

MushRumors

The Newsletter of the Northwest Mushroomers Association

Volume 26, Issue 3

July 2015

Warm Temperatures Chase the Thin Alpine Snowpack, Initiating an Early Flush of Spring Mushrooms in Washington

Survivors Banquet on March 21 Featured Banquet, Raffle, and Board Elections

By Christine Roberts

This year, our first event opening the NMA season was on March 21st—the Survivors Banquet, held at the Bellingham Unitarian Fellowship Hall at 1207 Ellsworth Street. At last year's banquet this was a new venue tracked down by Jack Waytz; we had so much positive feedback on this lovely facility that Jack booked it for this year and we will probably make it our home banqueting venue for the foreseeable future.

As always, many hands made light work of the set-up and soon the room looked festive. Serving tables were filled with tasty appetizers, aromatic main dishes, and luxurious desserts. This year we had a remarkably well-balanced potluck with more than enough food for latecomers. Fred set up the projector and screen to show slides that members had sent him of NMA club events, folks, and mushrooms. These cycled through during the feast and gave us all something to enjoy between bites.

As always, the banquet is also the annual general meeting with all that implies by way of club business. An amendment to the bylaws affecting the timing and simplifying the process of nominating and electing new officers to the board was voted on and passed. The slate of officers was unanimously approved and now consists of:

President: Chuck Nafziger

Vice President: Christine Roberts

Secretary: Linda Magee

Treasurer: Andrea Miner

Trustees: Bruce Armstrong, Douglas Bennion, Buck McAdoo, Richard Mollette, Sandra Stringer.

Photo by Vince Biciunas



Photo by Vince Biciunas



Photo by Vince Biciunas



Chuck thanked retiring officers Richard Morrison (ex-Vice President), Mariepaule Braule (ex-Treasurer) and Sue Blethen (ex-Secretary) for their service these past years.

Next up was a short quiz just for fun, with a theme of what animals, birds, or professions were suggested by the common names of certain fungi. Most folks guessed them all except for *Tricholoma pardinum*, also known as the tiger tricholoma, although it is not stripey, nor is it black and orange, nor does it come from the Indian subcontinent. I guess it must feel like a tiger is biting your stomach after unwisely eating it! (Maybe it smells like a tiger, I have never gotten close enough to a tiger to ascertain this, nor do I plan to any time soon.)

The finale for the evening's entertainment was the raffle, for which there were many lovely prizes and a couple of cheesy ones for fun. Without Jen (who was unable to be there) running the popular Chinese version of the raffle, we had to make it up as we went along with Richard Mollette supervising and lending his good loud voice if needed. He didn't really need to do much as Casey and Sarah Nysten, conscripted as helpers, had clearly remembered previous raffles they helped out with and basically took over and got on with it. I sat on tenterhooks as a highly coveted silk scarf painted by Martha Dyke was my choice on my winning ticket. Fortunately, nobody "traded" their prize for mine, but as so many prizes were also very desirable folks seemed content with their choices.

After that, all we had to do was clean up, and that happened with incredible efficiency. The church representative had arranged to come back about the time we'd finished to help with putting stuff back and she entered a tidy room with all tables and chairs put away. So thank you all for making the evening a splendid event, for helping set up and clean up and for making so many wonderful dishes.

Photo by Vince Biciunas



Raffle winners had many mushroom-themed prizes to choose from.

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The Northwest Mushroomers Association meets on the second Thursday of the months April, May, and June and September, October, and November, from 7 - 9 pm.

Meeting location is the Bellingham Public Library. We will inform you in advance of any changes of venue. Membership dues are \$15 for individuals/families and \$10 for students. Please make checks payable to NMA and send to: membership, at the mailing address above.

Field trips are scheduled for the Saturday after each meeting.

MushRumors is published on March 7th, June 7th, September 7th, November 20th, and January 7th. Club members are encouraged to submit stories, photos, recipes, poetry, and artwork related to their own mushroom hunting experiences. Submissions should be made 7-10 days prior to publication.

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Well, for those dozen or so of us who showed up, the food this time far eclipsed the fungi. Despite the unusually mild but rainy winter, few mushrooms reacted favorably to the climate. The *Verpas* usually come and go in March while the few true morels that might be encountered here arrive later in the spring. This leaves us with various polypores and maybe a few pallid *Strobilurus* species or a brown *Mycena* or two. If we had to eliminate a foray, an April one would not be the worst choice.

Photo by Buck McAdoo



Stropharia ambigua, one of the 16 species encountered during foray.

I arrived at the Fairhaven Park shelter at 10 a.m. to discover a group of our finest ready to step out in pouring rain. I suspected this might happen, so I beat a hasty retreat back to downtown Bellingham to bring over the maps of the area. By the time I returned, it was evident that maps weren't needed in the first place. There was no one left to receive them.

Left to my own devices I trotted down to the wood chip mulch along Chuckanut Drive where not even an *Agrocybe* was to be found. This was not looking good. The 100-Acre Woods is about to be renamed the Robin du Pré Woods in honor of Robin who was one of many who fought hard to preserve the site from a developer. She recently succumbed to cancer, so I am all for the name change.

While reflecting on all this, foray host Bruce Armstrong hove into view. He'd been all over the place and hadn't found a thing. This was looking worse than 'not good'. The only consolation was that it might be like this wherever we went, so by foraying nearby, a lot of gas money was saved.

A little past noon and identifiers Fred Rhoades and Christine Roberts showed up with their entourages, and wonder of all wonders, they actually found 16 different species. Here they are in alphabetical order:

Agrocybe praecox: Edible but mediocre.

Coprinellus micaceus: Edible and good.

Fomes fomentarius: A horseshoe shaped conk used for tinder in the Middle Ages.

Fomitopsis pinicola: A large blackened specimen that may have disengaged years ago.

Fuligo cinerea: There is also a white *Fuligo candida* with smaller spores, but who wanted to cart this one home to find out?

Photo by Vince Biciunas



A fern-lined trail in the Hundred Acre Wood.

Ganoderma applanatum: Artist's conk.

Hypholoma fasciculare: Sulphur Tuft. Very bitter and poisonous. Apologies to Laura Nichols for my initial misidentification. I need to remember to look at the entire fruiting body before making a pronouncement.

Inocybe albodisca: Another poisonous species with a bicolorous cap.

Mycena pura: Beautifully purple but loaded with muscarine.

Piptoporus betulinus: The birch polypore, known for its blunt and inrolled cap margin.

Pluteus cervinus: The edible deer mushroom, an acquired taste.

Polyporus badius: A tough polypore with a black stem base.

Stropharia ambigua: An out-of-season find. Tastes like old forest leaves.

Trametes versicolor: Turkey Tail. Has medical benefits when boiled as a tea.

Trichaptum abietinum: A scabby diminutive polypore with lilac-tinged pores.

Xylaria hypoxylon: Looks like little black strings. A big genus in the tropics.

The star of this group was the little white slime mold, *Fuligo cinerea*. Under a magnifying glass, the white blob was transformed into a cluster of miniature ivory spheres. It was on a stick of wood and we hoped we could see it move. One of our members related seeing a slime mold on TV. It had been placed in a labyrinth with oatmeal at one end. While the audience moved to the edge of their seats, the slime mold moved unerringly in the direction of the oatmeal.

