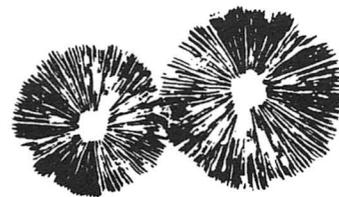


# SPORE PRINTS



BULLETIN OF THE PUGET SOUND MYCOLOGICAL SOCIETY

Number 360

March 2000

## FUNGUS DOES THE DIRTY WORK *Breakthroughs,* Pacific Northwest National Laboratory, Winter 1999–2000

Despite negative images often associated with fungus, scientists at Pacific Northwest National Laboratory have found that it can be an effective tool for environmental cleanup.

Researchers at Pacific Northwest's Marine Sciences Laboratory have developed a way to condition fungus to clean up soil contaminated with petroleum hydrocarbons and other toxic or hazardous waste. The completely natural method, called mycoremediation or fungal remediation, is expected to be faster and more cost-effective than other bioremediation techniques.

Although most fungal remediation research has focused on one species, Pacific Northwest researchers have tested more than 50 fungal species for various applications. The process begins by collecting higher fungi from the contaminated area or a comparable site. Including careful selection, culture and testing, the several steps that follow result in proprietary fungal strains that are predisposed to break down and destroy specific contaminants.

It is the mycelium network of microscopic threads, or strings of cells that make up the fungus, that does the actual work. Acting as a filter, the mycelium selectively extracts materials from soil and water and then breaks down the contaminants using enzymes that it releases into the substrate.

In a four-month pilot-scale study in 1998, scientists treated soils at the Washington State Department of Transportation maintenance yard in Bellingham using mycoremediation. Three types of soils were collected from the earthen floor of a vehicle maintenance building, an area contaminated with diesel and an area contaminated with gasoline.

After four to five weeks, fruiting was observed, which means that large mushrooms began to appear at the surface of the soil. At the same time, the mycelium had penetrated through all three of the four-foot mounds of soil and the smell of oil had disappeared. After four months all of the soil was clean enough to use in landscaping.

A patent is pending on the method used to culture, select, and condition natural fungus species to be more efficient at breaking down certain contaminants. Pacific Northwest is continuing to test further applications of mycoremediation and is pursuing opportunities to commercialize the process.

## NOTICE TO SPORE PRINTS CONTRIBUTORS Agnes Sieger

The April *Spore Prints* will be prepared by Patrice Benson. Please turn in all articles, news items, and other contributions to Patrice, 3818 Cascadia Ave. South, Seattle, WA 98118. Phone (206) 722-0691 or e-mail: 74274.2752@compuserve.com by or before the *Spore Prints* deadline on March 24.

## CLOSET MYCOPHAGIST?

*Mycellium,*  
Mycological Society of Toronto, Jan.-Mar. 2000

Pierre Elliott Trudeau turned 80 last year and celebrated 15 years of retirement from politics. The year he retired, 1984, he bought a house in Montreal that was once the home of the renowned architect Ernest Cormier, designer of the Supreme Court of Canada building. One of the unusual features of that house was secret passageways, which Cormier used to carry on an illicit love affair.

For mushroom lovers, however, the house boasted an even more fascinating curiosity. In the dining room you could open a cupboard and pick fresh mushrooms! The house was built into the mountain, and the fungi flourished in the fertile soil behind the wall.

## SPRING MYCOLOGICAL FORAY AND FUNGUS SURVEY Brian Luther

A mycological foray and fungus survey is scheduled for Lake Wenatchee on May 12–14. Our host for this exciting weekend is Forest Service Botanist Mick Mueller, who has graciously offered to invite 20 to 30 interested PSMS members. Again, our base camp will be Tall Timbers Lodge, an excellent facility located near the north side of Lake Wenatchee in Chelan County, Washington. This is a continuation of the Lake Wenatchee survey Mick started a few years ago and will be held jointly with the Pacific Northwest Key Council.

Volunteers must be interested in collecting at various specified locations, taking notes on habitat, etc. All collections will then be brought back to a make-shift lab, where specimens will be keyed out and microscopic examination will confirm the identification of the species. These collections will be kept, catalogued, and put into a reference herbarium, with research results being compiled and added to previous studies from the area.

