

# MushRumors

The Newsletter of the Northwest Mushroomers Association

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## Fall Show Highlights an Unusual Year for Mushrooms in northwest Washington

Nicely Done, Start to Finish, 2015

By Chuck Nafziger and Maggie Sullivan

Photo by Caleb Brown



Fun at the children's table, with beautiful displays in the foreground.

sorting of mushrooms brought in to the Bloedel Donovan Pavilion, the selection looked bleak with several "genus" boxes still empty. Then Carol and Stas Bronisz appeared with two vehicles filled with the mushrooms they had been carefully gathering for the previous few days. Somehow they managed to find an incredible variety of mushrooms that had been eluding everyone else. NMA owes them a huge of thanks for filling in the blanks spots with beautifully gathered specimens.

There were many expert and intermediate identifiers present at the Saturday sorting "to genus" and, with the smaller number of specimens, this process was finished much earlier than usual on Saturday. That night, Fred Rhoades and his crew of expert identifiers got an early start on identifying "to

Photo by Jack Wavtz



The gnarly *Turbinellus kaufmanii*, collected by Stas and Carol Bronisz

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species" before going home. Both the crew of identifiers and the mushrooms were in great shape for Sunday morning at 8:00 am when we entered

the main field house where we had to set up for the show. Volunteer participation was fantastic, thanks to Maggie's persistence and gentle arm twisting while holding out the volunteer sign up sheets during the last few months. By the time tables were set up for the folks who were to artfully arrange the mushrooms in the display trays, boxes of identified mushrooms were already coming in to the main hall. Pam Borso and Margaret Dilly expertly kept track of the flow of identified mushrooms from the Pavilion coming to the volunteers where they were beautifully arranged in display trays before being moved to their final place on the display tables. The system of labeling mushrooms and logging which trays have been done, and then getting the trays to the right place on the tables has been so honed over the last couple of years that the process went incredibly smoothly--fast, careful work, but with smiles and none of the worried looks I have seen at some shows in the past. The trays ended up the most artfully arranged they have ever been.

Because of the system with extra tables that Maggie instituted last year, all the side displays were set up concurrent with tray arranging, which requires the pre-show use of many tables. The food and coffee for volunteers was superb under Mariepaule Braule's guidance and by 12 noon, when the show started, club members were still going strong.

### **Identification, Pre Show--Fred Rhoades chairperson**

343 species were recorded at this year's show! The organization of the complex process of putting name labels on individual mushrooms in a timely fashion has become an art form for Fred. Incredibly well done job! The additional identifiers included Erin Moore, Buck McAdoo, Christine Roberts, Margaret Dilly, Dick Morrison, Rebecca Bunn, Harold Mead, Gary Laursen, Jack Waytz, Caleb Brown, Lisa McAvoy, Darrell Lambert, Stephanie Truitt, Jeremy Ferrera and Teri Wilde. The species list and I.D.'s comments are

*Photo by Caleb Brown*



in a separate article.

**Admissions Table--Nadine Lihach chairperson**  
Aided by Lyle Anderson, Security: Dick Tobias  
Nadine reports, "It was a healthy year at the gate: 602 paying attendees, including free kids." Including NMA's new informational tri-fold (thanks to Fred Rhoades) along show program helped curious people find out who actually puts on this fabulous show. Nadine says, "Final impression: many eager show-goers, and many, many, many excited faces leaving the show. Kids in particular are great to watch: they are smiling and their eyes are shiny after their peek at the bizarre world of fungi. Surely some future mycologists in the crowd."

### **Ecology and Conservation Table--Erin Moore and Zack Seilo co-chairs**

The topics of ecology and conservation are gaining importance as reflected in the placement of the new two table display created by Fred Rhoades, Christine Roberts, Sandra Stringer, Zack and Erin. There was a steady flow of interested visitors to the conservation table, with questions ably fielded by Zack Seilo and Martin Passmore.

### **Identification, During Show--Sandra Stringer chairperson**

Sandra's method of having an intermediate identifier on each side of the expert proved beneficial for both the education of the intermediates and the through-flow of the attendees with mushrooms to be identified. She reports that the selection of books on the I.D. table guided newcomers when they later bought guides at the book sales table, and the new placement of the I.D. table, between the microscopy and conservation/ecology tables worked wonderfully.

Identifiers: Buck MacAdoo, Dick Morrison, Christine Roberts, and Fred Rhoades

Assistants: Linda Magee, Claudia Ebsworth, Panani Reid, Jim Stringer, Cynthia Hansen, Stephanie Traih, Darrell Lambert, Eric Worden, and Jim Scarborough

### **Entry Display--Chuck Nafziger, chairperson**

A lot of beautiful material garnered by Chuck from Mother Nature along with the artistic touches of Louis Anzalone and Rich Tobias, aided by Michel Milner developed into another magical display of all things

fungal. Thanks you to all the people who brought things in especially for the entry display.

### **Microscope Table--Christine Roberts, chairperson**

Christine reports, "...went reasonably well, for some reason the laptop views were less likely to pull a line-up than the peering down the actual microscope used to do. Not sure if folks realized they were looking at the view down the scope....Microscope table team included Sandra and Jim Stringer, and Bob Trotta. Erin also held the fort for a little while so I could get coffee. Thanks to this reliable team I was able to get away to do my paper workshop and have a spell on the ID table."

### **Touch and Smell--Harold Mead and Jeremy Ferrera, co-chairs**

This great introduction to using more senses than just visual for identifying and appreciating mushrooms was as valuable and popular as ever. Harold reports, "Although some of the normal specimens were lacking, an abundant supply of interesting species were available thanks to Christine Roberts, Fred Rhoades and others. Because the touch and smell table is largely unstructured discussions are not limited simple ID issues but extend to ecology and other broader issues. In addition to Jeremy, Cynthia Hansen, Alicia

*Photo by Caleb Brown*



### **McMurche and Natasha Goldie chipped in." Slime Molds--Angela Mele**

While not really fungi, slime molds are very beautiful

*Photo by Chuck Nafziger*



**The audacious volunteers, who worked their magic!**

on the microscopic scale as demonstrated by Angela with her lovely illustrations: mostly of slime molds but also of stinkhorns, a mushroom.

### **Childrens Table--Martha Dyck, chairperson**

Martha reports. "Kids colored mushroom pictures and decorated bookmarks and paper 'crowns' with stamped patterns. But the real hit was the play dough with which the children let their imaginations run wild. I was again astounded at what kids' imaginations can create--many colorful mushroom scenarios and wild and crazy designs. Martha was helped by Elli Haron, Martina Lilleston, Natasha Goldie, and Stephanie Truitt."

### **Brains and Brawn--Bruce Armstrong, chairperson**

A lot of stuff gets moved in and a lot of stuff gets tossed out while setting up for the show. Knowing what goes where, how to distribute extra mushrooms from the tray arrangers to other tables, moving tables, hanging sign, and keeping a safe and tidy place when a big chunk of forest is brought indoors is not easy. Helped by Claude Dilly and Jim Stringer and Cynthia Hanson.

### **Tray Arranging--Margaret Dilly and Pam Borso co-chairs**

Margaret and Pam oversaw the tray arranging with grace and ease. Margaret reports, "...Starting on Saturday night where the identification occurs, Pam Borso my co/chairperson stayed late to assist with the labels. "Sunday morning the crew of arrangers began putting together the many trays for display for Pam

who shuffled them into their proper places on the display tables. Even with the scarcity of mushrooms about 70 trays were beautifully arranged". "Many thanks to Pam Borso, Vince Biciunas, KristiSvane-Abadie, Jennifer Svane, Maripaule Braule, Rebecca Brunelle, Carol Bronisz, Martha Dyck, Holly Roger, Gary Koch, and Kandace Ackelson (my granddaughter). All of which contributed to make this a successful Show."

