



Fungi Kingdom News

The newsletter of the Pioneer Valley Mycological Association

© Jess Evans



These unknown tiny fruiting bodies (approximately 1" at the tallest) were hiding underneath a rotting log under about 4" of snow and slush. We've entered the time of year when most fungi require a bit more determination and a few more cozy layers on while out in the woods.

© Mike Ostrowski



Mike Ostrowski is one of our most dedicated log rollers out there in the woods this time of year. You can read more about mycelium, pictured here, in the following pages.

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Pioneer Valley Mycological Association

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Other members:

Philip Hadley
Jonathan Kranz
Paul Thomas

OUR MISSION STATEMENT

The Pioneer Valley Mycological Association is dedicated to enhancing the public's knowledge and appreciation of the fungal kingdom by providing ongoing educational programming in the form of guided mushroom walks, lectures, newsletters, information on multi-day regional and national forays, and citizen science projects. Because fungi are integral components of complex ecosystems, we are committed to advocating for responsible and sustainable study and collection methods. We focus on, but are not limited to, the three counties of the Pioneer Valley in western Massachusetts (Franklin, Hampshire and Hampden).

PVMA is a member of the Northeast Mycological Federation (www.nemf.org) and the North American Mycological Association (www.namyco.org).

www.PVMAmyco.org

Also visit Dianna Smith's educational site fungikingdom.net for articles, fungi photos, and more.

We Welcome Your Submissions!

This is your newsletter; we'd love to have you contribute to it!
Prose, verse, photos, drawings, recipes, scientific observations – send them all to:
jessicabensonevans@gmail.com

From the President...

First, a warm welcome to all of our new members who joined us for the first time in 2022! Our wonderful members, both returning and first-time, make our club the welcoming and joyful group that it is, and we wouldn't be PVMA without all of you. Thanks for being part of the magic!



It's been a great winter season for fungi so far. We briefly had deep snow up here in Shutesbury, but the wind and warming temps at the end of December meant lots of fallen branches with tiny treasures and numerous logs free from frost and ready to roll. Did you know that fungi can be found in all seasons?

Take a look at pages 6-7 for more examples of winter fungi found by our members.

- Jess

©Mary Obrzut



Year-round hiking enthusiast and Vice President Mary Obrzut spotted this beautiful *Schizophyllum commune* this winter.

Notes from the Underground: The Mysterious World of Mycelium

By Jonathan Kranz

Open any mycology book, attend any introductory fungal lecture, and among the first lessons comes the understanding that the mushrooms we seek are merely the fruiting bodies of the fungi we can't see: the metabolism of this creature, its day-to-day living, growing, eating, exploring, and ultimately, dying, are fulfilled invisibly within a thready, cobwebby network of hyphae called, "mycelium."

©Jess Evans



Hohenbuehelia mastrucata with mycelium

Fungi thrive in the underworld, hidden within the dark recesses of plant tissues, dead or dying wood, and that simultaneously ordinary and extraordinary substance, soil. Most of the time, we mushroom hunters see nothing of this life beyond the few threads that cling to the base of freshly harvested specimens, or an ivory mycelium spread thin, damp and lacy on the underside of a freshly turned log.

We know that fungi, like animals, are heterotrophs that must consume other life in order to live.

But unlike animals that ingest food and excrete waste, fungi live "inside-out," excreting the chemistry necessary to liberate nutrients they can then absorb. With so much activity outside itself, where does its body end and the environment begin?

How do we imagine such a porous, ambiguous creature? What would be its shape, its texture and form? If we had a superpower that would allow us to picture the mycelium distinct from its context, what would we see? Would it resemble clouds or pillows, neural networks or explosive nebula? Does each individual (and what does individuality mean for a being so widely spread out?) maintain its own distinct turf with discrete boundaries, or can the hyphae of many individuals intertwine, creating a three-dimensional tapestry of multiple species underground?

"We don't know exactly what's going on below ground."

According to David Hibbett, PhD, Professor of Biology at Clark University and a good friend of both the PVMA and BMC, "different fungi have different forms." The saprobes that feed on dead wood – the brown and white rotters -- for example, are "more homogenous than the soil [dwellers]." These will indeed defend distinct territories often defined by the spalting favored by woodworkers.

