulescens and *Dicranum fulvum* at a rock concert in Delaware County, Ohio. Photo by Bob Klips

Endocarpon pallidum is a squamulose lichen that is quite common, although

very inconspicuous, on siliceous boulders in woods. As such, it is likely to be sharing turf with a number of bryophytes, including, as shown below, a drab carpet moss so annoyingly common that we wish it would just stay on logs where it belongs, *Platygyrium repens*.



Endocarpon pallidum and *Platygyrium repens* in Franklin County, doing what “Paper” does in “Rock, Paper, Scissors.” Photo by Bob Klips

Phaeophyscia adiastrata is a very common small-lobed foliose lichen, one of a few that do well in the shade.



Phaeophyscia adiastrata and *Frullania brittoniae* growing on a boulder, boldly, in Miami County. Photo by Bob Klips

While it can be distinguished, in part, by its abundant development of coarsely granular soredia both on the lobe surfaces and on their margins, sometimes disk-shaped spore-producing apothecia are produced as well. A somewhat uncommon, small dark leafy

liverwort, *Frullania brittoniae*, tends to occur on rocks too, so they can be seen together.

The co-occurrence of lichen and mosses on rocks can sometimes go unnoticed because the lichen blends in so well. This is another instance of *Phaeophyscia adiastrata* on a boulder, alongside a tufted acrocarpous moss *Orthotrichum strangulatum*, a saxicolous member of a mainly corticolous genus.



Phaeophyscia adiastrata hides in plain sight near *Orthotrichum strangulatum* in Franklin County. Photo by Bob Klips

The “pelts” (genus *Peltigera*) are large, loosely attached lichens that have a cyanobacterial photobiont.



Peltigera canina and *Anomodon attenuatus* are lithic bedfellows in Meigs County. Photo by Bob Klips

Pelts tend to occur on rocks in open woods. Dog lichen, *P. canina*, seems to be especially common. *Anomodon attenuatus* is a very common open

woodland moss that, while regularly seen at tree bases, often grows on rocks.

One of the most common lichens found high on the bark of trees, even in urban areas, is a tiny but profuse, bright yellow foliose one, *Candelaria concolor*. A common high-bark moss genus is *Orthotrichum* (various species, obnoxiously difficult to tell apart). *Candelaria* and *Orthotrichum* often grow together.



Candelaria concolor and *Orthotrichum pusillum*, a corticolous combo, in Miami County. Photo by Bob Klips

There's another high-bark pair. The moderate-sized, light gray foliose lichen genus *Physconia* is distinguished, in part, by the strongly "pruinose" (i.e., having a powdery bloom) upper surface of the lobes.

Here, *P. leucoleiptes* is seen alongside an intriguing short-stemmed, broad-leaved acrocarpous moss, *Syntrichia papillosa*, that reproduces exclusively by means of minute globose asexual gemmae produced along the upper leaf surface. (The gemmae are not evident in the photo because the moss is in its dried-up state, with leaves clinging tightly to the stem.)



Physconia leucoleiptes and *Syntrichia papillosa* barking up the right tree in Franklin County. Photo by Bob Klips

Like the people who study them, bryophytes and lichens are often found together. During OMLA forays and workshops we are fortunate to have friendly experts on hand who can help us extend our knowledge to new and unfamiliar cryptogams we might otherwise miss. – **Bob Klips**

LICHENS MAY INACTIVATE PRIONS

Some of the most intriguing and mystifying infections are those caused by infection with prions, essentially slow, self-reproducing proteins that have been incriminated in causing a series of neurologic maladies with fatal outcomes. Chronic wasting disease, Creutzfeldt-Jakob disease, and "mad cow disease" are some notable examples. Some of these diseases are found in humans, but others are found (so far) only in animals. Prions are notoriously difficult to "kill" or inactivate; they are not inactivated by most detergents, cooking, freezing, or by autoclaving, a method used to sterilize medical instruments.

When prions are released into the environment by infected sheep or deer, they can stay infectious for many years, even decades. Thus it is important to be able to remove prions from the environment or their means of

transmission. Recent research has indicated that lichens have great potential for safely reducing the number of prions because some lichen species contain a naturally-produced protease enzyme capable of significantly breaking down prions in the lab. Not only are such inactivators rare, those produced by lichens would be excellent choices because so few synthetic inactivators can be used in the environment safely.

Lichens produce unique and unusual organic compounds that aid their survival and can have antimicrobial activities. In fact, pharmaceutical companies have been examining the medicinal properties of lichens more closely with this feature in mind in recent years. Future work will examine the effect of lichens on prions in the environment and determine if lichen consumption in livestock feeds can protect farm animals from acquiring prion diseases.

Partly because lichens grow so slowly and rarely under artificial conditions, obtaining any inactivative material under laboratory conditions seems improbable. Rather, the active lichen ingredient would have to be isolated, its chemical structure determined, and a way sought to synthesize this substance in large batch operations similar to the way many antibiotics are produced today.

– **Bob Burrell**

REVISION OF THE LICHEN GENUS *PUNCTELIA*

A recent article in *The Lichenologist* (Lendemer, James C. and Brendan P. Hodkinson. 2010) has shed new light on the problematic lichen species commonly referred to as *Punctelia subrudecta* or *Punctelia perreticulata*. Using DNA analysis, the authors have

arrived at the conclusion that the name *Punctelia subrudecta* is to be rejected from North American specimens. However, *Punctelia perreticulata* is considered a valid species and known from southern Ohio.

The lichen previously called *Punctelia subrudecta* has been found to differ from European species, as well as related North American species in ways significant enough to be regarded as a distinct species. They have concluded that most of the eastern US *Punctelia* with a smooth upper surface, sorediate margins and upper surface, C+ red medulla, and pale lower surface to be *Punctelia caseana* (a new species). It does, however, have two morphological forms: one with mostly marginal soredia and one with marginal and laminal soredia, but otherwise indistinguishable from each other.

All of the samples of *Punctelia perreticulata* studied have lightly pruinose lobe tips (absent in *P. caseana*) as well as the ridged upper surface.



Punctelia subrudecta is now called *P. caseana*. Photo by Ray Showman

Key to Ohio species of *Punctelia*

(Modified from Lendemer and Hodkinson)

- 1. Lacking soredia, isidia, and lobules; medulla C-.....*P. bolliana*
- 1. Soredia, isidia, or lobules present; medulla C+ or C-.....2

- 2. Thallus isidiate or lobulate3
- 2. Thallus sorediate6

- 3. Thallus lobulate4
- 3. Thallus isidiate5

- 4. Thallus lobulate, medulla C-..... *P. bolliana*
- 4. Thallus lobulate, medulla C+ red.....*P. missouriensis*

- 5. Thallus with tall, often branched isidia; common...*P. rudecta*
- 5. Thallus with flattened, squamiform isidia..... *P. missouriensis*

- 6. Soredia coarse, few per soralium..... *P. missouriensis*
- 6. Soredia fine, many per soralium..... 7

- 7. Lower surface black; medulla C+ pink (gyrophoric acid).....*P. borreri*
- 7. Lower surface pale; medulla C+ red (lecanoric acid)..... 8

- 8. Upper surface ridged; lobe tips pruinose..... *P. perriticulata*
- 8. Upper surface nearly smooth; lobe tips shiny..... *P. caseana*

WHAT COLOR IS THAT ROCK TRIPE?

Perhaps the most frequently-encountered umbilicate lichen in the Appalachian Highlands is Rock Tripe (*Umbilicaria mammulata*). When one encounters a large cliff face covered with hundreds of

these deluxe-sized lichens, it is truly a memorable sight. This interesting lichen is attached to vertical rock surfaces by means of a central holdfast which resembles the “outie” variety of a belly button (umbilicus). The upper surface of this large, leathery lichen is frequently lacerated along the rim and the upper cortex is usually found with a gray-brown to olive-brown color (as depicted in Fig. 1).