### **Edible and Look Alike Trays--Terri Wilde, chairperson**

These are the most looked at trays on any of the tables. Terri Wilde has been improving them for two years

*Photo by Caleb Brown*



Alex talking about mushroom cultivation, with Carol Bronisz at the preservation display in the foreground.

with Fred's help and they are truly works of art.

### **Volunteer Food--Mariepaule Braule, chairperson**

Hungry volunteers gave the highest marks to Mariepaule, for her excellent selection of hearty volunteer food this year. The good food went a long way toward keeping tired volunteers smiling. Thanks, Martina Lilleston for Sunday's enchiladas, and Rebecca Brunell for Saturday's coffee cake. The new location of the Green Room worked well!

### **Preservation--Carole and Stas Bronisz, co-chairs**

The display on preserving mushrooms was set up by Carole and Stas. Vince and Fein Hulscher helped field the many questions attendees had about how to deal with the plentitude of mushrooms this year. The handouts with recipes, tips on drying and freezing mushrooms, and cooking mushrooms are great help to all whose main interest is eating our fungal friends.

### **Cultivation, Alex Winstead of Cascadia**

### **Mushrooms**

Alex had a good day matching cultivators with kits, and Cascadia gave one of the Pavilion talks. Cascadia's quality products always keep a crowd around their table.

### **Pavilion Talks, Chris Colburn chairperson, Michel Milner announcer**

All the talks were to packed audiences and all were well received.

Dick Morrison, "Common Edibles and Look-Alikes" Cascadia Mushrooms, "Mushroom Cultivation"

Fred Rhoades, "Fungal Ecology"

Christine Roberts, "How to Make Paper From Fungi"

### **Rest Area**

The rest/video area had equipment problems so it so it became a fairly quiet and much-needed rest area. for the foot weary show attendees. One lady with a walker barely made it to a seat, and several ladies with babes in arms showed relief at having places to sit. Thank you Tom Wilmore for trying to wrestle the video problems into submission.

### **Art--Jill Emerson chairperson**

Jill says, "Thank you to Coral Nafziger, Amanda Pease and Chuck for helping field questions from the attendees. There was lots of interest and enthusiasm about the carved and painted red belted and artists' conks. Christine's mushroom papers and book of illustrations were carefully studied and elicited ohs and ahs. Fred Rhoades' 3-D photographs brought huge smiles.. Many people came to the table with stories about their own creative endeavors with mushroom art. Hopefully some of the attendees have been inspired to contribute to the art table next year."

### **Book Sales--Maggie Sullivan, Jim Stringer, co-chairs**

Maggie reports, "Booksales were brisk and many questions from beginners were fielded. I don't think we had as many sales as years past, but our dedicated crew had a good time. Many thanks to co-chair Jim Stringer for his never-ending work as well as our co-salespersons: Geri Surratt, Laurita Whitford, Marian Tobias, Tom Wilmore and Tim Reid."

### **Membership--Vince Biciunas, chairperson**

Vince says, "The membership table stayed busy all day, with many renewing memberships, and at least twenty new member families. Our membership year

goes from November 1 to October 31 of each year, and if you are a new member joining after July 1, you are automatically joined for the following year. Paypal from our website is a really easy way to renew, if you haven't yet, for 2016. A big thanks to Jen Green for taking on the memberships for the last three years. While I've covered the desk, so to speak, for the show, I'm happy to report that new member Darrell Lambert has agreed to take on the memberships chair for next year. So a big hooray for all that! I'd also like to acknowledge and thank the volunteers who helped with the memberships table: Terese VanAssche, Michael Millner, Linda Magee, and Darrell Lambert."

**Crafts--Sue Blethen, chairperson**

New this year, the mushroom related crafts for sale were at a different table from the "art for display" table. People were glad to have mushroom related artisan crafts available for purchase. Pat Royce (jewelry), Caleb Brown (glass pendants); MaryByrne (fine art cards). Sue Blethen and Christina Roberts had items on display. The proof of concept was successful, and the table will grow in the future.

**Kitchen--Richard Mollette, Dianne DelGiorgia, co-chairs**

With Richard's guidance, all show attendees who desired were treated to a delicious taste of our wild

*Photo by Jack Waytz*



Surreal fruiting of *Amanita muscaria*, Beacon Hill neighborhood of Seattle, days before the first frost.

fungi. Richard summed up this years effort with a "koan":

"What is the sound of a successful NMA show kitchen?"

Richard and Dianne were helped by Tom Wilmore, Sue Shellenberger, Stas Bronisz, Meg Jacobsen, Andrea Minor, and Alex Winstead.

**Potluck--Linda Magee, chairperson**

Linda reports, "When the bell tolled 5 pm, the event hall was cleared of visitors and NMA volunteers really jumped into high gear. In record time the exhibits were taken down and seating was arranged for the end-of-show potluck. Exhausted but exhilarated by the weeks of intensive planning and days of painstaking preparation for the Mushroom Show, the diners

*Photo by Caleb Brown*



Attendees look on in wonder at the beautiful displays.

enjoyed the final volunteer effort of the event...a fine meal with good friends. We all toasted the success of the show and celebrated in song Richard Mollette's 70th birthday. When the clean-up crew turned off the lights and locked the doors of the event center, we left behind clean floors, chairs and tables stowed, and a job very well done.

**Back Stage**

Thanks to Andrea Miner our treasurer for keeping the books. This show is important to the financial well-being of NMA. Thanks to Linda Magee and Tom Wilmore for handling the facilities keys, for opening up in the morning and closing in the evenings, and for all the other jobs they did in between.

Publicity was handled by Cynthia Hanson and Erin Moore. The excellent show pamphlet: was created by Pat Royce, Vince Biciunas, and Maggie Sullivan, with Pat coming up with the great new format that uses Fred Rhoades new club trifold pamphlet.

Caleb Brown and Buck McAdoo were the able show photographers.

It takes a village to put on a wild mushroom show and, boy, what a village, and what a show this year! Thanks to everyone who participated. After the dust clears, the mushrooms are composted, and all is tallied up, it is fun to put on the show. We hope all you club members had fun with your part in the show and that you will be back next year applying what you learned to make next year's show run smoother than ever before.

## **Mushroom of the Month *Galerina marginata*** (Batsch) Kuehner By Buck McAdoo

Photo by Buck McAdoo

Listed as one of the twelve most poisonous mushrooms in Britain, this innocuous looking *Galerina* can be found all over North America, Europe, all of Asia north of India, and in temperate parts of Australia. Long known as *Galerina autumnalis* in north American guides, it explodes the wives' tale that all mushrooms fruiting on wood are edible. It appears to be the quintessential little brown mushroom until you delve into it. The more you delve into it, the worse it gets.

It all started from a report by Charles Horton Peck on a post mortem exam of a mother and two daughters who had perished from eating *G. autumnalis* in 1912. The report showed 'destructive lesions of the liver'. Prior to this report no one had a clue that *Galerinas* could be poisonous. It was subsequently discovered that



*Galerina marginata*

*Galerina marginata* (the former *G. autumnalis*) contains the same phalloidins and amanitins found in *Amanita phalloides*, the Death Cap. According to Lyon, Harding, & Tomblin, they contain 'complicated cyclopeptide molecules made up from 7 or 8 amino acids linked in the form of a ring'. These bind to carbohydrates to form large molecules called myriamins, which in turn get broken down in the digestive system to release the cyclopeptides. These toxins then enter the blood stream to attack liver and kidney cells.

Reports vary on the dosage for death. According to Jean-Marie Polese a mortal dose for an adult would be 60 caps. Lincoff and Mitchel write that all it takes is 20 caps. Larry Millman states that a single cap can kill a human while Polese & Lamaison describe the fate of a foray mycologist who merely test tasted this *Galerina*. He ended up in the hospital.

