SPORE PRINTS

BULLETIN OF THE PUGET SOUND MYCOLOGICAL SOCIETY

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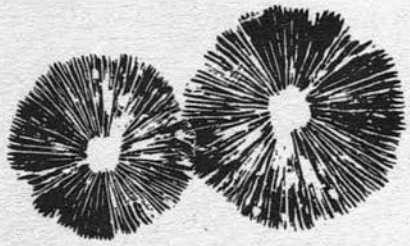

NO SHOW IN 1992? Agnes Sieger

Everyone the board has asked to consider chairing the Annual Exhibit for next year has declined. We are now about 2 months behind schedule for starting publicity, and unless someone volunteers soon, we will be forced to cancel next year's show.

Having an Annual Exhibit is not up to the board. It is up to you, the members. If you want a show next year, see any PSMS officer NOW and ask to chair it. If you don't, it's time to consider something else.

BEFORE YOU PICK THAT MUSHROOM... Gary Gilbert

Mycophobia, the fear of mushrooms, seems to run rampant, but carefree and careless foraging for fungi can lead to mcyo-over-confidencia. To safely know an edible mushroom, one must learn *every* thing about it, including its look-alikes. Although no one in PSMS has suffered serious illness due to mushroom poisoning, many have developed diarrhea, vomiting, and other mild mushroom maladies. As we learn and practice our fungal hunter/gatherer skills, we should equally learn to value and practice sitting down and really studying fungi.

When I first took Coleman Leuthy's beginner's class in 1985, the rules of the club seem to have been well known.

1. Know the spore print.
2. Know the mushroom.
3. Know its look-alike.
4. Get at least one positive ID of it.
5. Eat only a small amount at first.

A 6th rule could easily be added, "When you teach a newcomer any new edible, teach them Rules 1 through 5 in addition." Sometimes it seems like these rules are all but forgotten as many of us focus on the straight-line approach of learning just the "target mushroom." With a more holistic approach to learning fungi, your individual knowledge base will be broadened, it will be much easier to learn new, more difficult to identify edibles, and you will be better able to teach neophytes how to safely start on the road to fungal bliss.

For example, I wonder how many of you out there know the color of the spore print of our region's insanely popular chanterelle? (Rule 1). And how about knowing and being able to identify its look-alikes, namely, *Hygrophoropsis aurantiaca*, *Chroogomphus tomentosus*, and *Gomphus floccosus*. (Rule 3).

The equation becomes much more complex when one considers the Gypsy Mushroom, *Rozites caperata*, a not-so-well-known yet highly rambunctious wanderer of the woods. The Gypsy's veil is not always present nor is its well-known silvery sheen. Confusion can occur. Unlike for the chanterelle, some of its look-alikes contain the toxin muscarine. Symptoms of muscarine poisoning begin 15-20 minutes after ingestion and are mostly unpleasant, although 50 g to 5 kg of muscarine-containing mushrooms, depending on the species, can be life threatening. Muscarine can be found in your friendly (looking) neighborhood *Inocybe*, which tends to have a radially split cap and a flesh color that give it a Gypsy-esque appearance. Besides *Inocybe* species, *Rozites caperata*'s family of look-alikes includes *Agrocybe praecox*, *Cortinarius* species (of which it is basically a member), and some *Agaricus* and *Galerina*.

So as wintertime gives us a chance to warm our toes and catch up on life's miscellaneous details, why not pick up a few mushroom books and learn more about your favorite edible fungi and their look-alikes.

1993 NAMA FORAY COMMITTEE Dennis Bowman

Walking the perimeter of the parade field at Ft. Worden State Park a week ago surrounded by quantities of mushrooms, I agreed with Dick Sieger that seeing all these mushrooms "certainly was a good omen." I'd asked Denis Benjamin, Kern Hendricks, and Dick to accompany me in a final review of the site where PSMS will be hosting the 1993 NAMA foray.

We'd lucked into a rare sunny day and were treated to a blustery view of Puget Sound and a backdrop of the snow-covered Olympic Mountains, with varying views of each as we walked between buildings.

We found a little house alone on the bluff above the beach which will be a great retreat for our mycologist, and an original classroom building perfect for the classes and workshops we'll be holding. We found gracious officers' houses, roomy dorms, and cozy NCO quarters. You can see the beauty of Ft. Worden yourself by watching the movie "An Officer and a Gentleman," which was filmed there.

Currently, we are constructing the list of principal committees covering the 10 or 12 main areas necessary for the foray. Several committees are not yet chaired. Please call me if you're thinking of taking a more leading role in this foray. Check the list next month and consider which committees you will involve yourself with as we begin gearing up for what I heard Denis say several times "is going to be a great event!"