This reminded us that it was time for lunch. The chow was the usual excellent fare. The forays are not supposed to be gossip columns, but President Chuck's Oyster Mushroom muffins were exceptional. Doug's chicken was perfectly cooked, and a saw was helpful in sectioning the baguette sandwich.

One final note: Someone left behind a fine serrated knife with a black handle. This can be found at the home of Christine Roberts and Bob Trotta if anyone wishes to reclaim it.

Morel Madness Report: May 8-10

By Linda Magee

Photo by Erin Moore



A sure sign of spring, and harbinger of morels: A *Calypso* orchid (*Calypso bulbosa*) in bloom.

people set out to hunt morels. A number of us went to the Carlton Complex Burn near Pateros; others of us stayed close and foraged around Chiwawa River Road, near the Ranch at a controlled-burn site, and at the Chiwaukum Burn site. The weather was beautiful, but very dry. As the day wore on, more and more people—both individuals and commercial pickers—appeared at these sites. Near the Saturday potluck hour, foragers returned with their finds. The people who went to Pateros got the largest number of morels. Those of us who stayed nearby brought in from several to a couple of dozen, morels each. We had both natural morels and some from burn sites. The harvest was not bounteous, but it was generous. Everyone who had morels contributed a share for the Sunday breakfast. We were tired, but excited...and hungry! So, we all moved into full food-prep mode and put some magnificent food on the table. Saturday evening was a time for relaxation, conversation and some mighty raucous ping pong, pool, and Foosball tournaments.

Sunday morning came quickly—especially for the kitchen help. The Sunday breakfast was delicious

Morel Madness 2015 was great fun for all our members who attended. Please take a look at the accompanying photos and attendee comments to get a true idea of this year's excitement.

On the Friday afternoon of Mother's Day Weekend, we began to gather at the Lodge at Stonewater Ranch outside of Leavenworth, near the tiny community of Plain, Washington. Fourteen of us took up residence in the spacious Lodge and 27 campers pitched their tents and strung hammocks on the beautiful grounds. Once we settled in, there was time to sun, visit, hike the grounds and pet the horses. Over food and drink Friday evening we studied maps and planned for the Saturday forays.

After coffee and a quick breakfast on Saturday,

people set out to hunt morels. A number of us went to the Carlton Complex Burn near Pateros; others of us stayed close and foraged around Chiwawa River Road, near the Ranch at a controlled-burn site, and at the Chiwaukum Burn site. The weather was beautiful, but very dry. As the day wore on, more and more people—both individuals and commercial pickers—appeared at these sites. Near the Saturday potluck hour, foragers returned with their finds. The people who went to Pateros got the largest number of morels. Those of us who stayed nearby brought in from several to a couple of dozen, morels each. We had both natural morels and some from burn sites. The harvest was not bounteous, but it was generous. Everyone who had morels contributed a share for the Sunday breakfast. We were tired, but excited...and hungry! So, we all moved into full food-prep mode and put some magnificent food on the table. Saturday evening was a time for relaxation, conversation and some mighty raucous ping pong, pool, and Foosball tournaments.

Photo by Erin Moore



Young *Morchella snyderi* found near a campfire ring in the Chiwawa River area.

and plentiful—coffee, fruit, three frittatas and some taco fixings—all with ample additions of freshly-foraged morels. After breakfast, the volunteer cleaners in our group worked quickly and left the Lodge sparkling clean. The adventure continued after check out. Those of us who didn't have much luck on Saturday checked out the controlled-burn site nearby and were rewarded with more morels!

If this were a postcard, we would have written, "Having a great time, wish you were here." But, next year you CAN be there AND have a great time! Planning for Morel Madness 2016 is already underway. We will keep the NMA membership updated.

Every single person who attended Morel Madness 2015 contributed to make the event not only possible, but outstanding. My husband Tom Wilmore and I were in charge of Sunday morning breakfast, but I want to thank

Photo by Vince Biciunas



Morel hunters enjoying a meal at the Lodge at Stonewater Ranch.

a guest, Joel Shumate. Joel cooks at Chuckanut Brewery in Bellingham. His finesse and expertise in the kitchen added a most professional touch. Kudos to Jack Waytz for negotiating the contract with Stonewater Ranch earlier this year. Many thanks to my co-host, Vince Biciunas, who has been co-hosting this event for a number of years. This was my first time to attend a Morel Madness event, and thanks to Vince's mentoring, guidance and encouragement, I plan to co-host next year, with Raven Jirkovic.

The highest praise and thanks we give to Mother Nature, the greatest organizer of all. Without her, none of this would have been possible.

Attendee Comments

We LOVE The Lodge!
-Vince Biciunas

We ended up driving to a burn area past the town of Pateros, about 1½ hour drive. Didn't find any at first, but about lunch times, started finding morels under the pine needles just poking through. They were hiding in plain sight all the time. Had a wonderful time with the different groups of mushroom hunters we went with.

-Jim McClellan

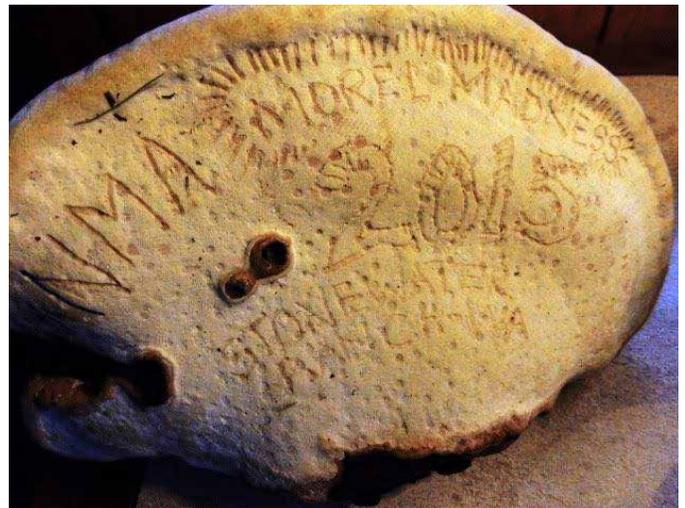
I love the Lodge, also I got skunked for the third time. But I learned Saturday evening that I probably walked over many. Sometime only a small part of a morel's head peeks out of the pine needles.

-Christa Simmons

Morel Madness is something we share as a couple, something special we do together most years. We Love it! The first year I came, I felt completely welcome and had so much fun. On Friday, we settled in and on Saturday, we enjoyed hiking and learning about mushrooms. I had no idea how interested I would ultimately become. It's really because of the individuals that show up... unique, much like the mushrooms. We are elders, 20-somethings, children and everything in between. We have much in common and there is no pressure. Mushrooms, good conversation, games, delicious food and drink, appreciation of nature, and like mycelium, we are all in relationship to one another.

-Raven Jirkovic

Photo by Vince Biciunas



I found my morels in the forest amongst pine needles and lichen. This was my first time and a wonderful experience. I appreciate my fearless leaders in their inspiration. I'm casting my morels in silver!

