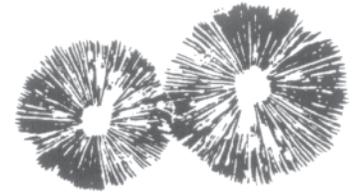


# SPORE PRINTS

BULLETIN OF THE PUGET SOUND MYCOLOGICAL SOCIETY  
Number 423 June 2006



## CULTIVATING A MYSTIQUE

Jane Black

*The New York Times*, March 1, 2006  
(cont. from May *Spore Prints* issue)

Primitive truffle farms began in France almost 150 years ago. The first truffle trees were planted there in the early 1800's by Joseph Talon in woods known as good truffle-hunting grounds outside his village in the Luberon Valley. His logic: already-present truffle spores would infect the new saplings. The technique worked but didn't take off until 1868, after *Phylloxera*, a fungus that feeds on grapevine roots, devastated France's vineyards. Peasants in search of a new crop mimicked Talon and planted forests of oak, ushering in France's golden age of truffles.

Back then, truffle lore says, black truffles were as common as tomatoes are today, making it possible for great chefs like Escoffier to create recipes like *salade Jockey-Club*, which calls for equal parts asparagus, truffles and chicken.

In the 20th century, two world wars and population shifts to the cities devastated French truffle production. Then, in the 1970's, French scientists patented a method to coax the fungus and tree roots to live together symbiotically—the fungus gives the roots more surface area to obtain nutrients from the soil; the roots deliver sugar to the fungus so it can produce truffles.

The exact method is kept under wraps. But growers say it is achieved by precisely controlling the environmental factors to which the tree and the truffle are exposed, including, among others, temperature, light, moisture, nutrients, and soil aeration.

France has nearly 25,000 acres of productive truffle plantations, according to the French truffle federation. Within the last decade, 17,000 more acres have been planted but have yet to produce truffles, since trees take 8 to 10 years to bear fruit.

When and why truffles proliferate remains a mystery. While mycologists have observed that truffles need alkaline soil, periodic heavy doses of rain, and temperatures that do not dip below 21 degrees, the truffle's growth patterns have made research difficult.

Despite such uncertainty, the high price of black truffles has piqued interest around the globe. The only luxury food products that cost more are caviar and the rarer white truffle, which no one has successfully farmed. And that means even a small black truffle farm can turn a tidy profit. The most productive New Zealand truffle plantation last year harvested the equivalent of 275 pounds per acre, according to Dr. Ian Hall, the mycologist whose technology was used to infect the farm's trees. Even at



Ivan Domaniewicz

*Daniel Bertolin, president of the truffle association in Teruel, Spain, harvesting truffles on his farm near Sarrion. Ground truffles seed new plants.*

wholesale prices (\$800 per pound) that's equivalent to \$220,000 per acre versus around \$135 an acre for wheat.

No wonder then that small farmers are rushing to get a piece of the action. In Spain, membership in the Teruel truffle association has skyrocketed from 12 to nearly 150 members since 1997. About 78 percent of truffle orchard owners already have expanded or are planning to expand the amount of land they dedicate to truffles, according to a 2002 study on the socioeconomic impact of truffle cultivation on rural Spain.

(cont. on page 4)

## NEW FUNGI JOURNAL ON LINE

Colin Meyer

I'd like to introduce you to *Pacific Northwest Fungi*, a new, peer-reviewed, on-line scientific journal featuring mycological research from our area. Dean Glawe is the editor-in-chief and Joe Ammirati and a number of other prominent mycologists from this region are associate editors. You'll remember Dr. Glawe from the talk on powdery mildew fungi he gave at PSMS in April of last year.

As a bogger (a member of the Shadow Lake Bog Fungi Inventory project), I am especially proud to call your attention to the first paper that our project has produced, documenting one of the interesting mushrooms that we collected, *Cortinarius rubellus*. (See "The 30 Year Mushroom" in Bog Blog No. 9, *Spore Prints* issue 415, October 2005).

The URL for *Pacific Northwest Fungi* is

<http://pnwfungi.org/>

To see the *Cortinarius rubellus* article, go to <http://pnwfungi.org/pdf%20files/manuscripts%20volume%201/pnwf20066.pdf>

## NATURAL SCIENCE ART SHOW

We all see beauty in nature, but it takes a special talent to select a piece of it and render it so it is both beautiful and useful.



Through July 30, the Artfx Gallery, 420 N. 35th Street, Seattle, explores the techniques and media used in illustrating natural science since before the Renaissance, from 15th century woodcuts to computer art and many examples in between. Included in the exhibit are write-ups on the media used.

