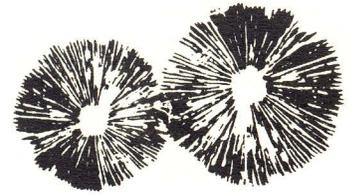


SPORE PRINTS



BULLETIN OF THE PUGET SOUND MYCOLOGICAL SOCIETY
Number 353 June 1999

FROM THE PRESIDENT

Doug Ward

The good news is that the morels are starting to appear in many of the usual places. Some even better news is that Ron Post and Brandon Matheny have agreed to co-chair the Annual Exhibit this Fall. Please be receptive to their requests for assistance.

The unusual spring has caused a number of changes to the weekend outing schedule. This has pointed out that it is important to check the "private" option (#3) on the PSMS answering machine, (206) 522-6031, as well as the Web site for those with Internet access. Webmaster Steven Bell has informed me that field trip information will start appearing in the "members only" section of the PSMS site, www.psms.org. The name and password information for that section are listed at the bottom of this page.

See you at the June meeting.

HOW DID TWO FELLOWS FROM TULSA COME TO BE EXHIBIT CHAIRS?

Dick Sieger

PSMS is having an annual exhibit this year only because Ron Post and Brandon Matheny agreed at the May board meeting to be co-chairs. They are taking on a big job that usually starts 15 months beforehand. The exhibit will be at CUH on October 9 and 10, so they have just 5 months in which to catch up. They need a great deal of help from the rest of us.

Ron Post was exhibit publicity chair from 1988–1990. Then he worked for several years to produce a wonderful mushroom conservation pamphlet and video presentation. Along the way, he was elected to the board. He became the PSMS conservation and ecology chair in 1991. He helped convince the state legislature and Forest Service to write laws and regulations beneficial to mushroomers. He sought someone to replace him as chair in 1993 but continued to hold that position for 3 more years. Ron coordinated PSMS's participation in the Man in the Biosphere chanterelle study and has been our book sales chair since 1997.



Brandon Matheny joined PSMS in 1995 and took off running. By October he was leading a group of mushroomers at The Mountaineers/PSMS foray and in December was one of the identifiers at a field trip. Two months later, he organized a microscope study group and in May became education chair. A year later, he was elected to the board. To keep busy, he helped install the shelving in our office. He has been microscopy chair at the exhibit for several years and is one of its principal identifiers. Needing more of a challenge, Brandon entered graduate school at the University of Washington last year. He is studying *Inocybe* and working toward a Master's degree.



Help them catch up!

THE ROLE OF FUNGI IN SOIL

Susan Goldhor

Boston Mycological Club Bulletin, March 1999

Soil is not just particles of minerals; it is a highly variable ecosystem in which fungi play major roles. Elaine Ingham, the co-founder of Soil Foodweb, Inc., an innovative company based in Oregon, writes in last August's *BioCycle*, that one can compare soil to a brick house. Bacteria make the 'bricks'; i.e., they glue the minute mineral particles of clay (colloids, silt particles, sand grains, etc.) together and to the organic particles in soil, using extracellular slime. But fungi act as the bricklayers, gluing together the composites formed by bacteria. Root hairs also help. And finally, the "rooms" in the house are formed by the larger organisms, such as protozoa, beneficial nematodes, soil arthropods, and worms. Without bacteria and fungi, we wouldn't have soil; we would just have anaerobic dirt. A teaspoon of healthy lawn soil should contain about 600 million bacteria, about three miles of fungal hyphae, 10,000 protozoa, and up to 30 nematodes. A teaspoon of compost could have much more; for example, up to several hundred miles of fungal hyphae!

Not only do bacteria and fungi hold soil together, they hold fertilizer in the soil. Without healthy bacterial and fungal populations, fertilizer washes out of soil and into water supplies. In many cases, soil has become dirt; its original ecosystem wiped out by overuse of chemical fertilizers, herbicides, pesticides and fungicides. To turn that dirt back into soil, it's helpful to use compost. But, as we learn more about the relationships between soil and what grows in it, we are learning that compost is as complex and variable as soil.

One way in which composts are now categorized is by their fungal-bacterial ratios. Experts now recognize three categories: bacteria-dominated, fungi equal to bacteria, and fungi-dominated. Which is better depends on what you want to grow in that soil. Lawns, vegetables, and row crops seem to do better in bacterially dominated soils (which tend to be mildly alkaline), while trees do better in fungally dominated soils (more acidic—no wonder New England soils want to grow trees!).