-Jennifer Yates

If you go outside then you can find some weird stuff. One of the weird things you can find is a Morel which looks like the inside of a Gnome's hat, but only if it had no skull, and its brain went up into its cap.

-Michael Millner

First time hunting morels and we found some. Found somewhere near the Minnow Creek Trail, all close to the trail head, not in a burn area.

-Anonymous

First time attending Morel Madness and we found some! Also enjoyed the great Lodge at Stonewater Ranch and feasted on delicious food, surrounded by great company and assisted by the expertise of long-time NMA members.

-Anonymous

Roasted Squirrel recipes! First you skin them.

-Anonymous

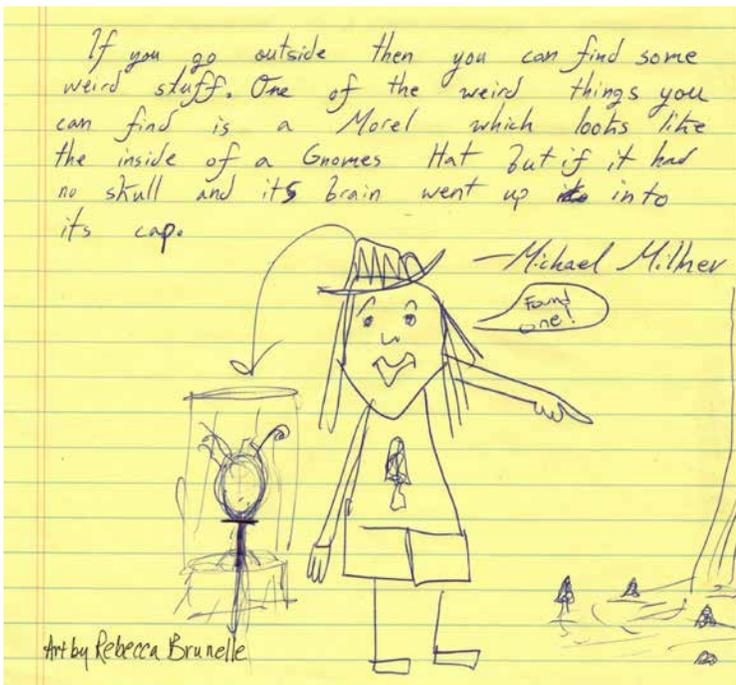
Photo by Vince Biciunas



Photo by Vince Biciunas



Photo by Vince Biciunas



Fungi

- Agrocybe praecox*
- Amanita gemmata*
- Boletus rex-veris* (buttons only)
- Coprinus* or *Coprinellus* sp - possibly *C. impatiens*
- Cortinarius cinnamomeus* group
- Corinarius croceus*
- Cortinarius* sp.
- Cryptoporus volvatus*
- Fomitopsis pinicola*
- Geopyxis carbonaria* - pixie cup*
- Geopyxis vulcanalis* - vulcan pixie cup*
- Helvella* sp.
- Lyophyllum* sp.
- Morchella snyderi*
- Nidula niveotomentosa* - bird's nest fungi
- Nolanea verna*
- Peziza petersii* (possibly)*
- Phellinus pini*
- Plectania nannfeldtii**
- Pluteus cervinus*
- Pseudoplectania nigrella**
- Pulvinula carbonaria**
- Ramaria rasilispora*
- Ramaria rubrievanescens*
- Sarcosphaera coronaria* - violet star cup
- Scleroderma citrinum* - thick-skinned puffball
- Suillus granulatus*
- Trametes hirsuta*
- Tricholoma vernaticum*
- Tricholoma saponaceum*
- Vascellum pratense* - likely; very old

* From *Ascomycetes of North America* by Beug et al.

Lichens

- Alectoria sarmentosa*
- Bryoria* sp.
- Hypogymnia apinnata* or *enteromorpha* (likely)
- Hypogymnia physodes* (likely)
- Hypogymnia* sp.
- Letharia vulpina* - wolf lichen
- Nodobryoria* sp.

Photo by Erin Moore



Collected specimens arranged on the identification table at the lodge.

Photo by Vince Biciunas



Morchella snyderi just waiting to be picked.

Mushroom Farming and Mycophobia in Lebanon

By Alex Winstead

Photo by Alex Winstead



When I began growing mushrooms more than twelve years ago, I held a vision that this unique practice of transforming waste material into nutritious food could be useful in so many parts of the world. Romantic dreams of mushroom farms improving agricultural economies, creating new, ecologically beneficial food sources, and empowering people with skills to feed their families and community were what inspired my early efforts. Stories of low-tech rural enterprises growing gourmet mushrooms in off-the-grid jungle environments trickled into my consciousness from varied sources and colored the philosophy and, eventually, the physical structure of how I built my own mushroom farm in Whatcom County.

Finally, and suddenly, the dream of travelling to distant lands became much closer to reality in the summer of 2014. I was paid a visit by a budding mycological entrepreneur, Nicolas Haddad from Lebanon, accompanied by 30+ year veteran of the mushroom industry, Mickey Foley of Oregon. Mickey had recently visited Nicolas while on a Farmer To Farmer exchange in Lebanon sponsored by USAID.

During their visit I learned more about Mickey's experience travelling the world as a volunteer mushroom expert and the different places he's been and projects he's worked on. This was a very fortuitous meeting. Mickey—being retired for a number of years—has reduced the amount of these projects he takes on each year. We parted ways with the agreement to follow up and for him to pass my information on to his contacts that organize exchange programs.

We stayed in touch, and by late fall I was being recruited to travel to Lebanon for a two week assignment assisting a few small startup growing operations and to get an introduction to the Lebanese mushroom industry. Wow! I could not believe this was happening and it was all coming together at my farm's busiest time of the year.

I was able to put the trip off until February when farm life is slower. The excitement of making my first trip to the Middle East was growing—feelings of nervousness and enthusiasm mixed together as I prepared for my journey.

You know you're not in Kansas anymore when you step into the Middle East Airlines terminal at Charles de Gaulle Airport in Paris. The dress is a mix of Western and Middle Eastern, the security detail carry AK-47s and are in military uniform, and the cacophony of languages is a slough of new sounds, exclamations, and a distinct mix of Arabic, French, English and probably others I can't pick out. This is getting interesting!

I survive the 24+ hour trip to Beirut, struggle my way with limited French to my hotel, and settle in with my first of many Schawarma (Lebanese spit-roasted meat wrapped in flat bread with veggies) for dinner.

The next day I meet with my hosts at the Land 'O Lakes field office in Beirut (Land 'O Lakes is a major U.S. Ag company and administers some USAID-sponsored programs abroad like Farmer To Farmer exchanges). They give me an introduction to the country, the geography, political climate and a bit about the culture and state of the mushroom industry. This is where I first learn about a common condition of Mycophobia amongst many Lebanese. The industry and appetite for mushrooms is quite small and is mostly focused on the white button mushroom. Anything else, even Crimini (the same species as the white button), is viewed somewhat skeptically and rare to find in grocery stores, markets or typical restaurants. The demand for specialty foods—including exotic mushrooms—is growing along with the Lebanese upper-middle class, but is still in its infancy. Mushrooms like shiitake, oyster, enoki, portabella, etc. are found only in specialty grocery stores and up-scale restaurants. Almost 100% of these varieties—with the exception of some crimini and portabella—are imported from Europe or farther East Asia. This is why I am here: people see an opportunity to capture some of this growing demand for specialty mushrooms by producing them in Lebanon.

