

# SPORE PRINTS



BULLETIN OF THE PUGET SOUND MYCOLOGICAL SOCIETY

Number 398

January 2004

## MUSHROOM ODORS R. G. Benedict & D. E. Stuntz

*Pacific Search*, September 1975

*Continued from December 2003*

The pronounced smell of green corn, not yet chemically defined, occurs in the poisonous *Inocybe sororia* and *Inocybe* species #3399. It is also detected in *Cortinarius superbus* and *Cystoderma amianthinum*.

Few species of amanitas have telltale aromas, but one with a sprouting-potato odor is *Amanita porphyria*, a non-edible form. The chances of picking a white-gilled, white-spored, potato-scented, mushroom that is not *A. porphyria* are rare. Mushrooms with similar odor are *Volvarellia speciosa* and *Pluteus cervinus*. Both have pink gills and spores, but *P. cervinus* lacks a volva at the base of the stem.

Cucumber, farinaceous, and rancid-linseed-oil odors are found in numerous mushrooms. The main difference between these three odors is that of intensity. The mild odor of cucumber is revealed in *Galerina marginata*, *G. autumnalis*, *G. venenata*, and *Phaeocollybia kauffmanii*. A farinaceous smell, often expressed as "mealy" or "branny," is attributed to *Tricholoma flavovirens*, *Entoloma lividum*, and *E. sericeum*. The strong odor of rancid linseed oil is highly noticeable in *Armillaria zelleri*, *Tricholoma pessundatum*, *T. vaccinum*, *T. populinum*, and *Clitocybe sinopica*.

An interesting but uncommon smell, somewhat like tincture of iodine, is known as iodoform. It describes the scent from non-edible *Polyporus hirtus* and *Mycena iodolens*.

*Tricholoma saponaceum*, a common mushroom of low quality for the pot, has a soapy odor.

Among the unpleasant odors, categories of fishy, spoiled hamburger, and chestnut catkins are much alike and occur primarily in species of the large, poisonous genus *Inocybe*. Common examples are *I. pudica* and *I. napipes*. Similar odors appear in *Verpa bohemica* and the *Morchella* species. The edible *Russula xerampelina* smells like shrimp. Pothunters say that the odor from cooking this species will drive you out of the kitchen, and recommend it be cooked outdoors. These odors result from simple amines like methyl, ethyl, and propyl amine.

Mushrooms in the *Amanita solitaria* and *A. chlorinosma* groups often smell like chlorine household bleach (sodium hypochlorite).

Skunk cabbage is a rare aroma in this region's fungi, but is unmistakable in *Clitocybe nebularis* and *C. alba*.

Several species of *Marasmius* have chemicals similar to those in garlic. One small carpophore of *M. scorodonius*, *M. prasiosmus*, or *M. foetidum* could add considerable flavor to a pot roast. Oil of garlic is allyl sulphide.

Acetylene, a flammable gas, is almost odorless when pure. Commercial acetylene, made by adding water to calcium carbide, contains impurities that give it an odor similar to garlic. Certain basidiomycetes contain antibiotic substances which inhibit the

growth of bacteria or fungi. One such antibiotic is Diatrelyn I, found in *Clitocybe diatrete*. Some of these chemicals are unstable and release acetylene when they decompose. The sharp odors of *Clitocybe inversa* and *Ripartites helomorpha*, especially when wet, are probably due to the decomposition of polyacetylenic compounds present.

*Hebeloma crustuliniforme* and *H. mesophaeum* possess a nauseous combination of radish and the odious organic solvent, pyridine. The pretty, lavender-colored *Mycena pura* and the hallucinogenic *Psilocybe cyanescens* have a mild radish scent.

As coal is converted to coke, the coal gas vapors contain many odious chemicals in addition to odor-free methane and hydrogen gases. Mushroom scents arising from *Tricholoma inamoenum*, *T. sulphureum*, and *Lepiota bucknallii* are said to resemble those in the unpurified mixture of vapors.

Stinkhorns are highly specialized fleshy fungi with the nauseating odors of decaying flesh. They are so strong to the nose that one can detect their presence 50 feet downwind. Although they are rare west of the Cascades, one occasionally encounters *Mutinus caninus* and, rarely, *Lysurus gardneri*. The stench odors arise from fly-attracting aldehydes not commonly encountered in chemistry. One such compound is phenylacetaldehyde, isolated from *Phallus impudicus*.