There are now supposed to be eight of these deadly *Galerinas* worldwide. *Galerina marginata* is by far the most common in temperate climes. Others mentioned have been *Galerina badipes*, *Galerina venenata* from Oregon and Washington, *Galerina marginata* var. *angusticystis* from Mt. Rainier, *Galerina fasciculata* from Japan, *Galerina beinrothii* from Spain, and *Galerina sulciceps* from Java. The latter could be the world's most poisonous mushroom. It took a life in just seven hours. The eighth just might be *Galerina praticola*, long considered by Moser to be a synonym of *Galerina unicolor*.

This brings up the recent batch of synonyms brought up by DNA sequencing. It was discovered that *Galerina autumnalis*, *Galerina marginata*, and *Galerina unicolor* were all the same species. Since the epithet '*marginatus*' was published almost a century earlier than the other names, it takes precedent. In the recently published California Mushrooms, Desjardin, Wood, & Stevens add *Galerina oregonense* and *Galerina venenata* to this list of synonyms. For sheer economy of words I prefer Watling, Orton, & Gregory's description of *Galerina marginata*. They describe caps from 1½- 4 cm wide, bell shaped to convex, margins at first incurved. In maturity they become plane with an obtuse umbo. They are moist to rarely viscid, and also hygrophanous, fading when drying from ochre-tawny to pale ochre or buff. The cap margins are striate when fresh. The cap context is ochre. Gills are crowded, thin, broadly adnate, at times with decurrent tooth. They are pale ochre becoming rusty from spores. The stem is 3-6 cm long and 2½ -7½ mm thick. It is equal or expanding slightly at base. Like most *Galerina* stipes it is honey colored at the apex becoming brown at the base. The apex can be smooth or pruinose above an evanescent, submembranous ring. Pallid fibrils, not scales, are found below the ring or ring zone. The context of the stem is brown. The spores are rusty, the odor mealy. The species is a saprophyte on multiple substrates. If we add snippets of descriptive information from various experts we discover that *Galerina marginata* can have a farinaceous odor or no odor at all. The stem base can be bald or imbued with white hairs or white mycelial threads. The membranous ring is whitish but almost always found pale rusty from spores. KOH turns the caps red. The silvery fibrils on the lower stem turn brown when handled. The membranous ring can disappear in age or simply slide down the stem. Eyssartier & Roux mention that the

Photo by Buck McAdoo



*Psilocybe inquilina*

Photo by Buck McAdoo



*Psilocybe pelliculosa*

Photo by Caleb Brown



*Psilocybe stuntzii*

Photo by Buck McAdoo



*Psilocybe semilanceata*

margin of the cap cuticle extends beyond where the edges of the gills end. Svrcek reports fine white cilia on the gill edges. Stamets discovered (from *Galerina autumnalis*) that caps can have separable pellicles. Kubicka felt that the

odor was a combination of flour and cucumber. And Breitenbach & Kranzlin added burn sites as yet another habitat. Which brings us to this intriguing subject. Since *G. autumnalis*, *G. marginatus*, and *G. unicolor* were amalgamated into one species, the listed habitats for this taxon greatly expanded. Traditionally found on conifer stumps, including yew, it can now appear on sawdust, aspen and other rotting hardwood logs, buried wood, moss, wood chip mulch, glacial wash, tundra in northern Alaska, and even paper. Gro Gulden claims it can be found on heaths and pastures, and if you accept *Galerina venenata* as a synonym, just add lawns in Oregon and Washington and probably northern California.

Called the Autumn Skullcap by the McKnights or the Funeral Bell by Roberts & Evans, *G. marginata* is the largest of the *Galerinas*. Christian Epinat has found caps up to 7 cm wide while George Barron reports stems 9 cm long and 8 mm thick! It can be found solitary on stumps and logs but is more likely to appear in colonies. According to Laessøe it can also be cespitose.

Sadly, the Funeral Bell has a long list of look-alikes, edible and otherwise. To chronicle some of the tragic histories, here are some samples from the literature:

**Lincoff & Mitchel** – ‘In 1953 an Oregon couple ate a cupful of a *Galerina* found on their lawn. The delayed onset of symptoms suggested amanitin poisoning. The wife recovered in a week. The man was discharged from the hospital after 46 days. He had lost 40 pounds and convalesced for more than two months. Dr. A.H. Smith investigated the case. He came to the conclusion that a new species was the culprit, and called it *Galerina venenata*.

**Stamets** – In 1981 three teenagers from Whidbey Island fed on *Galerina venenata*, believing they had found *Psilocybe semilanceata*, the Liberty Cap. Fearing prosecution for picking a controlled substance they delayed reporting their symptoms for two days. Two eventually recovered but a sixteen year-old girl died after six days.

**Voitk** – ‘Deaths happen when *Galerina marginata* is mistaken for *Kuehneromyces mutabilis*.’

**A.H. Smith** – ‘The *Galerina marginata* group has poisoned collectors who thought they were eating the Honey Mushroom.’

**Turner & Szczawinski** – ‘There have been fatalities among people who thought they were Liberty Caps’.

What follows now is a list of edibles that have fooled people before along with photos where possible. Before we get there it must be mentioned that both Miron Hard and Charles McIlvaine wrote that *G. marginata* was an excellent edible. Their guides came out in 1902 and 1908 well before anyone knew *Galerinas* could be poisonous. In all likelihood they dined on *Kuehneromyces lignicola*, the closest look-alike among edibles. Called the Autumn Skullcap by the McKnights or the Funeral Bell by Roberts & Evans, *G. marginata* is the largest of the *Galerinas*. Christian Epinat has found caps up to 7 cm wide while George Barron reports stems 9 cm long and 8 mm thick! It can be found solitary on stumps and logs but is more likely to appear in colonies. According to Laessøe it can also be cespitose.

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More unbelievable is the pronouncement in Giuseppe Pace’s 1998 guide, *Mushrooms of the World*, that states that ‘*Galera marginata* is harmless, growing singly on coniferous, rarely latifoliate wood. Odor and flavor of flour.’ It is no fun pointing this out, but people need to know.

*Kuehneromyces lignicola* – One of our most common spring mushrooms in Whatcom County, The horror is that it can share the same log with *Galerina marginata*. is also the closest look-alike. It has markedly hygrophanous caps and silky gray fibrils on the stem. According to Moser it has an inconstant ring. The pale brown velar remnants leave an annular zone that is a bit darker than the annular zone left by the disappearing ring of *G. marginatus*. Microscopically it differs by having smooth spores and the lack of pleuro-cystidia and cheilocystidia. Anyone would have to be nuts to try it.

*Kuehneromyces mutabilis* from the Funeral Bell by having scales, often recurved scales on the stem below the ring. In fact it often appears that the stem is sheathed from the base up to the ring with a squamose surface. The caps are noted for being hygro-

Photo by Buck McAdoo



*Kuehneromyces lignicola*

Photo by Buck McAdoo



*Kuehneromyces mutabilis*

phanous. But unlike *G. marginata* it never has a farinaceous odor and has smooth spores. It is such an



Photo by Buck McAdoo



*Hyphaloma capnoides*

Photo by Buck McAdoo



*Hyphaloma dispersum*

acknowledged edible that it is raised commercially in Europe. Common in the fall in Whatcom County, beginners should avoid it until they can observe it side by side with *G. marginata*.

*Hypholoma capnoides* – One of the northwest’s most common fungi, this edible differs by its purple-brown spore print and smooth whitish stem that becomes orange-brown towards the base.

*Hypholoma dispersum* – Common in our area, it fruits on conifer debris and differs by its pallid appendiculate veil remnants on the cap margin, purple-brown spores, and long, tough, pliant stems covered with cobwebby

Photo by Buck McAdoo



*Armillaria mellea*

Photo by Buck McAdoo



*Armillaria nabsnona*

fibrils.

