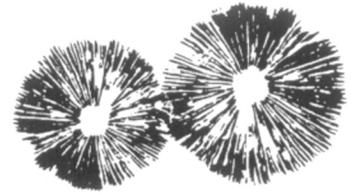


# SPORE PRINTS

BULLETIN OF THE PUGET SOUND MYCOLOGICAL SOCIETY  
Number 453 June 2009



*Mushroom  
Maynia!*

*May 3, 2009*

photos courtesy of John Goldman

## Spore Prints

is published monthly, September through June by the

### PUGET SOUND MYCOLOGICAL SOCIETY

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## CALENDAR

May 30 Swauk Creek Field Trip (**new date**)  
June 9 Membership Meeting, 7:30 p.m., CUH  
June 15 Board Meeting, 7:30 p.m., CUH  
Aug. 18 *Spore Prints* deadline  
Sept. 8 Membership Meeting, 7:30 p.m., CUH  
Oct. 17-18 Annual Wild Mushroom Exhibit

## BOARD NEWS

**Denise Banaszewski**

Mushroom Maynia! was a success, and 26 new members signed up. We also have a date set for the 2010 Mushroom Maynia! (May 2). A good time was had by all. In other news, we were approached by the Nisei Veterans Committee, a nonprofit organization. Their members are interested in going on a matsutake hunt in the fall, and asked if we would be interested in guiding such a trip. We are looking into ways to accommodate their request. In addition, after having discussed this for several months, we will make our roster available on line, in pdf format, to members beginning this fall (see President's Message). Finally, a reminder to all to come to the June membership meeting, where we will wish Josh Birkebak good luck in his studies!



## MEMBERSHIP MEETING

Tuesday, June 9, 7:30 p.m., in the Center for Urban Horticulture, 3501 NE 41st Street, Seattle.

Our speaker this month is Dr. Michael Beug, Professor Emeritus from the Evergreen State College in Olympia, Washington. His presentation will be on poisonous and hallucinogenic mushrooms and mushroom toxins, always a timely and popular subject. His presentation will cover mushroom identification, toxin groups, their chemical compositions, and symptoms when ingested. In addition to his contributions on mushroom toxins, Dr. Beug has developed many introductory and advanced educational slide presentations on fungi, which can be readily accessed on the internet (see <http://academic.evergreen.edu/projects/mushrooms/>) or on DVDs through the North American Mycological Association. He currently chairs the Toxicology Committee for the North American Mycological Association and is an outstanding, award-winning photographer. Many exquisite photos of toxic and hallucinogenic mushrooms will be included.



Will members with last names beginning with the letters L-Z please bring a plate of refreshments for the meeting.

## PRESIDENT'S MESSAGE

**Patrice Benson**

Thanks to all of the PSMS members who contributed to the wonderful second annual Mushroom Maynia! at the Burke Museum on May 3, 2009. Fifty-two members volunteered, 360 people paid to see the mushrooms, and we signed up 26 new members! Thanks to Chair Joanne Young for leading the troops in such a fine fashion. Welcome to all of the new members and your families. Please be sure to attend a field trip and meet some other mushroom enthusiasts.

The board of trustees has decided to create an on-line roster which can be updated frequently and accessed from any computer. This will eliminate the costs of printing and mailing and allow for paper-free use. The roster will be in a format that can be printed on your home computer or at the library if you prefer a hard copy. For those of you without computers, a printed copy can be made available upon request. In anticipation of posting the roster, which is scheduled for September 1, please check the information in the current roster and mail or e-mail any changes to Pacita Roberts ([pacitaroberts@gmail.com](mailto:pacitaroberts@gmail.com), 10516 27th NE, Seattle, WA 98125) or Ann Polin ([WesAfricaAnn@comcast.net](mailto:WesAfricaAnn@comcast.net), 22265 34th Pl W, Brier, WA 98036). You may, of course, request that you not be listed in the roster. There will not be a printed version different from the on-line version. The roster will be in the password-protected membership section of the website. We will change the password in September and yearly thereafter. The new username and password will be published in the printed copy of the September *Spore Prints*.

The mushrooms have begun in force and the rains will be great for our spring and summer fruitings.

Don't miss our June meeting, which will feature Dr. Michael Beug as our speaker. We will be honoring our UW graduate, Joshua Birkebak, and pushing him out of the PSMS nest to fledge toward Tennessee and further mycological studies with another one of our own, Dr. Brandon Matheny. We wish Joshua the best that life has to offer and hope that he returns to teach us new and wonderful things about mushrooms.