Fig. 1. Rock tripe found in its usual state. Photo by Bob Burrell

The smooth, upper surface is not pitted or covered with warts. However, depending on the location, you may encounter this same lichen whose upper surface is coated with a definite, green color, as in Fig. 2.



Fig. 2. Rock tripe found under very moist conditions. Photo by Bob Burrell

Inasmuch as this color “phase” is not mentioned in guide books, it is tempting

to call this a new species unless the surface is more carefully considered. The upper surface of these green specimens could either be covered with external, epiphytic green algae, probably *Pleurococcus* spp. or else due to increased visibility of the photobiont in the outer part of the lichen during periods of extreme moisture. If growing in exceptional humidity or places subject to heavy rain, conditions are suitable for rapid algal growth and this green-coated Rock Tripe may be found.

- **Bob Burrell**

OHIO BRYOLOGY AND THE MOSS ATLAS: HISTORY AND PROGRESS

The publication of *A Catalog and Atlas of the Mosses of Ohio* (Snider and Andreas, 1996; hereafter referred to as the “Atlas”) instigated a new interest in Ohio bryology. Dr. Jerry Snider, Professor of Biology, University of Cincinnati, and perhaps the modern “father” of Ohio bryology, provided guidance and encouragement to undergraduate and graduate students, and a group of professional and amateur Ohio bryologists. A few of the Ohio group, including me, have carried on Jerry’s interest in Ohio bryophytes. Jim Toppin and Janet Traub continue to collect in northwest Ohio, and until his death in 2009, Donn Horschler (along with his collecting companion Roger Troutman) made significant collections from central Ohio.

The publication of the Atlas tied much information together. It briefly summarized a history of Ohio moss investigations, including a list of important scientific works completed to date. Many of the non-herbarium based county records cited in the Atlas came from these, especially from Bob Geisy’s (1957) checklist. The Atlas provided a

list of Ohio mosses, updated nomenclature, nomenclatural synonymy, and county distribution maps. After Geisy’s 1957 checklist, much field work had been achieved (for instance, Allen, 1983; Snider and He, 1993). These works resulted in additional Ohio-based herbarium specimens as well as published checklists for specific sites that were incorporated into the 1996 Atlas. Finally, the Atlas provided motivation and passion that fueled the modern renaissance in Ohio bryology. From just a handful of professional and amateur cryptogamic botanists in 1996, there are now dozens of individuals exploring Ohio ecosystems in search of species new to Ohio or to Ohio counties. Cryptogams are now part of Ohio’s rare plant list (www.dnr.state.oh.us/dnap), and new and noteworthy collections are presented at the Ohio Botanical Symposium.

Immediate Results after the Publication.

The maps in the Atlas provided a county-by-county distribution of moss species showing that some very common mosses had been overlooked in otherwise well-collected counties, and that some counties had been entirely overlooked.

Beginning in 1996, Diane Lucas and I began visiting Ohio natural areas, parks, and private properties in order to “fill in the blanks.” For example, the Atlas had no moss records from Jefferson County, so we concentrated on that county and produced a bryophyte flora consisting of 115 mosses, 17 liverworts, and 1 hornwort (Andreas and Lucas, 2006). Diane and others increased the moss flora of Erie County from 99 to 156, and Lorain County from 89 to 161. John Atwood and Carl Chuey (2004) collected in counties in the vicinity of Youngstown State University, and

provided a total of 271 new county records.

After the publication of the Atlas, I began to track down literature-based records that seemed inconsistent. I visited, or requested specimen loans from, herbaria at Missouri Botanical Garden, University of Michigan, New York Botanical Garden, and Duke University. An example of a “stray dot” was *Paraleucobryum longifolium*, reported as growing in Tuscarawas County. This species is typical of northern boreal forests or high elevation areas. That herbarium specimen was located at the Missouri Botanical Garden and had been annotated as *Dicranum scoparium*.

Additional taxa were added to the Ohio moss flora. Some came from field work (such as *Brachythecium velutinum*, *Pohlia bulbifera*, and *Trematodon longicollis*). A few new taxa were added from Volume 27 of the *Flora of North America North of Mexico* (2007). For example, *Dicranum undulatum* had been collected by Floyd Bartley in Jackson County, and the record was located in an out-of-state herbarium.

All new county records, new species, and updated records (from literature citations to actual herbarium specimens) were recorded by placing new dots on a “master set” of the distribution maps. In addition, all changes were kept in a notebook where information for each taxon was recorded (for instance, the herbarium where the specimen was housed, any literature citation, and any relevant herbarium label information). Diane Lucas eventually converted these records to a database.

New Bryological Herbaria. When the Atlas was published, the University of Cincinnati was the most active Ohio bryophyte herbarium. In 1998, under the curatorship of John Freudenstein, I started a bryophyte herbarium at Kent State University (KE). Early entries were from material collected while working at the University of Michigan Biological Station, and from collections made while surveying Ohio peatlands (Andreas and Bryan, 1990). A small but historically important bryophyte collection by Almon Rood, an amateur botanist in northeastern Ohio, that had been stored in shoeboxes on top of herbarium cases, was included.

From 1998 to 2011, the Kent State University Bryophyte Herbarium grew to about 12,000 specimens. Specimens came from material collected on regional forays such as the Andrews and Blomquist Forays, exchange programs with the Missouri Botanical Garden, participation in the ABLS moss exchange, acquisition of exsiccatae, and donations by Diane Lucas, Sam Mazzer, Rob Curtis and others.

About the same time, Diane Lucas began organizing the bryophyte collection at the Cleveland Museum of Natural History (CLM). This collection includes primarily her donations, an historical collection by Edo Claassen, and collections by Jim Bissell and others. There are approximately 3,300 bryophyte specimens at the Cleveland Museum of Natural History.

Formation of the Ohio Moss and Lichen Association. With the publication of *The Macrolichens of Ohio* (Showman and Flenniken, 2004), Ohio had county dot distributions for mosses and lichens. Ray and I discussed the formation of a group that would continue to add

information to the cryptogamic collections of Ohio. At the Ohio Botanical Symposium of 2004, an announcement was made about an organizational meeting for the Ohio Moss and Lichen Association (OMLA) at the Gorman Nature Center (Lexington, OH) on June 3, 2004. The first annual foray was held October 22-24, 2004 at the Edge of Appalachia Preserve System in Adams County (Andreas, Showman and Zloba (2005)). Since then, OMLA has conducted two forays a year which concentrate on under-collected counties. OMLA members alternate organizing forays.

Don Flenniken started the OMLA newsletter, *OBELISK*, in 2005. Its name is based on the obelisk-style tombstone over the grave of William Starling Sullivant, perhaps Ohio's best known bryologist. Don was editor of the newsletter until 2007 when Ray Showman joined him as co-editor. Don stepped down as co-editor in 2010 and was replaced by Janet Traub. *OBELISK* contains four regular columns: 1) Left Hand Corner (a forum for ideas, opinions and editorials), 2) Moss Musings (featuring bryophytes and written by me), 3) Wanted Alive (featuring rare or extirpated lichens and bryophytes and authored by various members), and 4) News and Notes, in which announcements and small informational items are placed. The newsletter also contains articles by members including reports of that year's forays.

In 2008, Brian Gara and Bob Klips, with technical assistance from Steve McVey, developed a website (www.ohiomosslichen.org) for OMLA. This site maintains an on-going history of the organization, meeting announcements, moss and lichen

information relevant either to Ohio or the organization's members, and archived issues of *OBELISK*.