Anyone interested in natural science, which should include most members of PSMS, should enjoy this show, which includes four pieces by PSMS artist Marilyn Droege, unfortunately none of them mushrooms.

The Artfx Gallery is open Thursday–Sunday from noon to 5 PM.

## Spore Prints

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## MEMBERSHIP MEETING

Tuesday, June 13, 2006, 7:30 PM at the UW Center for Urban Horticulture, 3501 NE 41st Street, Seattle

What does it take to grow truffles?

Our June meeting features truffle expert Dr. Charles Lefevre, owner of New World Truffieres, a rapidly growing company specializing in truffle cultivation and controlled inoculation of oak and hazelnut seedlings with culinary truffle species. New World Truffieres has been featured in numerous publications, including *The New York Times*, *Forbes*, *Audubon*, and the *Los Angeles Times*. Dr. Lefevre received his Ph.D. in Forest Mycology at Oregon State University in 2002, conducting research on the host associations of the American Matsutake mushroom. He is president of the North American Truffling Society, co-organizer of the Oregon Truffle Festival, and has published technical articles on the Oregon truffles and cultivation of the celebrated European species. Dr. Lefevre makes his fascinating subject entertaining and accessible.



Will people with last names beginning with the letters H–M, please bring goodies for the social hour.

## CALENDAR

- June 13 Membership Meeting, 7:30 PM, CUH  
Bibliophilic Field Trip, Allen Library, UW
- June 17 Tentative Field Trip (check PSMS Website)
- June 19 PSMS Board Meeting, 7:30 PM, CUH
- Aug. 17–20 NAMA Foray, Hinton, Alberta, Canada
- Aug. 21 PSMS Board Meeting, 7:30 PM, CUH
- Aug. 22 *Spore Prints* deadline
- Sept. 12 Membership Meeting, 7:30 PM, CUH
- Sept. 18 PSMS Board Meeting, 7:30 PM, CUH
- Oct. 14–15 Annual PSMS Wild Mushroom Exhibit

## BOARD NEWS

Dennis Oliver

The last board meeting of the spring season was held under sunny skies. The meeting was a quick review of the current season. Colleen Compton has volunteered to be the Hosting Coordinator for the fall field trips, helping provide hosts for the events. Ron Post has volunteered to assist at the book sale table for the June and September meetings. We are still looking for a few more volunteers to help share the work. The board in a unanimous vote endorsed the effort of the Stuntz Foundation to raise funds to create an endowed chair of Systematic Mycology at the University of Washington. The next meeting of the board will be August 21. The board adjourned to wander into the spring dusk wishing for a little more rain so morels will really arrive in numbers.



## BIBLIOPHILIC FIELD TRIP

Ron Post

Come see and hear explained the wonderful world of historical books on mushrooms. See examples of various printmaking techniques, bindings, and other elements of the physical book, from 3 PM to 4 PM on Tuesday, June 13, in the Maps/Special Collections classroom of the Allen Library at the UW. Sandra Kroupa, Book Arts and Rare Book Curator in UW Special Collections, will talk about some of the books from Dr. Daniel Stuntz's collection. Sign up by e-mail at [bensohp@amgen.com](mailto:bensohp@amgen.com) or let Patrice Benson know of your intent to attend. Limited to 30 people.



Directions: Go to the north lobby of the Allen Library on the UW campus (the one with the crows hanging above your head). Take the elevator in that lobby to the basement. As you get off the elevator, turn to your right and walk a short way to the hallway going off to the right. Part way down this hallway is the classroom door, the first door on your right. It should be open at the time the class is expected. No food and drink in the room. Just to the right of the door as you enter the room, there are two closets. Those attending are asked to leave coats, purses, bags, packs, etc., in there.

## CRYSTAL SPRINGS FIELD TRIP

Hildegard Hendrickson

The weather was so beautiful at Crystal Springs on May 13 that we did not need the shelter and could set up close to the entrance of the camp. The camp is still closed, but the people who take care

of the camp came by and were very interested in learning about mushrooms. All around us there were still snow patches, and it was evident that the morel hunting had to be done at lower elevations. Early in my mushrooming experience, I acquired an inexpensive altimeter to help me gauge the elevation where morels are fruiting. On this day, morels were found at 1800 to 2000 ft elevation.

Most new people found their first morel, including Ron Post's girlfriend, Kelly, (who now may be "hooked" on mushrooming). Ron Post and Hildegard Hendrickson (with early assistance by Josh Birkebak) identified over 30 fungi (at least to genus). Forty-five persons signed the register, and half of them stayed for the delicious potluck. Emily Routledge cooked mushroom stroganoff with store-bought mushrooms augmented with some fresh morels. Mike & Valerie Lee hosted.



