SPORE PRINTS

BULLETIN OF THE PUGET SOUND MYCOLOGICAL SOCIETY
Number 400 March 2004

PRESIDENT'S MESSAGE — Karin Mendell

Though the ballots have not yet been counted for the 2004 election, it's safe to say that my successor as PSMS president for 2004–2006 has been chosen. Great good luck to Ron Post in his upcoming role as PSMS president. Working with everyone in the group has been a great learning experience for me! As I move into the background, I'd like to thank some of the folks who contributed so much throughout the two years of my term. I would have been especially lost without the patient and valuable assistance of Joanne Young, immediate past president. Her counsel and guidance was offered graciously and deeply appreciated. Thanks to David Hunt for being such a good and true friend—supporting me in forays and two Fall Shows and keeping me sane in the process!

We have some terrific folks as officers and board members whom I'd like to thank, as well. They really worked hard to assist in providing great opportunities for members. Patrice Benson, Vice President, and John Goldman, Treasurer, have done a tremendous job keeping our membership meetings exciting and our finances in the black, respectively. Ramona Owen has worked hard as Secretary and also worked at dozens of other jobs such as on our Fall Show and yearly banquets. Huge thanks to the Trustees whose terms are ending: Don and Cathy Lennebacker, Elizabeth Lisaius, and Bernice Velategui. They contributed incredible energy and efforts in so many areas, from membership services to field trips to poster, T-shirt, and hat production!

Thanks also to those Trustees who ran or renewed their commitment last election: Pacita Roberts, David Hunt, Alissa Allen, and Tony Tschanz. Their energy and enthusiasm have really energized the Board.

Also special thanks to Marian Maxwell, Emily Routledge, and Colin Meyer—who, though not currently serving on the Board, never turned down a request for assistance on help with banquets, identification and field trips, and fantastic publicity for our Fall Show!

And thank you, the PSMS membership, for allowing me the honor of working with all of you, the past two years!

40TH ANNIVERSARY MUSINGS — Karin Mendell

Happy 40th Anniversary PSMS! This is a great opportunity for little introspection as PSMS reaches the ripe old age of 40 years. I would like to urge all of our members to look at what the club is doing. Would you like to see more ID classes? More kids activities? More opportunities for field studies such as David Pilz shared with us last month? If you'd like to see new or different directions, get involved! Take on a Board position or speak to a Board member to put forth an idea or suggestion. This is exactly why I got more involved, after watching on the sidelines for a while. This organization should belong to its members—and those that do get involved will help determine the future direction of the club.

Welcome Back to the Flower Show for 2005. Emily Routledge has come forward to volunteer to lead the Flower Show effort for 2005. Information and assistance by previous chairs will help her to organize this effort next year. The Board was delighted to accept her offer. Thanks, Emily! We all applaud your enthusiasm.

By-Laws Available on Web Site. Colin Meyer, our WebMaster, reminds us that members can download the PSMS by-laws from our WebPage. There is much interesting information in the document, such as the purpose of the club and the board members' and officers' duties. Plain text and MS Word versions are available from the "About PSMS" page: http:// psms.org/about/.

Colin also encourages everyone to get involved. As several people pointed out, if you want to see something happen with the club, volunteer and make it happen.

If you have issues (positive or negative), bring them up for discussion. Any member is welcome to sit in on a board meeting. If you are interested, just ask one of the current board members or Colin for details. The board is very busy, and there is a large agenda for each meeting, so advance notice is necessary.

Board Minutes Open to Membership. A further enhancement for our membership's participation will be that the Board Minutes will now be available in a hard copy notebook which will be placed at our Membership table during regular monthly meetings.

Though it's sometimes difficult to see how things get done from the outside, this group has never been a "secret society" and would benefit from all the member participation it can get!

May PSMS grow and flourish as the fungi do—another 40 years!!!

CULTIVATION WORKSHOP — Ed Foy

The Oregon Mycological Society will offer a cultivation seminar during their meeting on 22 March, 6-10 pm. Fruitbody cloning, spawn production, substrate inoculation, and growout methods will be demonstrated. Mr. Dan Wheeler, renowned truffle cultivator, may divulge some of his secrets.

All PSMS members are cordially invited to attend. Carpool on down I-5, turn onto 405, head west on 26 to Beaverton. After a couple of miles, turn right, following the signs to the Portland Zoo and World Forestry Center. Stay to the left and park where indicated. We meet in Cheatham Hall, just south of the big Forestry Center building. This is a must for those seriously interested in cultivation. They would pay commercial sources hundreds of dollars for the knowledge and samples that they will take away free.

