SPORE PRINTS

BULLETIN OF THE PUGET SOUND MYCOLOGICAL SOCIETY
Number 421 April 2006

PRESIDENT'S MESSAGE — Ron Post

The new president, Patrice Benson, is sunning and strolling in Paris, so I am filling you in on club business one last time. Here are some volunteer needs that have gone unfilled during my term, They are positions you can either take your time with on an occasional basis or really run with.

1. Field Trip hosts: We have not filled up the slots for spring field trip hosts yet (though we do have identifiers for all of them), so please call Cathy Lennebacker and volunteer for any of the following dates: April 1, May 13, June 3, or June 10.
2. Backup for membership chair (when Bernice is out of town). Call Patrice Benson at (206) 722-0691.
3. Someone interested in chairing a regional foray at Cispus. Call Patrice.
4. Librarian to open the library for members an hour or two before each membership meeting. Call Ron Post at (206) 527-2996.

With that said, the date for our exhibit has been set for October 14 and 15. The location will be at Sand Point Park once again. I will chair the exhibit, and we'll all pray for rainfall.

SURVIVOR'S BANQUET — Colleen Compton

It was wonderful to see so many happy PSMS members and guests enjoying themselves at the Survivor's Banquet on March 11, 2006. The food was very good. The hall was festive with white tablecloths, spring flowers, and candles. It was very lively.

We showed our appreciation to longtime members Marsi and Magda diGiovanni by awarding them the Golden Mushroom pin and plaque. They are a couple who've always been helpful in a quiet "behind the scenes" way. They have served refreshments after monthly meetings for years, served on the board, helped new members at field trips, and provided much of our greenery and foliage decoration for exhibits, to name a few things.

For entertainment, we enjoyed the talents of Vail St. Vrain and her brother Bob Kelly They performed a skit featuring mushroom stories and jokes. They were in costume and provided sound effects. The skit was written by Vail and sometimes incorporated our members into the jokes. We loved it. Our president, Ron Post, MC'd and led us in mushroom song. I didn't know we had so much hidden talent.

Jamie Notman, one of our chef members provided a variety of artisan breads served at each table. Thanks, Jamie, that was a lot of very delicious bread. Marian Maxwell handled a lively auction with mushroom-theme gifts. Over one hundred guests attended. See you at the banquet next year.

EXPLOSIVE-EATING FUNGUS — Barry Fox

Newscientist.com, 21 February 2006
via *The Sporeprint*, L.A. Myco. Soc., March 2006

Could a fungus counter the explosive power of dynamite? That's the idea behind a patent filed by Robert Riggs of Texas.

When explosives are used for mining or demolition, some may fail to detonate and get lost in the rubble. Riggs reckons the remedy could be to mix pellets of dormant fungal spores in with the explosive charge before inserting the wick into the explosive package. The dry spores lie dormant while the explosives are in storage and, if the charge detonates as intended, will get blown to smithereens. But if the explosive fails to detonate, water from the air should migrate down the wick and into the charge. The spores should then germinate and devour the charge, rendering it harmless.

The white-rot fungus *Phlebia radiata* is particularly fond of high explosives, according to the patent. And the speed at which it gobbles the stuff up depends on the number of pellets added: five pellets per stick for slow degradation or 30 to make it safe after just a few days.

MICROSCOPY CLASS — Ron Post

A beginner's class in microscope use will be taught by Judy Roger of the Oregon Mycological Society at the Center for Urban Horticulture on Sunday. April 30, from noon to 6 PM. The cost will be $20, and the class size is limited to 12. PSMS will supply the microscopes and chemicals, but you are welcome to bring your own. Sign up by e-mailing education@psms.org and specifying "microscopy 4/30". Successful completion of this class entitles society members to sign out a PSMS microscope for their own use for periods of one or two months at a time, depending on demand.