The following mushrooms were identified:

<i>Agrocybe praecox</i>	<i>Marasmius</i> sp.
<i>Calbovista subsculpta</i>	<i>Morchella elata</i> group
<i>Collybia</i> sp.	<i>Morchella crassipes</i> group
<i>Cortinarius</i> sp.	<i>Nidularia</i> sp.
<i>Crinipellis</i> sp.	<i>Nolanea sericea</i>
<i>Discina perlata</i>	<i>Otidea</i> sp.
<i>Disciotis venosa</i>	<i>Peziza</i> sp.
<i>Flammulina velutipes</i>	<i>Piptoporus betulinus</i>
<i>Ganoderma applanatum</i>	<i>Polyporus elegans</i>
<i>Guepiniopsis alpinus</i>	<i>Poria</i> sp.
<i>Gyromitra esculenta</i>	<i>Rhizina undulate</i>
<i>Gyromitra gigas</i>	<i>Sarcoscypha coccinea</i>
<i>Hygrophorus subalpinus</i>	<i>Scleroderma</i> sp.
<i>Hygrophorus</i> sp.	<i>Trametes versicolor</i>
<i>Lentinus ponderosus</i>	<i>Verpa bohemica</i>
<i>Lyophyllum montanum</i>	

## TWENTY-NINE PINES FIELD TRIP Brian Luther

All the way over to the lovely Teanaway River Valley from Seattle on May 20, it was lightly raining, and we were sure that we'd end up with a repeat of what has happened the past few years over there—namely, a damp day and having to take cover during potluck to stay dry, since the campground has no shelter. About mid-day, though, the clouds started parting, and it turned into a beautiful day, sunny but not too hot.

A surprising number of people signed in (57), so there was a lot of enthusiasm to get out and look for morels. Conditions, however, were quite dry, and there were very few mushrooms out. Even though the rivers, streams, and creeks were running strong and almost overflowing their banks because of the previous week's high temperatures, causing high mountain snow-pack melt, the woods themselves were very dry. Roads that were fully open last year were still snowed in, so there was lots of snow, but the woods were still dry.

Thanks to our terrific hosts, Don and Cathy Lennebacker, we were all set up in the first campsite as you enter the campground. They anticipated possible showers and put up a complete canopy tent covering an entire picnic table. Thank you, Don & Cathy, as usual,

for a job super well done. Lynne Elwell brought her cute little mini-Australian shepherds which always supply us with a source of entertainment. The *Calypso bulbosa* orchids were blooming, but not in the profusion they would have if soil conditions were moister.

Twenty-seven species of fungi were collected and displayed. A few morels were found, but unfortunately because of the drier than normal conditions, they were very few and far between. One clump of *Pleurotus ostreatus* was found on dead cottonwood, and several snow-bank fungi were collected, including *Hygrophorus marzuolus*. A couple of interesting finds included *Gyromitra melaleucoides* and a rare spring fruiting of *Bolbitius vitellinus* growing in heavy grass mowings. Thanks to Larry Baxter for helping with identification.

My wife, Pam, was finally able to come for a warm day in the sun with us, and this was very welcome after seven months of intensive and harsh, but successful, post operative cancer treatments. It was wonderful to see her sitting in a lawn chair, falling asleep in the sun and feeling normal and healthy again.

The real highlight of the day was definitely the fantastic potluck social we had, starting at 4:00 PM. I'd guess maybe 25 people stayed to eat. There were lots of delicious dishes and red wine, and we made fast work of all the food. Emily Routledge made a big pan of a super tasty brown sauce of sautéed *Agaricus bisporus* and some of her precious morels she had found, and then we put that over her polenta. Yum! Very few fungi, but I assure you it was worth the trip just for the potluck, good company with friends, and a sunny day of fresh air in the mountains.



Date: 5/3/06  
To: Agnes & Dick Sieger  
From: Tony Ganger

Dan and I went on the PSMS field trip at Flaming Geyser State Park on April 8. It poured down rain, but we had a great time. Everyone was so nice and it was so great being in the Washington woods. Unfortunately, we didn't find a single Morel mushroom...or even a False Morel.

So, back here in Chicago. Yesterday, I'm painting a step on our back deck, getting it ready for the season. I happened to glance under the deck and growing in two inches of stone...guess what I find? There must have been some spores on the stone we had put under the deck or in the deck wood. I've never seen a Morel growing in this area.

I hope you're both doing well and enjoying spring!

Best to you both and thanks again for connecting us with the group.

Tony  
Tony Ganger  
Associate Director for Service-Learning  
YMCA of the USA  
101 N. Wacker Dr.  
Chicago, IL 60606



Tony Ganger

## Cultivating a Mystique (cont. from page 1)

Whether cultivated truffles taste as good as wild, as many growers say, is a matter of debate. But they definitely have advantages.