My first assignment is with the Holy Spirit University (USEK) of Kaslik, a smaller town just 20 minutes from Beirut. The college of agronomy at this Maronite Catholic university wants to establish a mushroom culture lab

and test farm on it's campus. Their goal is to offer spawn to local growers as well as training to both their own students who want to enter the field of mushroom growing as well as Lebanese farmers who need more skills and supplies to produce specialty mushrooms. There are more than 100 Maronite Catholic monasteries in Lebanon, many of which are rural and produce their own food. Growing mushrooms for consumption in-house or as a way to generate income could also spread to the various monasteries connected with the university.

Working in their well-equipped laboratory, I train the USEK team on the basics of sterile culture work with mushroom strains I 'smuggled' from home and we discuss the habitat needs for successfully producing mushrooms in their warm Mediterranean climate. Kaslik is located north of Beirut close to the sea and is a gateway to the rural uplands and mountains that separate coastal Lebanon with the interior Bekaa Valley where many farms are located. The climate in winter while I was there is mild—in the 60s or 70s most days with occasional rain. Summers are extremely hot and dry, with spring and fall being more reasonable. Proper climate controls are necessary for any mushroom farming venture that plans to produce year-round here.

Throughout my trip I toured and met the owners of four local *Agaricus* farms for perspective on the current industry and to see how it is being managed. All of these farms are high-tech operations with advanced systems and high productivity. The major influence for the design and management of the farms comes from Dutch consultants and suppliers. Mushroom farms in Holland are among the most efficient and high-tech in the world and their designs and expertise spreads far and wide. All but one of the farms I visited purchase 100% of their growing media, casing soil, supplies and actual structures directly from the Netherlands, shipped in cargo containers. This makes productivity and yields extremely reliable, but it makes the costs astronomical. Most of these farms are just breaking even. It is not a sustainable model of farming in my opinion.

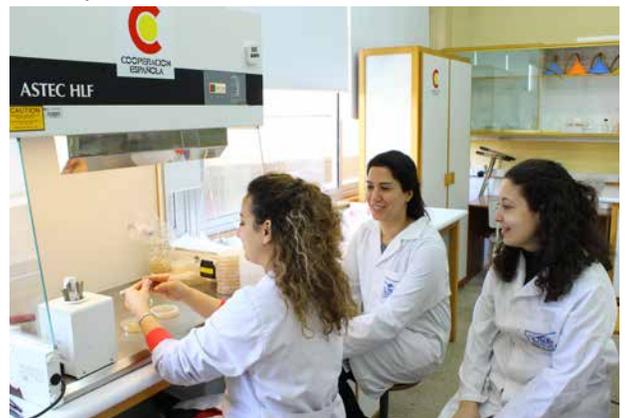
The totally sad irony of the Dutch-influenced farming model is that the Lebanese growers are actually competing directly in the marketplace with mushrooms imported from the Netherlands! To add insult to injury, the imported mushrooms demand a higher price than those locally grown. There exists a strange mentality in Lebanon—which is common but not entirely universal—that imported goods are superior to those produced locally. That somehow mushrooms (and other foods) grown in Lebanon, closer to the market, are somehow of a lower quality than those that are imported. This condition perplexed me throughout my trip and I continually counted my blessings for my own community, where the opposite mentality exists; local food is better, and a farm like mine has the support it needs to succeed.

Wild mushrooms are not common in the typical Lebanese cuisine. I was not around for the season when most mushrooms come out, but I did hear from some people that there are areas in the mountains where wild fungi are abundant. A PhD student I met at the American University of Beirut (AUB) has worked extensively with identifying wild mushrooms across Lebanon. She had cataloged and preserved hundreds of specimens and is in the process of completing her thesis on mycorrhizae. She recognized many of the genera of mushrooms in a slide show of mine and upon seeing my photos of *Amanita* she exclaimed that her dream is to find one in the wild. Apparently she hasn't come across any yet and they are not very common.

Hunting wild mushrooms for one's own table is even rarer in Lebanon and is surrounded with fears and stories of poisoning and death. The looks I got after confessing proudly to foraging my own wild fungi were priceless. The usual question following their initial shock was "how do you know they're edible?" or "how can you tell if a mushroom is poisonous?". To which I explain the process of learning to recognize key characteristics, using keys to identify the mushrooms you find, and the indispensable value of learning from someone who has real experience. Even after all of this reassurance most will still look at me suspiciously, shaking their head slightly, knowing that I have a screw loose somewhere.

Lebanon is a small country, rumors spread here as fast as technology and media can carry them. Earlier in 2014 a Syrian family was poisoned and killed (so the rumor goes) by eating mushrooms they thought were edible. Hunger and poverty among the large refugee population and the lower class drive people desperate for

Photo by Alex Winstead





nourishment to take their chances with unknown wild foods. Tragic outcomes feed the culture of mycophobia, and a lack of local knowledge leads to more tragedies. It is my hope that if I have any impact from volunteering on a project like this one, it is to teach the people who really need the nourishment to grow some of their own food so they don't have to take those deadly chances. If the programs I'm assisting to get off the ground are successful, we may see small, family-scale mushroom farms tucked in here and there across the fertile Bekaa Valley of Lebanon. And maybe even someday there will be locally grown oyster mushrooms served on a restaurant menu in Beirut!

The Urbanization of Psilocybin Mushrooms in the Pacific Northwest *By Caleb Brown*

Psilocybin mushrooms, often called “magic mushrooms” are interesting for many reasons, yet most studies focus on the psychoactive tryptamine alkaloids as the object of interest. However, something more peculiar is happening here in the Pacific Northwest, and it has little to do with the drugs themselves.

Washington specifically holds the largest number of psychoactive mushroom species in the world, with approximately twenty-five psychoactive species in five genera. Yet, despite inhabiting in the Evergreen State, psilocybin mushrooms prefer urban developments rather than the vast temperate forests dominating the landscape. It is this phenomenon which typically results in confined areas where citizens live alongside large amounts of psychoactive mushrooms.

However, most of these species go largely unnoticed, and are often found in hazardous places such as the newly woodchipped median of a freeway. Spores from a fruiting such as this can be distributed throughout the landscape by our road systems, hitchhiking on the flow of traffic. In this way, urban mushrooms can create large highways of genetic distribution, which are often driven by the government's incessant need for landscaping along freeways. Additional distribution, driven by gardening communities, often transplants foreign mycelium that clings to the roots, dirt, and woody debris of nursery plants and landscaping material. This process often brings species of fungi into new urban habitats, where perfect conditions may be awaiting them. Watering cycles, as well as the addition of fertilizers and new substratum continually provides growth in areas that are well maintained. Sod from pasturelands and woodchips from road crews remain the most common substrates, yet a variety of wood, grass, and manure have been found to grow psilocybin mushrooms. These materials, which are used in the construction of communities and infrastructure, are becoming increasingly common as urban developments continue to grow.