Attempting to keep up with the times, I went to talk to a company selling mycorrhizal spores for soil inoculation, since I intended to plant trees. 'Which should I buy?,' I asked, eager to support fungal ventures. We had a long talk, at the end of which the salesman finally asked where I was going to plant them. I told him they would go into a yard that was mostly woodland. "Listen," he said, "you don't need our stuff. All the fungi we sell are already there. Just plant your trees."

MEMBERS ONLY WEB SITE

Steven Bell

To log onto the "Members Only" section of the PSMS web site, www.psms.org, type the following for "User ID" and "Password:":

User ID: Hypholoma

Password: fasciculare

The passwords will be changed regularly, so be sure to check the Web Site section of each month's *Spore Prints*.

Spore Prints

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PUGET SOUND MYCOLOGICAL SOCIETY

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Annual dues \$20; full-time students \$15

CALENDAR

June 8 Membership meeting, 7:30 PM, CUH
June 12 Fungi Perfecti field trip
August 12–15 NAMA foray, Cape Girardeau, Missouri
August 23 Board meeting, 7:30 PM, CUH
August 27 *Spore Prints* deadline
September 14 Membership meeting, 7:30 PM, CUH
October 9–10 Annual exhibit

BOARD NEWS

Agnes Sieger

Brandon Matheny and Ron Post have agreed to chair the annual exhibit, and Joanne Young will co-chair. Harold Schnarre will be in charge of construction. Jim Berlstein feels he may be able to get some of his students to take on some duties such as parking in exchange for free admission. We have found a permanent source for the pins used on the ID tags at the annual exhibit. We have a computer file of all the mushroom species found in *Mushrooms Demystified*, and are working on a labeling program. We may need to acquire an inexpensive printer.

The microscopy class is scheduled for July. At the last board meeting of the Stuntz Foundation, Dr. Ammirati suggested a more encompassing microscopy training involving the use of his lab. The Spring Foray at Meany Hall is rescheduled to June 5–6. Steven Bell will set a date and get reservations for next year's survivor's banquet. The society needs someone to take over telephone ID referrals.

Approximately 50 more membership renewals have come in since reminder cards were sent out.

Taylor Lockwood has designed a postcard with four beautiful mushroom stamp designs which he will submit to the US Postal Service. Board members signed the back of the postcard, and Joanne will write a letter from PSMS to accompany it.

MEMBERSHIP MEETING

Tuesday, June 8, at 7:30 PM at the Center for Urban Horticulture, 3501 NE 41st Street, Seattle

Our guest speaker for June is Dr. Joseph F. Ammirati. His topic will be "Fungi and Habitats."

PSMS first heard of Dr. Ammirati in 1982 when Dr. Stuntz gave a talk about "the fetid swamp of *Cortinarius*" and mentioned a young mycologist who might, in time, develop some understanding of the genus. Dr. Ammirati now chairs the Botany Department at the University of Washington. Dr. Ammirati is a true friend of the hobbyist. He has been our scientific advisor for 14 years and was advisor for our Barlow Pass study, the Oregon chanterelle project, and the Pacific Northwest Key Council. He was foray mycologist for several North American Mycological Association forays including the one hosted by PSMS in 1993. He has been foray mycologist for amateur societies innumerable times and has spoken at their meetings, classes, forays, and banquets. Now, once again, he will address our society. He may mention *Cortinarius*.

Would persons with last names beginning with the letters F–L please bring refreshments for the social hour? Thanks to everyone who brought refreshments last month.

TRUFFLES

Susan Goldhor

Boston Mycological Club Bulletin, March 1999

A number of our fellow mycophiles' newsletters have contained articles about the recent genetic examination of black truffles (*Tuber melanosporum*), which grow mostly in Spain, France, and Italy, and show variability in several traits, included taste and odor—the most valuable and delicious being from the Perigord region of France.

An article by Bill Freedman in the October issue of *Mycena News* (Mycological Society of San Francisco) reports that European investigators found that the quality of black truffles has everything to do with where they grow and little or nothing to do with genetic variability. In fact, although summer and autumn truffles showed significant genetic variability, black truffles showed almost none.