Truffles plucked from cultivated soil tend to grow into more uniform spheres because they can swell without being squeezed by lumpy dirt or stones. While chefs claim that there's nothing like the rich aroma of a good wild truffle, they also favor round truffles because there is less waste. Deep grooves can trap dirt and unsightly knobs must be cut off before the truffle can be presented and shaved tableside.

Perhaps most important for American truffle farmers, the truffle's pungent scent begins to fade within 48 hours, giving local entrepreneurs an edge. Franklin Garland, who produced his first truffle in Hillsborough, N.C., in 1993, supplies mid-Atlantic restaurants with next-day service. According to Oregon mycologist Charles Lefevre, "the day is not far off when truffles harvested in Napa in the afternoon will be served the same evening in San Francisco." It can take three days or more for truffles to arrive from Europe.

Of course, even Mr. Lefevre readily admits that there are barriers to true industrialization. For one, it's hard to scale a business that relies on trained dogs and skilled handlers who are only needed on a seasonal basis. Even at a plantation the size of Arutz, a knowledgeable truffle hunter must accompany one of its 17 dogs to each tree and dig every truffle by hand. Pick too early and they will lack that intoxicating fragrance of damp leaves, musk, and fresh winter nights. Pick too late and the truffle may go soft or rot before it reaches a diner's plate.

Moreover, starting a truffle farm is a long-term investment with huge risks. Even if, after a decade of incubation, the truffles grow at all, the crop risks being plundered by thieves: in France and Italy, gangs equipped with wire cutters and night-vision goggles have systematically raided farms, as well as kidnapped or poisoned prized truffle dogs.



"The people having great success are not talking about it and who can blame them?" Mr. Lefevre said. "Think of it like having \$20 bills scattered thick all over the ground of your orchard. If I had a place like that, I probably wouldn't want other people to know about it either."

One of the few truffle farmers who is happy to talk about his dreams is Larry Turley. In 2004, Mr. Turley, who grew up on a Tennessee farm and went on to found Turley Wine Cellars in St. Helena, planted 2,000 trees in Templeton, California, an area well-known for its naturally truffle-friendly alkaline soil.

"There's no guarantee it will work," Mr. Turley said. "But when I found out that Victorians had banned truffles because they believed it inflamed the passions, I said, 'I'm in.'"



## MUSHROOM MISSIONARIES

Brian Luther gave a public spring mushroom hike on Saturday, May 13, at Deception Pass State Park. About 25 people came.

## FAIRY RINGS: LOVE 'EM OR LEAVE 'EM

Martin Osis

*The Mycophile*, May/June 2006

What's up with all those mushrooms poking up through the lawn? A couple of days of rain and then it seems that overnight they're popping up here and there singly or in groups, in a variety of shapes, sizes, and colors.

Mushrooms are, of course, the fruiting bodies of fungal organisms that live in our grass or on a piece of buried wood debris year after year. When all the con-



www1.agric.gov.ab.ca



www.ilmyco.gen.chicago.il.u

ditions are right, the fungus shoots out a fruiting body, usually after a good soaking rain. Fungi consist

mostly of water, so they require a good amount of it to be able to produce the mushroom, which in turn produces spores to continue its life cycle.

Fungi are the great recyclers of the world, playing an essential role in returning nutrients for all types of life, both plant and animal. Different from plants (and more like us), they do not produce chlorophyll but usually rely on plants for their energy source. In this process they exude enzymes, breaking down dead plant material and releasing nutrients for use by both plants and animals.

One of the best recognized of these fungi is the "Fairy Ring Mushroom." It must be noted that there are a lot of different fungi that grow in rings and all of these fungi growing in rings on your lawn are recycling dead grass. The fungal organism itself grows in the ground as a mass of tiny thread-like roots. Some have been known to be 800 years old. The ancients believed that at night, tiny fairies came out and danced around in a circle. When they needed a rest they would sit down on the mushrooms. In the forest, rings with different but larger mushrooms grew, providing a rest stop for larger fairies who, being bolder, were not afraid of the forest.

The fairy rings are rated by some as choice edibles, so one of the most efficient ways of getting rid of them is to eat them! But make sure that what you have is the true Fairy Ring Mushroom, *Marasmius oreades*. The many "little brown mushrooms"—LBMs—that grow on lawns should be avoided. (Regretfully, not all these LBMs, which are notoriously difficult to identify, are little nor are they all brown.) Mushrooms picked for the table must always be positively identified. Identifying mushrooms can be tricky. Always rely on a good field guide or join a local club. Also, when eating these positively identified mushrooms for the first time, try them in small amounts as there is always a possibility of an allergic reaction.