*Agaricus placomyces* and *A. hondensis* have a phenol or creosote odor. Violent gastronomic upsets await anyone foolish enough to eat the odorous forms of these fungi.

When certain species of *Mycena* are crushed between thumb and forefinger, the distinctive odor of nitrous acid or fuming nitric acid can be detected.

In many species of mushrooms, including *Marasmius oreades*, the odor of hydrogen cyanide can be detected.

Perhaps this article will stimulate those pothunters who have not done so in the past to make better use of their olfactory faculties. There is no rule of thumb regarding mushroom odors, but in practice. *cont. on page 2*

## WE NEED NEW LEADERS!

Karin Mendell

The PSMS Board has asked me to deliver a very serious message to our membership—*We need new leaders!*

The PSMS activities that we all enjoy are threatened with extinction unless new folks step up and offer to help lead them. Experience is *not* required, Qualified members will be glad to work with you. There are notebooks full of information to direct you. If you have participated in a foray or a survivor's banquet or a fall show (even once), you can be trained to *lead* these activities. Activities such as coordinating field trips and forays or chairing the Fall Show do *not* require being a Board member. Our old leaders are tired and have been overworked for too long. If you care about PSMS and want to see it continue, you need to step up now.

# Spore Prints

is published monthly, September through June by the

## PUGET SOUND MYCOLOGICAL SOCIETY

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## CALENDAR

Jan. 13 Membership Meeting, 7:30 PM, CUH  
Jan 15 Field Trip Planning Meeting  
Jan. 19 PSMS Board Meeting, 7:30 PM, CUH  
Jan. 20 *Spore Prints* deadline

## Odors, cont. from page 1

tically all cases, either the unpleasant-smelling specimens have odors which are not dissipated upon cooking, or the mushrooms are poisonous, or both. In one incident, a woman suffered muscarinic poisoning when she ate some specimens not described in the 1962 publication of the book *The Savory Wild Mushroom* (revised and enlarged in 1971). These turned out to be *Inocybe pudica*, and had she taken the time to smell them first we doubt if she would have been tempted.

DR. STUNTZ was a professor of botany at the University of Washington and scientific advisor to the Puget Sound Mycological Society. DR. BENEDICT, a semi-retired microbiologist, was formerly a research associate professor of pharmacognosy in the University of Washington School of Pharmacy.

## MUSHROOM SHOW 2003 DEBRIEFING

This is a reminder to chairpersons and serious volunteers from the 2003 Wild Mushroom exhibit that there will be a debriefing pizza session at Patrice Benson's on January 17, 2004, at 7:00 PM.

Please come with constructive ideas for the next exhibit as well as suggestions for chairpersons to lead us into the next decade of exhibits. Call or email RSVPs to Patrice at (206) 722-0691 or [patrice.benson@comcast.net](mailto:patrice.benson@comcast.net) and she can give you directions.

## MEMBERSHIP MEETING

Tuesday, January 13, 7:30 PM, in the Center for Urban Horticulture, 3501 NE 41st Street, Seattle

In January we will present a slide show on poisonous and hallucinogenic mushrooms as a special request from some of our current members. It was created By Dr. Michael Beug and borrowed from the NAMA educational collection. It covers toxin groups, their chemical compositions, and symptoms. Many wonderful photos of toxic and hallucinogenic mushrooms are included.

Will members with last names beginning with the letters M-Z please bring something to share at our social time after the meeting?

## MEMBERS DONATE TO SCHOLARSHIP FUND

John Goldman

PSMS would like to acknowledge the generosity of several members who made donations in the past few months. When Wade and Osa Sommermeyer renewed their membership, they also donated \$100 for our scholarship fund as they have in past years. Fran Ikeda donated the \$35 proceeds of the apple butter she sold at the show to the scholarship fund. Founding member and first PSMS President (1964) Ben Woo gave a very generous \$500 to the scholarship again this year as well as purchasing \$122 worth of supplies for the fall show for which he sought no reimbursement. We thank all of these people for their thoughtful contributions and would like to encourage others to do the same. These gifts can be distributed as grants or so that mycology can be promoted in many different ways. (If you would like to donate anonymously, that can be arranged.)