With these changes in mind, it is hard to consider the possibility of a decrease in psilocybin mushroom populations. However, it seems the rate at which these populations are growing is slowing down. A significant impact was made when cities around the Pacific Northwest made the economic and environmental choice to use leftover bark from lumberyards as landscaping material. The decreasing amount of the fungi's favored sapwood and heartwood substrates is causing populations in some areas to crash. Even though this so called beauty bark can support psilocybin mushrooms, it often takes years for natural processes to prepare a substrate for psilocybin mushroom colonization. Despite the difficulty for spores to germinate and grow on this material, it seems some genotypes have the ability to create exo-digesting compounds necessary to thrive in bark substrates. Once a suitable host is established, plentiful food and a lack of competition drive these fungi to fruit in the thousands.

Whether or not psilocybin mushrooms have adapted to this change in bark substrate is unknown. However, it must remain noteworthy that these mushrooms did not originate from man-made landscapes, but have adapted

to use them. Habitats in the future will continue to grow and expand as the natural landscape is developed. During this time, different materials may increase genetic diversity as fungi develop resistances to toxins or adapt to new substrates. It is this ability to adapt, along with the vast network of distribution and increase in habitat, which nearly ensures the future of urban psilocybin mushrooms in the Pacific Northwest.

It has been demonstrated that human interactions within the natural landscape has lead to this vast urbanization of magic mushrooms. With this in mind, it remains important that our pursuit of knowledge not be limited to drugs when studying hallucinogenic fungi. As human and fungal populations continue to grow, we must assure the continual systematic and taxonomic study of psilocybin mushrooms for the health of the Pacific Northwest and its residents.

It is this reason why much of my time has been spent in urban environments searching for mushrooms and photographing them. However, species containing psilocybin remain the most interesting, as I am often shocked to find a large number of species fruiting in strange habitats. As a schedule one substance, it is amazing how psilocybin-containing fungi haven't been eradicated as part of the ever-persisting war on drugs. On the other hand, most instances of trafficking psilocybin mushrooms have been limited to one tropical species, which is easily cultivated in force. Even so, it seems only a matter of time until these fungi are targeted for removal. With growing populations of psilocybin mushrooms and concerns revolving them, photography seems to be the least controversial and most promising tool to studying the habits of these fungi. As such, I present a small number of photos, which may help determine the identity of psilocybin mushrooms in the interests of conservation and public safety.

The genus *Psilocybe* holds the most species in this complex of psilocybin mushrooms. It is comprised of small, caramel-brown colored mushrooms that often bruise blue when damaged. *Psilocybe* remains the most common psilocybin mushroom genus in the world, with nearly all of the species containing active tryptamine alkaloids. Spores and mycelium rapidly colonize newly-laid substrates, and often outcompete any competition. It is this advantage (along with others) which has lead to the rapid urbanization of *Psilocybe*.

Psilocybe azurescens is often the most striking *Psilocybe* mushroom. Reported to contain the largest concentrations of tryptamine alkaloids, with approximately three times more than the average black market psilocybin mushroom. Its scientific name reflects this phenomenon, as fruit bodies and mycelium alike turn heavy azure blue when damaged. As a result, many seek this powerful magic mushroom, and often hunt the natural habitat along the Columbia River delta and coastal dune grass where this species can be found in force. Consequently, many parks throughout the area have established a law against mushroom foraging to dissuade mushroom hunters. However, during each fall rangers continue to prosecute citizens over the felony possession of magic mushrooms. The urbanization of this species is similar to many other taxa in *Psilocybe*, and it prefers woody debris to colonize. The distribution seems to be ongoing, but for now currently limited to Southwest Washington and Northwest Oregon.

However, *Ps. azurescens* is highly sought after and remains the subject of cultivation throughout the world; only time will tell if these mushrooms will become urbanized in these new habitats.

Psilocybe cyanescens, often called the wavy cap, is the most common psilocybin mushroom in the Pacific Northwest. This taxon mainly prefers woodchip substrates, but has also been known to grow in grass and appears to be naturalized on the Pacific Coast, colonizing dune grasses. The fruiting seasons of this species extends from early fall to well into the winter frosts. *Ps. cyanescens* is a hardy species, which can often endure weeklong freezes during the

Photo by Caleb Brown



Psilocybe cyanescens

winter. Fruiting bodies often contain high amounts of tryptamine alkaloids, which can result in colorful bluing reactions for which it gets its scientific name.

Photo by Caleb Brown



Psilocybe stuntzii

Psilocybe stuntzii, termed the blue ringer, remains one of the only species of psilocybin mushroom to have an annulus. This annulus, which often turns blue, is where this species gets its informal name. Originating from pasturelands, this species has made its way into housing developments of the Pacific Northwest. It can be found growing on both woodchip substrates and well-maintained grass. *Ps. stuntzii* primarily fruits in the fall, with occasional fruitings in the early months of spring. It is thought that *Ps. stuntzii* was likely the most common species of urbanized psilocybin mushroom during the development of Seattle, and is still commonly found in newly urbanized areas.

Photo by Caleb Brown



Psilocybe baeocystis

counterparts. During the fall, in grassland and woodchip habitats alike, it is common to find *Ps. baeocystis* growing gregariously alongside related *Psilocybe* species, especially *Ps. cyanofibrillosa* and *Ps. stuntzii*.

Psilocybe cyanofibrillosa is an extremely rare species, which often fruits in close proximity to both *Ps. stuntzii* and *Ps. baeocystis*. It can be found in both decaying woody substrates as well as maintained grasses. It readily bruises blue when damaged and fruits in small gregarious clusters.

Psilocybe semilanceata, otherwise known as the liberty cap, is likely the world's most

Psilocybe baeocystis, often just called “Baeos,” remain the most interesting species to me personally. Fruiting bodies can be observed with a silvery white stem, which twists and burls. The cap often wrinkles, creating a shape similar to a beach cabana. Bluing reactions are intense, and often stain the fruit bodies brilliant blue-green. It seems for this reason that it was chosen as the object of study to describe baeocystin, one of the four major tryptamine alkaloids present in hallucinogenic fungi. Although these fungi are rare, they can thrive in both woody and grass substrates, similar to *Ps. stuntzii*. Yet, unlike many other species, *Ps. baeocystis* seems to have an uncanny ability to grow with its

Photo by Caleb Brown



Psilocybe cyanofibrillosa

famous magic mushroom. The common name arises from the pileus, which is similar to the Phrygian cap, a national symbol of France. *Ps. semilanceata* can be found fruiting in the fall and early winter months. It mainly grows in cow pastures around the temperate regions around the world, where the abundance of natural fertilizer can lead to large amounts of fruit bodies. However, the urbanization of this species can be witnessed in areas where grass is well maintained throughout the Pacific Northwest.