To help us organize this event, please e-mail edfoy@gorge.net if you plan to attend.

Spore Prints

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PUGET SOUND MYCOLOGICAL SOCIETY

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CALENDAR

March 13	PSMS Survivor's Banquet and Annual Meeting, CUH
March 15	PSMS Board Meeting, 7:30 PM, CUH Board Room
March 27	Field Trip, MacDonald County Park, Carnation
March 23	*Spore Prints* deadline
April 3	Field Trip, Flaming Geyser State Park
April 13	PSMS Membership Meeting, CUH

BOARD NEWS

Pacita Roberts

The PSMS Board met on August 19, 2002, in the CUH Board Room. Cathy and Don Lennebacker presented the list of spring and fall field trips for 2004 and asked for volunteers to host. The spring foray will not be held owing to the absence of a chair; the fall foray also needs a chair. The fall show will be at Sand Point on October 16 and 17. Tom Volk will be the guest speaker. This event is also in need of a chair. Joanne presented information on the banquet program and ticket sales. Emily Routledge has stepped up to chair the PSMS booth at the 2005 Northwest Flower and Garden Show. The nominating committee will be accepting ballots postmarked by March 6 for the current election. Ballots will be counted in time for presentation of election results at the PSMS Survivor's Banquet.

PSMS INVENTORY

PSMS will do an inventory this summer. If you have something that belongs to the club, let Ron Post (ronp46@hotmail.com) know by June so it can be included.

MEMBERSHIP MEETING

This month is the **PSMS Annual Meeting and Survivor's Banquet**, Saturday, March 13, at the Center for Urban Horticulture. Festivities begin at 6:30 PM. New board members and officers will be announced, as well as the winner of the Golden Mushroom Award for 2004.

Dress: The dress code is elegant to casual. This is a dress-up opportunity; a chance to wear your favorite mushroom accessories, come in costume—or dress like it's 1964! (year of the Beatles, debut of "Flipper," and founding of PSMS).

Entertainment: Music will be provided by classical guitar soloist, Mark Wilson (www.mhilliardwilson.com).

Price: $27 per person. Children 12 years old and less, $18 each. Price includes catered buffet dinner, beverages, souvenir wine glass, and a chance to win door prizes.

Final deadline to sign up: March 5. We must give a final count to the caterer the first week of March. We will NOT be able to accept any registrations at the door.

To sign up, send your reservation and payment of $27 per person, and $18 per child 12 and under to PSMS Banquet, 1916 North 49th Street Seattle, WA 98103. Make checks payable to "PSMS - Banquet." Questions? Please call Lynn Phillips, (206) 524-2950.

BOARD MEETING INVITATIONS TO NEWLY ELECTED BOARD MEMBERS

Karin Mendell

I'd like to remind our newly elected Board members for 2004–2006, who will be announced at the March 13 Survivor's Banquet, that they are invited to attend the March Board meeting on Monday, March 15, at 7:30 PM at the Isaacson Hall board room at CUH. New Board members attend as observers in March, with their voting rights taking effect at the April Board meeting.

It bears repeating here, that PSMS Board meetings are always open to our general memberships, though only elected Board members have voting rights on decisions concerning the business of running the Society. The Board usually has a full agenda with regular business. Issues or concerns may always be brought to the Board via a Board member or club Officer prior to a meeting for best consideration. Colin Meyer, our PSMS Web Master, reminds everyone that our PSMS by-laws are currently posted on our website at http://psms.org/about/ and are available for download.

We are, again, grateful to our members who step forward to take on leadership roles as Board members. Your willingness to serve this organization makes all of our terrific activities possible!

ROSTER UPDATE

Karin Mendell

Bob Mendell has again consented to work with our database manager, Pacita Roberts, to format our membership information into a revised roster for 2004–2005.

Has your phone number, e-mail, or home address changed recently? If so, PLEASE make sure to send your updated information to Pacita Roberts so that she can update our database for inclusion in the roster. Pacita's e-mail address is r6379@u.washington.edu. The only way for us to get your information correct in the roster is to correct the database. So do this today! Thanks.