Have a wonderful summer of mushroom gathering and planning your fall mushroom events. The 46th annual PSMS Wild Mushroom Exhibit will be October 17–18, 2009. Don't forget about the film "Know your Mushrooms" (see <http://nwfilmforum.org>) and the Breitenbush conference October 22–25, 2009 (info at [www.mushroominc.org](http://www.mushroominc.org)).

## 29 PINES FIELD TRIP

Brian Luther



The previous week it had rained extensively, both in western and eastern Washington, and the roads in the 29 Pines campground on May 9 had large puddles of water in the chuck holes—an indication of the recent precipitation. But for our day there, it was mostly sunny and just the perfect, warm temperature, although we did get a brief sprinkling mid-day as a large dark cloud passed over. So, we really got a nice, timely break in the weather. Sixty-seven people signed in for our Saturday field trip off the Teanaway River Road.

We were especially lucky to have two members who volunteered to work together as hosts for this field trip. Doug U-Ren set up camp a few days earlier and we really did appreciate his efforts. He had a nice canopy put up and tables out, since this location has no shelter. He kept a fire going and really made it a welcome spot to meet. Our other host, Hildegard Hendrickson, provided goodies and the essential hot coffee and also brought from Seattle an overflowing basket full of gorgeous morels, in case pickings were slim. Thanks, Hilda and Doug, for helping to make the day extra enjoyable for everybody.

Morel pickings were definitely slim, as we were at least a couple of weeks early, and those that were found were mostly immature. Only a few mature specimens came in, but Doug had some fruitings staked out if he needed to show beginners. Twenty-six different fungi were collected, displayed, and identified, with nothing unusual being found. The only species found in any quantity were *Agrocybe praecox*, *Gyromitra gigas*, and *G. esculenta*, none of which are good edibles.

Around 20 people stayed for a really nice potluck with a good assortment of dishes. Hildegard donated the basket of choice Seattle morels for the potluck, and Cathy Lennebacker sautéed them and added some cream—yummy. PSMS member Allan McFadden treated us all to several vintage bottles of delicious red wines, the earliest being a 1977 Cabernet Sauvignon which was fabulous. It was so good, in fact, that we couldn't stop talking about it. This wine was older than some of the members who sampled it. Thanks for sharing, Allan—it was a real treat!

When I got home I scratched what I thought was a small scab under the hair on my scalp and low and behold it was an uninvited living guest—a tick had firmly taken hold on my head. It took several days for the spot to heal and feel better after I removed it. I had been collecting through some brushy areas during the day and that's where you usually find them, or I should say, they find you.

If all of these activities (minus the tick experience) sound like fun and you didn't make it to any of the spring field trips, then be sure to plan on going in the fall. Join in the fun of getting out in the woods, getting exercise and fresh air, finding and collecting



fungi, learning new species, enjoying great food (and wine), socializing, and making friends with the best bunch of people you'll find anywhere. I'm already planning the four fall field trips, so I look forward to seeing you then.

Good collecting.

## VERPAS WITHOUT COTTONWOODS

Brian Luther



*Verpa bohemica*

Everybody associates *Verpa bohemica* with our common cottonwood trees (*Populus trichocarpa*). In our neck of the woods, that's normally where they're most frequently looked for and found. Here in the PNW verpas are often found at low elevations in western Washington in March and April either in pure stands of cottonwood or where there's cottonwood mixed with some maple, alder, or even an occasional conifer here and there, but usually where cottonwoods predominate. *Verpa (Ptychoverpa) bohemica* and its smaller eight-spored cousin *Verpa conica* are, indeed, often collected in deep cottonwood leaf duff, but not always. They're actually widely distributed and can be found associated with a mixed variety of both broad-leaf trees and conifers—not just cottonwoods.

After the 29 Pines field trip we went over to do some work at our Eagle Creek property and verpas were quite plentiful, growing directly out of very thick leaf debris from Big Leaf Maple (*Acer macrophyllum*) and Red Osier Dogwood (*Cornus stolonifera*), without a cottonwood nearby. I picked up large clumps of the leaf mold right where the verpas were collected, sorted through all of it, and didn't find a single cottonwood leaf anywhere—mostly all maple with a very small amount of dogwood mixed in. I call them my "Maple Verpas."