If you observe the fairy ring, you will notice greener and faster-growing grass on the outside. The grass dies in the center because the root work or mycelium of the fungus, which is slightly greasy, grows so densely that it chokes off the water supply to the grass. If you want your grass to look good, aerate the ring with a garden fork, breaking up the fungus to allow water penetration to the grass. An

application of soapy water also helps break down the oily mycelium. This tactic, which allows both mushrooms and grass to thrive, works best when the ring is still young. With proper fertilization the rest of the grass looks like the greener grass growing on the edge of the ring, making the ring hardly noticeable. Healthy grass, delicious mushrooms—sometimes, you can have your cake and eat it too!



Britt Bunyard

Many species of mushrooms, some say as many as 60, can grow in a ring, including *Amanita muscaria* such as these.

## FAIRY RING LORE

[morelmushroomhunting.com/fairy\\_ring.jpg](http://morelmushroomhunting.com/fairy_ring.jpg)



For centuries, the sudden and rapid eruption of circles of mushrooms from the soil led people to believe that dark or terrible forces were at work. Lightning strikes, meteorites, shooting stars, earthly vapors, and witches have all been proposed as agents of their origin.

In France fairy rings were called sorcerers' rings and in Austria, witches' rings. A Tyrolean legend claims that the rings were burned into the ground by the fiery tail of a dragon. In Holland they were said to be the marks where the Devil rested his milk churn. In Europe, the belief that fungi were the work of evil spirits or witches persisted well into the 19th century.

In England, as their name suggests, they were places where fairies come to dance. The mushrooms around the perimeter were seats where the sprites could rest after their exertions. People in rural England claimed to have seen fairies dancing at fairy rings as recently as the start of the twentieth century.

One common theme in all these traditions is the belief that dire consequences await anyone foolhardy enough to enter a fairy ring. Trespassers would be struck blind or lame, or even disappear to become slaves in the fairies' underground realm. In Wales the rings were associated with fertility and doom, and anyone foolish enough to plow one up would incur the wrath of the fairies. It was also widely believed that if animals grazed within a fairy ring their milk would putrefy.

On the positive side, fairy rings were said to bring good luck to houses built in fields where they occur. In another tradition, the rings were sites of buried treasure, but there was a catch—the treasure could only be retrieved with the help of fairies or witches.

## MUSHROOM OF THE MONTH: *Amanita ocreata*

[from an article by Shannon Berch, in *Fungifama*, South Vancouver Island Myco. Soc., April 2006]

This issue's mushroom of the month is rare around here, but deadly. In a recent talk to the South Vancouver Island Mycological Society, Dr. Michael Beug, toxicology chair of the North American Mycological Association (NAMA), reported that *Amanita ocreata* appears to be the most toxic member of the Destroying Angel group of *Amanita*. Only 9 people have been reported poisoned by it in 30 years of record keeping by NAMA, but 100% of those victims suffered liver damage, 40% suffered kidney failure, and another 40% died.

Although it is uncommon, Jan Lindgren, *Amanita* specialist on the Pacific Northwest Key Council, reports that *Amanita ocreata* does occur in Washington and Oregon. "I have reports of it from several sites in Oregon and a few in Washington. It is found in the spring, just after the morels are done fruiting, in the lowland by rivers. This is about the middle of May.

"One year we collected 75 of them at Woodland, Washington, which is just north of Vancouver, Washington. The habitat was oak, hazelnut, snowberry, poison oak, alder, cottonwood, and blackberries. I think that it is associated with either the Oregon White oak, *Quercus garryana*, or the hazelnut, which may be either the native one or an escaped domestic variety.

"A simple KOH test will separate it from *A. verna*. *Amanita ocreata* will give a yellow reaction, and no yellow is seen with *A. verna*. *Amanita ocreata* will also show a pinkish or buff color when fresh and is somewhat smaller."

You may also want to check out Mike Beug's web site on poisonous and hallucinogenic mushrooms at [www.evergreen.edu/mushrooms/phm/index.htm](http://www.evergreen.edu/mushrooms/phm/index.htm).

### Notes by Dick Sieger

*Amanita ocreata* has a cap that is 1½–6 inches broad and a stalk that is 2½–8 inches long. The cap is white or pinkish buff and is usually bald but occasionally has a patch of thin tissue. The stalk has a friable ring that hangs like a skirt. The bottom of the stalk has an abrupt bulb surrounded by an obvious "death cup" which may disappear in age or with careless handling. The white gills are attached to the stalk or free from it in old age. A spore print is white. Unlike most mushrooms we collect, a reclining *Amanita* may start bending up after an hour or so—look for a curved stalk.