Wood showing examples of spalting, or the different zones of wood rot fungi.



[\[SOURCE\]](#)

“But the three-dimensional [spread] of ectomycorrhizal mycelia?” says Hibbett. “We don’t know.”

That large “not-knowing” became the underlying theme of my pursuit of the underworld. Serita Frey, PhD, Professor of Natural Resources and the Environment at the University of New Hampshire, concurs: “We simply don’t know what’s going on below ground.” In a time when the recently deployed James Webb Space Telescope seems to be producing near-daily insights into galactic systems millions of light years away, we have significantly less understanding of the natural dynamics of soil systems literally under our feet. The reasons why are not obscure: it’s dark down there and the complex interrelationships of so many organic and inorganic variables are difficult if not impossible to recreate in the lab.

Here's what we do know. First, among the fungi that live symbiotically with plants, we must distinguish the **endomycorrhizal arbuscular fungi (AM)** that associate with 85% of all plant species from the **ectomycorrhizal fungi (ECM)** that associate with merely 5% of terrestrial plants, including many of our familiar forest trees : oaks, birches, pine (but not, sadly, maples). The hyphae of the former, AM fungi actually penetrate into the root cells themselves, creating arbuscules – branched, tree-like organs -- for the exchange of nutrients/water for life-giving sugars. AM fungus activity is essential for life on Earth, but their mycelia do not create mushroom fruiting bodies.

The ectomycorrhizal fungi are less prevalent, but more significant to us mushroom hunters because of the bounty they create on the forest floor. Underground, their hyphae do not penetrate plant cell walls, but do create a Hartig net between the epidermis and cortex to facilitate exchanges.

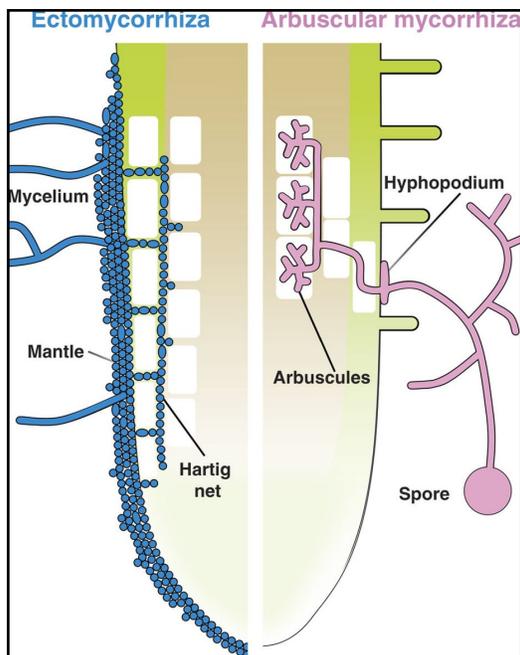
An examination of tree rootlets, even with relatively minor magnification, will reveal a hyphal “wrapping” that bonds plant and fungus together.

In either form, AM or ECM, the mycelia extend beyond their symbiotic root foundations to explore for water and nutrients they can exchange for carbohydrates. According to Dr. Frey, the reach of this hyphal extension is “not well documented and depends on the species and growth habit, with some hyphae extending a significant distance from colonized roots.”



©Mike Ostrowski

ECM versus AM fungi, shown on a plant root.



[SOURCE]

Yet, oddly enough, despite the overwhelming number of plant/fungi relationships and the oft quoted statistic of 1 – 40 miles of hyphae per teaspoon of soil, “only 1% to 2% of soil surface area is occupied by microbes,” says Dr. Frey, “leaving lots of room for mycelia to explore without bumping into each other.”

Mycelia may not be colliding, but the soil environment remains profoundly crowded. Dr. Frey estimates that some two – three thousand different fungal species, active and resting (i.e., spores, sclerotia), can inhabit that same teaspoon of soil. That’s why, Dr. Hibbett suggests, biologists are exploring “metagenomics,” “metatranscriptomics” and “metaproteomics” (DNA > RNA > proteins) to find “clues to the physiological potentialities of an environment beyond the genome of any one organism.”