The Combined Crum and Tuckerman Workshops. In 2006, Ray Showman and I organized a joint meeting of the Crum and Tuckerman Workshops in Ohio. It was the 13th meeting of the Tuckerman Workshop, and the 3rd meeting of the Crum Workshop. This combined workshop brought non-Ohio professional and amateur cryptogamic botanists to the state. The end result was the re-discovery of three presumed extirpated mosses (*Anomodon viticulosus*, *Weissia sharpii*, and *Thuidium allenii*), and three new Ohio species of macrolichens, *Heterodermia pseudospeciosa*, *Parmotrema gardneri*, and *Physcia pumilior* (Andreas, Showman and Lendemer, 2007).

The Ohio State University Input. In 2006, Cynthia Dassler became Curator of Cryptogams at the Museum of Biological Diversity, The Ohio State University. She organized the bryophyte collection by repackaging some of the historical collections and by updating nomenclature. Diane Lucas, Jeff Rose and I are surveying the bryophyte collection, and have found new county records through annotating the specimens.

Bob Klips, Jeff Rose and Cynthia are adding new collections to the herbarium, especially from a private natural area in Hocking County, OH. Jeff Rose, and Carole and Bill Schumacher are concentrating on collecting specimens from central and northwestern Ohio. The Museum of Biological Diversity has become the unofficial "headquarters" for OMLA. Cynthia plans and hosts the annual meeting and identification workshops.

The Mapping Process. The database originally created by Diane Lucas is currently being converted to digital maps by a committee of OMLA members. Bill Schumacher is creating dot maps using GIS software. Bob Klips is adding scientific and family names using Photoshop. Jim Toppin and Janet Traub are creating 88 separate county species lists using Microsoft Excel. When this process is finished there will be available on the OMLA website a clean, printable copy in Portable Document Format (pdf), and a clickable Ohio map that will bring up county lists and range maps. All additions to the Ohio moss distribution maps are specimen-based. In order to maintain its accuracy, a process similar to that used by the Ohio Rare Plant Council will be adopted. All changes will be presented in writing to the OMLA membership at its annual meeting. The information required will be the location of the herbarium specimen.

Summary. The history of Ohio bryology probably began with William Starling Sullivant, considered by some to be the “father” of American bryology (Snider and Andreas, 1996). He began collecting around 1840 and a copy of his “*Musci alleghanienses*” is housed in the Rare Book Room at The Museum of Biological Diversity, The Ohio State University. Several of Sullivant’s Ohio collections (for example, *Scorpidium scorpioides* and *Platydictya minutissima*) have never been re-collected. These remain a mystery. It might seem that, with more than 170 years of collecting, the Ohio moss checklist would be complete. Yet each year something new is added to the checklist. In 1996 the Atlas contained 385 species and 15 varieties. Today there are approximately 420 moss species reported from Ohio. At the end

of the Atlas, Jerry Snider included 30 blank maps. I think he meant that as a challenge to future Ohio bryologists.

- **Barbara K. Andreas**

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THE CRUSTOSE LICHENS OF JEFFERSON COUNTY

The packets were yellow and gathering dust,
as they lay in the steel cabinet drawer.
Forty plus years they have waited in trust,
to become part of the state's lichen lore.

Time was when smoke and pollution brewed,
in the county alongside the river.
Steel was king and the smoke stacks spewed,
making more steel to deliver.

Time also was when lichens first became known,
to a teacher who had just settled there.
So he set out to see how many were prone,
to live in the haze and smoke, everywhere.

The collections were made from the sites all
around,
everything laid out on the table.
All that was left for those specimens found,
was their name to be applied to the label.

But that never happened for reasons obscure,
the collections from time long since past;
ended up in the Museum's steel cabinet drawer,
until rescued and brought out for naming, at last.

Smoke no longer rolls from the old mill stacks,
the air has become clear once more.
Maybe someday someone will go back,
and compare what is there, with before.

The names of the lichens collected back then,
some forty-five years ago;
I've taken the liberty, as well as my pen,
and listed their names here, below.

Acarospora fuscata
Amandinea punctata
Aspicilia cinerea
Bacidia polychroa
Bacidia schweinitzii
Caloplaca feracissima
Caloplaca flavovirescens
Caloplaca subsoluta

Diploschistes muscorum
Diploschistes scruposus
Fuscidea reductum
Graphis scripta
Hypocenomyce scalaris
Lecanora dispersa
Lecidea cyrtidia
Micarea pliocarpa
Pertusaria amara
Phlyctis argena
Porpidia albocaerulescens
Porpidia crustulata
Porpidia subsimplex
Pyrenula pseudobufonia
Rhizocarpon hochstetteri
Rhizocarpon reductum
Rinodina bischoffii
Scoliciosporum umbrinum
Thelidium minutulum
Trapelia glebulosa
Trapeliopsis granulose
Verrucaria calkinsiana
Verrucaria muralis
Verrucaria nigrescens
- Don Flenniken

PINE TREE LICHENS

While most corticolous lichens will
grow on a number of tree species, there
are several that are very specific to
Ohio's native pines. This is a niche that
is shunned by almost all other lichens.
While white pine is native to
northeastern Ohio, this article addresses
only the pitch, shortleaf and Virginia
pines of southeastern Ohio. Of these,
Virginia pine - often in dense, pure
stands, is by far the most common.

I have found two lichens to be obligate
inhabitants of pine twigs and branches.
Imshaugia placorodia is a small, light
gray foliose species that almost always
has numerous apothecia. I have found
this lichen exclusively on the twigs and
branches of Virginia pine, although it
could also grow on twigs of the other
pine species. *Tuckermanella fendleri* is

a very small foliose lichen – fingernail sized at most. It is a dark, green-brown color when dry, but bright green when wet. It has toothed margins and usually numerous, large apothecia. This also grows exclusively on pine twigs where it is sometimes hard to spot due to its dark color.



Imshaugia placorodia and *Tuckermanella fendleri* (dry). Photo by Ray Showman



Tuckermanella fendleri (wet). Photo by Ray Showman

Two others, *Tuckermanopsis americana* and *T. ciliaris* are also near obligate pine dwellers. I have seen these very rarely on the hard, acidic bark of chestnut oak. These nearly identical species are separated by chemistry. Both are medium sized brown-green foliose lichens. They usually have marginal pycnidia and frequently have marginal apothecia. I have also seen these on the

fallen twigs and branches of hemlock trees.



Tuckermanopsis americana. Photo by Ray Showman

Imshaugia aleurites also strongly favors pine bark, usually on trunks rather than twigs. However it is also occasionally seen on the hard, acidic bark of oaks and on dead wood. This is a medium sized light gray foliose lichen with numerous fine isidia massing towards the center of the thallus.



Imshaugia aleurites. Photo by Ray Showman

So don't ignore the native pine stands in your search for lichens. They may yield these otherwise rare lichen species.

- Ray Showman

MOSS MUSINGS

An Ordinary Ohio Road

A benefit to moving to southeastern Ohio is the occasional outing with Ray Showman on which we search the forested hills looking for lichens and mosses. Ray selects the sites because he is much more familiar with the region. For those of you who have been in the field with Ray, you know that he is part mountain goat. He usually takes me to deep, forested ravines with huge sandstone rock outcrops and slump blocks. He expects me to walk along narrow ledges high above Raccoon Creek (I opt to crawl on my hands and knees through poison-ivy), or worse yet, jump from a 10-foot high ledge, or slide down an even higher vertical rock face (did I mention that I have acrophobia?).

Ray is desperate to teach me to identify lichens. He'll point out a few on a tree and ask me to examine their characters (green-gray or gray-green, rhizines present or not, isidiate or sorediate, pseudocyphellae present or absent - ugh!). Later he'll quiz me, and I always fail (except for *Flavoparmelia caperata*, I've mastered that one)! But Ray remains optimistic, and he still takes me on hikes.