It is still unknown if *Verpa bohemica* is purely saprophytic or if there could be some mycorrhizal association involved.

As the season progresses in spring it's common to find both true morels and very mature verpas together under cottonwoods, especially as you advance upward in elevation in the mountains in May and June. This cottonwood habitat is one of the specialty niches to look for true morels in later in the season. So, keep your eyes out.

## OOPS! EDITOR NEEDED

Nick Iadanza

*MushRumors*, Ore. Myco. Soc., May/June 2009

Someone once asked if there was a point to the editor's message in *MushRumors*....lest you think that this is a waste of space, I offer the following as examples of the value of having good editors (or lack thereof):

Canada's *Ottawa Citizen* newspaper printed a recipe for Chantrelle Lemon Pasta in its food section, calling for one cup of chanterelle mushrooms. They even provided a helpful photograph so amateur mushroom hunters could find their own wild chanterelles. Unfortunately, the photograph showed Destroying Angels, which are deadly when eaten.

cont. on page 4

**Oops!**, cont. from page 3

On the very same day it ran a story about an Albany family that was poisoned by a batch of wild “death cap” mushrooms they picked by mistake, the *Contra Costa Times* accidentally ran a photo of a death cap mushroom on the cover of their food section—which focused on wild mushrooms. Oops. A correction read: “A photo of this mushroom on the cover of Wednesday’s Food section was incorrectly identified as a giant morel. It’s actually either a death cap or a death cap look-a-like, a mushroom ethical foragers never harvest due to the danger of confusion.”

Maine’s *Portland Press Herald–Maine Sunday Telegram* ran a correction for a previous article. “A story about foraging for edible mushrooms contained a photo of *Amanita muscaria*, which is a poisonous and hallucinogenic mushroom. It was a copy editor’s error. The picture in question was removed from the online site.”

From Great Britain: One national newspaper had to issue a hasty correction after it gave away a free wall chart showing edible mushrooms of the UK which wrongly stated that the giant funnel cap was safe to eat.

Old but interesting: In a country that takes its champignons seriously, Larousse, the venerable French publishing house, suspended sales of the new edition of its famous dictionary because the book erred in saying that some highly poisonous wild mushrooms were harmless. On page 203 of the 1991 edition, there was a color illustration showing 15 varieties of mushrooms, including *Amanita phalloides*, often called the deadliest wild mushroom in France. There was supposed to be a red dot next to the beige-white mushroom, indicating that it was deadly. Instead, there is a black dot, indicating that it is harmless. The same mistake was made for two other highly poisonous mushrooms, *Amanita virosa* and *Cortinarius orellanus*.

This is the perfect time to say “thanks” to our reviewers, Maggie Rogers and Jolie Jordan.

## MALARIA CONTROL SCHEME TARGETS OLDER MOSQUITOES

Rose Hoban

Voice of America News

Durham, North Carolina, 17 April 2009

Despite new drugs and strategies for combating malaria, this infectious illness remains one of the world’s most dangerous and deadly diseases. Now, some researchers think they have a strategy to produce a new, more environmentally friendly insecticide that targets geriatric mosquitoes.



Insecticides such as DDT were effective at controlling mosquitoes for several generations. But DDT had such toxic side effects that it was eventually banned, despite its effectiveness.

Now, entomologist Andrew Read at Penn State University thinks the problem with insecticides such as DDT may be because people looking to control malaria have gone about it the wrong way.

“You don’t need to indiscriminately kill mosquitoes to stop disease,” he says. “You just need to kill the old ones.”

That’s because mosquitoes live only a few weeks. It takes the malaria parasite about two weeks in the mosquito to become dangerous to people. So Read says instead of trying to kill all mosquitoes, a better strategy is to target older, dangerous ones.

“The good thing about just killing the old ones is that most mosquitoes will have done most of their reproduction before you kill them, and that means the susceptible mosquitoes will indeed continue to breed, so you still have susceptible mosquitoes, and your insecticides then just work against the old guys, removing them, and they are the dangerous ones. So under those circumstances, you don’t get the evolution of insecticide-resistant mosquitoes.”

He and his colleagues have been testing a kind of fungus that makes mosquitoes sick over the course of several weeks. And it eventually kills the oldest and most infectious mosquitoes.

“The name of the game is not mosquito control. It’s actually malaria control,” Read explains. “So if you just remove the old ones, you still have lots of young, non-dangerous mosquitoes around, but you have controlled malaria.”