SPRING 2004 FIELD TRIP SCHEDULE

The spring field trips have all been scheduled, and we can look forward to collecting mushrooms, swapping tales over our usual creatively delicious potluck dishes, and benefitting from the expertise of our intrepid identifier(s). Enjoy the fresh air as you hike, the learning, and the convivial company of fellow fungi seekers! **Note:** *All Washington State parks require a $5.00 fee for each car parked within the park.*

March 27 — **MacDonald County Park** (30 miles east of Seattle)

To start off the season, we will visit MacDonald Park, 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. *ID: Hildegard Hendrickson and Brian Luther. Host: Michelle Huang.*

April 3 — **Flaming Geyser State Park** (elev. 300 ft, 35 miles southeast of Seattle)

From I-405, take State Highway 169 heading east (Black Diamond/Maple Valley Highway) and drive through Black Diamond. Drive 3 miles south of Black Diamond and turn right onto Green Valley Rd. (You should turn off before you reach Enumclaw.) Drive about 3.5 miles and turn left onto Flaming Geyser Road. The park runs along the Green River. Look for the PSMS signs at a picnic shelter close to this entrance.

May 8 — **Circle 8 Ranch**
May 15 — **29 Pines**
May 22 — **Crystal Springs**
June 5 — **Chatter Creek**
June 12 — **Swauk Creek**

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 waterproof 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 mush. 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 may be possible to come early on Friday and stay over to Sunday. 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, field trip 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 (sometimes later when the days are longer in the summer). You need to bring your own eating utensils and beverage and a dish to contribute to the table. This can be an appetizer, a salad, a main dish, or a dessert. The food is usually delicious, and the potluck is a great time to swap tales, collect recipes, and share mushroom information with friends old and new.

WANTED: PARASITIZED BOLETES

Dear mushroom enthusiasts,

I am a researcher at University of California at Davis and am conducting research on bolete-infecting *Hypomyces* species. I would appreciate any information regarding parasitized boletes. I would be very grateful to those of you who would be willing to send me material. My goal is to culture the parasite and to obtain bolete material for identification purposes.

I am particularly interested in boletes in the *Boletus/Xerocomus chrysenteron* complex. If anybody would like to collect parasitized boletes and send them to me via Fed Ex, I can provide a Fed Ex number for the sender.

Likewise, I am also willing to make collecting trips in areas where people have been finding parasitized boletes. Any information would be appreciated.

Sincerely,

Greg W. Douhan
Post-doctoral researcher
Department of Plant Pathology
University of California, Davis
Davis, CA 95616
(530) 754-9894

Upcoming Meetings:
April 13, 8:00 P.M. Pacific Science Center

Program: *Dr. Stuntz - "Painless Taxonomy or How Mushrooms Got Those Godawful Names"*

PSMS Bulletin No. 1, *April 1964*

BOOK REVIEW

Brian S. Luther

Mushrooms of the Boreal Forest
by Eugene F. Bossenmaier
University Extension Press
University of Saskatchewan
Saskatoon, SK S7N 5C8 Canada
ISBN 0-88880-355-9
1997

Covering a formidable area in North America from the Canadian eastern seaboard, making a wide path through the central area of the remaining provinces, going a bit into British Columbia and the NW Territories, this publication has concentrated on the most frequently encountered larger fungi found within the Boreal Forest, which extends over northern Europe and Asia as well. The Boreal Forest is also called Taiga or the Moose-Spruce Forest and is a distinct ecological biome; its flora is remarkably consistent and uniform. Although this book's intended emphasis is the Boreal Forest, many of these fungi are familiar to all experienced mushroom hunters and mycologists, and although some species are not found in our immediate area of the Pacific Northwest, many are. With elevation gain into the mountains you'll find very similar zones called the Canadian and Hudsonian zones which are, in fact, mini Boreal Forest areas on mountains.

The few brief introductory pages are followed by descriptions of species and photographs, which occupy the bulk of this 105 page book. This colorful, spiral bound, school notebook sized book covers a delightful assemblage of macrofungi with 241 color photos, all arranged on the right side pages, with very brief and informal descriptions adjacent on the opposite (left) pages. Having the descriptive comments and photos always opposite one another makes it a great quick reference that doesn't require thumbing through to another page for one or the other. However, if you're looking for a text with well organized and consistently detailed species descriptions, then this book is not going to be very useful to you. The descriptions are really more like brief ramblings (if that's possible) or short comments highlighting interesting features of the mushrooms or their ecology, rather than providing hard descriptive data of fruiting bodies.