Bill writes, "The difference in genetic variability is explained in this way: The black truffle ripens in winter and is not tolerant to frost. Their restricted appearance in southwestern Europe is thought to be due to glaciation about 10,000 years ago. As the glaciers moved southward, they wiped out most of the broad-leaved hardwoods on whose roots the black truffle depended for nutrition. The glaciers melted before reaching the shores of the Mediterranean Sea, depositing soil, seeds, and spores for both trees and fungi. The lack of genetic variation suggests that the origin of the black truffle came from a limited, perhaps recent, source. Perhaps only a few trees initially survived being carried down from the North and the fungus may not have had time to experience significant genetic changes."

The same article reports that two American farms—one in California and one in North Carolina—are growing black truffles, and the USDA is considering truffles as an alternative crop for tobacco farmers. As someone who has tried some of the California truffle products and once had the ecstatic experience of eating the true Perigord truffle, I hope they take into consideration the question of location in flavor development!

A CHEMIST SMELLS MUSHROOMS **D. DeShazer**
Mycophile, March/April 1999
 reprinted from the MSSF Web site

The field of mycology is lucky to have Organic Chemistry Professor William Wood sniffing the odors of fleshy fungi. Dr. Wood has been the Chemistry Department Chair and a past recipient of the Outstanding Professor of the Year at Humboldt State University (HSU). He is well known at HSU for his lively lecturing style and wide-ranging research interests, which encompass the odors of wild mushrooms, the defensive spray of skunks, and antibiotic compounds.

Recently, Dr. Wood gave a lecture to both the Mycological Society of San Francisco and the Sonoma County Mycological Association that was well illustrated with slides. It covered the importance of fungal odors, odor receptor theory, fungal odor history, the chemistry of mushroom odors, and the variability of mushroom odors. The talk concluded with a short presentation of the flavor-enhancing ability of some edible mushrooms.

The odors of fungi are important and are used extensively in the literature, in descriptions, and in keys to mushrooms. People smell odors because the odor molecule (called the odorant) fits into a molecular receptor in our nose. It turns out that ANY similar chemical fitting into the slot of the receptor will be perceived as a similar smell, even though the chemical is different. DNA research has indicated that we have up to 1000 different receptors in our nose. Not every person has all of these receptors. Individuals not

having a receptor class are “anosmic” to that class of chemicals and cannot detect it. Another problem in human odor perception is “olfactory fatigue” which is caused when a high dose of odorant binds tightly to the receptors and blocks them. When this happens, we cannot detect the odor of further doses of the odorant. In nature, the chemicals responsible for these odors are there for adaptive reasons—either to attract or repulse another creature.

Dr. Wood’s research continues to determine the chemicals responsible for other mushroom odors. He indicated that he hopes to find the chemicals responsible for farinaceous odors and that this odor is best observed from freshly cut specimens.

He concluded with a discussion of the chemistry and action of flavor enhancers. Many mushrooms contain flavor enhancers such as monosodium glutamate (MSG). This is the same chemical once believed to be responsible for the “Chinese Restaurant Syndrome.” It is now known that histamines in soy sauce are the real culprit, not MSG. Another flavor enhancer is 5'-guanosine monophosphate (5'GMP). These chemicals are found in *Pleurotus ostreatus*, *Coprinus comatus*, and *Lentinus edodes*. All three of these edibles enhance the flavor of dishes and contribute to the full, balanced taste of a meal.

A few words of caution for mycologists: Mushroom odors are best noted in fresh specimens because they can change with time. For some odors, the mushroom must be crushed to release the odor. And finally, when describing a fungal odor, avoid general terms like fruity or fragrant. It is best to connect it to another common smell, such as peppermint or almonds.

Odor	Chemical	Mushroom
mushroom alcohol	1-octen-3-ol	common mushroom
Red hots	methyl cinnamate	<i>Tricholoma magnivelare</i>
garlic	lenthionine	<i>Lentinus edodes</i>
maraschino cherries	benzyl alcohol	<i>Agaricus augustus</i>
truffles	dimethyl sulphide	commercial truffles
almond	benzyl aldehyde	<i>Agaricus augustus</i>
coumarin	coumarin	<i>Hydnellum suaveolens</i>
anise	p-anisaldehyde	<i>Hydnellum suaveolens</i>
tooty-fruity	1,3-imethoxybenzene	<i>Nolanea fructufragrans</i>
burnt sugar	o-aminobenzaldehyde	<i>Hebeloma sacchariolens</i>
decaying carrion	a mixture of many	<i>Phallus impudicus</i>
farinaceous or mealy	unknown	<i>Leucopaxillus amarus</i>
cucumber & farinaceous	2-nonenal	<i>Clitopilus prunulus</i>

A FANCIFUL REPORT FROM THE *PSILOCYBE* FIELDS

The Mycophile, March/April 1999

Mike Bloom: On a recent photographic field trip, I came across a patch of *Psilocybe cyanescens*. It was tricky to find full fruiting bodies in good shape for a photograph because the slugs had eaten most of the gills. It left me with a burning question: Do slugs have enough of a brain to hallucinate? And if, as at least one theorist proposes, eating *Psilocybe* caused man to evolve into intelligent life, are there now super-intelligent slugs sliming their way through the forest?