MUSHROOM ID CLASSES — Colin Meyer

Beginning mushroom identification classes are being offered this spring on Tuesday evenings, beginning on April 18 and continuing through May 9. Classes will be held at the Center for Urban Horticulture, from 7:00 until 9:00 in the evening.

The classes will focus on learning the anatomy of mushrooms and how to use dichotomous keys for identification. The recommended text is *Mushrooms Demystified* by David Arora. The book will be available for sale on the first day of class, and there will be a few copies available for borrowing from the PSMS library.

The cost for the classes is $30. Registration is available to PSMS members only. The class always fills up, so please do not come if you do not have a confirmed registration. For more information or to register, please e-mail Colin Meyer at education@psms.org (preferably) or telephone (206) 722-6687.

Spore Prints

is published monthly, September through June by the

PUGET SOUND MYCOLOGICAL SOCIETY

Center for Urban Horticulture, Box 354115
University of Washington, Seattle, Washington 98195
(206) 522-6031 http://www.psms.org
User name: Password:

OFFICERS: Patrice Benson, President
Joanne Young, Vice President
David Manus, Treasurer
Dennis Oliver, Secretary

TRUSTEES: Molly Bernstein, Colleen Compton, Marilyn Droege, Steve Haynack, Younghee Lee, Jamie Notman, Lynn Phillips, Carissa Thornock, Doug Ward
Ron Post (Immed. Past Pres.)

ALTERNATE: Luis Felix

SCI. ADVISOR: Dr. Joseph F. Ammirati

EDITOR: Agnes A. Sieger, 271 Harmony Lane, Port Angeles, WA 98362
sieger@att.net

Annual dues $25; full-time students $15

CALENDAR

Apr. 8	Field Trip, Flaming Geyser State Park
Apr. 11	Membership Meeting, 7:30 PM, CUH
Apr. 17	Board Meeting, 7:30 PM, CUH
Apr. 18	*Spore Prints* deadline Beginners' Class, 7:00 PM, CUH
Apr. 25	Beginners' Class, 7:00 PM, CUH
Apr. 30	Micoscopy class, noon, CUH
May 2	Beginners' Class, 7:00 PM, CUH

BOARD NEWS — Dennis Oliver

The March meeting always brings mixed emotions. We sadly said goodbye to our president, Ron Post, and treasurer, John Goldman, and joyfully welcomed our incoming president, Patrice Benson, and treasurer, David Manus. Trustees Colleen Compton and Marilyn Droege were reelected for second terms, to be joined by newly elected trustees Younghee Lee, Jamie Notman, Doug Ward, and Luis Felix as the alternate. All these new officers will begin serving with the April meeting. Joanne Young will fill the remaining term of vice president.

Other business acted upon by the board was setting the annual mushroom exhibit for October 14 at Magnuson Park. The board also voted to offer a microscopy class by Judy Rogers, date to be announced. [See mycroscopy class article on page 1.]

Daffynitions for Mycophiles — Christine Roberts

Decurrant: To pick all the dried fruit out of a scone.
Hygrophamous: Well-known personality in water sports.

MEMBERSHIP MEETING

Tuesday, April 11, 2006, at 7:30 PM at the Center for Urban Horticulture, 3501 NE 41st Street, Seattle

There's more than truth and mushrooms out there. The meeting this month features the expertise of Linda and Roger Urbaniak, whose specialty is collecting and eating wild foods. They will teach us what else to look for when we are searching for mushrooms in the spring and the fall. Learn where and when to find such tasty wild foods as asparagus, blueberries, blackberries, strawberries, a variety of fruits, and unusual foods such as cattails, nettles, liquorish fern, and chestnuts as well as morels and chanterelles. Both instructors are experienced in food gathering, speaking, and writing. Come a few minutes early to taste what they wish to share with us in the way of preserved and foraged spring treasures.

Will persons with last names beginning with the letters M–Z please bring a plate of refreshments for the social hour?