Arranged throughout the book alphabetically by family and then likewise by genus, the fungi treated are a mere "taste" of what's out there, but it does a very nice job of presenting a really good introductory overview of what's actually a much bigger picture. The largest section is the Gilled Fungi (pp. 2–53), followed by Ridged Fungi, Fleshy Pored Fungi, Toothed Fungi, Coral and Club Fungi, Woody Pored Fungi, Puffballs and Earthstars, Morels, False Morels and Elfin Saddles, Cup Fungi, Jelly Fungi and Other Fungi. Three Slime Molds (which are not true fungi) are treated for good measure, and scattered here and there are a few photos of flowers, trees, and habitat shots. The author provides only one small box on p. 11 with few details or distinguishing characters for those fungi in the Basidiomycotina (Basidiomycetes) and Ascomycotina (Ascomycetes) and continues his alphabetical march in the book by going from the family Lycoperdaceae (a Gastromycete family in the Basidiomycetes) to the Morchellaceae of the Ascomycetes with no transitional comments. Living tree associations (mycorrhizal relationships) and substrates are often mentioned in the descriptions, which are very useful for identification. It does have a couple of identification errors: the text on page 40 says that color photo F2 on page 41 is the same species as color photo F1, but the two are distinct species of *Laccaria*. Also, color photo C on page 49, which is labeled as *Mycena overholtzii*, shows a completely different species of *Mycena*.

Besides the nice color plates and the arrangement of the text that I mentioned above, what I like most about this publication are the diverse and interesting topics that are highlighted within black lines throughout, making it more "readable" and less text-like for the beginner. These include subjects such as "Insects and Mushrooms" (p. 31), "Mushrooms in Arts and Crafts" (p. 21), "Food Value of Wild Mushrooms" (p.65), just to mention a few. It has a rare color photo of a fungus that I did some research on years ago (and co-authored a paper on), namely *Crepidotus cinnabarinus* (p.13), which I was delighted to see.

Down to earth, precautionary, and sound advice for all levels of mycophiles is peppered throughout the text, and the back of the book has a small section on "Mushroom Edibility," followed by a glossary and index. It makes a nice addition and reference for anyone's mycological library, and for a modest $15.95, it's worth it.

CHANTERELLE MUSHROOM PRODUCTIVITY RESPONSES TO YOUNG STAND THINNING

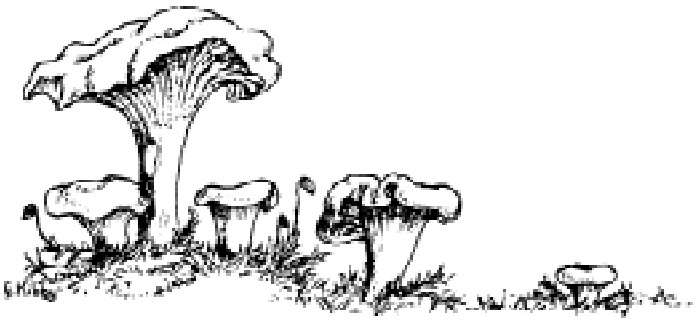
David Pilz

As presented to the Puget Sound Mycological Society, February 10, 2004

Context

Edible mushrooms have been widely collected from the forests of the Pacific Northwest since European settlers began hunting for mushrooms they had collected in their homelands. (Some native tribes harvested a few mushroom species, but we lack evidence of their wide-spread consumption). During the 1990's, commercial mushroom harvesting expanded dramatically as international markets developed and forest workers sought means to supplement their income. National Forest and BLM lands provide ideal habitat for many types of edible forest mushrooms, and managers have developed permits and regulations that allow commercial harvesting. Chanterelles are one of the most frequently harvested mushrooms on public lands. The Pacific golden chanterelle, *Cantharellus formosus* (formerly *C. cibarius*), and the white chanterelle, *C. subalbidus*, are the two most common chanterelles in the low elevation forests on the west side of the Cascade Range. Both occur abundantly in young forests regenerated from earlier logging.

C. formosus and *C. subalbidus* are mycorrhizal fungi, that is, fungi that form symbiotic relations with the roots of certain conifers, especially Douglas-fir and western hemlock. Mycorrhizal fungi form a web of "hyphae" (one-cell-wide threads collectively known as "mycelium") in the soil and also colonize the young root tips of their arboreal hosts. The fungus functions as an extended fine root system, absorbing water and minerals that are transferred to the tree and, in return, the trees provide the fungus with carbohydrates it has recently produced through photosynthesis. The Pacific golden chanterelle and white



affect chanterelle productivity (number or weight of mushrooms per acre per year) by altering a number of factors:

1. Food supplies for the fungus (density and health of host trees)
2. Environmental conditions near the forest floor that affect fruiting (temperature, humidity, and light levels)
3. Soil conditions (compaction, summer and early autumn moisture levels, distribution of rotted wood and organic matter in the soil profile, litter layer thickness, slash burning, and microbial population shifts)

The Young Stand Thinning and Diversity Study in the McKenzie and Middle Fork Ranger Districts of the Willamette National Forest is an well-replicated, long-term, integrated ecosystem study that is ideal for studying chanterelle responses to stand thinning. Understanding how chanterelles respond to thinning will benefit from such long-term research because stand conditions change through time as remaining trees resume vigorous growth. Cooperating with a larger integrated study lessens the work load and improves interpretation of results.