*Armillaria mellea* – Differs significantly by its white spores, more robust stature, fibrous, tough stem with flaky cream colored ring. It is only here because there was a poisoning in New York by someone who confused it with *G. marginata*.

*Armillaria nabsnona* – This is the *Armillaria* that most resembles the Funeral Bell. It can be told apart by the white spores and the dark brown to almost black stem with no membranous ring.

*Flammulina velutipes* – A winter mushroom that also fruits in colonies on wood. Rare in Whatcom County. It differs by its white spores and dark velvety stem.

*Pholiota humidicola* – Also has rusty spores but differs in its cartilaginous dark rusty stem that lacks a ring and the broad, subdistant pale honey colored gills. Found in the Pacific Northwest on moss in conifer woods.

*Amanita fulva* – In 1974 a couple who thought they were dining on *A. fulva* consumed *Galerina venenata* instead. Hard to fathom this one. It has a much longer stem, no ring, a volval sack at the base, and white spores.

*Psilocybe stuntzii* – An anomaly among *Psilocybes* in that it has a ring on its stem. It loves wood chip mulch and can be told apart by its purple-brown spores.

*Psilocybe semilanceata* -could be confused with the grass inhabiting *G. venenata*, but differs by the

absence of a ring and the purple-brown spores.

*Psilocybe pelliculosa* – Fruits in large colonies on woody debris. It lacks a ring and has its purple-brown spores.

*Psilocybe inquilina* – Fruits on matted grasses and further differs by its scurfy stem with whitish fibrils, almost sulcate-striate margins when moist, and lack of a ring.

*Psathyrella piluliformis* – Climbs all over logs but *differs* in its shiny white stem, white velar shards on the cap margin, and deep brown spores.

The Funeral Bell also has a deadly look-alike in *Conocybe filaris*. It also appears locally and fruits on rotten wood. It has a floppy moveable ring, cinnamon-brown spores, and usually an umbonate knob at the cap disc. Microscopically, *G. marginata* is characterized by its rugulose spores with slightly loosening perispore that measure 8-11 x 5-6.5 microns, 4-spored basidia, presence of clamps, fusoid-ventricose cystidia with long necks, parallel gill trama that become more interwoven in age, and a pileipellis in the form of an ixocutis.

Prior to the revelations from the DNA sequencing, de Haan & Walley studied the complex surrounding *G. marginata*. They thought it the most confusing yet intriguing group in *Galerina*. ‘About ten species are in this group. Differences center around whether the pileipellis is gelatinized, the degree of roughness of the spore wall, the structure of the perispore (whether calyptrate or not), and the substrate (whether on soil or wood).’

Close relatives in *Galerina* need to be separated microscopically. Here are a few that differ in the following ways:

*Galerina badipes* (also poisonous) – Is a smaller species with 2-spored basidia and almond shaped spores with roughened walls.

*Galerina helvoliceps* – Differs by its markedly calyptrate spores and less developed ring.

*Galerina cinnamomea* – Suspected by Stamets to be also deadly, it lacks the membranous ring of *G. marginata* and further differs by its dark cinnamon colored stem that becomes paler at the apex.

*Galerina walleyana* – Has a smaller stature, strongly encrusted hyphae in the gill trama, and smaller spores with deviating shapes, measuring 6-7 x 3.5-4 microns.

*Galerina pseudomycenopsis* – Differs by fruiting on the ground and the nearly smooth spore walls.

*Galerina moelleri* – Fruits on moss and has spores with an apical germ pore.

*Galerina marginata* var. *angusticystis* – Has smoother spores and long necked cystidia with narrow, acute apices.

*Galerina jaapii* – Has narrowly amygdaloid (almond shaped) spores and 2-spored basidia. It is found on moss and soil near streams.

If you do ingest the Funeral Bell, the symptoms are roughly the same for *Amanita phalloides*. From 6-24 hours after ingestion there will arrive abdominal pains, vomiting, diarrhea, and nausea for one or more days. This will be followed by a short remission. Then comes a period of more intense abdominal pain followed by liver and kidney failure, convulsions, coma, and death.

To try to beat it, the first step is an enema to rid the body of all tissues. This is followed by activated charcoal to absorb the toxins, then sodium sulfate or magnesium sulfite for a catharsis. Take intravenous glucose and electrolytes for fluid replacement. Lincoff and Mitchel then suggested thioctic acid which in more modern times has been replaced with silybinin, a milk thistle extract. If the liver fails, administer vitamin K and ‘extracorporeal circulation of the blood through charcoal canisters.’ If the kidney fails, try hemodialysis and massive doses of corticosteroids plus cytochrome C. Follow this with intravenous infusions of penicillin G.

If you are one of those who don’t want to watch your own blood circulate through outside canisters, the secret to survival is to refrain from eating little brown mushrooms. If you still are attracted by those psilocybin, mushrooms in field and wood chip mulch you

need to focus on spore color and stem. If the spore deposit is rusty and the stem has either a tiny doughnut shaped ring or a paler ring zone where a ring once was, just say ‘no’

### Bibliography

- David Arora, *Mushrooms Demystified*, 1986
- George Barron, *Mushrooms of Northeast North America*, 1999.
- Howard Bigelow, *Mushroom Pocket Field Guide*, 1974.
- Breitenbach & Kranzlin, *Fungi of Switzerland*, Vol.5, 2000.
- Bruno Cetto, *I Funghi dal Vero*, Vol.7, 1993.
- De Haan & Walley, *Studies in Galerina in Fungi Non Delineati XLVI*, 2009.
- Desjardin, Wood, & Stevens, *California Mushrooms*, 2015.
- Dickinson & Lucas, *The Encyclopedia of Mushrooms*, 1979.
- Eyssartier & Roux, *Le Guide des Champignons – France et Europe*, 2011.
- Forest Service, Alaska Region, *Mushrooms of the National Forests in Alaska*, 2013.
- J. Walton Groves, *Edible and Poisonous Mushrooms of Canada*, 1979.
- Gro Gulden, *Galerinas in Cold Climates in North American Fungi 5, No.5*, (125-157), 2010.
- Miron Hard, *Mushrooms – Edible & Otherwise*, 1908.
- Harding, Lyon, & Tomblin, *How to Identify Edible Mushrooms*, 1996.
- Hesler & Smith, *The North American Species of Pholiota*, 1968.
- Kuo & Methven, *Mushrooms of the Midwest*, 2014.
- Thomas Laessøe, *Mushrooms – How to Identify and Gather Wild Mushrooms and Other Fungi*, 1996.
- Laessøe & Lincoff, *Eyewitness Handbooks – Mushrooms*, 1998.
- Lamaison & Polese, *The Great Encyclopedia of Mushrooms*, 1999.
- Lincoff & Mitchel, *Toxic and Hallucinogenic Mushroom Poisoning*, 1977.
- McIlvaine & Macadam, *One Thousand American Fungi*, 1902.
- McKenny, Stuntz, & Ammirati, *The New Savory Wild Mushroom*, 1987.
- McKnight & McKnight, *Peterson Field Guides – Mushrooms*, 1987.
- Miller & Miller, *North American Mushrooms*, 2006.
- Lawrence Millman, *The Fascinating Fungi of New England*, 2011.
- Moreno, Manjon, & Zugaza, *La Guia de Incafo de los Hongos de la Peninsula Iberica, Tome I*, 1986.
- Meinhard Moser, *Keys to Agarics and Boleti*, 1978.
- Orr & Orr, *Mushrooms of Western North America*, 1979.
- Giuseppe Pace, *Mushrooms of the World*, 1998.
- Jean-Marie Polese, *Le Guide des Champignons des Alpes*, 2003.
- Roberts & Evans, *The Book of Fungi*, 2011.
- William Roody, *Mushrooms of West Virginia and the Central Appalachians*, 2003.
- Singer & Smith, *A Monograph on the Genus Galerina Earle*, 1964.
- A.H. Smith, *The Mushroom Hunter's Field Guide*, 1977.
- Smith, Smith, & Weber, *How to Know the Gilled Mushrooms*, 1979.
- Paul Stamets, *Psilocybe Mushrooms & Their Allies*, 1978.
- Paul Stamets, *Psilocybin Mushrooms of the World*, 1996.
- Starosta & Epinat, *Fungi*, 1999.
- Mirko Svrcek, *The Hamlyn Book of Mushrooms and Fungi*, 1983.
- Svrcek & Kubicka, *Champignons d'Europe*, 1980.
- Turner & Szczawinski, *Common Poisonous Plants and Mushrooms of North America*, 1991.
- Andrus Voitk, *A Little Illustrated Book of Common Mushrooms of Newfoundland and Labrador*, 2007.
- Watling & Gregory, *Cortinariaceae p.p. in British Fungus Flora 7*, 1993.
- Weber & Smith, *A Field Guide to Southern Mushrooms*, 1985.