Read says this fungus is about 98 to 99 percent effective at killing old mosquitoes in the lab. Now he says he needs to test this fungal insecticide in village areas where malaria is prevalent, to see whether fewer people get the disease, even if they’re still getting bitten by mosquitoes.

## TURNING COFFEE WASTE INTO MUSHROOMS

Greener Design Staff

[www.greenbiz.com/news/](http://www.greenbiz.com/news/), April 20, 2009

ATLANTA, Ga. - The ZERI Foundation was recognized by the Specialty Coffee Association of America this month for its work helping coffee farms utilize their waste.

ZERI (Zero Emissions Research and Initiatives) started a program in Colombia 15 years ago using waste from coffee farms to grow mushrooms. ZERI says that shiitake mushrooms grow three times faster in the waste than normally. Any waste left over from growing the mushrooms is then used as animal feed.



*Shiitake growing on coffee waste.*

ZERI’s waste-to-mushrooms program has already created 10,000 jobs in Colombia and Africa, providing at least two jobs per coffee farm. ZERI hopes to spread the program even further throughout the 25 million coffee farms in the world.

The program is even coming to the United States this month as two students from University of California Berkeley’s Haas School of Business, Alex Velez and Nikhil Arora, launch BTTR Ventures. The company will take local coffee ground waste, use it to grow mushrooms in an Oakland, California, warehouse, and donate the remaining waste to City Slicker Farms in Oakland.

The Specialty Coffee Association of America gave ZERI its annual sustainability award at its 21st Annual Exposition in Atlanta this month.

*I got lost in the woods one day  
I just couldn’t figure my way  
I couldn’t get out  
No one answered my shouts  
So I just decided to stay*

—Charmoon Richardson

SOMA News, Sonoma Co. Myco. Assoc

## FINDING FUNGI IN ANTARCTICA Emily Stone *Smithsonian* magazine, May 2009

Since there are 100,000 known fungus species, it might not seem all that remarkable that Robert Blanchette may have discovered three new ones. But he found the fungi where no one believed they existed—Antarctica—and he says they’re feasting on historic treasures—the wooden huts built a century ago by legendary British explorers Ernest Shackleton and Robert Scott.

The three small buildings, constructed during Shackleton’s and Scott’s efforts to explore Antarctica and reach the South Pole between 1901 and 1915, are considered invaluable links to the “heroic age” of polar exploration, when eight nations launched 15 Antarctic expeditions between 1895 and 1917.

When conservationists noticed signs of decay in the huts—rotting planks and wooden crates covered with black speckles—they knew who to consult.

Blanchette, a 57-year-old plant pathologist at the University of Minnesota, is a leading specialist in the study of how fungi affect archaeological artifacts. Originally focused on forest diseases—such as root rot and white pine blister rust—he raised his profile in 1988 when he delivered a paper describing the fungal decay of wooden relics from an excavated Native American village in Washington State.

In the decades that followed, Blanchette studied wooden remains from the Atlantic Ocean, from Asian, African, and North American deserts, and from both poles.

Before Blanchette, no mycologist had documented any wood-degrading fungi native to Antarctica. After all, fungi generally prefer warmth, and no trees have grown on the frozen continent for millions of years. But when Blanchette compared the DNA of the fungi discovered at the explorer huts with a database of known species, he found three types of fungi that were clearly distinct from any temperate species that the explorers or later visitors might have brought with them.

It appears, then, that the three huts are being attacked, in part, by native species.

Blanchette says he’s delighted to be studying some “really tough fungi,” capable of eking out an existence in one of the planet’s most inhospitable environments. He speculates the fungi lived off penguin guano, moss, lichens, and material in the soil until the explorers arrived and provided a veritable feast—the first wood Antarctica had seen in eons.

Blanchette and his team have advised the Antarctic Heritage Trust about protecting the huts. Because fungi need moisture, the researchers recommended clearing out a century’s worth of accumulated ice under Shackleton’s hut (revealing stores of whiskey in the process) and removing 100 tons of snow and ice that accumulate annually behind Scott’s hut at Cape Evans.

Blanchette, meanwhile, made another observation: one species of Antarctic fungus appears to be feasting on petroleum spilled from leaky fuel containers that Scott left behind at Cape Evans. If so, Blanchette speculates that the fungus—or enzymes extracted from it—could be put to work digesting petroleum spills.