To make the "simple KOH test," apply a 3–5% water solution of lye or household ammonia to the mushroom and see if a yellow stain appears within a few minutes. Other mushrooms, including some *Amanita* species and many *Agaricus* species, will also give a yellow reaction. Note that *A. verna* has the same deadly toxins as *A. ocreata*.



Boleslaw Kuznik

## IF YOU GO DOWN TO THE WOODS TODAY...

**Bryce Kendrick, FRSC, Sidney, B.C.**

recently published in *Island Tides*

In the words of the old saying, the logging companies and the Government apparently “can’t see the forest for the trees.”

This is certainly wilful blindness on their part. They have enough knowledgeable employees that it seems impossible for them to remain unaware of the true nature of the old-growth forests they are “harvesting” so unsustainably.



What is a forest? To some people (forest company executives?) it is just a collection of trees: two-by-fours in waiting, wood on the hoof, and in the case of old-growth forests, a collection that includes many dead and dying trees which, if not “harvested” will merely rot away. What a waste.

In truth, every true forest (and I’m not speaking of the biotically impoverished plantations that are often deliberately created after first-growth forests have been removed) is a rich and complex community of living organisms, not tens or hundreds, but *thousands* of different species, ranging in size from the trees all the way down to bacteria less than 1/25,000th of an inch long. And as the size of member species decreases, the number of individuals usually increases, until we discover that there are scores of birds, thousands of smaller plants, untold millions of bacteria, for every single tree.

E. O. Wilson writes: “Eliminate just one kind of tree...and some of its pollinators, leafeaters and woodborers will disappear with it, then various of their parasites and key predators, and perhaps a species of bird or bat that depends on its fruit—and when will the reverberations end?” To this list I could add: its symbiotic mycorrhizal fungi, and other fungi that specialize in attacking or decomposing (recycling) its leaves and its wood, and a variety of specialized mycophagous (fungus-eating) invertebrates.

Old-growth cutting in southwestern B.C. is now being blamed for declines in populations of 17 species of mammals, birds, amphibians and fish. And the bird species, such as the spotted owl, coastal marbled murrelets, and northern goshawks, are only the larger and more conspicuous members of the biota to be threatened with regional extinction. It is generally agreed that if the birds in a habitat are OK, then everything else is likely to be fine as well. So we can use the birds as our red flag, our indicator of danger, our “canary in the mine” of the forest. Since they are obviously not OK in our coastal forests, almost everything else that lives in old-growth forests is also likely to be threatened by the destruction of their habitat. In many cases we can be reasonably confident that they are organisms (albeit small ones) that have not even been detected and described as yet by scientists. For example, it is clear that there are many more fungi out there than have yet been seen. One credible estimate for the whole Earth is 1,500,000 of which only about 100,000—about 7%—have so far been described. However, despite their vital importance in almost every terrestrial ecosystem, as decomposers and root symbionts, most people find it hard to generate much enthusiasm for the fungi.

So let’s try a bird species. The spotted owl has never been common, but there used to be about 500 pairs in B.C., the only Province in which they occur. Largely as a direct result of the logging of old-

growth forests, this population has now been reduced to 23 individuals, and in 2005 researchers could locate only 6 breeding pairs. This is clearly an ongoing disaster. And we are sadly much nearer the end of this process than the beginning.

To shift focus for a moment, the public is also aware that many of our salmon runs are in danger, and although some of that has to do with overfishing, and the vagaries of life in the open ocean, it is also clear that degradation of spawning habitat, caused in many cases by imprudent and unsustainable logging, often in riparian habitat, shares much of the blame.

We must ask if we can trust the forestry industry with our rare wildlife, but equally we must question our Provincial government, which is basically responsible to us, the electorate, for what is permitted to happen to the environment here. Are either of these groups really acting in a responsible manner, or is the bottom line the only thing that counts? It is well beyond time that Government act decisively in the interests of the communities of life inhabiting our forests.

To quote E. O. Wilson again: “...to the degree that we come to understand other organisms, we will place a greater value on them, and on ourselves.”

## BREITENBUSH MUSHROOM CONFERENCE

**Patrice Benson**

The 23rd annual Breitenbush Mushroom Conference will be held October 8–11, 2006, near Detroit, Oregon, in the midst of the hot springs and old-growth forests of central Oregon. The theme this year will be “Mushrooms: Identity and Flavors.” The focus will be on identification of edible wild mushrooms and the cooking and preservation of these forest treasures. We will also have a special workshop in mycopyrography featuring Marie Heerens. Mycologists will be Paul Kroeger and Judy Roger. Chefs Michael Blackwell and Jeremy Faber will be enlightening our palates. Register by visiting the website [www.breitenbush.com](http://www.breitenbush.com) or phone (503) 854-3320.