Photo by Caleb Brown



Psilocybe semilanceata

Psilocybe ovoideocystidiata is one of the newly described species to the Pacific Northwest, and is a prime example of how the urbanization of psilocybin mushrooms is an ongoing process. Interestingly, the natural range of this taxon is well outside the Pacific Northwest. It can be found fruiting in and around the Ohio River Valley and has been found to occur in many of the northeastern United States. It is thought that *Ps. ovoideocystidiata* was introduced from this area to the Pacific Northwest, as it

Photo by Caleb Brown



Psilocybe ovoideocystidiata

to rip and claw at the land until only shreds of tree limbs cover the ground. After a few years of decay, these areas tend to create colonies of *Ps. pelliculosa* ranging in the tens of thousands. A large distribution can be linked to excavators and other heavy machinery, which are often packed on to trailers caked with dirt and mycelium. Consequently, almost every clear cut in the Pacific Northwest can be found to host *Ps. pelliculosa*. As crews move from area to area, it is virtually unknown that these products of the foresting industry are creating masses of hallucinogenic mushrooms.

Gymnopilus is an additional genus known to contain psilocybin mushrooms. However, many taxa within *Gymnopilus* do not contain the tryptamine alkaloids present in all psilocybin mushrooms. The

prefers man-made habitats much like *Ps. cyanescens*, yet it remains one of the only *Psilocybe* species to fruit largely in the spring, with only minor flushes in the fall.

Psilocybe pelliculosa may not be the most urbanized mushroom, yet it is important to include this species in our discussion. Fruit bodies are similar to *Ps. semilanceata*, but naturally occur on woody substrates throughout old growth conifer forests in the Pacific Northwest. Still, distribution is not limited to these forests. The timber industry, which relies heavily on these areas, use machinery

Photo by Caleb Brown



Psilocybe pelliculosa

Photo by Caleb Brown



Gymnopilus aeruginosus-luteofolius group

Gymnopilus luteofolius-aeruginosus group has been described to represent some of these tryptamine-bearing fungi in the Pacific Northwest. These taxa contain low concentrations of tryptamine alkaloids, and are not often abused as a recreational drug. The *Gymnopilus luteofolius-aeruginosus* group is often observed growing from fallen logs or woodchips in parks and forested trails.

The genus *Pholiotina* is a genus of tiny brown mushrooms, which often contain liver and gastro toxins.

Photo by Caleb Brown



Panaeolus cinctulus

bright red-yellow fruit bodies are visually striking, and can produce large amounts of spores that often stain the substrate orange. Contrasting colors can be produced by the alkaloidal bluing reaction, which can create brilliant blues and greens amongst the reddish tones. *Gymnopilus* prefers woody substrates, and has made its way from the forests to colonize our urban habitats. As with many of the taxa, morphological features that had previously separated *Gymnopilus* into distinct groups were not supported by molecular data. A collection of species called the

Ph. smithii and *Ph. cyanopus* are the only two species in the genus to have tryptamine alkaloids. They are nearly identical, sharing many macro and microscopic features. Similarities to other toxic species within the genera have limited the recreational value of these species, although high amounts of tryptamine alkaloids have been found, which are responsible for an immediate bluing reaction towards the base of the stipe when plucked. Habitats are limited to grassy areas around the Pacific Northwest, both sparse and well maintained. Additionally, *Ph. smithii* and *Ph. cyanopus* can fruit in habitats high in wood debris. These two taxa were thought to be rare, but the small stature and commonly misidentified fruit bodies have led to a misrepresentation of the distribution, which is now thought to be worldwide during many seasons.

Panaeolus is a genus of dung-loving fungi with jet-black spores. Although many species contain tryptamine alkaloids, only a few species have the ability to fruit outside of their dung habitat. However, taxa that grow in urban environments quickly colonize and fruit. Ancestral genes play a role in this phenomenon, as dung-consuming fungi must reproduce rapidly. The taxonomy of this genus is ongoing but some species have been well represented.

Panaeolus subbalteatus, otherwise known as *P. cinctulus*, is the world's most widely distributed magic mushroom. Often called the weed mushroom, it loves to fruit in gardens and pastures during the spring in areas around the world. This taxon prefers old horse manure, yet readily available

fertilizers have made well-maintained grasses a key substrate for these fungi. *P. cinctulus* is generally weak in potency, but is responsible for some of the accidental mushroom poisonings throughout history.

Panaeolus fmicola, *P. olivaceus*, and *P. bisporus* are three additional taxa which have become urbanized in the Pacific Northwest. Although similar in taxonomy, each of these species is unique, and capable of having its own preference of substrate. However, these associations are unclear and require further study to describe. *Panaeolus* of this kind are weak in potency, with the exception of *P. bisporus*, which can create potent basidiocarps. These three species can be found growing in the late spring and summer in well-maintained grasses.

Photo by Caleb Brown



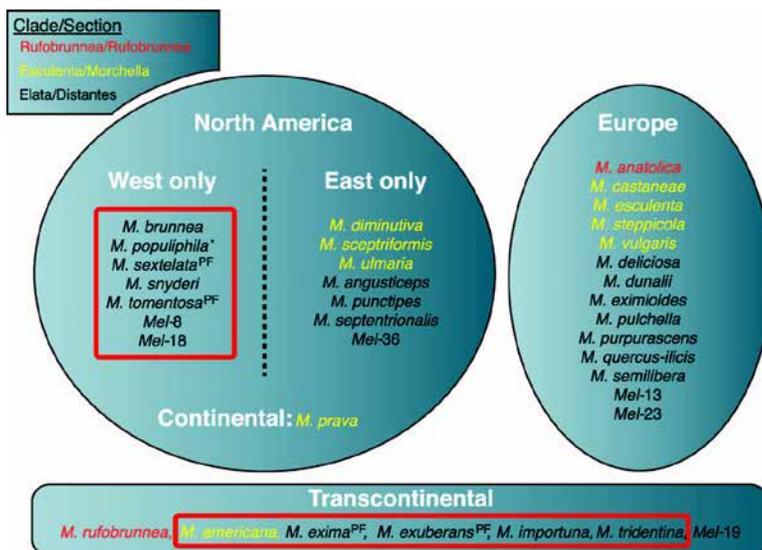
Panaeolus fmicola

More Morel Taxonomy

By Fred Rhoades

Three years ago, in a MushRumors article, I tried to clarify our understanding of which morels occur in our area. With additional scientific reports out now, I'll try again. Modern interpretation of the world of morels was summarized in O'Donnell et al. (2011) who examined molecular differences among worldwide collections.

These authors only put collections in related groups; they did not coin new names. Kuo et al. (2012) introduced many new names for North American species. Kuo's coauthors included many North American mycologists; Michael Kuo himself is not a mycologist—he is an English teacher—but he is experienced in mushroom taxonomy. However, prior to these two papers, the French mycologist Clowez (2010), had published his own worldwide view, also based on DNA work. Because earlier names have priority and these European authors had included what were thought to be many of the same North American things, Clowez's new names were thought to be the right ones. When Beug et al. (2014) published the magnum opus *Ascomycete Fungi of North America*, they tried to make sense of this nomenclatural jungle (but



Locations of morel species around the world. Figure from Richard et al. (2015)

unfortunately used some names that have turned out to be wrong). They included information on 19 species regarded as occurring in North America and discussion of the disposition of a great many other species and names. Finally, Richard et al. (2015) have now truly clarified things from North America and Europe. Their figure to the upper left summarizes their findings showing the locations of the various species around the world, with the species expected nearby outlined in red boxes.