If the ultimate nature and form of mycelia remains frustratingly inconclusive, we can take comfort in knowing that its activity – like the search for quantum gravity or the nature of black holes – is as mysterious to our best scientists as it is for us lay mushroom enthusiasts. We end where we began, but perhaps with more humility and awe; for every mushroom we pick and study, there is a secret world of mycelium that, like the dreams in our heads and the stars in the sky, reward us with an even greater capacity for wonder.

©Jess Evans



Top view of *Hohenbuehelia mastrucata* with mycelium

Coming this Fall: The 2023 Continental MycoBlitz!

“You may have heard of a “BioBlitz” – an intense, and usually time limited survey of all of the organisms living in a given geographic area. A MycoBlitz is a similar survey, but with the focus solely on fungi. Participants work to catalog as many species as they can from the survey area, during the survey time period.” Winter is a great time to learn how to participate!

Save the Dates:

August 11 – 20 and October 13 – 22

For more information, visit [Mycota’s MycoBlitz page](#).



Although winter is a “dormant” period for the macrofungi we find all summer and fall, there’s still plenty to see out there in the woods. Members have been out hiking favorite trails, rolling logs, and finding a number of beautiful species despite the cold.

©Mike Ostrowski



Schizophyllum commune, also commonly known as the “Split Gill.”

©Mike Ostrowski



Lentinus arcularius.

©Mike Ostrowski



Panellus stipticus with a lovely example of mycelium.



Tectella patellaris (left) with *Scytinotus ringens* (right)



Crucibulum laeve, commonly known as "Bird's Nest" fungi.



Phaeotramella foliacea, also commonly known as *Tremella foliacea*.

The 2022 Christmas Mushroom Count

By Lawrence Millman

Certain New Englanders seem to think that, well, it's winter, so our fungi have all gone south to Florida. But some of our fungal species are no more migratory than some of our birds...and just as Mass Audubon sponsors an annual Christmas Bird Count, I've been doing an annual Christmas Mushroom Count for ten years at the Wachusett Meadow Wildlife Sanctuary in Princeton, MA.

In 2022, our Christmas count took place on December 27, a day when the temperature was several degrees below freezing. We had only three participants — Joe Warfel, Deana Tempest Thomas, and yours truly. Family-oriented activities seemed to have claimed most of the event's past participants. Which is a shame. For what family activity can be as gratifying as fungal foraging?

Our initial sighting was a *Gloeophyllum tra-beum* on the worked wood of the parking lot's fence. Soon we were seeing the usual winter suspects — *Irpex lacteus*, *Schizophyllum commune*, *Stereum complicatum*, *Panellus stipticus*, *Hydnoporia olivacea*, *Trichaptum bifforme*, and *Mycosphaerella colorata*, an asco that's on almost every mountain laurel leaf this time of year.



Plicaturopsis crispa, commonly called the “Crimped Gill.”

Two other species were everywhere— the jelly fungus *Exidia crenata* (formerly *E. recisa*) and *Plicaturopsis crispa*, a saprobic species with a tannish pileus and crimped gills (hence its common name Crimped Gill). Both these species can freeze and rehydrate quite a few times, no problem. In fact, *P. crispa* seems to prefer fruiting in the winter rather than other times of the year.

At one point, Deana shouted, “Hurrah!” For there was a row of *Porodis-culus pendulus*, the world's smallest polypore, on the same fallen log where she'd found it during last year's event. This species is not so much uncommon as it is overlooked. I should add that the basidiocarps looked a bit the worse for wear, but with the passage of time, which of us isn't the worse for wear?

At another point, Joe found several Lilliputian, reddish-pink mushrooms with pleated caps on the trunk of an oak tree. The species in question was *Mycena corticola*, which uses its substrate's bark as insulation in the winter. It also has the ability to shrivel up during very cold conditions, then come back to sporulating life during less cold conditions.

In the end, we documented 51 species (see next page). If most of the logs hadn't been frozen to the ground, we would have found more species, including cup fungi and certain crusts. But wait! Under one of the few logs we rolled, we found several *Chlorociboria aeruginescens*. Was it my imagination, or did I hear these lovely green cups singing “Merry Christmas Mushroom Count” to us?