I'd appreciate any answers. A direct reply from a hyper-evolved slug would be best, of course.

Paul Stamets: My opinion is that slugs which consume *Psilocybe* are on a rapid-track of evolution, and if we are not careful, in a billion or two years (plus or minus a decade or so) they will take over mycological societies.

Brad Millar: From my observation of the Congress and other governmental departments, slugs have evolved quite far, but have yet to gain even the rudiments of intelligence.



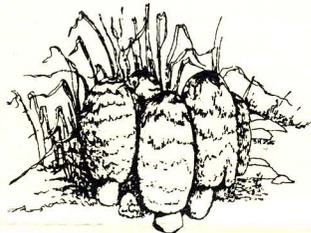
ST. EDWARDS FIELD TRIP

Lynn Elwell

St. Edward's was our first Sunday outing in recent years. St. Edward is a lovely park, and it is a very short drive for almost everyone. Harry Chalekian provided coffee. Mike Lovelady and Harold Schnarre shared their knowledge and took people on walks. The small group of wet 'shroomers found quite a few oyster mushrooms. (The park has a lot of alder.) Ten or 12 people attended. Everybody left by 1:00 PM.

ELSIE BURKMAN *COPRINUS* PICTURE WANTED

The exhibit committee wants to display a picture of a *Coprinus* on this year's poster. Do you have a *Coprinus* painted by Elsie Burkman that the committee may copy? Please make arrangements with Patrice Benson, (206) 722-0691.



Elsie is special because, well, she's Elsie. She is one of our few remaining charter members and is an artist who paints with ink from *Coprinus comatus*, the shaggy mane. Elsie has been coming to annual exhibits for 35 years. Look for her in the exhibit art section this year. You'll be glad you met her.

FUNGI PERFECTI FIELD TRIP UPDATE

J. Young

The Fungi Perfecti tour is at 11:00 AM Saturday, June 12th, in Olympia. Fungi Perfecti is Paul Stamets' mushroom cultivation and research complex which is seldom open to visitors. PSMS members who wish to carpool may meet at the Tukwila Park & Ride (#746) at Interurban Ave. South/52nd Ave. South, just off of I-5. The Park & Ride is north of Southcenter and the interchange of I-5 and I-405. Plan to meet no later than 9:00 AM. Fungi Perfecti is located about 25 minutes from Olympia off of Highway 101. There will be maps available at the June membership meeting.

POLENTA AND BOLETUS STEW

George Rafanelli

Stew

1/4 lb. butter
1 medium onion
Parsley, chopped
2 fryers, cut up
Salt and pepper
Tomato paste, small can
Chicken broth (home made or canned)
1 quart fresh *Boletus*



Melt butter in a large roast pan. Add chopped onion and parsley. Cook on top of stove until onion is transparent. Salt and pepper the chicken pieces and fry them in the pan over the onions. Put in the oven on broil until chicken is browned.

Mix tomato paste with the chicken broth and pour over the chicken. Add enough broth to cover the meat. Add mushrooms. Cover the roasting pan and cook in 350-400° oven. Taste stew after 1/2 hour and add salt and pepper if required. Cook until chicken tests done.

Polenta

1 1/2 qt. water
2 teaspoons salt
1 1/2 cups yellow corn meal

In a heavy 3-4 qt. sauce pan, bring water and salt to a boil. Pour the uncooked corn meal slowly into the boiling water, making sure that the boiling never stops. Stir constantly to keep the mixture smooth. Reduce the heat and simmer the polenta, stirring frequently for 20-30 minutes or until it is so thick that the spoon will stand up unsupported in the pan. Turn out on a large platter to serve.

Slice from the platter into dishes at the table. Cover with a generous serving of *Boletus* stew.

Eat heartily! (Feeds six hungry people)

*This will be the last newsletter until September.
Have a good summer!*

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