NAMA DUES Steve Trudell

It's time to renew your NAMA membership for 1992. Just send a check (made payable to "NAMA") for $12 (this includes the 20% PSMS discount) to

Steve Trudell
3300 Hunter Blvd. S.
Seattle, WA 98144-7032

With the national foray coming to Puget Sound in 1993, I'm hoping that we can increase the NAMA contingent in PSMS and other local clubs.

Spore Prints

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CALENDAR

Jan. 14	Membership meeting, 7:30 p.m., CUH
Jan. 20	Board meeting, 7:30 p.m., CUH
Jan. 24	*Spore Prints* Deadline
Jan. 26	Beginners' cultivation workshop, 10:00 a.m. to 4:00 p.m.

BOARD NEWS

Agnes Sieger

Membership renewals are coming in nicely. Patrice Benson is still looking for a place for the Survivor's Banquet. Twenty people have already signed up for the cultivation workshop in January. In addition to doing a video, which will take a while to make, Ron Post would like to do a conservation pamphlet. He already has input from the San Francisco club, the wild greenery association, and some PSMS members. Denis Benjamin reports the beginners classes in March and April will follow the same format as last time, with volunteer teachers and perhaps the addition of a Saturday or Sunday field trip. Denis has been talking with Joe Ammirati about scientific projects PSMS could do. Almost all the library books have been reshelved. Five people have agreed to run for the board but the nominating committee is having trouble coming up with officers.

There was a discussion on the future of PSMS. Should we continue recruiting new members, train them to pot-hunt, and have most drop out? Should we seek a smaller but more active membership — perhaps by raising the dues or eliminating the membership desk from the show? Should we emphasize learning rather than collecting — perhaps by running fewer, but more educational field trips? Should we drop the annual exhibit for a while and rely on other events to bring the members together?

Membership Meeting

Tuesday, January 14, 1992, at 7:30 p.m., Center for Urban Horticulture, 3501 N.E. 41st Street, Seattle

A Taste of Preserved Mushrooms: January's meeting features a series of short lectures by some of our members on the preservation and use of wild mushrooms . Drying, pickling, freezing, and salting will be discussed, followed by an informal question, answer, and advice-from-the-audience session. We really hope to stir things up and push the winter blahs aside with a bit of good taste.

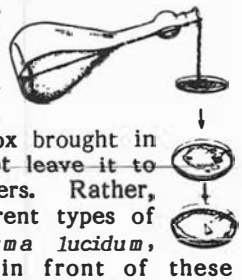
Members whose names begin with the letters M — P are asked to bring a small plate of refreshments for the social hour following the meeting.

CULTIVATION GROUP

Louis Poncz

The Cultivation Group met on December 15th. The meeting was filled with an enthusiastic crowd of novices and experienced members, probably since we were there to talk about morel cultivation. Lynn Phillips led the discussion and pointed out that, while it is relatively easy to propagate morels in agar and on media, it is difficult to grow the mushrooms successfully in an outdoor habitat or bed. The packet that Lynn prepared for the class included information about a patented process for growing morels, how to nurture the bed, and where to look for morels in the wild.

Lynn showed us a mixture of ash, chips, etc., that she uses in her garden bed, and individuals told of the various factors that they have heard are important in morel cultivation. Sal and Evelyn Mineo (who are Master Gardeners) volunteered to analyze the soil adjacent to any morels that any of the members are able to grow successfully.



Following this discussion, we prepared bags of sawdust inoculated with morel mycelium brought by Lynn. These bags will be used to inoculate our outdoor habitats/beds. In addition, Bill Bridges and Walter Knox brought in their laminar flow hoods. We did not leave it to the experts to do the culture transfers. Rather, each of us transferred several different types of cultures, including morels, *Ganoderma lucidum*, and *Lepista nuda* (wood blewits), in front of these hoods. Bill Beaty (of Teknos — the firm that is contributing the site for the upcoming cultivation seminar) brought in a small laser and placed it in front of a laminar flow hood. We were all able to see the flow of dust particles on the sides of the hood and the absence of particles in front of the hood. Overall, it was a very exciting meeting where we met many new members and had a good time. The next meeting will be the A Through Y Cultivation Workshop which will run from 10:00 a.m. to 4:00 p.m. on Sunday, January 26th. Several openings are still available; if you are interested in coming, please call Sondra Shira at 227-9489 or Bill Bridges at 838-6378.