That’s what Blanchette says he loves about his work—the unexpected developments and the surprising resilience of life. No matter the environment, he says, “we’re always finding great fungi.”

## BUT THEY REALLY ARE MORELS...NOT MushRumors, Ore. Myco. Soc., May/June 2009

OMS member Pam Buesing related the story of a recent opportunity to educate the staff of a local upscale restaurant. Pam ordered a dish from the menu billed as “chicken with morels,” somewhat surprised that morels appeared on the menu so early in the season. When the dish arrived, Pam knew immediately that the “morels” were verpas. She was a little unsure of how to approach the situation. A few minutes later, when the wait person asked the usual, “how is everything?” she said, “well...” and pointed out that the mushrooms weren’t actually morels. When they immediately offered to replace the dish, Pam took them up on the offer. While she waited for her dinner, they brought out some of the whole, uncooked mushrooms to show that they were “really morels.” Fortunately they were classic examples of young verpas. Sliding a dinner knife under the edge of the cap, Pam was able to show that the cap was attached only at the very top of the stem. Later in the evening, the manager came out and thanked her for pointing out the differences and said that they had looked them up on the Internet and were able to see the differences in the two mushrooms for themselves. He was hoping to get his money back from his “mushroom guy.”

## DUTCH SCIENTISTS DEVELOP A POTATO RESISTANT TO *PHYTOPHTERA*

**Thijs Westerbeek van Eerten**  
Radio Netherlands, May 11, 2009

Using a form of genetic modification called cisgenesis, botanists at the University of Wageningen in Holland have developed a potato with a natural resistance to the fungus *Phytophthora infestans*. *Phytophthora infestans*, better known as potato rot, can wipe out whole harvests and was responsible for the Great Potato Famine in Ireland in the mid-19th century.

The problem with genetic manipulation arises from the artificial addition of foreign genes into a plant or animal to create a living organism that does not occur naturally. Many people object to such manipulation on moral grounds. What gets really scary, however, is when such organisms start to spread, mutate, or mingle with other species, raising even stronger objections on ecological grounds.

Wouter van Eck, an expert with the Dutch branch of Friends of the Earth, paints a frightening picture: “Unexpected dangers could emerge that only become apparent when an allergy occurs or a plague, or when it reproduces with other organisms in nature.... You don’t know what can happen, it is a risk.”

Unwilling to brush aside the advantages of genetic modification without a fight, scientists at the University of Wageningen are working hard on cisgenesis. In this method, new genes are introduced into an organism, but ones from the same family and not from another organism. You could consider it in the same way as classical cross fertilization, but much quicker. With cisgenesis, a new type of potato or tomato with a built in resistance against disease can be developed in 6 years instead of 40. Another important factor is that the process is not completely unnatural because the combination of certain genes from a plant family could take place in the wild.

Professor Evert Jacobsen of Wageningen University’s Plant Sciences Group explains how the new—but related—genes are introduced into the potato.

*cont. on page 6*

## Cisgenesis, cont. from page 5

“You take a bacterium which occurs naturally in soil, ‘an agro bacterium’ and you add the required gene. The bacterium introduces the gene—which is resistant to potato rot—into the new plant and continually repeats the process.”

Another advantage of cisgenesis is that resistance to a disease developed in this way is a natural resistance, making pesticides practically redundant. And that is a completely different approach to the way in which large companies currently use genetic modification, as Mr van Eck explains:

“What you see is that gene technology is developed to serve the interests of companies and not of farmers. For example, more pesticides are used because Monsanto has developed plants which are better able to endure them. That is just bad for both the environment and people’s health.”

Environment Minister Jacqueline Cramer has told the Lower House she is considering an exemption for the limited use of cisgenic plants, so that they can be grown freely. The case continues.

### ON EATING RAW MUSHROOMS David Campbell

*Mycena News*, Mycological Society of San Francisco,  
via *The Mushroom Log*, Ohio Mushroom Society,  
Jan./Feb. 2009

There seems to be an ongoing temptation amongst mycophagists and chefs to serve mushrooms raw or barely cooked. Generally speaking, this is not the best of ideas.

The mycochitin composition of mushroom cell walls, as opposed to cellulose walls of plant cells, is difficult for humans to digest. Our stomachs resent indigestible items, and often forcibly reject them without further ado. The cooking process helps break down fungal cell walls, rendering mushroom flesh not only more readily digestible, but also releasing significant nutritional value contained within the cells.