March 3, 2011 promised to be an extraordinary day in that we were going to walk along a small floodplain within Stony Hollow. He promised no steep ravines, just an easy stroll. The area is located near the Hope Furnace, just a stone's throw away from the place in Zaleski State Forest where OMLA collected on the 2006 summer foray.

Early March in southeastern Ohio is still winter. The trees were leafless, the small pools along creeks were covered with ice, the seeps coming from the rocks were frozen, and the path through the forest was muddy. The trees in this part of the Zaleski State Forest were young and ordinary – beech, maple, elm, and tulip. Christmas fern and last year's fertile fronds of sensitive fern were easily identifiable. Even the rock outcrops along the path seemed ordinary – not high or covered with dense populations of mosses and lichens. Southeastern Ohio is full of similar rock outcrops, though most are exposed in deeper shaded ravines.

Though there was no visible change in topography or forest cover, suddenly things became interesting. Growing on the surface of the low rock ledges were large pillows of *Sphagnum capillifolium* and *S. palustre*. Although common Ohio sphagnums, any large population of sphagnum in Vinton County is unusual. On the intermittent seeps that flowed over the vertical rock surfaces, and the tiny moist ledges and cracks within the rocks, grew *Sematophyllum demissum*, *Plagiothecium cavifolium*, *Pseudotaxiphyllum elegans*, *Hookeria acutifolia*, *Leucolejeunea clypeata*, and *Frullania asagrayana*. A rather large slump block at the juncture of a side ravine was covered with brownish patches of *Andreaea rothii*, a moss known mostly from historical records in four Ohio counties.

By now I am rather pleased with the day – no acrobatic maneuvers required to

keep up with Ray, and some very nice “finds” for Vinton County.

Then Ray spotted a steep 60 degree bank that led to a road above where the car was parked. He couldn't resist the climb. While Ray leaped up the embankment, I used vegetation to pull myself up to arrive on Irish Ridge Road.

It was an ordinary southeastern Ohio dirt road. On its east bank was a vertical sandstone rockface, about 10-15 feet high, that extended for about a fifth of a mile. There are hundreds if not thousands of similar rockfaces in southeastern Ohio and I've examined many of them. About the only difference was its sunny western exposure created because of the road cut. On this particular day the seeping water over the rock face was partially frozen, but new spring growth was evident. On that very ordinary rockface grew *Pogonatum brachyphyllum*, collected only once before in Ohio, in 1935. Growing with it was *Campylostelium saxicola*, a state-listed moss and only the fourth confirmed collection from Ohio. Pinkdot lichen (*Dibaeis absoluta*), a state-listed lichen, was common. The rock exposure above the rock face was luxuriously vegetated with a variety of mosses including, *Dicranum spurium*, rarely collected through it is reported from 6 Ohio counties, and *Polytrichastrum pallidisetum*, somewhat common in northeastern Ohio, but known from only 2 other southern counties.

To find unusual mosses and lichens, one would think that you need to visit a state

nature preserve, an area with already-known rarities, or a habitat type that produces the greatest diversity. But to quote George Gershwin, “It ain't necessarily so.” This otherwise ordinary forest and the rock outcrop along a dirt road supported a wonderful array of cryptogams.

What is important is to get out and look. Be curious! If it looks different or unusual, it probably is. Diane Lucas found *Anacamptodon splachnoides* (a moss she had been searching for in Lorain County) on a tree along a path that she had walked for years, only this time she bent down at the right moment. Ray found *Usnea cornuta*, a new species to the state, dislodged from a tree in his back yard by white-breasted nuthatches (see *OBELISK*, Vol 7, No. 1). Bob Klips, Jeff Rose, Cynthia Dassler, Brian Gara, Bill Schumacher and Ryan Schoeneman found *Physcomitrium collenchymatum*, new to the state, in a newly developing prairie within a mitigation wetland site – hardly a pristine community. None of these “finds” were expected – we were just out with friends exploring the environs of Ohio. - **Barbara K. Andreas**

2011 SUMMER FORAY

Defiance County in northwest Ohio is 412 square miles of primarily farmland (80%), with about 12% forest and just under 4% wetlands. There is little exposed bedrock in the county. Our foray to the county was held Saturday, June 11, 2011, and we visited four sites. In addition, lichens were collected at

several area cemeteries. There had not been much collecting of mosses and lichens in the past: only 15 moss species and 25 lichen species were reported for the county as of 2007.

Our first stop was the Thoreau Wildlife Sanctuary, a few miles northwest of the city of Defiance. It was established by the Diehl Family Foundation in 1989 and is used by Defiance College for restoration ecology research and education. The sanctuary covers about 200 acres, of which 100 are wooded.

Next we collected at the 78-acre Penney Nature Center, which was donated to Defiance Soil and Water Conservation District in 2001 by Nancy Jo Penney and is used primarily for education. It is a few miles north of the Thoreau Sanctuary, and includes a sizable woods. Both Thoreau and Penney are primarily mesic sites with several small wetlands.

We had lunch at Bronson Park, a 25-acre city park on the south side of Defiance along the Auglaize River. In addition to the picnic area, it featured nice coverings of mosses, even encroaching on the parking lot.

In the afternoon we collected at a privately owned woodland in the southeast part of the county. This had some extensive wet areas.

We're very grateful to Doug Kane of Defiance College, Kip Studer of Defiance Soil & Water, Christy Brown of Defiance City Parks, and the owners of the private woodland for allowing us access to the sites and permission to collect.

A total of 41 lichen species were recorded (see list below), of which 25 were new to Defiance County.

Hyperphyscia confusa is a newly named species that is also new for the state. We found 44 moss species, all of which were new county records. We also recorded one liverwort species, *Lophocolea heterophylla*. – **Jim Toppin**

Lichens recorded on the OMLA Summer Foray. N= New for Defiance County; NO = New for Ohio

Macrolichen Name
<i>Candelaria concolor</i>
<i>Cladonia chlorophaea</i> cmlpx.
<i>Cladonia coniocraea</i>
<i>Cladonia cristatella</i>
<i>Cladonia furcata</i>
<i>Cladonia polycarpoides</i>
<i>Cladonia rei</i>
<i>Flavoparmelia caperata</i>
<i>Heterodermia obscurata</i> N
<i>Hyperphyscia confusa</i> N, NO
<i>Myelochroa aurulenta</i> N
<i>Parmotrema hypotropum</i> N
<i>Parmelia sulcata</i>
<i>Peltigera canina</i>
<i>Phaeophyscia adiastrum</i> N
<i>Phaeophyscia hirtella</i> N
<i>Phaeophyscia pusilloides</i> N
<i>Phaeophyscia rubropulchra</i>
<i>Physcia adscendens</i>
<i>Physcia americana</i> N
<i>Physcia millegrana</i>
<i>Physcia stellaris</i>
<i>Physciella chloantha</i> N
<i>Physciella melanochra</i> N
<i>Physconia detersa</i> N
<i>Punctelia bolliana</i> N
<i>Punctelia missouriensis</i> N
<i>Punctelia rudecta</i>
<i>Punctelia subrudecta</i> N
<i>Xanthomendoza fallax</i>
<i>Xanthomendoza weberi</i> N
<i>Xanthomendoza ulophyllodes</i> N
Microlichen Name
<i>Acarospora fuscata</i> N
<i>Arthonia caesia</i> N
<i>Buellia stillingiana</i> N
<i>Caloplaca feracissima</i> N
<i>Dimelaena oreina</i> N
<i>Lecanora allophana</i> N
<i>Lecanora dispersa</i> N
<i>Sarcogyne regularis</i> N
<i>Verrucaria nigrescens</i> N

Mosses recorded for Defiance County, Ohio on the OMLA Summer Foray, June 11, 2011. All moss species are new for Defiance County