This is a wonderful opportunity for PSMS members to contribute to a valuable research project and have a fun time as well. Last year's fall survey had to be cancelled because of bad weather conditions, which won't be a problem for the spring foray. The sleeping quarters are very good, most rooms having two or more comfortable bunk beds, with indoor bathrooms and showers available. The food service is outstanding, with delicious hearty meals served. For our field work days, sack lunches will be supplied.

There will be one or more color slide lectures Saturday evening (after dinner) and lots of chances to study and learn from more advanced mycologists. The spring mycoflora is unique, with many peculiar species that don't fruit any other time of year.

We need volunteers with all levels of experience, but will need a core of mycologists for detailed microscopy. If this sounds appealing to you and you're seriously interested in getting involved and contributing to this weekend project, then please contact Joanne Young by phone at (206) 633-0752 or e-mail at [jd2young@aol.com](mailto:jd2young@aol.com) or e-mail Brian Luther at [a2zluther@sprintmail.com](mailto:a2zluther@sprintmail.com).

# Spore Prints

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## PUGET SOUND MYCOLOGICAL SOCIETY

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Annual dues \$20; full-time students \$10

## CALENDAR

- March 18 Survivors' Banquet & Annual Meeting, Edmonds Community College
- March 24 *Spore Prints* deadline (submit articles to **Patrice Benson**)
- March 25 Camp Long field trip
- April 2 MacDonald Park field trip

## BOARD NEWS

Agnes Sieger

Treasurer Lynn Phillips reports that because of a change in state law, we no longer have to pay sales tax on purchases made for resale. There are still a few bills outstanding from the exhibit.

Corey sent out 200 reminder cards to members who had not renewed, which resulted in 25 renewals as of mid-February. Mike Lovelady has agreed to be Field Trip Chair. We still need someone to coordinate the field trip hosts.

Chef Walter Bronowitz of Edmonds Community College can provide free-range veal for the Survivors' Banquet. Doug Ward will be the MC, Ben Woo will speak, and Joanne Young will collect the mushrooms and door prizes. Decorations will be handled by Russ Kurtz, Lynn Phillips, and Lynne Elwell. Fran Ikeda will be the hostess. Steven Bell will provide guides to the right building and a printed program.

Doug has not heard back from Jean Chin on how the new rosters are coming. He would like to distribute them at the banquet. The Lake Wenatchee Project is May 12-14. We have two volunteers for PSMS Librarian. Brandon Matheny pointed out that people buying items for the club may be able to get a tax discount if they use our nonprofit ID number.

## MEMBERSHIP MEETING

This month is the **Annual Meeting and Survivors' Banquet**, held Saturday, March 18, in Brier Hall at Edmonds Community College.



Doors open at 6:30 PM, and dinner will be served at 7:30. Choice of free-range veal or vegetarian. Great food, great service, a great occasion. All this for only \$25 ea. To attend, contact Bernice Velategui, (206) 232-0845. Bon Apétit!

## SPRING FIELD TRIPS

Mike Lovelady

Our first two outings this year are short excursions to introduce newcomers to the mushroom *Verpa bohemica* and its habitat and whet the appetite for the spring mushrooms to come. The first trip is to Camp Long in West Seattle. The second is to MacDonald Park in Carnation, about 30 miles east of Seattle.

### March 25

Camp Long  
(West Seattle)

Our first field trip this spring will be an easy in-town day trip to Camp Long in West Seattle on Saturday, March 25. From I-5 south or north, take the West Seattle bridge and go left on 35th Ave. heading south. Drive about one mile and look for the Camp Long sign on the left. We will be hunting *Verpa bohemica*.

### April 2

MacDonald Park  
(30 miles east of Seattle)

MacDonald Park is on the Tolt River about ½ mile south of the town of Carnation in King County. Enter the park on N.E. 40th Street from State Highway 203. Watch for PSMS signs on the corner and use the day-use parking lot. We will meet at the main shelter across the suspension bridge for a general introduction to mushroom hunting. Then we will break into small groups and go out to gather specimens. Identifiers should be available around 10:30 AM. There should be *Verpa bohemica* under the cottonwoods in the surrounding area. We'll meet rain or shine. You may want to bring lunch.

## FIELD TRIP TIPS

Agnes Sieger

For those who joined PSMS at the Annual Exhibit in October, I thought it might be nice to review some basic mushrooming tips regarding the upcoming Spring field trips.