The Study

The study design is replicated on four sites and we are monitoring chanterelle productivity in three stand treatments at each site:

1. Control: ~615 original trees per hectare (250 trees per acre)
2. Light thin: ~270 residual trees per hectare (110 trees per acre)
3. Heavy thin: ~125 residual trees per hectare (50 trees per acre) with underplanting

Our primary goal is to examine the response (over time) of chanterelle productivity to the thinning treatments. Our original hypothesis was that productivity would decline immediately after thinning (more so, the more heavily thinned) and then eventually rebound to higher than pre-thinning levels as the residual trees begin to grow more vigorously and fully occupy their habitat. Also, little prior work had been done on developing efficient and practical methods for sampling edible mushrooms under a variety of field conditions; hence examining sampling methodology also was a research goal. Additional related studies include spatial analysis of how mapped chanterelle patches respond to removal of nearby host trees, and DNA analyses of mapped fruiting bodies to determine the number and distribution of genetically unique mycelial colonies.

Results

Productivity data have been collected for one year prior to logging (1994) and three of the four years afterwards (1996, 1997, and 1999).

Chanterelles were found on every site (although not every year), and productivity varied widely among both sites and years. The range of productivity was 0–1532 chanterelles per hectare (0–620 per acre) and 0–73.8 kilograms per hectare (0–29.9 pounds per acre).

As predicted, chanterelle productivity declined significantly ($p<0.5$), but was not eliminated, immediately after thinning, and the level of decline was greater in the heavily thinned stands than in those lightly thinned. As of 1999, productivity seems to be increasing again in thinned stands, but the trend is not (yet) statistically significant. Removal of host trees, drier forest floors, and layers of slash that make chanterelles difficult to find likely all contributed to the decline.

Long (100 to 400 meters/300 to 1200 feet) narrow (5 meters/15 feet) strip plots worked well for sampling spatially clustered chanterelles while keeping track of what areas had already been searched (especially in dense brush). The total sample area per stand needs to be large (~ 0.4 hectare or 1 acre) to derive useful productivity estimates.

Genetic analyses of chanterelle individuals and populations show small scale (<16 meters) diversity with multiple genetically unique chanterelle colonies (individuals) and species fruiting in overlapping patterns. A previously unknown species of chanterelle was identified through genetic analyses. It grows intermingled with both golden and white chanterelles. The researcher, Susie Dunham, suggests the tentative name *C. cascadensis* sp. nov., or the "Cascade chanterelle." Although it is difficult to distinguish from the Pacific golden chanterelle, fortunately it too is a good edible mushroom.

Data from the mapped chanterelle patches have not yet been analyzed. Henceforth we plan to sample productivity every third to fifth year to track recovery over time.

Application

Although chanterelles are only one of the many products and amenities that we derive from our forests, they are an integral part of the forest ecosystem and provide many people with pleasure and income. Forest managers will be able to better ensure their continued availability if they understand the relations between management activities and chanterelle productivity. With this understanding, managers can continue to provide opportunities to harvest chanterelles in areas that have compatible management goals and convenient access.

Young Stand Study web site:
http://www.fsl.orst.edu/mycology/youngstndthin/Yss.html

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MY WORST COLLECTING TRIP

Josh Herr

Mushroomers, Oregon Myco. Soc., January–February 2004

We've all had great collecting forays before; the weather is great, and you find plenty of new, interesting fungi and some instantly known treasures. I, too, have had my share of horrible collecting trips. Bad collecting forays, which seem to be the most memorable of the lot, to me at least, occur when I don't find any mushrooms and I run into trouble.