Moss Name
<i>Amblystegium varium</i>
<i>Anomodon attenuatus</i>
<i>Anomodon rostratus</i>
<i>Atrichum angustatum</i>
<i>Atrichum altecristatum</i>
<i>Aulacomnium palustre</i>
<i>Barbula unguiculata</i>
<i>Brachythecium laetum</i>
<i>Brachythecium rutabulum</i>
<i>Brachythecium salebrosum</i>
<i>Bryum argenteum</i>
<i>Bryum flaccidum</i>
<i>Bryum lisae</i> var. <i>cuspidatum</i>
<i>Calliergonella lindbergii</i>
<i>Campylium hispidulum</i>
<i>Ceratodon purpureus</i>
<i>Climacium americanum</i>
<i>Dicranum flagellare</i>
<i>Dicranum montanum</i>
<i>Dicranum scoparium</i>
<i>Ditrichum pallidum</i>
<i>Entodon seductrix</i>
<i>Fissidens taxifolius</i>
<i>Funaria hygrometrica</i>
<i>Haplocladium microphyllum</i>
<i>Helodium blandowii</i> var. <i>helodioides</i>
<i>Helodium paludosum</i>
<i>Hypnum pallescens</i>
<i>Leptodictyum riparium</i>
<i>Leskea gracilescens</i>
<i>Orthotrichum pumilum</i>
<i>Physcomitrium pyriforme</i>
<i>Plagiomnium ciliare</i>
<i>Plagiomnium cuspidatum</i>
<i>Plagiothecium denticulatum</i>
<i>Platygyrium repens</i>
<i>Polytrichastrum ohioense</i>
<i>Polytrichum commune</i>
<i>Ptychostomum capillare</i>
<i>Rhynchostegium serrulatum</i>
<i>Thuidium recognitum</i>
<i>Thuidium delicatulum</i>
<i>Sematophyllum adnatum</i>
<i>Schistidium rivulare</i>
Liverwort Name
<i>Lophocolea heterophylla</i>

WANTED (ALIVE)

Ohio Liverworts

Liverworts and hornworts are groups of Ohio plants that have been overlooked. The last checklist was published by Harvey A. Miller in 1964 (Ohio J. Sci. 64 (3): 177-184). In his 47 year-old checklist, there are 122 species of liverworts and 3 species of hornworts. He gave a list of the Ohio counties where a particular species had been collected. Since that time, liverworts and hornworts are reported in various bryophyte species lists (such as the OMLA foray reports), but no attempt has been made to update the nomenclature or distribution.

In Ohio, liverwort and hornworts are not as common as mosses, both in species numbers and in biomass. Hornworts are often overlooked because they appear in the fall, about the time that most field botanists are “shutting down”. They also do not overwinter as a visible rosette.

Liverworts should be more common than the herbarium records support. It has been proposed that the poor air quality of Ohio may limit their growth on exposed tree trunks and rock outcrops, especially in extreme eastern Ohio. Most Ohio forests were decimated by the late 1920’s, and mature trees and deep forests are rare. Ohio has fewer natural wetlands, such as bogs and fens – communities that often support a rich liverwort population.

As one would predict, Hocking County has the most species of liverworts, with 85 of the 122 reported species. The next highest county is Athens County with 60 species. Only 7 more counties (Champaign, Clark, Jackson, Cuyahoga, Fairfield, Lake, and Adams) have 20 or

more species. Some liverworts are widespread throughout the state. *Nowellia curvifolia* could be found on a decorticated decaying log in every county. In Miller's treatment, it is reported from 12 counties.

Diane Lucas, Cynthia Dassler and I are planning to update the checklist of Ohio liverworts and hornworts, and then concentrate on the distribution of individual species. Our goal will be to produce a document similar to the *Annotated Checklist of the Hornworts, Liverworts, and Mosses of West Virginia*, written by Susan Studlar, Steven Stephenson, and Paul Harmon, and published in 2002 by the Wildlife Resources Section, West Virginia Division of Natural Resources.

We would appreciate receiving any identified or unidentified specimens, along with the appropriate label information. Please keep on the lookout for Ohio hornworts and liverworts.

– **Barbara K. Andreas**

THE DUST LICHENS

There is one particular group of crustose lichens commonly called Dust Lichens. In the past, the Dust Lichens have gone by various genus names that included *Amphiloma*, *Crocynia*, *Lepriloma*, and *Lepraria*; and have also included the yellow species of the genus *Chrysothrix*. Until recently this whole group of species was largely ignored because they do not produce apothecia or fungal spores. This lack of apothecia places them in the *Fungi imperfecti* and for this reason they are also called imperfect lichens. Using modern technology to understand their chemical makeup, James Lendemer of the New York Botanical Garden, and others have presented evidence of several new species in both the genus *Lepraria* (the

gray Dust Lichens) and the genus *Chrysothrix* (the yellow Dust Lichens).

The Dust Lichens are masses of soredia-like granules that are easily dislodged and carried away by wind and gravity to new locations. Although found on bark, rock substrates seem to be the preferred habitat for most species. One reason for this is because they do not readily absorb water from rain, due to the surface tension of water being greater than the absorption property of the lichen's powdery nature. Moisture and minerals are absorbed from the dampness of the substrate surface, especially during evening and morning dew accumulation or from a naturally moist habitat.

In addition to *Lepraria* and *Chrysothrix*, the genus *Psilolechia* is included here because of its similar nature, appearance, and habitat and can easily be mistaken for *Chrysothrix*

At the present time there are 6 species of *Lepraria*, 2 species of *Chrysothrix*, and *Psilolechia lucida* known from Ohio. Previous names for Ohio species are unreliable and should not be considered accurate. Recent work by Lendemer, Harris, and Ladd has helped to clarify Ohio's species, as well as those in eastern US.

Our *Lepraria* species may be separated into 2 groups, based upon morphological characteristics. The first group is those that are essentially fluffy, with a relatively thick thallus and an apparent medulla. The second group is those that appear granular, have a thinner thallus, and lack a medulla. Since ascocarps are unknown, chemistry plays an important part in their identification. Spot tests (K, C, KC, and P) are useful, but chromatography is needed for complete accuracy.

The following, along with the accompanying photographs (all by Don Flenniken) are intended to be helpful in recognizing Ohio's Dust Lichens.

Lepraria lobificans may be our most common species and has often been referred to as *Lepraria membranacea*, or by several other names that include *Amphiloma lanuginosum* and *Leproloma membranaceum*. This species is often seen in mossy habitats such as moist rock walls and bridge abutments. The thallus usually forms distinct patches with irregular, lobed margins. The lobes remain flat, with a underlying layer of hyphae (medulla). It will test P+ orange.



Lepraria normandinoides is similar to the above, but its lobes are upturned, giving a slightly cup-shaped lobe margin. It also has a dark layer of hyphae below that help to anchor it to the substrate. It also tests P+ orange and is found on rocks.



Lepraria incana is usually found on the bark of trees, rarely on rocks. It tends to be greenish or bluish in color and is less likely to form distinct lobes. Chemically, it is K-, C-, KC-, and P-, but is UV+ white



Lepraria caesiocalba is granular in texture, the granules rather hard with a toughened outer layer, but not a true cortex. It tests P+ red and could easily be mistaken for *Lepraria caesiella* that tests P+ yellow or P-. Both are found growing on rocks.



Lepraria neglecta is a similar granular species, with hard granules. It often forms consecutive growth rings and appears zoned with light and dark bands. When in this form it is rather easily identified. However, it may be found as patches of granules without any appearance of zonation. In circumstances as this, one must test with

KC to be certain. It will test K-, C-, P-, and KC+ red. It seems to be a fairly common species on rocks.



Lepraria caesiella, as mentioned above, is similar to *Lepraria caesioalba* but differs in chemistry, testing P+ light yellow or P-. It tends to have a bluish cast when observed in the natural habitat.