**Apparel:** The Pacific Northwest is wet. Wear warm clothing, preferably in layers, and water-proof shoes or boots and bring your rain gear. Pacific Northwest vegetation is usually thick, and the sky is frequently overcast. Bring a compass and whistle and a map of the area—and remember to use them.

**Mushrooming gear:** You will need a wide-bottomed container for your mushrooms. This can be a basket or bucket. Do not use plastic sacks; they tend to condense moisture and turn mushrooms into slime. You will need a sturdy knife suitable for cutting and prying and perhaps a soft brush to clean up the edibles; some people even bring a small garden trowel for digging. To protect individual specimens for identification, take some wax paper sandwich bags or aluminum foil.

**Collecting:** If you know you have a good edible, cut off the stem cleanly and brush off as much soil and debris as possible. Store like species in a rigid container where they won't get crushed or

pick up more dirt. Try to keep the mushrooms cool and dry, and process them as soon as possible.

**Field trip format:** Most PSMS field trips are planned for Saturdays, since this is the most convenient time for many people. It is possible to come early on Friday and stay over to Sunday. The campgrounds, unless otherwise specified, have camping facilities. Almost all field trips have hosts, who set up by 9:00 AM on Saturday with hot coffee and snacks. The hosts greet and sign in members, relay general tips on what is up and where to find it, and introduce newcomers to more experienced members. They also have a map of the area. After signing in, participants gather their gear and head for their favorite hunting grounds. In the afternoon, they come back to the campsite to identify their finds, compare notes, and prepare for the potluck.

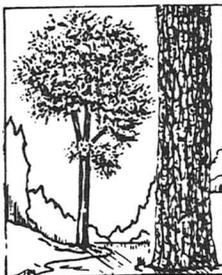


**Potluck:** The potluck starts at 4:00 PM (or sometimes later when days are longer). You need to bring your own eating utensils and beverage and a dish to contribute to the table. This can be an appetizer, salad, main dish, or dessert. The food is usually delicious, and it is a great time to swap tales, collect recipes, and share mushroom information with friends old and new.

## THE EARLY MOREL

Agnes Sieger

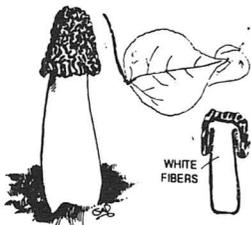
The first field trips this Spring are dedicated to *Verpa (Ptychoverpa) bohemica*, the first edible mushrooms to lure the mycophagist after the winter doldrums. Often called the early morel because of its timing and superficial resemblance to the true morels, *Verpa bohemica* fruits from late February through April, depending on the season. In the Pacific Northwest, it is associated with cottonwoods, often fruiting right around the drip line of mature trees “when the cottonwood leaves are the size of a mouse’s ear.” Once you learn to recognize the cottonwood, a tall, dark, poplar-like tree with wrinkled bark that grows in damp river bottoms throughout western Washington, you can spot your hunting ground from afar. Finding your quarry amid the debris of the previous fall, however, isn’t that easy.



*Verpa bohemica* is a medium-sized (3–8 in. tall), tanish mushroom with a wrinkled, bell-shaped cap which is attached only at the top, forming a skirt over the stem. The stem is long, at first whitish to cream in color and becoming tan with age, and filled with cottony fibers.

In contrast, true morels have pitted, not wrinkled, caps that are attached to the stems at the bottom (or in some cases part way up); their stems, while hollow, are empty.

Unlike other verpas, and most large ascomycetes, *Verpa bohemica* has only two spores per ascus instead of eight. For that reason, modern taxonomists have split it into its own genus, *Ptychoverpa*. What each ascus lacks in numbers, however, it makes up for in size; the spores are huge.



Although considered a good edible by many, this mushroom causes gastrointestinal upsets and loss of muscular coordination in some people and should be ap-

proached with caution. Many field guides recommend parboiling it and throwing away the water and eating only small amounts at a time. The effects may be cumulative, so don’t pig out on it several days in a row, even if it is the only edible mushroom out at the time.



## COLLECTING TIPS

Dick Sieger

People collect mushrooms for two main reasons, to eat or to study—and the best way to collect for one is not the best way to collect for the other.