## Silver Lake Foray

By Bruce Armstrong

Our foray this September went rather well. It was at Silver Lake. There were several new members who attended, and that's always nice. It's great meeting new people who are excited to learn about our fungal friends. Despite the relatively recent rains it was still rather dry under the canopy, but we were able to find a few things. I had some luck in the campground too. There wasn't quite so much cover there, so the ground had a bit more moisture. We did find a good variety of different species despite the dry conditions, and I would say everything went rather well.

We had a beautiful day for being out in the woods on Saturday, although it still seemed a bit dryer than would be expected after all that rain. Much of what we found was growing on wood or was itsy bitsy things but larger fungi were just starting up.

Photo by Chuck Nafziger



Foragers eagerly await the identity of their quarry.

Gilled mushrooms

*Cantharellus formosus* (real chanterelle)

*Crepidotus applanatus*

*Coprinopsis lagopus*

*Lepiota* cf. *felina* (The medium sized *Lepiota* with very dark brown cap with dark brown pointed scales, no scales on stem though, bulbous base, no volva, ring not really a collar, more like an *Amanita* ring, which we first thought it was, white, free gills, slight pinkish and yellowish staining on stem.)

*Gymnopus dryophilus*

*Gymnopus peronatus*

*Hygrophoropsis aurantiaca* (false chanterelle)

*Hypholoma dispersum*

*Hypholoma* sp.

*Mycena pura*

*Mycena haematopus*

Several small grey *Mycenas* without distinctive odours on needle litter

*Paxillus involutus*

*Pholiota flammans*

*Pholiota limonella*

*Psathyrella candolleana* group on rotten wood, possibly

alder or maple

*Psathyrella* sp.

*Strobilurus trullisatus*

*Tapinella atrotomentosa*

Boletes

*Boletus chrysenteron*

*Suillus caeruleus*

Polypores

*Laetiporus conifericola*

*Ganoderma applanatum*

*Fomitopsis pinicola*

*Phaeolus schweinetzii*

*Phlebia radiata*

*Trichaptum abietinum*

*Trametes versicolor*

*Tyromyces chioneus*

Puffballs and similar

*Geastrum* sp. (earthstar)

*Lycoperdon perlatum*

*Lycoperdon pyriforme*

*Lycoperdon umbrinum* ? in gravel

*Nidula niveotomentosa*

Jelly fungi

*Pseudohydnum gelatinosum*

*Tremella mesenterica*

Ascomycetes

*Lachnellula agassizii* (tiny yellow stalked cups on rotten wood)

## The End of the Road

By Randy Marchand

Photo by Randy Marchand



The idyllic wilderness of the north

I was awakened by the rising sun and tried to stretch. I could not stretch because of scattered gear and other sleeping bodies, also a jolt of pain from my overtaxed muscles hit me like a brick. Reaching out into the cold air to grab my clothes I grasped a cold, sticky substance and realized it was peanut butter. “Tim!” I yelled.

Tom was awakened by my yell and moaned, “Tim left yesterday.” Angrily I search for the paper towels, which I found were also covered with peanut butter.

It was a cold morning and the windows and ceiling of the van were covered with condensation from our breathing. It had of course, been raining on us and our gear. The smell of the van was overpowering, with dirty socks being the main culprit. All of this made for a very unpleasant situation. Sitting

there feeling cold, miserable, and a little disgusted, I thought of the day ahead.”Up and at’em!” I yelled.

A couple of hours later we had safely parked and had prepared to do a quick scouting excursion to look for pine mushrooms (Matsutake). The price of the number one grade had been slowly dropping but had stabilized at eighteen to twenty dollars a pound. the other grades were low, but it was early in the season and most of the mushrooms to be found would be number ones. We decided to have a quick look and if we found any mushrooms we would return to the van for our survival gear, and larger pack-sacks to carry mushrooms. We each had a gym bag to carry mushrooms, and a compass. We set our compass straight in 90 degrees off the road. We scrambled down a steep bank littered with logs and debris that the bulldozers had left when making the road. As we entered the bush, the transformation was spectacular. It was a breathtaking scene that will be locked in my memory forever. It was a forest unlike any had ever seen before. A thick green, wall-to-wall carpet of moss covered everything on the ground. The grey trunks of the trees standing like soldiers, naturally spaced, faded off into the distance. The whole scene was accentuated by beams of sunlight streaming down through the tree tops, high-lighting the colours.

Suddenly I noticed white in the moss close-by-- mushrooms, everywhere! The rush was on! We endeavored to fill our bags, and then return to the van. Soon the downhill slope turned into an uphill slope. Up and down we went through an area of moss covered ridges. Our bags were about half full when we came to a small, shallow lake. Tom said to Chris and me, “We’d better return to the van for our gear and packs”. We agreed because we needed the larger packs to carry more mushrooms, so we started back.

Four hours later, we realized we were lost. We sat on a cliff edge looking down at an unfamiliar forest and mountains while trying to control the feeling of panic that was surfacing. After a long break we continued on our compass bearing. We had been climbing very steep terrain for about an hour and we could still not find the road. We had also been finding mushrooms continually, and our bags were full and heavy. Together with the steep terrain, the heavy bags were taking their toll on our endurance.

When we next stopped to rest, we realized it would soon be dark. In preparing to spend the night in the bush with no gear, a calm overcame us. We found a bowl-like depression between two fallen trees. Then we gathered

Photo by Randy Marchand



Beautiful matsutakes!

rolls of moss for blankets. My partners wanted to light a fire, but after a heated argument they submitted to my will. The bush was bone dry and had we lit a fire it would have undoubtedly become a forest fire, and then we wouldn't have known which way to run. The night was cold, very cold, and we should have collected much more moss, but the morning dawned clear and we started on our way early.

*Photo by Randy Marchand*



**Randy, at the end of the road.**

We knew that we had climbed up much more than we had gone down the previous day so we back-tracked on our compass for two hours. Then we did the unforgivable and started to wander this way and that on the verge of panic. Fortunately we came to a rocky creek, and drank deeply from the warm, slow running water that we knew was quite possibly infected with Giardiasis, more commonly known as beaver fever. The need for water outweighed our concern of the waters purity.

Following the creek upstream with the intention of finding the lake we had seen the previous day, we soon came to a timber cruiser's ribbon line that was on our original compass bearing. We followed the ribbon line and an hour later we were standing on the road. When we got back to the van, we

realized what we had done. Having parked near the end of the road, we missed it on yesterday's uphill climb. While climbing down in the morning we missed it again. Returning to the mushroom buying station, we were disheartened to learn the price had dropped to twelve dollars a pound. However, we made three hundred and fifty dollars each, and had found a new mushrooming area that would produce thousands of pounds of pine mushrooms in the future. That night we slept warm and contented in our intimately crowded, smelly van.