Further, many mushrooms considered edible contain irritating or toxic components readily destroyed or eliminated by cooking. Therefore, common and valid mycophagal wisdom dictates that all edible mushrooms should be cooked prior to consumption. Exceptions are made only if one has specific knowledge that a particular pristine species is safe to eat raw. With these few *au naturel* exceptions, the “pristine” part becomes especially important. Environmental or microbial contaminations to the mushroom flesh may pose potential health hazards. By dramatic example, a few free-spirited youths in Hawaii a few years ago blithely consumed blue-staining *Psilocybes* as they went collecting from cow patties. What a downer it must have been a short while later, when the doctor told them they had nematodes [worms]!

Bear in mind, there is much yet to be learned about eating mushrooms; wild or tame, cooked or raw... the research is in progress, and we the mycophagists are, by default, the guinea pigs. What we know of mushroom edibility is primarily the result of shared anecdotal information, as compiled and recorded over the course of human history. Hardly do we rest on hard science or a complete body of knowledge when we decide whether or not to eat a given fungus. In fact, another good general reason for cooking one’s mushrooms is the blind stab it represents at protecting us from the unknown.

The list of edible mushrooms considered safe for raw consumption is quite short. Even species commonly eaten raw, especially the ubiquitous button mushroom, *Agaricus bisporus*, have their drawbacks. Buttons, and many other edible mushrooms, contain various hydrazines, a group of chemical compounds generally considered carcinogenic. For the most part, these compounds are heat sensitive, readily volatilized, and expunged from the fungal flesh by proper cooking. This basic understanding is employed by some more adventurous mycophagists to justify eating the false morel, *Gyromitra esculenta*, a deadly poisonous mushroom according to every published description I’ve read. Those who so indulge in this species believe the hydrazine compounds present (naturally occurring gyromitrin converts to monomethylhydrazine, or MMH, when heated) to be effectively removed, at least to a large degree, by thorough cooking, provided one stands well clear of the fumes during the cooking process. The more conservative mycophagists consider this practice questionable, at best, and argue that gyromitrin is never completely eliminated, that there may well be harmful cumulative factors associated with repeat false morel consumption ... I say “To each his own” in decisions such as this, cautioning only that the innocent and unaware should never be arbitrarily included in mycophagal experimentation.

The kicker with *Agaricus* species, including the buttons, is that one of their primary hydrazine components, along with gyromitrin, is “agaratine,” a substance somewhat resistant to cooking heat, with a significant percentage (25–75%) of agaratine material typically remaining after being subjected to various methods of cooking. So, the question as far as avoiding hydrazines in *Agaricus* is concerned, actually becomes whether to eat members of this genus at all.

We need to keep in mind that lab tests and subsequent conclusions drawn concerning carcinogenic or mutagenic health hazards of hydrazine involve massive doses of isolated extracts administered to mice in a concentrated time frame. Similarly disturbing test results are likely to be found with many substances present in many, many foods humans commonly eat without suffering or even worrying about any particular health concern. The relatively unblemished human history of consuming edible *Agaricus* species suggests we may continue to do so. The science may suggest we should not over indulge, but we already knew that. As I know of no one stricken by cancer or any other malady as particular result of eating *Agaricus*, and since the genus includes some of the most delectable of all edibles, there are several wild *Agaricus* species that remain firmly ensconced on my preferred edibles list.

Unfortunately, the button mushroom industry routinely promotes the use of their product raw, especially on salads, perpetuating the myth that mushrooms need not be cooked. I presume such promotion to be a profit driven policy. A recent Poison Control Center response incident with *Gyromitra montana* purchased at a Whole Foods store demonstrated the broader danger of public misconception about the safety of eating store-bought mushrooms raw. The blithe and unwitting “victim” reportedly took a nice chomp from her just purchased bull’s nose as she walked out of the store! As far as I know, this mushroom contains hydrazine compounds that may be quite similar to those found in *Gyromitra esculenta*, but in sufficiently reduced concentrations to be listed in many published mushroom guides as edible, *if cooked*. In this case, the immediate effects induced by consumption of the raw *Gyromitra* flesh easily trumped any long-term health concerns.