My worst mushroom collecting foray occurred during a horrendous summer drought during an extended summer stay at my parent's home in Pennsylvania. In August, the annual rainfall was approximately 25 inches below normal, and the ground was dry as a bone. I was itching for some good mushroom collecting, and I did a rain dance every morning to try to entice the sky to open

up and rejuvenate the earth. Fortunately, my dancing eventually paid off; it rained heavily over a three day period. The rain came from over the Atlantic ocean, as it frequently does along the east coast, dumping its majority in the southern New Jersey Pine Barrens, about two hours from where my parents live. The Pine Barrens are typically filled with pines (mainly Pitch Pine, *Pinus rigida*) and oaks (predominantly *Quercus marilandica*), great host trees for boletes and other mycorrhizal fungi such as *Lactarius, Russula,* and *Cortinarius.* I found maps indicating the most rainfall on the Internet and planned my route to National Park lands in hopes of finding plenty of mushrooms.

I waited patiently three or four days to give the mushrooms time to perk out of the ground. Packing collecting equipment, maps, and a lunch into my pickup truck, I hit the road. The weather was hot and humid, so I wore shorts and sandals to keep myself cool. It took me 2 hours to get there, but the trip wasn't too difficult. A portion of the trip was on the highway, but I knew when I was getting close when the road was nestled among pines.

I turned onto a promising dirt road with pines and oaks scraping the sides of my vehicle as I slowly drove on. Despite receiving more than 15 inches of rain, the dry piedmont soil had soaked up the rain like a sponge, leaving little trace of rainfall. I looked for mushrooms as I drove along the road. As the roads networked and crisscrossed, I eventually found a perfect place to start my hike, parked the truck, and headed out on the trail.

I walked about a quarter of a mile when I started to feel a strange sensation along my legs and feet. I looked down at my legs and I immediately was confused. I didn't remember wearing wool socks! It took me a few seconds to realize what was happening. My feet and legs were covered with ticks! They covered my legs to such an extent that I could not see my skin. It looked like I was wearing socks made of ticks from my feet to my knees, and these socks itched like crazy. The ticks were two different kinds, the larger American Dog Tick (*Dermacentor variabilis)* and the Common Deer Tick *(Ixodes scapularis*) whose bodies are approximately the size of a pinhead. Trying to brush them off with my hands I felt them crawling up my fingers and arms. I started to run back to the truck but in hysterics, I lost my way. I couldn't have gone far, but with the thick shrubby underbrush I couldn't see where the vehicle was parked. I hurried and ran along trying to find the correct path that led to my vehicle. I was panicking because I knew people who had contracted Lyme's disease, a strange neurological disease centered in the Eastern United States, from a single tick bite. With thousands upon thousands of ticks crawling on my body, I was certain that somehow I was going to catch the disease from a tick bite. I realized panicking was not helping the situation and tried to calm down. As I was looking for my truck, I could feel ticks crawling up my legs, arms, and across my face. I tried to collect myself and retrace my steps. I doubled back on the trail and caught site of my truck among the matchsticks of pines and oaks. I sprinted to the back of my pickup truck, climbed up on the bed in the back and took off my sandals and tried to brush off as many ticks as I could. Many of them had taken a bite and locked onto my flesh. I reached around and unlocked the driver's side door and climbed in without touching the ground. I settled myself in the seat and made tracks to the highway.

The following two hour drive seemed like the longest two hours of my life. I could feel infinitesimal trails on my skin by crawling ticks. It was like my senses were amplified a million times. My skin was crawling, quite literally. As I drove west, the setting sun was as hot and intense as I could remember during a sunset. My skin, quite literally crawling, had me on sensory overload.

When I got to my parent's house, I went straight for the bathroom and got undressed. I grabbed some tweezers and tried to remove as many ticks as I could, desperately trying to remove heads lodged in my skin, because these are known to re-grow new bodies. I placed the ticks in a small glass filled with rubbing alcohol. I lost track of the number I removed from my body somewhere after 183 ticks. This process took hours upon hours. I asked my mom to cut my hair to aid in looking through my scalp. We got out the dog clippers and practically shaved my head. My mom went through and removed tick after tick. I then rubbed my body down with rubbing alcohol in attempts to disinfect my body. I then took a long hot shower. I found it hard to go to sleep for the next couple of nights because I had the feeling that my skin was crawling with ticks. I wasn't sure if this was true on not, but over the next couple of days I turned up more and more ticks on my body. Two years after the fact, I am sure I have removed all the ticks from my body. I think.

It didn't take much for me to regain the courage to gallivant into the woods once again. I don't think there is a force that could keep me indoors away from the mushrooms. I've tried to introduce mushroom collecting to family and friends and convinced them to join me on my forays, but after this incident, it was impossible to get them to accompany me. This trip stands out to me as the worst. If I had been collecting ticks it would have been great, but probably the worst part was not having any mushrooms to show for it. Not a single mushroom.