## **Rockport State Park Mushroom Foray and Plant Walk, October 11, 2015** *By Chuck Nafziger*

*Photo by Chuck Nafziger*



**A fascinating fungal oddity**

The Rockport State Park "Mushroom Foray and Plant Walk", while not an official NMA foray, was hosted by club member Terri Wilde. After relating some thoughts on conserving the pristine nature of the park, Terri and Marlee Mountain, who are experts on wild plant foraging for food and medicinal purposes, led walks through the awe inspiring old growth forest on a gorgeous sunny day, describing how people have used some of the forest's biological treasures. Others of the attendees went off on their own exploring the park's many trails. Park Ranger Don Smith made sure the various groups knew where each other were. After an hour or so learning about the uses of the wild plants and mushrooms we

*Photo by Chuck Nafziger*

all gathered together by the shelter, complete with bonfire in a nearby fire pit, for a potluck. We were fortunate to have the skills of Buck McAdoo, Harold Mead, and Joel Kyle as identifiers. They also handled any and all questions about the tremendous variety of fungi inhabiting the area. It was a spiritually uplifting day in a beautiful place with very enjoyable and knowledgeable company. Thank you Terri and Ranger Don Smith for sharing the beauty and serenity of Rockport State Park with us.



**A friendly gathering around a very robust cauliflower-mushroom**

## Lummi Island Foray Report

By Buck McAdoo

The forecast had been rain for just about the entire week. As day broke on the morning of October 10, 2015 the sky looked ragged from the hatch cover of my Bristol Bay double-ender. Luckily I didn't have to double reef the sails. The excursion today would be on land. Despite the ominous sky, seven of us club members, including long-time member Harry Ota, made it to the 10:10 a.m. ferry crossing in time.

As we pulled into the parking lot of the Lummi Trust Headquarters building, we saw right away that we would be outnumbered. Perhaps between 35 and 40 islanders were on hand for the day's mushroom adventures. We were warmly greeted at the door by Janine Shaw who then made an announcement that all forayers would be going to the Otto Preserve. This was the preserve that literally encompassed the premises. We wouldn't have to drive to the Curry Preserve and risk getting soaked in the pastures or drive to the Baker Preserve and risk breaking the rules of the DNR who shared that preserve with Lummi Trust. This was, of course, both good and bad. Bad that we didn't have three venues to choose from, as in years past, and good because we could divide the fungi into edible and non-edible groups on the tables instead of by locations. There were a lot of people new to mushrooming in the room, and having a table of edibles must have been helpful.

Photo by Fred Rhoades



Photo by Buck McAdoo



This mysterious *Gymnopilus* was an outing highlight.

While I set up my identification books on a small side table, foray host Bruce Armstrong led our group down the Otto Preserve loop trails. It is hard to get lost here. There are two major loop trails going through mixed woods on rather flat ground, and numerous smaller loop trails branching off of those. No matter where you go, you will eventually get back to the lodge.

It was crowd full of enthusiasm. Quite a few kids showed up. It must have been an eye opener to see how many shapes the fungi could assume. Popular moments included watching the *Lactarius lactate*, watching the *Boletus* turn blue when cut in half, and watching the puff of spores arising from the pore mouth of the earth star when pinched. These were offset by relatively unattractive moments such as sniffing the coal

tar odor of *Tricholoma bufonium* or observing the stems of the Prince, totally perforated by worm tunnels. Watching me endure the taste tests of various *Russulas* was another crowd pleaser.

In the middle of all this happy bedlam, a woman came up to me to inform me that according to a program

Agaricus augustus  
Agaricus hondensis  
Agaricus moelleri ss auct. N.W.  
Amanita constrict  
Armillaria solidipes  
Atheniella adonis  
Bisporella citrina  
Boletus chrysenteron  
Boletus radicans  
Chlorophyllum olivieri  
Clitocybe nebularis

entitled 'Staying Alive', eating wild mushrooms in the wilderness was not recommended. Our bodies expend more energy digesting the mushrooms than we get from the vitamins and proteins in return. This information coupled with the rotting carcasses of *Suillus caerulescens* on the table of edibles might not have been encouraging.

Not to worry. An excellent potluck was served up, and everyone made it back to their cars and trucks just before it began to rain in earnest. 55 species were found.

Photo by Andrea Miner



*Agaricus molleri*

Coprinus species (too decimated to tell)  
 Coprinus sylvaticus  
 Cortinarius cinnabarinus  
 Cortinarius traganus  
 Crepidotus species (too hygrophanous to tell)  
 Fomitopsis cajanderi  
 Galerina marginata  
 Ganoderma applanatum  
 Ganoderma oregonense  
 Geastrum triplex  
 Gomphidius oregonensis  
 Gomphidius subroseus  
 Gymnopilus luteofolius  
 Gymnopus species  
 Gymnopus peronatus  
 Hebeloma mesophaeum  
 Hypomyces chrysospermum  
 dentalis  
 Lactarius luculentus var. laetus  
 Leucocoprinus brebissonii

Hypomyces lactifluorum  
 Inocybe geophylla  
 Inocybe godeyi  
 Inocybe lilacina  
 Inocybe napipes  
 Laccaria amethysteo-occi  
 Lycoperdon nettyana  
 Lycoperdon pyriforme  
 Marasmius plicatilis  
 Mycena species  
 Paxillus involutus  
 Phaeolus schweinitzii  
 Pluteus cervinus  
 Pluteus lutescens  
 Polyporus badius  
 Ramaria botrytis  
 Russula abietina  
 Russula rosacea  
 Russula vesca  
 Russula xerampelina  
 Strobilurus albopilatus  
 Suillus caeruleus  
 Trametes hirsuta  
 Trametes versicolor  
 Tricholoma bufonium

All in all, not a bad day's haul. We also learned that the Lummi Trust has recently purchased the old quarry on the east side of the island. One can only imagine what myco-remedial mushrooms could turn up there.

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The Northwest Mushroomers Association meets 7–9 p.m. on the second Thursdays of Apr, May, June and Sept, Oct, and Nov. Meeting location is the downtown Bellingham Public Library.

We will inform you in advance of any changes in time or venue. *Note: the April 2016 meeting will be held in the Fireplace Room at the Fairhaven Library.*

Fungal forays and field trips are scheduled for the Saturday after each meeting. To stay apprised of forays, events and more, please join our googlegroups email list by signing up as a member.

Membership dues are \$15 for families and individuals and \$10 for students. Please make checks payable to NMA and mail "Attn: Membership" to the address above, or use Paypal online at [northwestmushroomers.org/join-or-renew-membership/](http://northwestmushroomers.org/join-or-renew-membership/)

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## NEWSLETTER

*MushRumors* is published in the months of March, June, September, November, and January online at [northwestmushroomers.org](http://northwestmushroomers.org). Club members are encouraged to submit stories, photos, recipes, and artwork. Submissions should be made two weeks prior to the month of publication.

For newsletter content or comments, contact editor Jack Waytz above or mail to:  
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Recently, while getting over the flu, I read the intriguing *A New History of Life: Radical new discoveries about the origins and evolution of life on Earth*, by Peter Ward and Joe Kirschvink (2015, Bloomsbury Press). It was the best part of my convalescence.

*A New History of Life* begins with the birth of our planet 4.567 billion years ago and ends with the future of our sun and solar system. It's a grand story set over deep time so maybe we can forgive biogeologists Ward and Kirschvink for giving so little mention to fungi and lichens along the way. Still, I tried to tease out some things relevant.

Life developed first over billions of years in marine environments before rising to dry land. All of that evolution has been marked by walloping changes in climate, geology, and species extinctions and rebounds.