GETTY TRUST BUYS $3.5 MILLION, MOLD-RIDDLED HOME FOR NEW DIRECTOR

The Sporeprint, L.A. Myco. Soc., March 2006

Los Angeles (AP) - The J. Paul Getty Trust bought a $3.5 million home for its new museum director but soon found the dwelling was uninhabitable owing to mold contamination, officials said.

Representatives of the beleaguered tax-exempt trust said they relied on a 2004 report indicating there was no fungus in the 70-year-old, 4,900 square-foot West Los Angeles home that they bought for Michael Brand last October. But Valerie Fitzgerald, a leading Coldwell Banker agent in Beverly Hills, said she was surprised the trust didn't have a $300 to $500 basic mold inspection done "just for peace of mind."

And U.S. Sen. Charles Grassley, R-Iowa, chairman of the Senate Finance Committee, said he thought the home's price was excessive. "Apparently Getty officials didn't get the word that 'Lifestyles of the Rich and Famous' went off the air in 1995," said Grassley, whose committee oversees the Internal Revenue Service, which regulates tax-exempt organizations. "Champagne wishes and caviar dreams still seem to rule the day there."

The federal tax code does not define excessive spending but requires nonprofit organizations to provide "reasonable" compensation for employees, according to Frances Hill, a professor at the University of Miami School of Law.

Brand, whose annual salary is about $480,000, disputed the notion that the house was bought for him. "This is a house being bought for the museum," he said.

Getty board Chairman John Biggs said the trust is "desperately" trying to get its money back. Officials have consulted attorneys about a possible lawsuit. "That house is not going to work out, and I think we're going to essentially come out even," Biggs said.

Meanwhile, the Getty is paying $15,000 a month to rent a home for Brand.

The ill-fated home purchase is the latest controversy to rock the $7 billion trust, which oversees the J. Paul Getty Museum and divisions of art conservation, research, and philanthropy.

The trust's former antiquities curator, Marion True, is on trial in Rome for allegedly trafficking in looted artifacts. And the California attorney general is investigating spending by former Getty Chief Executive Barry Munitz to determine whether it jeopardizes the organization's nonprofit status. Munitz resigned last week.

UPCOMING FIELD TRIPS — Cathy Lennebacker

April 8 — **Flaming Geyser State Park**
(300 ft elev., 35 miles southeast of Seattle)

From I-405 take Highway 169 (Black Diamond/Maple Valley Highway) heading east. Three miles south of Black Diamond, turn right onto Green Valley Road (you should turn off before you reach Enumclaw). Drive about 3.5 miles and turn left into Flaming Geyser State Park on SE 354th Street. The park runs along the Green River. Look for the PSMS signs at a picnic shelter close to this entrance. *Note: The $5.00 fee for each car parked within the park has recently been recinded.* Identifier: Brian Luther.

Important: Read the accompanying article by Brian Luther about the new requirements for collecting in Washington State parks, as these requirements will be in effect on this field trip—and at all other State parks where PSMS has scheduled field trips.

REQUIREMENTS FOR MUSHROOM COLLECTING IN WASHINGTON STATE PARKS — Brian Luther

With regulation changes that went into effect in September 2005, we are now required to have an approved Scientific Collecting Permit at all Washington State Parks. Without this, we cannot have field trips to these locations and cannot legally collect fungi for the educational displays that are an essential part of all our field trips.

I just received confirmation from the State of Washington that renewal of my mushroom collecting permit, on behalf of PSMS, for Washington State Parks for 2006 has been approved. This authorizes us to collect for scientific, educational and culinary purposes this year in Flaming Geyser State Park and later in the year in fall at both Twanoh and Deception Pass State Parks.

Obtaining the permit is just the first step. All species collected must then be fully documented and a report submitted prior to the deadline set in the permit requirements. Several other things are also required.

In order to fulfill the requirements of these regulations, you (as the collector) **must follow the following procedure regarding mushroom specimen collecting at Washington State Parks.** I also need to talk about a recent problem that was brought to my attention by the park manager of Deception Pass State Park and is equally applicable to all Washington State Parks.