WORLD-FIRST AUSTRALIAN TRUFFLE FIND

The Sporeprint, Los Angeles Myco. Soc., Nov. 2003
via *Mycolog,* Huboldt Bay Mycol Soc., Feb. 2004

An Australian scientist has made a discovery which is electrifying world fungal biology—a new truffle genus related to the famous *Amanita* family, or fairy toadstools.

The Amanita family is famed worldwide for the red and white spotted toadstools beloved of children's fairy tales, the lethal Death Cap beloved of tabloid media, and a range of delicious edible fungi beloved of gourmets. The find, by Forestry and Forest Products mycologist Dr. Neale Bougher of the Australian Commonwealth Scientific and Industrial Research Organization (CSIRO), highlights Australia as one of the richest centers of truffle biodiversity on the planet.

Until Dr. Bougher discovered the new fungus in the rejuvenating forest landscape of a former bauxite mine near Perth, Western Australia, no one had ever found a truffle related to *Amanita*. "Its not just a new species. It's a whole new genus," he explains. "Scientists have been looking for this round the world for well over a century—and here it is, in Australia." Since the original find by Dr. Bougher, he and colleague Dr. Teresa Lebel of Melboume's Royal Botanic Gardens have identified no fewer than five new species of what has now been scientifically named *Amarrendia*—a marriage of the names *Amanita and Torrendia,* the two genera of fungi closely related to the discovery.

Dr. Bougher was part of a team studying landscape rehabilitation at the Darling Escarpment bauxite mine run by Alcoa World Alumina Australia—regarded as a global benchmark for successful restoration—when he literally unearthed the new genus.

"I had my suspicions the moment I picked it up in the field. I got a bit excited, but I couldn't be absolutely certain. So I rushed back to the lab and put it under the microscope and, immediately I saw the characteristic *Amanita* structures. I went crazy. At least,

I am sure the people in the lab thought I was crazy. I was yelling 'This has got to be a truffle *Amanita!'"*

The truffles in question are white and about the size of marbles, though Dr. Bougher has since found specimens as large as a decent kiwifruit. More important for him, however, is what the truffle means for Australia's environment.

First, it adds to a growing view that Australia is one of the planet's mega-biodiverse centers for truffles, which are important elements in soil health. "So far we've found nearly 90 genera of truffles and over 300 species here; 35 percent of the genera and 95 percent of the species occur nowhere else on Earth," he says. "And we're only scratching the surface in what we know about fungi."

Second, truffles are a favorite food of native marsupials like potoroos and woylies and rely on them to disperse their spores. Whether the *Amanita* truffles are safe to eat or not is unknown. Specimens are so precious every one has been taken into scientific collections. However, as no other truffle has proved poisonous and because they rely on mammals to transport their spores, Dr. Bougher thinks it unlikely, in spite of their toxic *Amanita* relatives. He advised against anyone trying them until this has been checked out, however.

Third, underground fungi, including truffles, are essential to landscape health. Fungi like truffles unlock nutrients for native plants and break down the tough Australian timber to form fertile new soil. Many eucalypts, wattles, and sheoaks depend critically on certain fungi, making them a primary factor in the survival and renewal of landscapes. In fact, Dr. Bougher argues, we face difficulty repairing and revegetating our landscapes unless the soil fungi are in place to help the trees and shrubs to grow and nutrient cycling to re-establish. "Many mysteries remain unresolved in the Kingdom of the Fungi, and Australia has a big role to play in helping to unravel them," he says. "The 'truffle *Amanita*' is an example of how much there is to find. So far only about 10% of Australia's native fungi are known to science, yet they are one of the most pervasive and important life forms on the continent."

TO THE RESCUE: FUNGI THAT INVADE ALSO PROTECT LEAVES

Carol Kaesuk Yoon

The New York Times, February 24, 2004

Leaves, scientists are discovering, are chock-full of microscopic fungi. A single leaf in a tropical jungle, in fact, is battered by more than 10,000 spores a day, each aiming to penetrate and take up residence.

Researchers remained stumped as to what, if anything, these invaders were doing. Now scientists studying the cacao tree, whose beans are used to make chocolate or cocoa, say these fungi, which many had suspected were parasites, are actually powerful protectors able to fend off plant diseases. The study was published online in December in *The Proceedings of the National Academy of Sciences*. The research team, which included Americans and Panamanians, carried out their studies at the Smithsonian Tropical Research Institute in Panama.