Mycena corticola

Christmas Mushroom Count Species List

<i>Antrodia sp.</i>	<i>Irpex lacteus</i> (Milk White Tooth Polypore)	<i>Sarea resiniae</i>
<i>Apiosporina morbosa</i> (Black Knot of Cherry)	<i>Kretschmaria deusta</i> (Carbon Cushion)	<i>Schizophyllum commune</i> (Split Gill)
<i>Botryobasidium sp.</i>	<i>Laetiporus sp.</i> (Chicken of the Woods)	<i>Spongipellis pachydon</i>
<i>Chlorociboria aeruginescens</i> (Green Elf Cup)	<i>Lophodermium pinastri</i> (Needle Cast)	<i>Steccherinum ochraceum</i> (Ochre Spreading Tooth)
<i>Dacrymyces sp.</i> (Orange Tree Brain)	<i>Mycena corticola</i>	<i>Stereum complicatum</i> (Crowded Parchment)
<i>Daedaleopsis confragosa</i> (Thin Maze Polypore)	<i>Mycosphaerella colorata</i>	<i>Stereum lobatum</i> (False Turkey Tail)
<i>Daldinia concentrica</i> (Cramp Ball)	<i>Nectria cinnabarina</i> (Coral Spot)	<i>Stereum sanguinolentum</i>
<i>Diatrype stigma</i>	<i>Oxyporus populinus</i> (Mossy Maple Polypore)	<i>Stereum striatum</i>
<i>Exidia crenata</i> (Amber Jelly Roll)	<i>Panellus stipticus</i> (Night Light)	<i>Trametes pubescens</i>
<i>Fomes fomentarius</i> (Tinder Polypore)	<i>Phaeocalicium polyporaeum</i> (Fairy Pins)	<i>Trametes versicolor</i> (Turkey Tail)
<i>Fomitopsis betulina</i> (Birch Polypore)	<i>Phaeotremella foliacea</i> (Leafy Brain)	<i>Tremella mesenterica</i> (Witches Butter)
<i>Ganoderma applanatum</i> (Artist Conk)	<i>Phlebia radiata</i>	<i>Trichaptum abietinum</i>
<i>Gloephyllum trabeum</i>	<i>Phlebia tremellosa</i> (Trembling Phlebia)	<i>Trichaptum bifforme</i> (Violet Tooth Polypore)
<i>Hydnoporia olivacea</i> (Olive-Toothed Polypore)	<i>Pilobilus crystallinus</i> (Hat Thrower)	<i>Tyromyces chioneus</i> (Cheese Polypore)
<i>Hypoxylon fragiforme</i> (Beech Balls)	<i>Plicaturopsis crispa</i> (Crimped Gill)	<i>Tubakia dryinus</i> (Oak Leaf Spot)
<i>Hypoxylon sp.</i>	<i>Porodisculus pendulus</i>	<i>Xylodon (=Schizopora) paradoxa</i>
	<i>Rosellinia sp.</i>	
	<i>Sarcomyxa serotina</i> (Late Fall Oyster)	

Annual Elections: Voting coming soon to your inbox!

This year, both our President and Treasurer are up for re-election. Each volunteer serves a 2-year term.

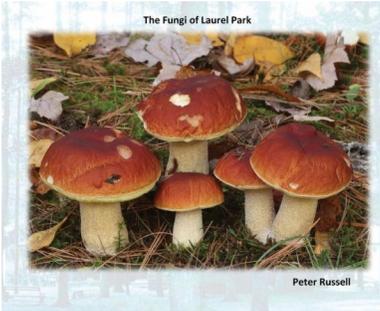
Jess Evans has been our President for the past four years and is excited to continue forward in that role for the upcoming term. Jess can often be found ad-libbing a song about fungi or looking way up the trail to see where Ella has gone this time!



Mike Ostrowski is one of the founding members of PVMA and has served as Treasurer for most of the club's history! Mike is a dedicated log-roller in the winter and a calm and steady presence year-round.



Please vote— your participation is important.



Book Review

The Fungi of Laurel Park

Peter Russell

2023, Hardbound, 184 pp.