The detailed report that I have to submit to Washington State at the end of the mushroom season includes:

1. A list of all species found
2. Their frequency of collection (how abundant or rare)
3. Basic info on the area of the park and general habitat the fungus was collected in
4. Associated trees and shrubs (mycorrhizal, or non-mycorrhizal).

In order for me to satisfy all these requirements I must ask that you all follow my collecting data guidelines in the future, as follows:

1. *Collect only a small amount of the fungus.* If there are several fruiting bodies, then bring in only a few, not everything you find. Leave some (edible or otherwise) for others. Never hoard.
2. *All collections made need to have a small slip of paper briefly describing where in the park they were found, general habitat, and any associated trees.* If you don't know the trees, no problem—just bring to me or include a small cone, small branchlet, or a leaf or two with the specimen. A brief comment like "under conifers on the upper trail" or "under hardwoods by the stream," or a specific tree, is needed. I am going to request that a special order of small forms be printed specifically for this purpose. This is nothing new; it's just that most mycophiles are not aware that this field data is SOP for all scientific collecting by mycologists. It's time that we got into the habit of doing it consistently and **my permit report requires this information.**

Also, I recently received a message from Jack Hartt, the Manager (= head ranger) of Deception Pass State Park, describing a problem that's a direct result of people collecting mushrooms in this beautiful place. Last November (2005) three organized mycological events took place at Deception Pass State Park within just a couple of weeks, and apparently the aftereffects were noticeable to the park management. Numerous unsightly holes were found all along pristine trails and high visibility areas where people had pulled up mushrooms, but never bothered to fill in the holes afterwards. For us to continue to have collecting privileges in Washington State Parks we all must be diligent about treading lightly, or we may lose these privileges. As Identification Chair, this is what I am now requiring all of you to do, without fail, in the future when collecting in Washington State Parks, in addition to what I've mentioned above.

3. *Do not use any form of a digging implement* (trowel, shovel, etc.) for removing a specimen. If necessary, use a small stick that does not create a large, uniform pit where the mushroom was removed. A collecting or hunting knife is fine as this is not much different from using a stick on the ground and doesn't create an unnatural looking hole.
4. *Fill in the hole.* If you don't know the mushroom and need to collect the whole specimen, including some of the forest duff for a positive ID, then remove as little forest duff as possible and fill the hole in completely and stamp it down, so there is absolutely no indication that we've tampered with the environment. With some species it is unavoidable that you need to dig down and collect the whole stem, and I understand that. If however, you already know the mushroom and don't need the whole specimen for us to give you a positive ID on it, then cut it off at the base to avoid pulling out forest duff whenever possible, but do so by cutting down into and well below the duff which will normally, but not always, ensure that you get the whole fruiting body.
5. *Do not collect along paths or in any high visibility areas.* Do your collecting away from scenic paths. This also needs to be SOP from now on. If something rare or highly unusual is spotted along a path, then collect it with utmost discretion following all of my above guidelines, but please avoid high traffic areas and trails at all cost. Use the paths as your conduits and then head into the woods for actual collecting, as far off the trails as possible. Even if off the beaten paths, deep in the woods, you *must* fill in any holes created by mushroom removal.

We have an excellent field trip scheduled for Flaming Geyser State Park on April 8, and I would appreciate your full cooperation in implementing the procedures and guidelines I listed above. I will have a brief training session early Saturday morning at Flaming Geyser.

Thank you for your attention to these important collecting details. I look forward to seeing you at Flaming Geyser State Park.

AUTHORITIES BUST MUSHROOM RING

Hildey Medina, *Santa Barbara News-Press*, February 9, 2006
via *The Sporeprint*, L.A. Myco. Soc., March 2006

With some timely sleuthing and a little luck, sheriff's detectives say they busted a ring of elusive Eastern European mushroom poachers who officials say preyed on the coveted chanterelle fungus for several years. "The Czechoslovakians were bragging that they were so sophisticated and cagey that they'd never get caught," said Lt. George Gingras. "But it's like anything—you do it long enough and you'll get caught."