## BRIEF ENCOUNTER

**Dick Sieger**

Agnes and Dick slip through the campground hunting morels.

Oh oh, they’ve been spotted.

A camper and her girls approach Dick.

He tips his hat.

The camper asks him, “Did you lose something?”

“No.”

“You have a brush. Are you painting something?”

“No.”

Then what *are* you doing?”

“Looking for snakes. There are a lot of them here because of all the rats.”

“Don’t tell us that!”

“I’ve had a snake chase a rat up my pants leg.”

The camper and girls flee.

Agnes and Dick slip through the campground hunting morels.

## PRESIDENT'S MESSAGE

Patrice Benson

Well, the morels are slow this year to show themselves, so we all have more time to do other things! And one of the important things I would like to do is to thank the following folks for their generosity in helping to make our club run smoothly.

Thanks to Brian Luther, identification chair, for arranging ID for all of our field trips. Hildegard Hendrickson fields all of the requests for mushroom identification and finds conveniently located identifiers to fill the requests. The identifiers are generous with their abilities and time, especially in an emergency situation.

Colin Meyer is our webmaster as well as the education chair. Colin, Ron Post, Dennis Oliver, and Joe Ammirati meet on a regular basis to plan for the next educational experience for PSMS.

Bernice Velategui and Pacita Roberts continue to keep track of our members by registering members and keeping up the database. The newsletters which you receive each month are mailed from information from the database kept up to date by Pacita. Joanne Young will be busy this summer lining up speakers for the fall membership meetings and reserving the rooms we need for board and membership meetings and classes.

Ron Post is supporting all of the efforts of the office of the president and will be chairing the next exhibit, which takes place this October 14–15. You are reading this because of the efforts of Agnes Sieger, *Spore Prints* Editor, and her support system, Dick Sieger.

Marilyn Droege will be volunteering in the library with Kim Traverse and Ron Post to make the collection easier to use and more accessible. Tony Tschanz will be pursuing the production of the next roster. Colleen Compton will be coordinating the volunteer hosts for field trips, assisting Don and Cathy Lennebacker as they do the planning and reserving of sites.

Younghee Lee will be selling books soon, but we still need another person to share that task. Have any of you ever wanted to run a bookstore? Well, here's your chance! Training provided. Book sales provides a large part of our operating expense allowing us to keep the membership fees low and affordable. Please think about volunteering to help. Just call me or e-mail [president@PSMS.org](mailto:president@PSMS.org).

Thanks, everybody, for working together to make mushrooms fun for all.

## UPCOMING ITEMS OF INTEREST

**NAMA Foray 2006.** August 17–20, 2006. Hinton Training Centre near Jasper National Park, Hinton, Alberta, Canada. Information: [Namyco.org](http://www.namyco.org).

**Mexican Mushroom Tours.** July 9–16, 2006. Leader: Dr. Joaquin Cifuentes, head of mycology studies at UNAM in Mexico City. Foray into the Sierra Gorda area in the central state of Querétaro. Limited to 16 individuals. Information: [www.mexmush.com](http://www.mexmush.com).

**Mexican Mushroom Tours, second excursion.** August 6–13, 2006. A foray in the southern state of Oaxaca and the Benito Juarez National park region where matsutake and five kinds of chanterelles are found. Includes a cooking class with Susana Trilling of PBS fame. Information: [www.mexmush.com](http://www.mexmush.com).

**Alaska's Wild Mushrooms.** August 25–27, 2006. With mushroom enthusiast Chris Riggio. An identification and appreciation of Alaska's mushrooms. Near Homer. Information: Mary Jane and Tony Lastufka at (907) 235-3633 or (907) 345-2571; or [ecotour@ptialsaka.net](mailto:ecotour@ptialsaka.net).

**7th Annual Yachats Village Mushroom Fest.** October 20–22, 2006. Yachats village, Oregon. Information: 1-800-929-0477; [www.yachats.org/events](http://www.yachats.org/events).

## GARLIC MUSTARD CASTS A PALL ON THE FOREST

Henry Fountain

*The New York Times*, 5/02/06

In drama, the uninvited visitor is a common plot device. Everyone is getting along swimmingly until a new character arrives and upsets the apple cart. Things quickly fall apart.

Garlic mustard, a tall weed native to Europe that was introduced to the United States in the late 1800's, is a bit like that uninvited visitor. Researchers have found that it disrupts a healthy relationship between hardwood tree seedlings and soil fungi, with results that can be disastrous for a forest.