According to Ward and Kirschvink, "There were a lot of both body plans and species diversity of photosynthesizing organisms we can call plants well before 472 million years ago [472 Ma marks the first known fossil of a terrestrial plant]. Many paleobiologists suspect that a wide diversity of fungi as well as green photosynthesizing microbes to multicellular plants may have been on land earlier than is now considered, and that even a billion years ago there may have been a surprisingly vigorous and numerous assemblage of that collectively could be called plants, if we throw in lichens, fungi, and sheets of green microbes draping wetter landscapes and swamps." Let's throw them in now, please.

We're reminded how the invasion of multicellular-land plants "utterly changed the nature of landforms and soil." Ward and Kirschvink go on: "The plant body must be anchored in place, and early land plants were probably anchored by fungal symbionts because there doesn't appear to be any differentiation in the higher forms. Additionally, this symbiotic relationship would provide for a means through which water could be recovered from the soil." Some 95% of all vascular plants today have a fungal partner living on their roots. Surely those partners solved together the long evolutionary problem of living out of the water.

(I dove into a quick look online. There is a fossilized "probable proterozoic fungi" at 900 Ma; the first fossilized "filaments of lichen-like symbiosis" from 600 Ma; and the first fossilized mycorrhizal spores, hyphae, and mold spores from 460 to 430 Ma (Rikkinen & Poinar Jr, 2007 and Berbee & Taylor, 2010). Frankly, we just don't know the "earliest" because fungi and lichens didn't much fossilize.)

One of the few "new discoveries" concerning fungi in this book concerns lignin and evolution of the wood rotters. It's thought now that fungi didn't evolve the rich, complex enzymatic ability to break down lignin until towards the end of the Carboniferous (360-300 Ma years ago), after the time our vast modern coal reserves were formed from tremendous masses of lignified dead wood. Molecular clock methods date the origins of decay fungi to a time that coincides with a sharp decline in the rate of organic carbon burial. So it perhaps wasn't just waterlogged swamps that held off decay, as previously thought; and fungi have something to do quite indirectly with modern day global warming.

This fall, many of us caught a lively talk given by University of BC's Ludovic De Renard to Northwest Mushroomers Association. De Renard is a doctoral student and "fungi detective" who compares fossils to living organisms to reconstruct fungal origins and diversification. He introduced us to the mystery organism -- and possible fungus -- Prototaxites. At a time before large trees when plants were at most a meter in height, Prototaxites was a giant at 3 feet wide and 25 feet tall. "Constructed of filaments, Prototaxites fossils have been interpreted as vascular plants, basidiomycete fruiting structures, algae, or lichens and most recently, masses of rhizoids from rolled mats of liverwort" -- or even perhaps assemblages of the above.

Something else *A New History of Life* tells us: not only did atmospheric levels of oxygen and carbon dioxide flux greatly over the course of our planet's history, but times of high oxygen match times of bigger individual life forms and higher diversity of genera. Interestingly, 300 Ma, the age of Prototaxites, was one of those times of high oxygen.

Was Prototaxites a fungi? We simply don't know. As Dr. Fred Rhoades notes, "The neat thing about all the studies about ancient organisms (including fungi) is that since we have so little information, just snapshots of fossils, molecular clock age estimates, etc. for all of life, many possibilities exist and the whole realm is wide open for intriguing hypotheses."

**2015 Fall Show Species List** Total of at least 343 including 21 lichens & 3 slime molds

**GILLED MUSHROOMS (236)**

Agaricus augustus  
Agaricus campestris  
Agaricus deardorffensis nom. prov. (formerly Agaricus moelleri)  
Agaricus hondensis  
Agrocybe erebia  
Alboleptonia sericella var. lutescens  
Amanita constricta  
Amanita gemmata  
Amanita muscaria  
Amanita pachycolea  
Amanita silvicola  
Amanita smithiana  
Ampulloclitocybe avellaneoalba  
Ampulloclitocybe clavipes  
Armillaria cepistipes  
Armillaria sinapina  
Armillaria solidipes  
Armillaria sp.  
Asterophora parasitica  
Atheniella adonis (Mycena adonis)  
Atheniella aurantiidisca (Mycena aurantiidisca)  
Bolbitius vitellinus  
Cantharellula umbonata  
Chlorophyllum brunneum  
Chlorophyllum olivieri  
Chlorophyllum rachodes  
Chrysomphalina aurantiaca  
Clitocybe deceptiva  
Clitocybe dilatata  
Clitocybe nebularis  
Clitocybula atrialba  
Clitopilus prunulus  
Collybia cirrhata  
Collybia tuberosa  
Connopus acervatus  
Conocybe filaris  
Coprinellus micaceus  
Coprinopsis lagopus  
Coprinus comatus  
Cortinarius alboviolaceus  
Cortinarius anomalus  
Cortinarius cinnamomeus  
Cortinarius croceus  
Cortinarius montanus  
Cortinarius multiformis  
Cortinarius purpurascens  
Cortinarius riederi  
Cortinarius sp.  
Cortinarius sp.  
Cortinarius spp. (subgenus Dermocybe)  
Cortinarius spp. (subgenus Leprocybe)  
Cortinarius spp. (subgenus Myxacium)  
Cortinarius spp. (subgenus Phlegmacium, incl. subgenus Bulbopodium)  
Cortinarius spp. (subgenus Sericeocybe)  
Cortinarius spp. (subgenus Telemonia)  
Cortinarius traganus  
Cortinarius zakii  
Crepidotus occidentalis  
Crepidotus variabilis  
Cystoderma amianthinum  
Cystoderma amianthinum f. rugosoreticulatum  
Cystoderma fallax  
Cystodermella granulosa  
Deconica montana  
Dendrocollybia racemosa  
Entoloma nidorosum  
Entoloma rhodopolium  
Entoloma sp.  
Floccularia albolaripes  
Galerina badipes  
Galerina heterocystis (Galerina clavata)  
Galerina sp.  
Gomphidius oregonensis  
Gomphidius subroseus  
Gymnopilus aeruginosus  
Gymnopilus bellulus  
Gymnopilus penetrans  
Gymnopilus picreus  
Gymnopilus sapineus  
Gymnopus confluens  
Gymnopus foetidus  
Gymnopus peronatus  
Hebeloma incarnatum  
Hebeloma mesophaeum  
Hebeloma praeolidum  
Hebeloma sacchariolens  
Hebeloma strophosum  
Hemimycena delicatella  
Hemimycena tortuosa  
Hygrocybe coccinea  
Hygrocybe conica  
Hygrocybe flavescens  
Hygrocybe laeta  
Hygrocybe miniata var. miniata