Evidence recovered from a car belonging to one of three suspects, arrested on February 3, included GPS location equipment, walkie-talkies, journals listing locations of prized mushroom patches, and sheets detailing the sale of $10,000 worth of stolen mushrooms, authorities said.

"When they find a mushroom patch, they log in the coordinates on the GPS, and the next year they home right in," said Lt. Gingras.

Deputies also recovered several thousand dollars' worth of chanterelles—described as having a fruity smell and peppery taste—from a Lompoc motel. The mushroom, which grows on oak-bedecked hillsides in this county, can sell for $10 to $20 a pound "on the street" and retails for about $25 a pound.

The fungus is generally yellow and funnel-shaped, though California varieties are usually white. Efforts to cultivate the mushroom have not been successful.

The arrests almost immediately followed a talk February 1 on chanterelles that local ranchers gave to the sheriff's rural crime unit. The ranchers alerted deputies to "several Czechoslovakian males who have been the most prolific thieves," said Sgt. Erik Raney. "They described them as tall, thin, and coming from up the north, possibly Oregon." Authorities had little more information on their quarries' national origin. Czechoslovakia split into the Czech Republic and Slovakia in 1993.

The day after the talk, Deputy John McCarthy came across a car parked outside Celite Corp. property on Miguelito Canyon Road in Lompoc—prime hunting grounds for chanterelles. Not long after, at about noon, the deputy saw two Lompoc men, Eugene Anthony Segura, 41, and Kasey Elaine Amick, 40, "coming out of the hills" on the private property.

Investigators found a stolen handgun under the driver's seat. Mr. Amick was cited on suspicion of trespassing and having an open container. Mr. Segura was cited in connection with the concealed handgun, reported stolen in Lompoc in 1998, and trespassing. The pair was also suspected of harvesting chanterelles and a petty theft complaint will be sought, said Sgt. Raney.

However, the pair's activities were unrelated to other fungus rustling, authorities said.

The next day, Deputy McCarthy spotted a car on Miguelito Canyon with Washington license plates. The car was registered to Josef Vychodil, someone the ranchers had fears about, said Sgt. Raney.

Authorities staked out the car until Mr. Vychodil emerged and drove off. Deputies pulled him over and saw a "big lump of something" covered up in the back seat, said Sgt. Raney. That lump, authorities said, turned out to be freshly picked mushrooms.

"We asked him where he got those, and he said he picked them 'on the side of the road,' " Sgt. Raney said. "Well, we know there are no mushrooms growing on the side of the road."

Mr. Vychodil, 52, of Seattle was arrested on suspicion of trespassing and grand theft. Two other men. Maxim Mikhailytchev, 24, of Vancouver, British Columbia, and Lucas Vrana, 29, of Seattle were located in a Lompoc motel and arrested on suspicion of conspiracy and grand theft.

PREGNANCY TEST MAY LIE BEHIND DEADLY FROG FUNGUS

Ed Stoddard

The Sporeprint, L.A. Myco. Soc., March 2006

Potchefstroom, South Africa (Reuters) - What do an old pregnancy test for women and a mysterious fungus that is killing frogs have in common?

Plenty, according to researchers at North-West University in South Africa, who believe they have traced the spread of the killer fungus to trade in the African clawed frog (*Xenopus laevis)*, used for decades in a bizarre but effective way of determining pregnancy.

"We think we have traced the origin of the spread of the amphibian chytrid fungus to the 'frog' pregnancy test for women, which was widely used from the 1930s to the 1960s," said Che Weldon, a zoologist at North-West University who has been researching the phenomenon.

That test involved taking the urine of a woman and injecting it into an African clawed frog. If the woman was pregnant the hormones in her urine would stimulate ovulation in the frog and it would spawn within a matter of hours.

The species was exported to labs around the world in huge quantities from South Africa from the 1930s—the decade in which Weldon has traced the first recorded case of the fungus by examining preserved frogs in museum collections.