The fungi are known as endophytes from the Greek *endo*, or in, and *phyto*, or plant, because they are found inside plant tissue where, scientists believe, they live off nutrients leaking from plants' cells.

Young cacao leaves, the team found, at first are free of fungi and can be kept free of endophytes if they are kept dry. So researchers were able to raise plants that, unlike those in the wild, contained no endophytes. They could then inoculate a subset of those with endophytes of their choice. Researchers then exposed plants with endophytes and without them to a devastating disease caused by *Phytophthora*.

"It's a dramatic difference," said Dr. A. Elizabeth Arnold, a tropical ecologist at Duke University and the lead author, noting that leaves without endophytes were three times as likely to die and lost twice as much leaf tissue, showing large, brown lesions.

Dr. Allen Herre, an evolutionary ecologist at the tropical research institute, and his colleagues in Panama are now working on ways to grow large amounts of the beneficial fungi cheaply and easily in the field.

For cocoa tree farming, an enterprise that has moved from country to country to escape the diseases that plague the vulnerable plant, the new findings provide hope for inexpensive and environmentally agreeable ways to protect the trees. But the work has implications far beyond chocolate, scientists say, suggesting a huge and until now unrecognized world of mutually beneficial biological interactions.

The new study has also provided a possible answer to a longstanding mystery. Young leaves of tropical trees are loaded with chemicals that deter attackers. But older leaves have far less protection. Why, researchers have long wondered, do these leaves not maintain their chemical defenses? Dr. Arnold's work suggests that plants may stop investing in chemical arsenals once endophyte protections begin to kick in.

While little is known about the endophytes of most plants, one group in grasses is well studied. In grasses, the fungi are passed from generation to generation through the grass seeds. In contrast, the fungi found in cacao float about as infectious spores among many other diverse fungal spores in the tropical forests, all seeking to infect whatever green leaves they may drop onto. Under such circumstances, theory predicts that the fungi—many of them close relatives of disease fungi—should race with other invaders to exploit their hosts mercilessly.

"It's really a challenge to understand why these things are not wreaking havoc on the plant," Dr. Herre said. "This challenges a lot of paradigms, so it's very exciting."

Whatever researchers learn about these benevolent fungi though is likely to be far-reaching for the botanical world. "These endophytes have been found in every major group of plants looked at," Dr. Arnold said. "There are a lot out there, and we keep finding more."

Luis Mejia

A leaf with the fungus escapes the more severe damage

The scheduled date for the first [field] trip will be Sunday, May 10. which is the day before the May meeting. We realize this will be on Mother's Day and only hope that you will take your mothers mushroom hunting.

PSMS Bulletin No. 1, *April 1964*

DIED: Wayne Iverson — Colin Meyer

I am sad to let you know that PSMS member Wayne Iverson has recently passed away. He died on January 30 of brain cancer which was diagnosed last November. He was only 50 years old.

You may not have known Wayne; he joined PSMS in 1996, but was only able to participate with the club occasionally. However, he was very important to the larger mycology/biology/naturalist community. As a community college and high school teacher, he made sure to include a section on mycology every time that he taught a biology class. His regularly lead nature walks were a joy to attend. You would hear him identify birds from their call and talk about all of the plants and fungi. He enjoyed taking the time to answer every question that came up.

I last spoke with him at the mushroom show in October. He was happy, healthy, and enthusiastic as ever about mushrooms, plants, and nature in general. He expressed a desire to become more involved with PSMS, and bought one of the nice new hats.

It was such a very sad shock to hear of his unfortunate and untimely illness. He will be greatly missed.

You may read his obituary at:

http://archives.seattletimes.nwsource.com/cgi-bin/texis.cgi/web/vortex/display?slug=iversonobit08m&date=20040208 .

GRILLED PORTABELLO WITH GOAT CHEESE

1 portabello mushroom per guest
Montracher cheese (goat cheese), enough to fill hollow sides of mushroom (approx. 2 oz each)
1 clove toasted garlic per mushroom
3 fresh basil leaves per mushroom
2 sprigs thyme per mushroom
2 sprig parsley per mushroom
Enough olive oil to coat mushrooms

Trim stems from mushrooms, brush with olive oil, and season with salt and pepper. In a food processor, blend garlic and herbs until finely chopped. Add Montracher and blend together. (Be careful not to over-process or mixture will become too runny.) Fill hollow side of mushrooms with cheese. Broil mushrooms until cheese mixture turns a very light brown and mushroom is tender.

McGee, MS

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