Barnes and Noble Press

ISBN 9798823165570

\$41 US

By Jess Evans

Many PVMA club members have gotten the chance to meet Peter Russell, our resident “Waxy Cap” expert and all-around knowledgeable mycologist over the past few years. Some have also gotten to experience Peter’s beautiful home woods in Laurel Park, the old Methodist summer camp in Northampton. Inspired by the unique old growth trees and prompted by a medical mishap rendering him unable to hike this past summer, Peter embarked upon an adventure of another kind. His new book, *The Fungi of Laurel Park*, represents both Peter’s incredible photography and deep knowledge of all things mycological.

The hardcover begins with an introduction for the reader on the history of Laurel Park. This wooded parkland with around 100 privately-owned cottages was once a Chataqua Assembly site, hosting large numbers of visitors in large tents. This history as a summer tent community meant that many of the trees at Laurel Park are old growth trees. Russell explains to the reader that these old growth trees are significant for fungi in that different species associate with older trees as opposed to young ones. This has created an excellent environment in which to find and study mushrooms. The introduction also contains information on the on the various trees species found

in the park and definitions of mycorrhizal, saprotrophic and parasitic fungi. This inclusion, among many others, makes the book valuable for any mycophile’s learning.

The author also includes an invaluable section on safety regarding edibility; a must-have for any book that discusses both poisonous and edible mushrooms. His notes on Chicken of the Woods are particularly helpful to illustrate a common problem among those who seek out edible mushrooms. He writes, “It is a highly sought-after edible but I recall two lists in an issue of the UK Field Mycology Magazine Magazine: one being those mushrooms most often collected and eaten; the other being those that cause most poisonings. COW was high up on both lists.” The following discussion illustrates beautifully the reasons why mushroom enthusiasts should always be careful. If you’ve ever over-indulged even the most choice species, you know what I mean!

Russell’s gorgeous, full-page photographs of both edible and toxic species are great for both identification and enjoyment; every image illustrates all key features and highlights just how beautiful fungi can be. I’m no stranger to the author’s photographic talents, having admired his frequent posts to our club Facebook page over these last few seasons.

The main sections of *The Fungi of Laurel Park* showcase Boletes, Amanitas, Brittle Gills and Milk Caps, other Mycorrhizal Fungi, Tree Pathogens and Wood Decomposers, Leaf Mulch and Wood Chip Fungi, Grassland Fungi, Ascomycetes, and Wax Caps. These pages, each complete with large photo, inset detail, and key identification details, represent the most common species that Russell has found over a period of 3 seasons at Laurel Park. Beyond that, the documentation represents an attention to detail and scientific study that is commendable! This labor of love is obviously the result of hours of dedication and enjoyment

of both his woods and the fungi found within.

While this title focuses on the fungi of Laurel Park, its contents are valuable for anyone who enjoys or studies fungi. The large photographs and key details are beautifully done, and the format makes it accessible to almost everyone. I highly recommend this book for anyone who enjoys mushroom photography or is hoping to expand their knowledge. Beyond that, the glossy cover and sturdy binding make this book a beautiful addition to any coffee table or to-be-read pile!



Peter Russell teaches club members during a walk, July 2021.

About the author:

"I haven't always been interested in fungi or taxonomy. My first degree was in ecological resource management and pollution studies, but little taxonomy was taught; my PhD was studying salt marsh plants but only ten species were studied; my first job was recording ancient woodland indicators in the woods above a steel works in Wales but the woods were so polluted there were few plants; I took up plant recording as a hobby to counter working for an investment bank but I soon concentrated on just grasses and sedges. I started recording fungi was back in 1996 in England when I became the fungi recorder for a local wildlife trust. But what really got me passionate about fungi was surveying Waxcaps in the UK to identify ancient grassland relicts, I surveyed over 200 sites and a fond memory is finding a farmer's field in which there were 34 different Waxcap species! I moved to the US fifteen years ago and have had to learn my fungi from scratch as they are so different! I have drifted from Brooklyn via Dallas to the Pioneer Valley and adore where I now live in Laurel Park amongst the Pines; there are even Waxy Caps growing in the moss! "

Reminder to Renew

If you have not yet renewed for 2023, this will be the last newsletter you receive.

Coming Soon!

- Spring Lecture Series through the Northeast Consortium
 - Voting for club officers (by email)
- Walk Schedule will be included in your Spring Newsletter

(Usually in April)