Some of the exported frogs were released or escaped into the wild, where it is believed they spread the fungus, which can move quickly through a water system and can jump from one frog species to another.

The first case of the fungus recorded outside South Africa was in 1961 in Quebec, Canada.

Adding weight to the case for an African origin is the fact that the fungus is widespread in southern Africa, but frogs in the region appear to have developed a resistance to it. However, it remains unclear if its roots are in southern Africa or elsewhere on the continent. Frogs here for the most part are resistant to it. Some do succumb to it, but we have not witnessed the mass die-offs experienced elsewhere," said Weldon.

The African clawed frog itself shows no clinical symptoms of the disease, which means it is the perfect vector: a carrier which does not die from the fungus. However, other species in southern Africa are not resistant, although there are none of the die-offs recorded in other parts of the world.

The clinical signs are obvious to experts: crazy frogs. "The symptoms are neurological and seem to affect their behaviour," said Weldon. River frogs, for example, are found far above the water level in plants and even high up in trees. Nocturnal species come out in daylight.

"This river frog is infected. I picked it up a metre high in a fern," said North-West University zoologist Louis du Preez as he lifted the lid of a plastic container to reveal a small, strikingly green frog.

Frogs infected with the fungus also display an excessive shedding of their skin.

The fungus is having a devastating impact on frog populations around the world, lending a sense of urgency to the research being done here. "You have to go the origin of the disease. The idea of 'out of Africa' is still a hypothesis, but it has a lot of support," said du Preez.

Another team of researchers said in early January that the fungus has killed entire frog populations in Central and South America.

Du Preez said it had been detected in the Americas, Africa, Australia, and Europe but, so far, not Asia.

"It probably hasn't been found in Asia yet simply because scientists have not made a concerted effort to find it there," he said.

About a third of the 5,743 known species of frogs, toads, and other amphibians are classified as threatened, according to the Global Amphibian Assessment.

Up to 167 species may already be extinct, and another 113 species have not been seen in recent years. Habitat loss is a major threat, but species have also died off in pristine environments, pointing to other causes such as the fungus.

"We fear that species are even being wiped out before they have been described by science," said du Preez.

The team is off this month to the Indian Ocean island of Madagascar to see if the fungus is present there. Madagascar, famed for its weird and wonderful wildlife, is home to about 250 frog species, all but one of which are found nowhere else, according to du Preez.

The ecological stakes are high.

"Amphibians are right in the centre of the food chain. They keep insect numbers down and serve as food themselves for many species, including wading birds, reptiles, and even fish," said Weldon.

"If you remove that link you remove an enormous flow of energy from the ecosystem," he said.

MINE OR YOURS?

Terri Layton

NJMAnews, New Jersey Myco. Assoc., March–April 2006

It's October, and it's the porcini (aka *Boletus edulis*) season. October also happens to be our wedding anniversary, and to celebrate the occasion my spousal component (Phil) and our little doggie family (Freida and Heidi) went on a daylong hiking trip up by the Delaware Water Gap.

Along the way we saw all kinds of mushrooms, and I was happily rattling off names of fungi (in Latin, mind you). Probably half were right, but who would argue? Certainly not the dogs, and most certainly not my husband. He is far less knowledgeable about mushrooms than I am, and he is an astute individual who knows the consequence of arguing with me from years of getting beat over the head.

Anyway, my husband literally stumbled onto these gigantic mushrooms and exclaimed "Look what I found!" I glanced over in his direction, and the conversation went something like this:

TERRI: (slowly pronouncing each syllable) Oh…My…God!

PHIL: (fast and choppy) What? What? What?

TERRI: (screaming) These are porcinis! *Boletus edulis*! King Boletus!

PHIL: (clutching his heart) Don't scare me like that. I thought you stepped on a snake.

TERRI: (still screaming) I don't believe it!!

PHIL: (stupefied) Is that good?