### Collecting for Identification or Study

If you don’t know what it is, don’t collect all you can find in the hope that it might turn out to be edible. Collect only a few specimens, including both young and mature mushrooms if possible, and handle them carefully. Ascomycetes (morels, cup fungi, etc.), which are plentiful in the spring, are frequently slow to mature, so for those try to include some over-the-hill samples.

Identifiers need to see whole fruiting bodies in good condition. How do you do that? First, be nice to your prizes. Keep species separate. Handle them gently so you don’t destroy fragile features like scales and rings. Don’t cut the stalk! Discard most of the debris but leave “roots,” cups, and a few scraps of whatever the mushroom was attached to. Instead of grabbing the stem, spread your finger and thumb and hold the mushroom at the bottom of the stalk and on top of the cap. Put it into a waxed paper sandwich bag, box, or aluminum foil. Do not use plastic; because it is nonporous, it tends to turn mushrooms to mush.

Tree associations may be important, so slip in a sample leaf, cone, or branch from nearby plants. Slide in a note with your name, phone number, collection date, and county where the collection was made. That will help the identifier gather information about unusual finds.

Finally, don’t expect names for everything. Some mushrooms take hours to name. Others can’t be named at all.

### Collecting for the Pot

Collect only mushrooms you can positively identify. Pick only those in choice condition and leave those past their prime to distribute spores for next year’s crop. Some people pull up the whole mushroom; others cut it off at the stem. The limited studies to date indicate that neither method is better for the mycelium. In either case, cut off the stem cleanly and brush off as much soil and debris as possible. Store like species in a rigid container where they won’t get crushed or pick up more dirt. Try to keep the mushrooms cool and dry, and process them as soon as possible.

## FLOWER AND GARDEN SHOW

Lynne Elwell

Many thanks to all of our peers who helped tend our PSMS booth at the Northwest Flower and Garden Show. I think it was a success. I hope you all had as good a time as I did. I feel we introduced PSMS to a lot of new people. Thanks again.

## FREE CULTIVATION SUPPLIES

Mike Hess

I have some mushroom growing supplies that I'm not using, and that I think someone should be. I've donated quite a lot to the society. I also left quite a lot of equipment in the storage area, but there's only so much room there. Any or all of this stuff can be had for free:

- 2 sleeves of Petri dishes
- 13 glass Petri dishes
- 23 test tubes
- 6 cases of regular quart jars
- lids with filter disks for those jars
- polypropylene bags
- 2 humidistats
- humidifier
- 2' x 2' HEPA filter (with prefilter and blower)
- agar
- malt extract agar
- potassium
- non-dolomite lime
- inoculation loops/scalpels

Give me a call at (206) 324-6967, and I'll hook you up.

## MUSHROOM IDENTIFIERS NEEDED

Hildegard Hendrickson

I am the clearinghouse for mushroom identification for PSMS. When a caller needs to have a mushroom identified, I try to get him/her in touch with a member who lives close. Currently, we have very few identifiers in the Bellevue and east area, as well as Renton/Auburn and south. I would appreciate a call, if you feel you could help out. My number is (206) 523-2892.

Now I will tell you about the unique calls that come in. One person wanted to know if there was a fee for having the mushrooms identified. Even though I told her "no," she never called back

Another lady, called at 11:30 PM and wanted me to come to Burien to identify a large brown mushroom on which her cat had nibbled. The cat had already been given peroxide to encourage vomiting. If the fungus was poisonous, she was going to take her beloved cat to a vet and have her stomach pumped.

## MACROLEPIOTA RACHODES WANTED

Dick Sieger

Dr. Elsa Vellinga, a Dutch mycologist working in San Francisco, is studying Lepiota species of the west coast. She would like collections of *Macrolepiota rachodes* (*Lepiota rachodes*). If you find some, please collect an entire mushroom and call Dick Sieger, (206) 362-6860. Dick will take care of preservation and shipping.



Summer is a good time to look for *Macrolepiota rachodes* in the urban areas of western Washington, and compost, gardens, and leaf litter under trees are good places to look for it. They are large, shaggy mushrooms with brown caps from 4 to 8 inches across and stalks 4 to 8 inches long. They have a thick double ring that can be slid along the stalk. The base of the stalk is swollen. Flesh on parts of the mushroom, especially the base of the stalk, stains red, orange, or saffron when cut, and this staining may be seen when fresh, young gills are rubbed. The cap cuticle, or rind, tears as the mushroom grows and forms coarse brown scales on a white background. The spore print is white.



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