Below are descriptions of the species that should occur naturally in the area we frequent (NW Washington, SW British Columbia, and just east of the Cascade Mountains), roughly by the ease of identifying them. I also include an interesting occurrence of a non-native species. The photos are all mine unless otherwise attributed. Aside from the DNA patterns (which most folks don't have access to), the following features are useful in determining different species: habitat, arrangement of the pits in the cap (either in ladder-like rows - the black morel, *M. "elata"* pattern, or randomly - the yellow morel, *M. esculenta* pattern), the size and shape of the sinus (the non-pitted gap) between the base of the cap and the stem, and, finally, the surface of the stem. Cap color may not always be a good character. In many species, color varies as they mature and, in some species, color varies in individuals of the same age.

Notes: The full species names are given in bold below along with the author abbreviations at the end so you can see who is responsible for these names. Also note that the names in the current version (2.2) of the Matchmaker program have not been updated; although there are good descriptions there, you will have to figure out which species from the following list are actually being described. Remember, Matchmaker includes species from a broader region (northern California to British Columbia and east to Montana) than the shorter list described in this article. The unnamed *Mel* species in the Richard et al figure above refer to distinct species in the *M. "elata"* group that may occur here as well but these are not covered since their distribution has not been worked out.

Photo by Fred Rhoades



Morchella importuna

The "local" species

Photo by Fred Rhoades



Morchella tridentina

***Morchella tridentina* Bres.:** This is the mountain blond morel that Kuo et al. had called *M. frustrata*. Too bad that name didn't stick, as the identity of this species has vexed mycologists for years here in the Pacific Northwest. It occurs in conifer and mixed forests from sea level up into and over the Cascade crest. It occurs widely but not abundantly as single to scattered individuals at low elevations close to the Salish Sea. It does not occur in burns. Characters include the relatively smooth stem, lighter coloration, and the ladder-like arrangement of pits like its black morel cousins. Many of the horizontal ridges are hardly developed

***Morchella importuna* M. Kuo, O'Donnell & T. J. Volk:** This is the most common morel in the immediate area of the lowlands west of the Cascade crest and goes by the common name, "landscape morel". *M. importuna* can be abundant in wood-chip mulch used in landscaping, usually the first year after a new layer of mulch has been applied. It likely is a decomposer of this material. For years, this species has been incorrectly referred to as *M. elata*, which was originally described in Europe (but the name *M. elata* is in question now). *M. importuna* has been found in Europe apparently having been introduced there from the western US. The coloration of this species is usually quite dark, except in the youngest individuals. The sinus is relatively narrow causing the cap to take a pointed oval shape. Like all the black morels, the pits are arranged vertically.

Photo by Fred Rhoades



Morchella snyderi

Photo by Fred Rhoades



Morchella tomentosa

Photo by Ben Woo



Morchella populiphila

(unlike in yellow morels) and rusty stains often occur in age. The sinus between cap base and stem is narrow so the cap base is a bit narrower than the part above.

***Morchella snyderi* M. Kuo & Methven:** This species is the most common non-burn morel east of the Cascades, often occurring in open ponderosa pine forests in mid to late May. It can be light to dark but usually has a deep sinus separating the cap from the stem so the cap's base is usually the widest part. The base of the stem is rippled with ridges and indentations. The cap's ridges tend to be especially dark in older, drying individuals. As with most of our morels, it has the black morel ladder-like arrangement of pits. Though most common in burn-free areas it can also occur in burns older than one year.

***Morchella tomentosa* Kuo:** This species is a burn morel usually restricted to recent forest burns east of the Cascade crest. Its tomentose (minutely fuzzy) stem is a give-away character that can't be missed. No other morel has this feature.

***Morchella populiphila* M. Kuo, M. C. Carter & J. D. Moore:** This is the Western half-free morel, similar to *M. semilibra* (a European species) and *M. punctipes* (eastern North America). Easy to tell because the sinus between cap and stem is extremely deep, causing the cap to appear free from the stem. It occurs under black cottonwood (*Populus trichocarpa*) in river bottoms, mostly on the east side of the Cascades. It is known to occur from Nevada and northern California north at least into Oregon and likely

occurs in the appropriate habitats in eastern Washington in our area.

East-side burn morels

There are several darker morels that occur in east-side burn areas that are extremely difficult to tell apart on casual examination. Like most of our morels, they have the black morel ladder-like arrangement of pits and a relatively narrow sinus. Depending on unknown factors they all can vary in color from light to dark brown to green to pink. Except for *M. exuberans* (which has a microscopic feature), the only way to be sure of any of these identities at this point is to pull out your handy-dandy field DNA analyzer. I don't knowingly have any photographs of these and so I include some photographs from the mentioned papers.

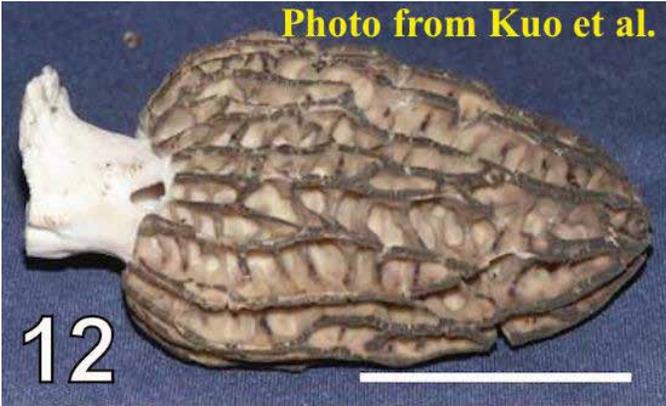
***Morchella brunnea* M. Kuo:** My one photo of this group may be this or one of the other species.

Photo by Fred Rhoades



Morchella americana (?) in Merry Teesdale's garden

Photo from Kuo et al.



Morchella sextelata

Photo from Richards et al.



Morchella eximia

MushroomExpert.com web site. However at last look, he hasn't updated the names clarified by Richard et al. One interesting result of all this work is that *Morchella elata*, a name we have all used forever for black morels, isn't used for anything anymore, no even for European species. There is no original material in any herbarium upon which the original name was based and the name has been used inappropriately so widely, that it isn't clear what this species is.

I'm sure there are other things around us that haven't been adequately studied and that there will be other new names. There are still a few unnamed morel collections awaiting study and the area around us may not have been adequately sampled by any of the authors mentioned. But, for now, this is where my understanding stays—until the next paper, that is.

***Morchella eximia* Boud:** This species was called *M. septimelata* by Kuo et al. and *M. anthrocophila* by other authors.

***Morchella exuberans* Clowez:** This species was called *M. capitata* by Kuo et al. and can be differentiated microscopically by the capitate (swollen ended) cells along the sterile ridges of the cap.