TERRI: (agitated) THESE ARE PORCINIS! THE BEST edibles!

PHIL: (grinning from ear to ear) Did I do good?

Well, I don't have to tell you what came next. I got down on my hands and knees (after all it was a religious experience) and harvested. I think I had about 6 lbs of prime stuff. I did leave a few little ones for the next lucky person, not because I am magnanimous but because they were so tiny I would have had to use forceps or chopsticks to pick them. (I carry lots of things in my backpack but not those.)

Anyway, about a week later I was bragging (keeping my mouth shut is not my strong suit) about my find at one of our forays. A big mistake. Among the listeners was none other than someone we'll call "The Big Bad Wolf." As I was describing the general location (another big mistake), to my shock and to everyone's amusement, the Wolf shouts, "I think that's MY SPOT." And I thought, "Oh, $*!."

Needless to say, Mr. Wolf and I had a private conversation (under some duress), and it turned out I was in "his spot." Immediately I started to apologize (another mistake). I told him that I shared them with some of our members (are we up to mistake #4?) as if this was going to make him feel better (fat chance). I swear I detected moisture gathering in Mr. Wolf's doleful eyes. Later, at our Christmas meeting, Mr. Big Bad once again reiterated that I harvested HIS SPOT. He confessed, however, that he had managed to get a few *Boletus edulis* there. I think he was referring to the little ones I left behind. BUT, did he thank me? NOOOOoooo.

To digress a bit from my main story, last August on my way to work I drove past an old oak tree with chicken mushrooms (*Laetiporus sulphureus*) just starting to peek out. My initial excitement was rapidly replaced by an overwhelming sensation of impending doom as the realization came to me that if I could spot it from my car so could others, especially the slowpokes. Each time I approached the tree, my heart would flutter from both anticipation and panic as the mushrooms got BIGGER and BRIGHTER. Talk about needing psychiatric help.

Thankfully, and to my amazement, no mushroom snatchers were about while they were getting plumper by the day. At one point I entertained the idea of tacking up a brown paper bag to conceal them. (Hey, desperate situations call for desperate measures.) One Friday, I picked the big plump ones and left the small ones for the following Monday. Of course I was taking a chance on weekend theft, but what could I do? They were too small to harvest, and I couldn't very well pitch a tent by the tree and get arrested for trespassing. By the way, did you know that one of our members (who shall remain nameless) got questioned by a police officer while looking for fungi (or did he say a "fun-guy") in the middle of a night?

Cont. on page 6

Mine or Yours?, *cont. from page 5*

Anyway, getting back to my chicken-mushroom story, the following Monday, as I approached the tree, my heart suddenly plummeted into my tummy. You guessed it—some rotten human being had stolen the rest of my mushrooms! And left nothing. Nil, zilch, zero, nada. I almost cried but opted to curse instead, and I cursed all the way to work.

The reason for my digression here was that after the chicken-mushroom episode, I can really empathize with The Big Bad Wolf on what he went through or is still going through.

So what have I learned from all this? Some dos and don'ts when you find the big ones:

1. Don't give out the location. This includes park or state name.
2. Don't agree with him/her even if they figured out where the spot was.
3. Do deny it even if he/she figures out you are lying.
4. Don't apologize. This is a sure giveaway.
5. Don't tell how much you harvested. Limit it to one pound or less. Less is definitely better here (more or less).
6. Don't say how delicious it was. Say, "It was OK."
7. Do share with family and friends who appreciate the finer things in life.
8. Do leave tiny ones for the next person.
9. Don't do anything to attract the local police, like foraying with a miner's hat or flashlight.

PS: Sorry Mr. Big Bad. Early mushroomers get the porcinis.

PPS: Can we take a vote? Is it mine or the Wolf's? I need a plan of attack for next year.