Chrysothrix xanthina is a bright yellow species made up of tiny granules that are loosely attached to the substrate. It may be found on rocks or on the bark of trees. This was previously known as *Chrysothrix candelaria*. All spot tests are negative and it is also UV-. It may easily be confused with sterile *Psilolechia lucida*, but that species is more greenish yellow and is bright orange under ultraviolet radiation.



Chrysothrix insulizans is a newly described species that typically occurs on sandstone, often in overhanging situations where some protection is afforded. It tends to form small groups of granules and becomes scattered over wide areas of the substrate. It will test K+ reddish, KC+ reddish (slow in forming the reddish color) and UV-. So far, it is known only from Jackson County in Ohio (from the Tuckerman Workshop, 2006).



Psilolechia lucida is included here although it has no relation to the above species. It is similar only in the leprose granules that make it up. It usually produced apothecia which can often be found by close examination of the thallus. All spot tests are negative, but it is UV+ orange and tends to be yellowish-green as compared to the brighter yellow of *Chrysothrix* spp. It is

found in much the same rock habitats as the above species. - **Don Flenniken**



NEW AND UNUSUAL MOSSES 2009-2011

This new *OBELISK* feature is a summary of rare moss findings based on reports sent in by members who responded to a request for information about recent records for species known from six or fewer counties. Moss distribution data are from the 2011 update (described elsewhere in this issue) of the Ohio Biological Survey publication "A Catalogue and Atlas of the Mosses of Ohio," by Jerry Snider and Barbara K. Andreas (1996). They are presented in chronological order.

Brachythecium velutinum. Shortly after being discovered as a new species for Ohio by Barb Andreas during the "scouting trip" for the 2009 OMLA fall foray to Darke County, there have been several additional, quite widely separated, stations for our smallest member of a difficult genus:

Brachythecium velutinum (Brachytheciaceae). This moss is now known from far-western Darke, far-northern Erie (collected by Diane Lucas in September 2009), north-central Morrow (from the OMLA foray this October) and extreme southern

Lawrence Counties (July, 2009, also by Barb Andreas). It typically grows on rock, bark, or at the base of trees in rather dry to moist woods. (Crum and Anderson, 1981). All but one of the Ohio records are from tree bases; the Erie County substrate is sandstone boulders.

Fabronia ciliaris. In April 2010, while investigating bryoflora at the mouth of a slate ravine in extreme southern Delaware County, Jeff Rose collected *Fabronia ciliaris* (Fabroniaceae) from the bark of a boxelder maple growing along the Olentangy River. This is only the 5th county specimen record for Ohio (in addition to 2 literature-only records) of a small but strikingly beautiful pleurocarp that grows in soft mats and has amazing coarsely toothed leaves. Also, the especially uncommon variety *F. ciliaris* var. *polycarpa* was collected during the October, 2010 OMLA fall foray to Muskingum County.

Physcomitrella patens. In October, 2010, while developing a bryophyte survey protocol to be used in wetland vegetation assessment at Three Creeks Metro Park in Franklin County, Cynthia Dassler and Bill Schumacher discovered a terrific new moss for Ohio, *Physcomitrella patens* (Funariaceae). This very small acrocarp (although with stems forking, sometimes repeatedly), the only member of its genus, is widely distributed, although uncommon, in eastern North America. Also occurring in Europe and Asia, *Physcomitrella* is perhaps the world's best known moss because it has become a model species for the study of bryophyte evolution and developmental genetics. Accordingly, this is the first moss to have had its genome completely sequenced! *Physcomitrella* is rather similar to another moss found on wet soil in open

areas, its quite common close relative *Aphanorrhagma serratum*, from which *Physcomitrella* is distinguished by having an inoperculate, irregularly rupturing capsule.

***Dichelyma capillaceum*.** A semi-aquatic pleurocarp with lanceolate, falcate-secund leaves that Crum and Anderson (1981) cautions could be overlooked owing to a resemblance to several other, unrelated, moss genera such as *Dreplanocladus* or *Dicranum*, *Dichelema capillaceum* (Fontinalaceae) was known previously from only two Ohio counties (one specimen record). This moss was collected by Barb Andreas at a swamp in Gallia County that she visited with Rick Gardner and Ray Showman in October, 2010, after Rick gave her a small sample he picked up on a previous trip there. She noted that *Dichelema* resembles *Leptodictyum riparium* even more than it does the genera mentioned by Crum and Anderson.

***Campylostelium saxicola*.** A small gregarious acrocarp that is rare and scattered across its range in eastern North America and parts of Europe and eastern Asia, *Campylostelium saxicola* (Ptychomitriaceae) grows primarily on acidic rock in shaded gorges and ravines. Known previously from three southern Ohio county specimen records and two literature-only ones, Barb Andreas collected this from a sandstone ledge in a Gallia County ravine during the above-mentioned October, 2010 trip. This upgraded Gallia from a literature-only to a specimen record. The species was also collected in Crawford County during the 2011 OMLA fall foray.

***Platydictya subtilis*.** In June, 2011, Bill Schumacher plucked an extremely small pleurocarp off a tree trunk crevice in the

woods at Tar Hollow State Park in Ross County: *Platydictya subtilis* (Amblystegiaceae). This is our sole corticolous member of an otherwise saxicolous genus, and one which may be more common than Atlas records indicate, likely under-collected due to its small size and resemblance to (yawn) *Amblystegium*. This is the 3rd county specimen record (4 others are literature-only). It was also collected during the 2010 OMLA foray in Muskingum County.

***Cryphaea glomerata*.** As part of the Ohio Biological Survey-sponsored Deep Woods All-Taxa Biotic Inventory, a trio of botanists consisting of Cynthia Dassler, Bob Klips, and Jeff Rose have made many trips individually or together to this 282 acre parcel in Hocking County. Although Hocking is Ohio's floristically most well-known county, this diverse site nonetheless harbors some mosses heretofore unseen in Hocking that are also rare state-wide. During the August, 2011 iteration of the annual Deep Woods "Bio-blitz" Bob collected *Cryphaea glomerata* (Cryphaeaceae) from a low branch of a very lichen- and moss-encrusted redbud tree in an open lawn area. This is a creeping pleurocarp with the general aspect of some close relatives, including both *Forsstroemia* and *Leucodon*. The combination of tightly imbricate (when dry) leaves and perichaetial leaves that are broad and acuminate serve as distinguishing features. Hardwood bark is a typical substrate for the species, which is said to be common in the southeast (Crum and Anderson, 1981). Prior to this, it had been recorded from four Ohio counties, two of which are specimen records.

***Didymodon rigidulus*.** Deep Woods is the site of another recently collected

rarity, this from a slab of shale talus that rests in the shaded creek that traverses the property. It was collected by Bob Klips during a mid-September follow-up trip to make sense of a confusing mix of mosses seen on the shale bluff there during the August Bio-blitz. This is *Didymodon rigidulus* (Pottiaceae): a tufted acrocarp that, like many members of its family, has a fidelity to calcareous substrates. This moss is discouragingly similar to a handful of other mid-sized, narrow-leaved, papillose-celled Pottiaceae, and would have probably remained in the “unidentified” (a.k.a. “step on it!”) category were it not for the presence of axillary gemmae, abundantly produced. This is the 3rd specimen county record for this moss (two others are literature-only).