***Morchella sextelata* M. Kuo**

An interesting fruiting

***Morchella americana* Clowez & C. Matherly?:** This is the only species in this list that is not a native. Merry Teesdale has been rehydrating dried, purchased morels in water overnight and then sprinkling the water out on her garden mulch (after she cooks the morels of course). This year, lo and behold, what looks like good *M. americana* (photo) appeared in late April in Merry's garden. We can't be sure (unfortunately the material had no mature spores) but this is in the yellow morel group, not in the black morel group that contains most of our morels. It is large, uniformly lighter in color and has scattered pits. Kuo et al. called this *M. esculentoides*, reflecting the fact that it is the North American version of the European yellow morel, *M. esculenta*. But Clowez's coined name has priority. Interestingly, *M. americana* has been found in Europe. Depending on what Merry's purchased species actually was, this could actually be any of a number of less common eastern North American morels (see Beug et al.) or perhaps a foreign species.

Conclusion

You will note from all the author citations that Michael Kuo's names have stood up pretty well for most of our species. You can read his excellent synopsis of morels (in all of North America) at the

Photo by Fred Rhoades



Morchella brunnea (?)

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Greetings, fellow Northwest Mushroomers! The publication dates for the club newsletter are as follows:

March 7th, June 7th, September 7th, November 20th, and January 7th. I invite everyone to feel free to submit a story with a picture or two of your own mushroom hunting adventure to share with the group. This makes for a varied and interesting publication, as well as giving you the opportunity to learn even more about the mushrooms found in our wonderful area. Submissions of articles should be sent to me at: gandalf5926@comcast.net one week before the publication date of each issue. All articles pertaining to some aspect of mycology are welcome! -Jack Waytz, Editor

New Burn Morel (To Us) Found

By Buck McAdoo

To get to this name, I started out with Kuo's North American key. I followed 'burn site morels with pallid ridges that turn darker in age.' All my dried specimens did turn browner when dried. This led me to *Morchella sextelata* or *Morchella septimelata*. Kuo stated that you could not tell them apart morphologically. The next step was to visit the latest monograph from Clowez and associates in the December Mycologia issue. Clowez had named a lot of new morels before Kuo named his, so Kerry O'Donnell, Kuo's DNA expert, flew to France to discover which species were valid and which were to become synonyms. By perusing these pages, one discovers that *Morchella septimelata* becomes a synonym of *Morchella eximia*, a burn site morel that has a dark grayish-olive line on its ridges. But *Morchella sextelata* is retained as a separate species. When in fresh condition this is a blonde burn site morel with flattened ridges. Under the microscope, the elements, which resemble elongated asci in some respects, are neither capitate nor clavate. They are more cylindrical in shape, which is why I went with *M. sextelata* for this collection—but I only studied one specimen. Since Kuo himself feels this is a gray area, it opens up this group of morels to other interpretations.

Photo by Jack Waytz



Morchella sextelata, a morel species found in burn sites.

Spring Pasta with Morels, Ramps and Peas

Ingredients

12 ounces fresh morel mushrooms, cleaned and very coarsely chopped
4 -6 ounces ramps, cleaned, cut into 1/2 inch pieces (or 1 medium leek, cleaned and thinly sliced, plus 1 clove garlic, minced)
1 tablespoon butter
1/4 cup diced cooked ham
1/4 cup dry white wine
3/4 cup whipping cream
1/2 cup reduced-sodium chicken stock or broth
1 1/4 cups frozen peas, thawed
1 1/2 teaspoons snipped fresh thyme
Salt and cracked black pepper
10 ounces dried linguine pasta
1/4 cup chopped fresh Italian (flat-leaf) parsley
Shaved Parmesan cheese, optional

Directions

In a very large skillet over medium-high heat cook and stir morels and ramps in hot butter for 4 to 5 minutes until just tender. With a slotted spoon, remove mixture to a bowl.

- Add ham to skillet. Cook and stir for 3 to 4 minutes until just starting to brown. Remove skillet from heat. Add white wine to skillet. Return to heat and cook for 1 minute. Add cream and stock. Cook and stir occasionally for 6 to 8 minutes until sauce coats the back of a wooden spoon. Return morels to skillet with peas and thyme. Cook for 3 to 4 minutes or until peas are just tender. Season to taste with salt and pepper.
- Meanwhile, in a large pot of salted water cook linguine according to package directions; drain. Return to pot over low heat with sauce and parsley. Toss until well-combined. Transfer to serving bowl. Serve with shaved Parmesan, if you like.

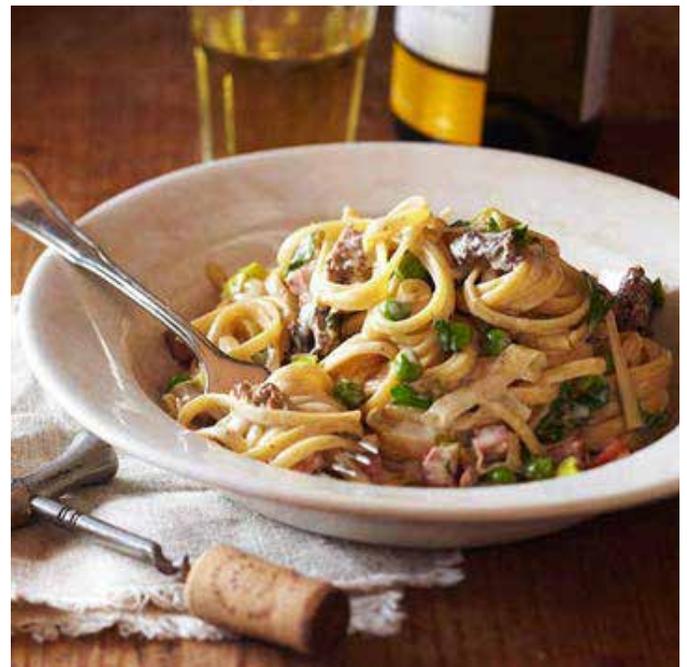
Recipe provided by midwestliving.com

Photo by Cynthia Hansen



A morel emerging from burned duff in eastern Washington.

Photo from midwestliving.com



A Fascinating Find by Bruce Armstrong at Rockport State Park: *Hymenoscyphus peruni*

By Buck McAdoo

Hymenoscyphus peruni was first published as *Helotium peruni* by Velenovsky in 1934. In 1984, Svrcek moved it to *Hymenoscyphus*. If you search on the internet, almost all references are in German or Norwegian. It has been found in southern Norway, Belgium, several places in Germany, seemingly widespread but not common.

My own microscopic skills are minimal when it comes to these ascomycetes. For instance, I don't analyze the textura which is a must-do for a complete observation. Anyhow, I found slender aseptate (or with just one septum) paraphyses measuring 2.4-3 x 100-122 microns. They were not expanded at the apices and there were no carotid globules. The asci measured 5-6.1 x 7-77 microns, but only two were measured. The spores were biseriate, 8 to the ascus. The spores were fusiform without abruptly tapering ends. They measured 3-3.6 x 9-13.5 microns and had two to three tiny guttules at either end. The stipe consisted of multiseptate hyphae 4-7 microns wide. Hyphae on the exterior surface were thin-walled. I did not examine the croziers.

In the future, Zotto (Dr. Baral) would prefer to see photos of microscopic features instead of scanned drawings to better assess the collection. According to Dr. Mike Beug, this is a first report for the Pacific Northwest. And since I can find no other North American reference to it, maybe a first for North America. Nice find, Bruce!

Photo by Buck McAdoo



Hymenoscyphus peruni found by Bruce Armstrong at Rockport State Park.