Like other scientists, Kristina A. Stinson, who studies invasive plants as a research associate at the Harvard Forest, Harvard's ecology and conservation research center in Petersham, Massachusetts, had noticed that native trees suffered in the presence of garlic mustard. "We thought their dependence on native fungi might play a role," Dr. Stinson said.

Many plants make use of arbuscular mycorrhizal fungi, which form an elaborate network of filaments throughout the soil. These fungi are a diverse group, but they all have one thing in common: they help plants take up nutrients from the soil, getting carbon in return.

Garlic mustard is a member of the mustard family, "one of the very few families that do not need to associate with mycorrhizal fungi at all," Dr. Stinson said. These species produce chemicals that have antifungal properties. Native mustards have been around long enough, she suggested, that the mycorrhizal fungi have learned to live with them. But the fungi haven't had time to adapt to garlic mustard. "It basically is killing off the fungi," she said.

In a study using soils from a forest in Ontario, Dr. Stinson and colleagues found that sugar maple and other hardwood seedlings grew much slower when the soil came from an area infested with garlic mustard than from a mustard-free area. The findings are published in the journal *Public Library of Science Biology*.

In studying invasive species, scientists often see a direct effect. Invasive cane toads in Australia, for example, wipe out snakes and other predators that try to eat them. But garlic mustard displays a mechanism that, so far at least, appears to be unique. "It's really a demonstration of how 'the enemy of my friend is also my enemy,'" Dr. Stinson said. By killing fungi, "it's disrupting this longstanding native mutualism."

Garlic mustard has now spread through 30 states, from Maine to Oregon, and into Canada. "When this plant shows up in a forest, the tree species themselves that become the canopy are most at risk," Dr. Stinson said. "That could have tremendous impact by changing the composition of the forest."

While the effect might not be immediate, it will occur nonetheless. "Our experiment was on seedlings," Dr. Stinson said. "But those are the future generations of forests."

## PSMS DISCUSSION GROUP

John Goldman

Like to keep 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. By signing up, you can send a message using only one address (psms-members@groups.yahoo.com) and have it reach everyone who also has registered, with no need to maintain individual e-mail addresses for all PSMS members!

There are two ways to sign up. The simplest way is to e-mail psms-members-subscribe@groups.yahoo.com and you will be added to the list and only get e-mail. If you want to get e-mail and have access to the Web-based features of Yahoo Groups, go to <http://groups.yahoo.com/group/psms-members>. Follow the link that says "Join this Group." (You will need to sign up for a free Yahoo Groups membership if you do not have one already.) By joining this way, you can access the e-mail from any computer (not just the e-mail inbox of your computer), search messages, and have access to the photo section and the "file" section where other documents are stored (recipes, PSMS bylaws, etc.)

## MOREL BREAD PUDDING

Patrice Benson

6–7 cups of cubed crusty bread  
3 cups of milk, cream, or half and half (soy milk as last resort)  
1½ cups grated cheese (Swiss or similar)  
¼ cup Parmesean cheese  
6 eggs  
2 Tbs or so herbs of choice; celery is also nice in this  
1 lb or more sauted morels or mushrooms of choice  
1 onion or 2–3 shallots, chopped fine or big  
2–3 Tbs butter or olive oil  
salt, pepper to taste



Sauté mushrooms in butter or oil, add onions, and cook for about 5 minutes or until limp.

Place bread cubes in the bottom of a buttered or sprayed baking pan approx. 9 × 13 in.

Layer on the cheese and mushrooms and sprinkle with herbs. Mix milk or cream with eggs and add ½ teaspoon salt and ¼ teaspoon pepper or as to your taste. Pour liquid over bread and mushrooms. This may be covered with plastic wrap and stored in the fridge overnight or bake right away at 350°F for about 50 minutes or until puffed and browned slightly. Let cool slightly and serve.

## MOREL PATÉ

Patrice Benson

as demonstrated at the May 2006 membership meeting

4 Tbs butter  
4–5 cups fresh morels  
3 Tbs Madeira  
1½ sticks softened, unsalted butter  
2 oz. goat cheese  
1 Tbs fresh tarragon  
salt and pepper to taste



Clean morels and trim ends if needed. Add butter to a cast-iron skillet and heat over medium-low. Add morels and sauté for 5–7 minutes. Add Madeira and cook 3 minutes longer. Set aside and let cool. Drain off excess liquid. Place sautéed morels in the food processor and finely chop. Add 1½ sticks softened butter, goat cheese, and tarragon to the processor and pulse until well blended. Add salt and pepper and quickly pulse. Remove to a serving bowl and garnish with a fresh sprig of tarragon. Serve with crostini.

*This will be your last Spore Prints issue until September.  
Have a great summer!*

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