***Ephemerum cohaerans*.** During the last Sunday afternoon in October, 2011, Bill Schumacher organized an impromptu field trip to Battelle Darby Metro Park in Franklin County attended by several OMLA members. The theme of the trip was a search for ephemeral mosses at a newly-established wetland/prairie ecological mitigation project. Mosses are strikingly abundant here, forming a crust over much of the ground, upon which little spheres of a presumably nitrogen-fixing cyanobacterium are also abundant. The principal ephemerals and ruderals at the site are *Barbula unguiculata*, *Aphanorrhagma serratum*, *Physcomitrium pyriforme* (tentatively identified using gametophytes only), and several *Bryum* species. Dark patches of protenema from which arise tiny sessile *Ephemerum* plants were common across the landscape. Subsequent examination of the miniscule mosses revealed costate, notably broad leaves, and other features consistent with *Ephemerum cohaerans* (Ephemeraceae), which had heretofore been reported from only two other Ohio

counties (one of them a specimen record). *Ephemerum* species are probably under-represented in the Atlas because crawling around in wet fields during the colder months of the year isn't everybody's idea of fun. (Go figure!).

***Physcomitrium collenchymatum*.**

Continuing with the October Sunday ephemeral trip, the bryological high point of this very fruitful day (and perhaps for the year) was a little moss that first caught Jeff Rose's eye: a tufted acrocarp with broad leaves and nearly globose capsules well-elevated by their setae. This moss had the aspect of *Tortula* (formerly *Pottia*) *truncata*, an uncommon fall ephemeral, which we all believed it to be at the time. Subsequent examination immediately revealed two sporophyte traits ruling out *Tortula*: (1) a mitrate, not cucullate, calyptra, and; (2) a short-beaked, not rostrate, operculum. This put it into the Funariaceae, where its small size and the peculiarly shallow, wide-mouthed dried capsules “quite unlike the capsule of any other North American species” (Crum and Anderson, 1981) revealed this to be *Physcomitrium collenchymatum* --the first collection from Ohio!

According to Crum and Anderson (1981), *P. collenchymatum* is “An ephemeral of weedy situations, thriving in disturbed habitats, on mud or damp soil and especially on silt, on the banks of ditches, creeks, rivers, or ponds, and also on bare soil in old fields (corn, cotton, and sugarcane fields, perhaps generally in bottomlands); spores maturing in fall to spring. Rare and scattered over much of eastern North America.” Yippee!



Physcomitrium collenchymatum “studio” photo by Bob Klips, taken October 31, 2011 (one day after its collection from Battelle Darby Metro Park, Franklin County, Ohio).

Seligeria recurvata. The second, non-ephemeral, half of the Battelle Darby trip was an examination of a wooded ravine, one of several that run perpendicular to, and intermittently drain into, Little Darby Creek. Scattered about the low ground of the ravine near the creek are some medium-sized rocks, a few of which had gregarious but not tufted colonies of a tiny few-leaved acrocarp, many bearing immature “spear-stage” sporophytes. There were also a few mature sporophytes, perhaps persistent from the previous year, with distinctive subcylindric capsules. The seta were remarkably curved (“cygneous”), so we called it “horse-hair” moss as Jeff scraped several of the wee plants into an envelope. “Horse-hair” turned out to be Ohio’s 2nd county record for *Seligeria recurvata* (Seligeriaceae). (The other, also a specimen, is from Adams.) Crum and Anderson (1981) explain this moss is found “on moist shaded cliffs and boulders, favoring sandstone rather than calcareous substrates.”

Didymodon ferrugineus. Impressed by the diversity seen in the Battelle Darby ravine during the ephemerals trip, Bill

Schumacher returned in early November to explore an adjacent ravine, where he gathered a papillose acrocarp from just below a seep. The groundwater was loaded with iron precipitating out as it hit the soil, which was thus cemented with the precipitated iron. These are indicators of high pH, calcareous conditions appropriate for *Didymodon ferrugineus* (*Didymodon fallax* var. *reflexa*) (Pottiaceae), as the moss was determined to be by virtue of strikingly recurved (when wet) leaves and a costa covered on the upper surface by elongate cells. This is just the second specimen county record for this moss; the other is from Adams. One record is literature-only. - **Bob Klips**

Reference: Crum, H.A. and L. E. Anderson. 1981. Mosses of Eastern North America. Columbia University Press. New York, NY.

OMLA FALL FORAY –2011



OMLA received a warm welcome! Photo by Bob Klips

This year’s fall foray was held in Crawford and Morrow Counties on Saturday October 1st and Sunday October 2nd. All of Saturday was held in Crawford County and the planning for this day was facilitated by the very active participation of the Crawford Park District, particularly its Director, Bill Fisher. Participants met in the morning in the beautiful nature center at Lowe-

Volk Park where Mr. Fisher gave a short presentation on the natural history of the county and an overview of the park system and its services (accompanied by doughnuts and coffee).

Immediately following the presentation, the group went a short distance down the road to the property of Craig Smith, whose property is largely an old sandstone quarry. There were abundant bryophytes there, including the state-listed *Plagiothecium laetibricola* and *Campylostelium saxicola*. For lunch, the group returned to Lowe-Volk where others collected for a while before joining the rest of the group who had either gone to Heckert Woods or Sears Woods State Nature preserve, both swamp forests with vernal pools. A small group of people also went to Daughmer Bur Oak Savannah, one of the few remnants of the Sandusky Plains prairies. As is typical for our fall forays, the group returned to the hotel for dinner and an identification session. Sunday morning was devoted to Morrow County where the group explored Mount Gilead State Park finding cryptogams in both the wet areas and dry upland surrounding a man-made lake.

Bryophytes recorded on the 2011 Fall Foray in Crawford (C) and Morrow (M) Counties. *Indicates new for that county. **State listed species.

Mosses	C	M
<i>Amblystegium serpens</i> var. <i>juratzkanum</i>		X*
<i>Amblystegium varium</i>	X	
<i>Anomodon attenuatus</i>	X	X
<i>Anomodon minor</i>	X*	X*
<i>Anomodon rostratus</i>	X	X
<i>Aphanorrhagma serratum</i>		X*
<i>Atrichum altecrisatum</i>	X*	X
<i>Atrichum angustatum</i>	X	
<i>Atrichum crispulum</i>	X	
<i>Aulacomnium heterostichum</i>	X*	
<i>Barbula unguiculata</i>	X	X

<i>Brachythecium laetum</i>	X	X
<i>Brachythecium oedipodium</i>	X*	
<i>Brachythecium rivulare</i>	X	
<i>Brachythecium rutabulum</i>	X	
<i>Brachythecium salebrosum</i>	X*	
<i>Brachythecium velutinum</i>		X*
<i>Bryhnia graminicolor</i>	X	
<i>Bryoandersonia illecebra</i>	X	X
<i>Bryum argenteum</i>	X*	
<i>Callicladium haldanianum</i>	X	
<i>Campylostelium saxicola</i> **	X*	
<i>Climacium americanum</i>	X	X
<i>Climacium kindbergii</i>	X	
<i>Ctenidium molluscum</i>		X*
<i>Cyrtio-hypnum pygmaeum</i>	X*	
<i>Dicranella heteromalla</i>	X*	
<i>Dicranum montanum</i>	X	X
<i>Dicranum scoparium</i>	X*	
<i>Dicranum viride</i>	X	X
<i>Entodon seductrix</i>	X	
<i>Ephemerum crassinervium</i>	X*	X*
<i>Eurynchium hians</i>	X	
<i>Eurynchium pulchellum</i>		X
<i>Fissidens exilis</i>	X*	X*
<i>Fissidens minutulus</i>	X*	
<i>Fissidens taxifolius</i>	X	X
<i>Funaria hygrometrica</i>	X*	
<i>Gymnostomum aeruginosum</i>	X*	
<i>Haplocladium microphyllum</i>	X	
<i>Haplohymenium triste</i>	X*	
<i>Hedwigia ciliata</i>	X*	X
<i>Hygroamblystegium tenax</i>		X
<i>Hypnum curvifolium</i>	X	X
<i>Hypnum pallescens</i>		X
<i>Isopterygium tenerum</i>	X*	
<i>Leptodictyum riparium</i>	X*	
<i>Leskea gracilescens</i>	X	X
<i>Leucobryum glaucum</i>	X*	X
<i>Mnium marginatum</i>	X*	
<i>Orthotrichum ohioense</i>	X*	
<i>Orthotrichum stellatum</i>		X
<i>Plagiomnium cuspidatum</i>	X	
<i>Plagiothecium cavifolium</i>	X	
<i>Plagiothecium latebricola</i> **	X*	
<i>Platygyrium repens</i>	X	
<i>Pogonatum pensilvanicum</i>		X*
<i>Pohlia nutans</i>	X*	
<i>Polytrichastrum ohioense</i>	X	X
<i>Pylasiadelphina tenuirostris</i>	X*	
<i>Rhizomnium punctatum</i>	X	X*
<i>Rhynchostegium serrulatum</i>	X	X
<i>Sematophyllum demissum</i>	X*	
<i>Schistidium rivulare</i>		X
<i>Taxiphyllum depanatum</i>	X*	
<i>Taxiphyllum taxirameum</i>	X*	X