## THUMBNAIL SKETCH OF PSMS CONSERVATION EFFORTS

Ron Post

When the issues surrounding commercial mushroom picking fired up the public's imagination about poison food being sold in supermarkets and men with guns and knives guarding mushroom-picking areas in the deep woods, there was already a network of people in Washington and Oregon who could dispel rumors. These folks had formed a group in the 1980s called C.E.P. (Citizens for Environmental Planning). They were led by Margaret Dilly, chair of the PSMS Conservation and Ecology Committee, by Ralph Hayford of the South Sound Mushroom Club, and by others.

C.E.P. worked on two fronts. Members were encouraged to report collections and commercial traffic so that baseline data on species of commercial interest could be gathered. And the group met with legislators and land managers to demand some regulation of the commercial industry. The state of Washington formed a task force on this issue in 1985, largely owing to this group's critical leadership.

At about the same time, members of the Oregon Mycological Society began a study of chanterelle productivity in different types of habitat. Lorelei Norvell led this painstaking effort.

In 1985 C.E.P. produced a "white paper" for the state task force. This was aimed at directly influencing pickers and harvesters to improve their practices in the forest, pay equitable fees and taxes for the material they took from public lands, and limit their harvest. The effort was a huge success thanks to years of work on the part of the Dillys and others.

One note about this period: in 1988, “Bill’s Bog” on the Olympic Peninsula became the first land preserve in the Northwest, perhaps in North America, to be devoted to research into fungi.

Washington got its first law (in 1989) requiring data to be filed by commercial distributors, and fees were raised to support the state’s collection of these data. There were, for the first time, penalties for transporting mushrooms from public land without the required permits. Recreational pickers were exempt. Perhaps more important, the activism caused many harmful practices, such as raking for matsutake, to end. However, commercial pickers do harm wooded habitat in a number of ways, such as dumping waste at camp sites.

The 1989 law was a “sunset” law—a time-limited bill that ended in 1993. It was replaced by legislation that, to this day, regulates mushrooms as special forest products. On the federal level, even greater efforts to collect data and regulate the harvest were under way, led by regional Forest Service and Bureau of Land Management people in Oregon.

The PSMS Conservation and Ecology Committee began to focus more on education, primarily about what had already been achieved. From 1991–95 Ron Post, the new chair, held semi-regular meetings to keep members informed of regulatory and research efforts on state and federal lands. In 1994 PSMS produced hundreds of copies of a conservation pamphlet with the help of a local printer who donated the paper and ink. These were given to other clubs and land use agencies and distributed at the exhibit. Other efforts included a series of lectures by our scientific adviser, Joe Ammirati, to update the club on research in fungal ecology, and a grant application to fund the creation of a permanent exhibit on fungal ecology (though this effort failed).

The committee disbanded after the mid-1990s for lack of member interest. But some members have asked about potential directions for such a committee, and here are some ideas that have been floating around in case anyone wants to reform the group under new leadership.

- Pursue funds for a permanent exhibit on ecological roles
- Create a research project using public and private funds and volunteers
- Establish a clearinghouse of information, perhaps a Web page, to improve access to existing information about fungal ecology
- Write a paper assessing the efforts of C.E.P. and land managers to bring attention to this issue.

## **LEPIOTA MAGNISPORA**

**Buck McAdoo**

*MushRumors*, Northwest Mushroomers Assoc., July/Aug. 2002

Whoever thinks that mushrooms are devoid of personality need only look here. These veiled beauties discovered on North Pender Island in November 2001 are only teenagers but they already appear like exotic jewelry against the moss.

*Lepiota magnispora* is characterized by caps 4–8 cm wide, sharply conical at first becoming convex to plane in age. The cinnamon-brown to ochre-brown discs break up into scales on a whitish to pale brown ground. The gills are free from the stem, whitish, and crowded. The stem is solid at first but hollow in age. The smooth white apex becomes abruptly woolly-shaggy below. The ring, if seen at all, is yellowish to pinkish-brown. Most European authors stress the presence of yellow cap margins and yellowish scales on the stem, but the yellow can be missing entirely, as it is here. The

odor and taste are pleasantly fungoid, the spore deposit is white becoming dextrinoid in Melzer’s, and the species is found throughout the autumn season under conifers and birch. Else Vellinga, who kindly identified this collection for us, separates this from *Lepiota clypeolaria* by its brighter, more intense coloration. Since this can be a rather arbitrary point of argument, the only fool-proof way to identify it is to look at the spores. They are 11–16 µm long for *L. clypeolaria* and 17–22 µm long for *L. magnispora*. These long, narrow, fusiform spores are quite distinct. According to Dick Sieger, the “spores bulge on one side like a fat Egyptian mummy,” and the hilar appendages are hooked like short beaks.