The first mushrooms;
What a lot of stones
That look just like them.
–Kiju

MEET RUSS KURTZ

Inga Wilcox

Russ is a real, genuine Charter Member. This means that he goes back to the very beginning of PSMS. In 1964 (28 years ago), he noticed an item in the newspaper asking persons interested in wild mushrooms to come to the Science Center to form a group. He went. Dixie Lee Ray, a friend of Dr. Stuntz, was director of the newly built Center and was interested in getting groups to use it. While Dr. Ray expected maybe 20 people to show up, an overwhelming 130 to 140 persons came. PSMS was formed, and Russ soon became a board member. He recalls that board meetings took place at the Center to be adjourned to a local tavern afterwards. Dr. Stuntz was well liked by all who met him, and many remember his generosity in providing food and drink to the usually hungry students.

In the early years, membership stood at 200 to 300 persons, and an annual exhibit was presented early on. Russ has been providing specimens for the exhibits every single year since he joined. In fact, he and George Rafanelli combed five of Washington's counties for fungi for the 1991 show, searching from early dawn to dusk. He and George are "hunting buddies"; both happen to have graduated from West Seattle High, even though they did not know each other then.

Russ retired as a veterinarian in 1986 to care for his ailing wife, Shirley, who died in 1989. Russ first got interested in mushrooms when he and his family, three daughters and two sons, noted the many mushrooms in Mt. Rainier National Park and the Cascades while hiking. His two grandsons who live in a small Alaskan village enjoy the outdoors, berry picking, and mushrooming, just like Grandpa.

Russ enjoys eating about 20 species of fungi and likes to cook. He finds *Boletus edulis* and *Leccinum aurantiacum* best for spaghetti sauce. For cooking Japanese dishes, he claims there is no substitute for *Tricholoma magnivelare*. Besides cooking, Russ enjoys gardening, growing lots of flowers and veggies. When on a foray, he enjoys finding new specimens. He recommends we all be "fussy" about picking mushrooms. "Don't bring something home that is not prime. Be selective."

WHAT IS NAMA?

Steve Trudell

What is NAMA? NAMA is the North American Mycological Association, a nationwide association of mushroom hunters. Although it includes a number of mycologists, emphasis is on the amateur. NAMA has 1600 members, 1540 from the U.S, 51 from Canada, and 9 from elsewhere. It is run by an executive secretary, 6 officers, and trustees from 12 regions, 5 universities, and many local mushroom clubs.

NAMA was started in the late 1950s by Harry Knighton as part of the People to People program initiated by President Eisenhower. Harry served as executive director of NAMA for over 25 years, retiring from that position in 1987. He and his wife, Elsie, who served several terms as secretary, are still active members.

Each year NAMA stages a meeting and 4-day foray in a different part of North America. The 1992 foray will be near Taos, New Mexico, and in 1993 it comes to Ft. Worden State Park, hosted by PSMS. In addition to the trustees' meeting, these forays include field trips to collect fungi, identification and display of the mushrooms, educational workshops and lectures, entertaining evening programs, book and crafts sales, mushroom tastings, and impromptu social gatherings.

NAMA has nine standing committees dealing with, for example, mycophagy, toxicology, education, literature, and photography and may add others on cultivation and mushroom dyeing. It offers an annual photography contest, a lending library of educational slide programs, a mushroom poisoning case registry, and forays to exotic locations such as Czechoslovakia, Scotland, Scandinavia, Yugoslavia, and Hungary. A trip to Mexico is being planned. Members receive a bimonthly newsletter, *The Mycophile* (originally *The Toadstool Picker's News*), an annual journal, *McIlvainea*, and a membership roster.

Despite this long list of tangibles, the greatest benefit of NAMA may be the opportunity to travel, to see new mushrooms, and to meet a wide variety of people with a shared interest in fungi.

SHIITAKE WITH BEANS

Patrice Benson

1 lb small white beans	4 C broth
1 onion	Thyme
2 oz or less dried shiitake	1 bay leaf
6 oz ham	Ground pepper

Soak beans overnight and pour off water. Saute onions until limp in bottom of lidded pot over low heat. Add all ingredients, bring to a simmer, cover, and cook until beans are tender (1-1/2 hours or longer).

DISAPPEARING MUSHROOMS

Jeremy Cherfas
[*Science*, Vol 254]

All over Europe this year, gourmets with a taste for the subtle flavors of fresh autumn mushrooms have been returning from their collecting trips with the same complaint: Where have all the fungi gone? Take the most prized fungus of all, the delicious, apricot-scented chanterelle: "A few years ago, it was easy to pick a basket in an afternoon," says Eef Arnolds, a fungal ecologist at the Agricultural University of the Netherlands. "Now, it's quite impossible. You can't find ten in one place."