Cooking of mushrooms generally reduces the likelihood of gastrointestinal irritation and allergenic reaction. Popular comestibles such as morels (*Morchella* spp.), hedgehogs (*Hydnum repandum*),

and oyster mushrooms (*Pleurotus* spp.) will almost certainly make one ill if eaten raw. Chanterelles (*Cantharellus cibarius*, *C. formosus*, etc.) are generally considered stomach irritants in the raw. King boletes (*Boletus edulis*) are known to cause many people gastro disturbance even when cooked, but are nonetheless popular raw in the hard-button stage. Diners served a raw porcini salad are well advised to eat just a tad...or else.

Some small and/or gooey mushrooms are often eaten raw, mostly because they hardly lend themselves to cooking. The witch's butters (*Tremella mesenterica*, *T. foliacea*, *Dacrymyces palmatus*) and toothed jellies (*Pseudohydnum gelatinosum*, *Phlogiotis helvelloides*) are good examples of fungi commonly eaten "as is," sans ill reported effect, or at least I've heard no dire reports. Part of the safety in occasionally consuming oddball species such as these is we never really eat all that much. In fact, the key to safe consumption of any and all mushrooms, aside from proper ID and sufficient cooking, is moderation.

Somewhat ironically, given the nefarious reputation of the genus at large, the most readily digestible, or at least most innocuous, mushroom to eat raw, by my experience, is the coccoli (*Amanita lanei*). I generally eat these mushrooms raw because they so remind me of oysters (mollusks, not the fungus), in that the more you cook them, the less desirable they become. In all fairness, I should mention that I do *chemically* cook my coccoli salad with lemon juice marinade. I have never suffered any discomfort, nor have I heard complaints from those who have consumed my "coccoli ceviche." Of course, you are not likely to see edible *Amanita* specimens for sale in the market, nor should you, methinks. Our markets and the public both lack the knowledge and sophistication to safely trade a product so easily confused with its lethal cousins!

Other methods of chemical cooking, aside from citric acid, involve brining or pickling. I lack personal experience with this form of mushroom processing, but I have heard and read it is used to apparently satisfactory effect in many cultures, notably Russia, where many kinds of freshly collected *Russula* and *Lactarius* species are reportedly tossed collectively into the brine barrel, to be directly retrieved and munched later. Of interest with this method is that some of these species so prepared are considered poisonous when cooked by conventional heat application.

As stated above, cooking with heat destroys many toxins and irritants found in mushrooms. Toxins present in various red sponged species of the genus *Boletus*, for instance, may allegedly be neutralized with prolonged cooking. Ibotenic acid and related toxic compounds present in *Amanita muscaria* are not heat sensitive, but are soluble in boiling water. This mushroom may be rendered edible by properly leaching the mushroom toxins into boiling water, tossing the water, and eating what's left of the mushroom. I have been party to this process several times while participating in David Arora's annual Mendocino seminars, where we often served properly processed fly agaric, sliced and boiled, to the assembled throng, free from toxic effect.

Make no mistake, however. Deadly amanitin toxins present in the death cap and destroying angel (*Amanita phalloides*, *A. ocreata*, etc.) are oblivious to heat and leaching processes, retaining their virulent properties regardless of cooking methods applied. Cooking or not makes no difference with these toadstools; they remain fully capable of killing any sad soul who egregiously partakes, regardless.

## URBAN EDIBLES

Agnes Sieger

It's June, and PSMS field trips are over until next fall. But despair not. Edible mushrooms are with us still.

I once filled my wastepaper basket—which I carefully placed on top of my desk to discourage any premature zeal on the part of the janitor—to the brim with *Agaricus augustus* which had fruited on schedule under the ground cover in front of the lab where I worked at the University of Washington.

As my experience attests, not all the good edibles grow way back in the hills in some secret hideaway that takes years to ferret out. Some of the best picking is right here in town.

*Agaricus augustus*, the Prince, is a prime example. In the summer, when most mushrooms are scarce, it pops up all over Seattle. It can be found anywhere from semi-woodlots, to yards with trees, to under the giant sequoia in the Arboretum. Just don't confuse it with *Agaricus praeclariassquamosus* (aka *A. meleagris*), which starts coming up in the same places later in the season.



*Melanophyllum (Lepiota) rachodes* is another good example. It occurs in backyards, compost heaps, vacant lots, and woodlots all over town. It looks a little like a shaggy *Amanita* without a volva, but if you scratch the stem, it bruises orange, which, to my knowledge, Amanitas don't do.