<i>Tetraphis pellucida</i>	X*	
<i>Thuidium delicatulum</i>	X	X
<i>Ulota crispa</i>		X*
Liverworts		
<i>Cephaloziella rubella</i>		X*
<i>Cololejeunea biddlecomiae</i>		X*
<i>Conocephalum conicum</i>	X*	
<i>Frullania eboracensis</i>	X*	X*
<i>Frullania inflata</i>	X*	
<i>Geocalyx graveolens</i>	X*	
<i>Lophocolea heterophylla</i>	X*	
<i>Nowellia curvifolia</i>	X*	X*
<i>Porella platyphylla</i>	X*	
<i>Radula complanata</i>	X*	
<i>Plagiochila porelloides</i>	X*	X*
Hornworts		
<i>Notothylas orbicularis</i>		X*
Total Species	67	39
New for County	39	16
* = county record		
** = state listed		

Lichens were recorded from the Smith Property, Lowe-Volk Park and Sears Woods Nature Preserve in Crawford County (10/1/11); and the Mount Gilead State Park in Morrow County (10/2/11). Additional records were also obtained from cemeteries in both counties. A total of 30 species with 18 new county records were reported from Crawford County with 26 species and 11 new records from Morrow County. All of the species found are fairly common in Ohio.

Lichen Name	C	M
<i>Anaptychia palmulata</i>		X*
<i>Candelaria concolor</i>	X	X
<i>Canoparmelia crozalsiana</i>	X*	X*
<i>Cladonia cylindrica</i>		X*
<i>Cladonia macilenta</i>	X*	
<i>Cladonia polycarpoides</i>		X*
<i>Flavoparmelia caperata</i>	X	X
<i>Flavopunctelia flaventior</i>	X	X
<i>Flavopunctelia soredica</i>	X	X
<i>Hyperphyscia adglutinata</i>	X*	X*
<i>Lecanora dispersa</i>	X*	
<i>Lecanora ahybocarpa</i>	X*	
<i>Leptogium cyanescens</i>	X*	
<i>Myelochroa aurulenta</i>	X	X
<i>Parmelia sulcata</i>	X	X

<i>Parmotrema hypotropum</i>	X*	X*
<i>Peltigera canina</i>		X*
<i>Phaeophyscia adiastrata</i>	X*	
<i>Phaeophyscia hirtella</i>	X*	X
<i>Phaeophyscia pusilloides</i>	X*	
<i>Phaeophyscia rubropulchra</i>	X*	X
<i>Physcia adscendens</i>	X	
<i>Physcia millegrana</i>	X	X
<i>Physcia phaea</i>	X*	X*
<i>Physcia stellaris</i>	X	X
<i>Physciella chloantha</i>	X*	
<i>Physciella melanchra</i>	X*	
<i>Physconia detersa</i>	X	X
<i>Physconi aenteroxantha</i>	X*	X*
<i>Punctelia bolliana</i>		X
<i>Punctelia missouriensis</i>	X	X*
<i>Punctelia rudedta</i>	X	X
<i>Punctelia subrudecta</i>	X*	X
<i>Pyxine sorediata</i>		X
<i>Rimelia reticulata</i>	X*	
<i>Xanthomendoza weberi</i>	X*	X*
Total Species	30	26
New for County	18	11

- Jeff Rose and Bob Klips

LOWER PLANTS

Moss and lichen – lower plants,
the higher plant people say;
But if you give them half a chance,
they'll really make your day.

Minature beauty – ecology too,
enough for your interest forever;
You'll need a scope and some chemicals
few,
to unlock their secrets most clever.

So get out there – look around,
learn from the lichen and moss;
Treasure the mysteries of lower plants
found,
and you'll never be at a loss.

- Ray Showman

NEWS & NOTES

We at the Ohio Moss and Lichen Association are saddened by the passing of Barbara Schomer. Barbara and her husband, Bruce Randall, participated in the 2008 Fall Foray to Erie County, then joined OMLA in 2009. Barbara lived in Pittsburgh. She volunteered in Everglades National Park and a lichen, *Calopadia schomeræ* (Pilocarpaceae) was named for her.

* * * * *

OMLA welcomes 8 new members who joined in 2011. They are Dylan Herd (Lancaster, OH, student membership), Jack Berninger (Cleves, OH), Eric Boyda (Ironton, OH), Conor Flynn (Columbus, OH, student membership), Diane Holsinger, Timberville, VA, Mike Kangas (University Heights, OH), Aurora Roemmich (Ironton, OH), Willa Schrlau (Chagrin Falls, OH), and Geoffrey Yost (North Canton, OH, student membership).

The total membership for OMLA is now 55!

* * * * *



Photo by Bob Burrell
Leopard slugs, like the one pictured here, sometimes graze on lichens.

COLLECTING LICHENS IN WEST VIRGINIA

When I was doing the collecting for The Macrolichens in West Virginia I found that cemeteries and churchyards were pretty good places for quick results. There were no “No Trespassing” signs and usually no one to bother you; especially if you avoided Sunday mornings around 10:00. I learned that one spring morning in the southern part of the state.

I had sort of lost track of time until this whole bunch of people come upon me and wanted me to come in for morning services. There wasn’t much else I could do, so I set down in one of those wooden pews. The singing could have used some help but the preacher did a good job with his message, don’t you know. And after he was finished, he invited anyone with a problem to come up to the altar. He did. But no one came. They didn’t. Well, like I said, he had a pretty good sermon, so I decided the right thing to do was go up to the altar as he asked. I did. And I said, “Maybe you can help me with my hearing”.

About that time everyone else in the church came up to the altar and they did what they called “The Laying of the Hands”. They did. They did. And what they did was, they laid their hands on me. Pretty soon this good preacher put his fingers in my ears and said a few words that ended with, “Amen” and “Praise the Lord”. Then he turned to me and said, “How’s your hearing now”?

And I said, “Well, I don’t know, it’s not until next week”. - **Don Flenniken**

The Editors wish to thank all of our contributors for making this issue the biggest and best yet!



Participants of the Summer Foray, June 11, 2011. (Left to right) Bob Klips, Jim Toppin, Carole Schumacher, Cynthia Dassler, Janet Traub, Ray Showman, Jeff Rose, Logan Findley, Don Flenniken, Naomi Mathew. Both photos by Bob Klips



Participants of the Fall Foray, October 1, 2011. (Left to right) Back row: Jeff Rose, Bill Schumacher, Cynthia Dassler, Bob Burrell, Ray Showman, Bill Fisher. Second row: Don Flenniken, Carole Schumacher, Diane Lucas, Dave Smith, Ed Fuchs, Jim Toppin, Bob Klips. Front row: Naomi Mathew, Barb Andreas, Janet Traub.