If anyone can find the chanterelle, it should be Arnolds, who has spent two decades studying mushroom populations in Europe. Now, with his empty collecting basket and a grim set of data assembled from records of fungal foraging trips going back to 1912, he has come to the distressing conclusion that fungus species are in catastrophic decline throughout Europe. Other experts agree with him. "Mass extinction" is the term used by John Jaenike, an ecologist at the University of Rochester, who is concerned that fungi may also be vanishing from the United States. But no one knows for sure. As Arnolds points out, "There are no observations" — the United States does not have the long historical records of Europe.

Arnolds has ruled out overpicking as the culprit because both inedible and edible species are affected. And it isn't changing forest management practices, because fungi in all types of mature forest have shown a similar drop. Ant that, concludes Arnolds, leaves air pollution. Throughout Europe, there is a negative correlation between the abundance and diversity of fungi and levels of nitrogen, sulfur, and ozone in the air, he says. In

Continued on page 4

Continued from page 3

Holland, the main offender appears to be farming, which uses prodigious quantities of nitrogen fertilizer, much of which is dispersed by the wind as hydrides and oxides of nitrogen and falls to Earth in nearby rainfall.

Any decline in the number of fungi has consequences that reach far beyond the disappointments suffered by a few gourmets: Without fungi, forests may not be able to survive. The fungi under threat mostly live in close symbiotic association with trees, providing water and minerals in exchange for carbohydrates. If trees lose their fungi, and the fine network of fungal filaments that extend the reach of their roots farther into the soil, they become much less resistant to stress. Thanks to the mass extinction of fungi, "severe frost or drought could lead to a mass dying of trees," Arnolds warns.

Quite how the excess nitrogen affects fungi is not clear. It could be an indirect impact of pollution on the tree, which does not grow as well, and hence cannot nourish a healthy crop of fungi, says Arnolds. Or it could be a direct effect of nitrogen and sulfur in the soil, which Arnolds' experiments show can prevent the fungus forming an association with the tree. Either way, the end result is an unhealthy tree.

The scale of the loss of fungi is vividly illustrated by Arnold's records. Surveys carried out in the Netherlands between 1912 and 1954, for example, recorded an average of 71 species of fungus per foray. But by the period between 1973 and 1982, a matched series of 15 surveys could turn up only 38 species per foray. More recent field work tells the same story. Counting every fungal species in marked plots in Holland over the past 20 years, Arnolds found that the average number of species has dropped from 37 to 12 per 1000 square meters.

A half-dozen other fungus experts working in Germany, Austria, Czechoslovakia, Poland, and Hungary have charted similar declines. Johannes Schmitt, a mycologist at the University of Saarbrucken, has been visiting the city market since 1950 and weighing the annual crop of locally gathered wild mushrooms. The total weight on sale of chanterelle and bolete mushrooms—two species that form symbiotic relations with trees—has plummeted over the past four decades. So has the mushroom's average size: It took 50 times as many chanterelles to make up a kilogram in 1975 as it did in 1958.

England, too, may be facing a similar loss of fungi. A preliminary survey of 60 fungus species inspired by the dismal evidence from mainland Europe shows 20 species in decline. "There is a lot of concern," says mycologist Bruce Ing, conservation officer of the British Mycological Society, "and we feel we should be examining a lot more species with a lot more vigor."

Along with the decline in mushroom numbers is an equally worrying disruption in the way the pattern of association between fungi and trees changes over time. Normally, as a tree gets older, one species of fungus gives way to another in a steady progression. But something appears to have gone wrong. "The trees are getting older quicker," says Philip Mason, a mycologist at the Institute of Terrestrial Ecology outside Edinburgh in Scotland. "The tree is middle aged, but with old-age fungi," says Mason. The trees drop their leaves more readily and may die early.

Given that there appears to be an intimate two-way coupling between the health of the fungal population and the health of the tree population, the state of a forest's fungi could provide an "early warning signal of problems for trees," says Jaenike. He points out that "in Europe, fungi began to drop out before the trees," in areas where forests have been disappearing. That makes it sensible to begin monitoring fungal population in the United States too. He is hoping to get a project started with cooperation from amateur mycologists. But it won't be easy to monitor U.S. fungi.

"Many of the U.S. species are undescribed," says Jaenike. "Some genera are just very sketchily known, and there are no historical databases." That, Jaenike thinks, is because the United States does not have a long history of collecting—and eating—wild fungi. Europe's gourmets, it seems, can lay claim to a little credit for helping advance the science of mycology, even if they are now going hungry.

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