Less than 10 feet from the *Lepiota rachodes* patch in her backyard in Renton, former PSMS President Jennie Schmitt had a patch of blewits, *Clitocybe (Lepista) nuda*. They usually showed up about the first of December. Judy Roger, a former PSMS member who now lives in Oregon, used to find blewits regularly in Woodland Park. Blewits also occur in the Arboretum and other parks in Seattle and on the East Side. They have been fruiting in our yard here in Port Angeles for years.



Parks are almost always good hunting grounds. Hildegard and Monte Hendrickson once astounded Dr. Orson Miller when they took him hunting for a couple of hours in the Arboretum and found *Boletus edulis*. Discovery Park has *Helvella lacunosa*. Hamlin Park in the north end near us occasionally yielded sprinklings of morels and chanterelles as well as large fruitings of *Agaricus campestris*, *Armillaria mellea* (until the park hired the local convicts to clear out the brush), and various *Suillus* species. On the other hand, it also yielded a plethora of *Amanita muscaria* and *Amanita pantherina*.



Be aware that *Armillaria mellea* does affect some people adversely although it's considered a good edible. It may depend on whether it's growing on hardwoods or conifers. Also, there are several different species in the *Armillaria mellea* complex. It must also be well cooked.

Toward August, sometimes earlier, with the summer rains comes the fairy ring mushroom, *Marasmius oreades*. It is common—sometimes abundant—in parks, yards, and other places that have been trampled a bit. Once you know how to identify them, take your scissors and clip off just the caps, because the stems are tough.



cont. on page 8

## Urban Mushrooms, cont. from page 7

Associated, in this area, with ornamental birch trees grows *Leccinum scabrum*, a species introduced to the Northwest which is as good an edible as the aurantiacum complex found in the mountains. There were some growing on the next street over from our house in Shoreline for years.



Along with the numerous conifers around town come crops of assorted *Suillus*; sometimes they seem to carpet the ground. If you get them small enough, before they've started to slime or are difficult to clean or the tube layers don't remove easily, some of them are reasonably good.

So are the small puffballs like *Lycoperdon perlatum* which are often found growing alongside driveways and in other compacted areas. Sauté them in butter and use them in soup.



The same habitat is good for *Coprinus comatus*, the shaggy mane. One year, the only *Coprinus* displayed at the annual exhibit was supplied by a worker who, realizing none had been brought in, ran home, grabbed a shovel, and dug up the patch in his local park.

Occasionally, in woodlots and stream gullies and places where there are alders, you can find the oyster mushroom, *Pleurotus ostreatus*. Check gullies and places with a creek and fallen timber. Who knows, you might get lucky.



Even that most elusive of edibles, the morel, visits town occasionally. I have mostly found it in newly established planters that have been covered with beauty bark. Also check under old apple trees and maybe cottonwoods or even alders.

So, city-dwellers, before you fill up the car with gas and dig out the forest service maps, take a stroll around the neighborhood.

## CHANTERELLE MUSHROOM SOUFFLE

Olson's Food Stores, Michael Blackwell, Exec. Chef

6 TBs butter  
¼ cup minced shallots  
1 lb Chanterelle mushrooms, chopped  
1 tsp salt  
Pinch thyme  
4 TBs flour  
1½ cups hot milk  
8 egg yolks, beaten  
8 egg whites, beaten stiff  
2 TBs grated Parmesan



Preheat oven to 350°F. Melt butter in skillet. Over medium high flame, sauté shallots, mushrooms, salt, and thyme until the shallots are transparent. Stirring with a wire whip, add flour and cook 3 minutes. Add hot milk and, stirring constantly, cook another 5 minutes until thickened. Remove from heat and cool slightly. Add the beaten egg yolks. Wait 3 minutes and stir in 1/3 of the beaten egg whites. With a rubber scraper, fold in remaining egg whites and pour into a buttered souffle dish. Sprinkle with Parmesan and place in preheated oven. Bake for 30 to 40 minutes or until golden brown. When done, a cake tester should come out dry. Serve at once. Excellent with lamb. *Makes 6 to 8 servings.*

## YAHOO DISCUSSION GROUP

Want to stay in touch over the summer? The PSMS e-mail discussion group maintained by Yahoo Groups is an easy way to keep in contact with other members, circulate information about PSMS events, and post general mushroom information. To join, follow the directions on the PSMS website (<http://psms.org/members/index.html>) or on page 40 of the PSMS roster.

*See you in September.*