Hygrocybe russocoriacea  
 Hygrophoropsis aurantiaca  
 Hygrophorus bakerensis  
 Hygrophorus camarophyllus  
 Hygrophorus eburneus  
 Hygrophorus hypothejus  
 Hygrophorus piceae  
 Hygrophorus sp.  
 Hygrophorus sp.  
 Hypholoma capnoides  
 Hypholoma fasciculare  
 Hypholoma marginatum (Hypholoma dispersum)  
 Hypholoma sublateritium  
 Hypholoma tuberosum  
 Inocybe albodisca  
 Inocybe flocculosa  
 Inocybe fuscidula  
 Inocybe geophylla  
 Inocybe hirsuta var. maxima  
 Inocybe kauffmanii  
 Inocybe lacera  
 Inocybe lilacina  
 Inocybe mixtilis  
 Inocybe olympiana  
 Inocybe pudica  
 Inocybe sororia  
 Inocybe sp.  
 Kuehneromyces mutabilis  
 Laccaria amethysteo-occidentalis  
 Laccaria bicolor  
 Laccaria laccata  
 Lactarius alnicola  
 Lactarius deliciosus group  
 Lactarius glyciosmus  
 Lactarius hepaticus  
 Lactarius kauffmanii  
 Lactarius luculentus var. luculentus  
 Lactarius obscuratus var. obscuratus  
 Lactarius olivaceoumbrinus  
 Lactarius pallescens  
 Lactarius pseudomucidus  
 Lactarius rubrilacteus  
 Lactarius rufus  
 Lactarius scrobiculatus  
 Lepiota castanea  
 Lepiota cristata  
 Lepiota eriophora  
 Lepiota magnispora  
 Lepiota rubrotinctoides  
 Leptonia formosa var. formosa  
 Leptonia sp.  
 Leratiomyces ceres  
 Leucoagaricus leucothites  
 Leucopaxillus gentianeus (Leucopaxillus amarus)  
 Lyophyllum semitale  
 Macrocystidia cucumis  
 Mycena citrinomarginata  
 Mycena epipterygia var. epipterygia  
 Mycena filopes  
 Mycena galericulata  
 Mycena haematopus  
 Mycena maculata  
 Mycena pura  
 Mycena purpureofusca  
 Mycena quinaultensis  
 Mycena robusta  
 Mycena sp.  
 Mycena sp.  
 Nolanea proxima  
 Nolanea strictia  
 Panaeolina foenicicii  
 Panaeolus olivaceus  
 Paxillus involutus  
 Phaeolepiota aurea  
 Pholiota agglutinata  
 Pholiota astragalina  
 Pholiota aurivella  
 Pholiota decorata  
 Pholiota flammans  
 Pholiota flavida  
 Pholiota terrestris  
 Phylloporus rhodoxanthus  
 Pleurocybella porrigens  
 Pleurotopsis longinqua  
 Pleurotus dryinus  
 Pleurotus pulmonarius  
 Pluteus cervinus  
 Psathyrella gracilis  
 Psathyrella longistriata  
 Pseudoarmillariella ectypoides  
 Psilocybe cyanescens  
 Rhodocollybia butyracea var. ochracea nom. prov.  
 Russula adusta  
 Russula aeruginoides  
 Russula brevipes var. acrior  
 Russula cascadenis  
 Russula cerolens  
 Russula crassotunicata  
 Russula dissimulans  
 Russula eleaodes

*Russula farinipes*  
*Russula fragilis*  
*Russula occidentalis*  
*Russula placita*  
*Russula queletii*  
*Russula raoultii*  
*Russula sanguinaria*  
*Russula sardoniana*  
*Russula silvicola*  
*Russula sororia*  
*Russula sp.*  
*Russula sp.*  
*Russula sphagnophila*  
*Russula stuntzii*  
*Russula versicolor*  
*Russula veternosa*  
*Russula xerampelina*  
*Russula xerampelina* var. *isabelliniceps*  
*Sarcomyxa serotina* (*Panellus serotinus*)  
*Simocybe centunculus*  
*Stropharia aeruginosa*  
*Stropharia ambigua*  
*Tapinella atrotomentosa* (*Paxillus atrotomentosus*)  
*Tapinella panuoides* (*Paxillus panuoides*)  
*Tricholoma albobrunneum*  
*Tricholoma atroviolaceum*  
*Tricholoma equestre*  
*Tricholoma imbricatum*  
*Tricholoma magnivelare*  
*Tricholoma moseri*  
*Tricholoma myomyces*  
*Tricholoma pardinum*  
*Tricholoma pessundatum*  
*Tricholoma portentosum*  
*Tricholoma saponaceum*  
*Tricholoma sulphurescens*  
*Tricholoma terreum*  
*Tricholoma vaccinum*  
*Tricholomopsis decora*  
*Tricholomopsis rutilans*  
*Xeromphalina campanella*  
*Xeromphalina fulvipipes*  
 unknown yellow pleurotoiid

**BOLETES (15)**  
*Boletus coniferarum*  
*Boletus edulis*  
*Boletus edulis* var. *grand edulis*  
*Boletus mirabilis*  
*Boletus smithii*

*Boletus subtomentosus*  
*Chalciporus piperatus*  
*Leccinum scabrum*  
*Suillus caeruleus*  
*Suillus lakei*  
*Suillus luteus*  
*Xerocomellus chrysenteron* (*Boletus chrysenteron*)  
*Xerocomellus zelleri* (*Boletus zelleri*)

**CHANTERELLES (6)**  
*Cantharellus cascadenis*  
*Cantharellus formosus*  
*Cantharellus subalbidus*  
*Craterellus tubaeformis*  
*Turbinellus floccosus*  
*Turbinellus kaufmanii*

**CLUBS, CORALS, FANS & CAULIFLOWER (13)**  
*Clavariadelphus ligula*  
*Clavulina coralloides* (*Clavulina cristata*)  
*Clavulina rugosa*  
*Clavulinopsis laeticolor*  
*Ramaria araiospora* var. *rubella*  
*Ramaria botrytis* var. *botrytis*  
*Ramaria concolor*  
*Ramaria formosa*  
*Ramaria rubrievanescens*  
*Ramaria stricta* var. *stricta*  
*Ramaria myceliosa*  
*Sparassis crispa*  
*Thelephora terrestris*

**SPINED FUNGI (2)**  
*Hericium abietis*  
*Hydnum umbilicatum*

**PUFFBALLS & ALLIES (8)**  
*Cyathus striatus*  
*Lycoperdon nigrescens*  
*Lycoperdon pyriforme* (*Morganella pyriforme*)  
*Nidula candida*  
*Nidula niveotomentosa*  
*Rhizopogon sp.*  
*Scleroderma bovista*  
*Scleroderma cepa*

**JELLY FUNGI (3)**  
*Dacrymyces chrysospermus*  
*Dacrymyces tortus*  
*Pseudohydnum gelatinosum*

POLYPORES & CRUSTS (20)

Coltricia perennis  
Fomes fomentarius  
Fomitopsis cajanderi  
Fomitopsis officinalis  
Fomitopsis pinicola  
Ganoderma applanatum  
Ganoderma oregonense  
Gloeophyllum sepiarium  
Gloiodon occidentalis (unusual, "toothed polypore")  
Jahnporus hirtus  
Laetiporus gilbertsonii  
Phaeolus schweinitzii  
Phlebia tremellosa  
Piptoporus betulinus  
Polyporus badius  
Polyporus elegans  
Stereaceae sp.  
Stereum hirsutum  
Trametes hirsuta  
Trametes versicolor

ASCOMYCOTA (16)

Aleuria aurantia  
Bisporella citrina  
Chlorociboria aeruginascens  
Gyromitra infula  
Helvella elastica  
Helvella maculata  
Helvella vespertina (Helvella lacunosa)  
Hypomyces chrysospermus  
Hypomyces lactifluorum  
Otidea alutacea  
Otidea onotica

Peziza repanda  
Peziza vesiculosa  
Rhytisma punctatum  
Spathularia flavida  
Xylaria hypoxylon

GLOMEROOMYCOTA (1)

Glomus sp.  
via email at: gandalf5926@

LICHENS (21)

Alectoria sarmentosa  
Cladonia squamosa  
Evernia prunastri  
Hypogymnia apinnata  
Hypogymnia enteromorpha  
Hypogymnia inactiva  
Hypogymnia physodes  
Lepraria pacifica  
Lichenomphalia umbellifera  
Lobaria linita  
Lobaria oregana  
Lobaria pulmonaria  
Parmotrema arnoldii  
Peltigera brittanica chloromorph  
Peltigera brittanica cyanomorph  
Peltigera canina  
Peltigera neopolydactyla  
Pertusaria ophthalmiza  
Sphaerophorus tuckermanii  
Usnea filipendula  
Usnea longissima

slime molds (3)

Fuligo septica  
Lycogala epidendrum  
Slime mold slime (plasmodium)

***Attention Northwest Mushroomers! After 11 years as the editor of MushRumors, the exalted publication that chronicles the exploits of our club, I have decided that it is time to hand over the reigns of editor to an enthusiastic and qualified individual with a desire to be the journalist that represents our fine organization. If interested, contact me via email at: gandalf5926@comcast.net***