Introduced by Murrill in *Mycologia* 4 back in 1912, *Lepiota magnispora* turns out to be an earlier name for *Lepiota ventrisospora* (Reid), which was introduced in England in 1958. Else Vellinga, working on a monograph on North American Lepiotaceae, made the discovery. She believes it may be more common in the western states than *Lepiota clypeolaria*. Both she and Dr. Reid are in agreement that the yellow coloration on cap and stem is not a reliable character, but it sure helps when observable. Lee Whitford and I found a big break of the yellowing sort at the Beaver Creek site a few Novembers back.

Oddly enough, there are very few reports in the North American literature on this species. Since the original description by Murrill, Helen Smith reported it in 1966, and Dick Sieger wrote up a thorough description for the Pacific N.W. Key Council, but that’s it!

Dick discovered that some European guides describe the species as edible. Frankly I wouldn’t put it anywhere near a dinner plate. There are just too many deadly little Lepiotos around to take the risk.

### *Bibliography:*

Marcel Bon, *The Mushrooms and Toadstools of Britain and North-western Europe*, 1987.

Breitenbach & Kranzlin, *Fungi of Switzerland*, 4, 1995.

Meinhard Moser, *Keys to Agarics and Boleti*, 1978.

William Murrill, *The Agaricaceae of the Pacific Coast*, H in *Mycologia*, 4, (231–262), 1912.

Dick Sieger, “Trial Key to the Pacific Northwest Lepiotaceae and Melanophyllum,” 1997.



*Mysterious magnispora: This funky little Lepiota might make a tasty last meal, or you might just live to complain about the taste.*

## FIELD TRIP MEETING

Cathy Lennebacker

The field trip planning committee will meet Thursday, January 15 at Hildegard Hendrickson's home at 2559 NE 96th, Seattle Washington. Feel free to attend if you are interested in participating in this planning meeting.

## DECEPTION PASS FIELD TRIP

Ron Post

You could say the Deception Pass field trip on November 15 was co-hosted by a Husky and Cougar (myself and Russ Kurtz), but there was no rivalry anywhere to be seen.

Joy Spurr and Hildegard were co-identifiers with able assistance from Russ and Joshua Birkebak. Thirty-six people signed in at the Cranberry Lake shelter, and the early arrivals were greeted by curious loons, Douglas squirrels, and the dutiful warnings of wrens darting through the nearby corn-high salal.

Although the sun never showed up, the winds and rain held off until later in the day, getting worse that night and Sunday. Thus we experienced a rather unexpectedly calm trip, and the campers who stayed in the park Friday night were rewarded with a mild start to the weekend. Many new members came to see what this enchanting area has to offer. A ranger was encountered in the woods by Tony Tschanz. She told Tony she had a few PSMS signs from our former field trips at the park, but no one knew where her office was, so we will hope the signs await our return.

No potluck was held but there were pastries, coffee, and tasty fruit from the persimmon tree in Russ's yard and Hildegard's apple trees.

Classic-looking collections of *Lactarius deliciosus* and *Ganoderma applanatum* were brought in, and a strange-looking *Tsuga* added some color to the tables. But the diversity was, as expected, not great because of the dry summer. Much of the area was somewhat green from recent rain, but that deceptive cover couldn't hide its secret: dry duff and soils. Two nice specimens of *Clitocybe nuda* came in and a horde of *Suillus* species and others of *Agaricus*, mostly the inedible species but few other good edibles. A large

*Hericium* and several *Helvella* with a range of tones from cloud-gray to soot-black were collected.

## CRISPY GARLIC CHOY SUM WITH BLACK TRUFFLES OR WITH SHIITAKE AND TRUFFLE OIL

Michael Blackwell

as prepared for the Sept. 9 PSMS membership meeting

- 1 large head choy sum, washed and cut into 2-inch pieces
- 18 cloves of garlic, sliced thinly
- ½ cup vegetable stock
- 1 large black truffle, sliced (or substitute sliced shiitake and truffle oil)
- Salt and black pepper to taste

In a hot wok, coat with canola oil and brown the garlic. Add the choy sum and season. Add vegetable stock and cook, for only 3 minutes. Plate up and cover with truffles. The steam of the dish will heat the truffles to release their oil and flavor. If using the shiitake, add them after the garlic, before adding the choy sum. Garnish with truffle oil.



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