[*NJMA Editor: If two or more people find the same great collecting area, the mushrooms belong to whoever gets there first. On the other hand, if someone takes you to their spot, then you MUST contact them before returning on your own. The lowest form of collector is the person who poaches in someone else's special spot after having been first taken to that location by the original collector.*]

SLIME MOLD INCITES MOTION IN ROBOT

Tracy Staedter, *Discovery News*

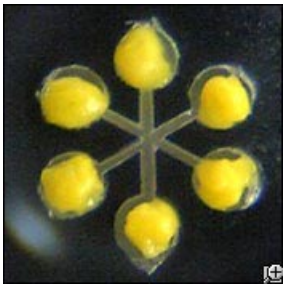
February 23, 2006 - For the first time, signals generated by a living cell have resulted in the locomotion of a six-legged robot, report Soichiro Tsuda and Yukio-Pegio Gunji from Kobe University in Japan and Klaus-Peter Zauner from the University of Southampton, United Kingdom. In the long run, the coupling of cells and machines could lead to hybrid robots with the flexibility to adapt to unforeseen situations that arise in complex environments—a quality that is extremely difficult to program into a computer but is demonstrated in every living organism.

"I think Zauner and Gunji have made the first step to creating a robo-cop," said Andrew Adamatzky, professor in unconventional computing at the University of the West of England, Bristol, and editor of the *International Journal of Unconventional Computing*. Adamatzky is not associated with the study.

The researchers used the single-celled organism, *Physarum polycephalum*, a slime mold able to grow up to several meters in diameter. In nature, slime molds thrive in dark, moist places. If exposed to the sun or some other repulsive stimuli, the mold will move, amoeba-like, to the nearest shady, damp place.

This behavior is linked to oscillations of thickness in the cell. For example, when a region of the cell senses an appealing condition, such as moisture or warmth, it will oscillate faster. If a region senses something unappealing, such as light, it will oscillate more slowly. It's these oscillations that the team captured and converted into leg motion on the robot.

First, they grew the cell in a Petri dish so that it formed the shape of a six-pointed star—each spoke correlating to a leg on the robot. They then placed the dish on a clear table. Below the table, the scientists positioned an orange light, a color the slime mold does not react to. Above the table, they situated a digital camera and a projector that flashed white light, which the mold does not like.



Using the projector, the scientists flashed a pattern of white light onto different spokes of the mold. The light induced oscillations in the mold, causing it to become thicker in some areas and thinner in others.

The digital camera captured the signal—the varying thickness—by imaging the brightness level of orange light shining up from underneath the mold. A computer converted patterns of oscillations into motions on the robot.

"We have confirmed that we can get different robot motions—straight walk and random direction change—if the type of oscillatory patterns we detect in the slime mold cell are applied to the legs of the robot," said team member Tsuda, who is currently working on his Ph.D. in the Department of Science and Technology at Kobe.

For example, signals that peaked one after another in a clockwise fashion resulted in the robot turning, and signals from two opposing spokes that peaked in an alternating pattern resulted in a straight gait.

According to the researchers, the cell has the added advantage of repairing itself. If one part of the spoke is cut away, the cell will regrow. And like all living organisms, the cell has natural repair mechanisms built into its DNA.

The one problem with the results is that the slime mold was not onboard the robot, said Adamatzky. "It's like putting a car driver in the house and letting him control the car on the highway remotely, without even looking at what is going on on the road."

According to Tsuda, whether the technology becomes an integral part of the robot control or whether it is used only as a research tool is yet to be determined.

WATER LAUNCHES SPORES LIKE A ROCKET

Elizabeth Pennisi, *Science*, 20 January 2006
via *Mycolog*, Humboldt Bay Myco. Soc., March 2006

It takes just a little water to send mushroom spores flying—and fast. Using a video camera that records 100,000 frames per second to capture a process never before witnessed, Nicholas Money, a mycologist at Miami University in Oxford, Ohio, has figured out the pivotal role water plays in the moments leading up to a fungal spore's rapid takeoff. The liquid can accelerate a spore more than 10,000g, the equivalent of almost instantaneously propelling a human 600 kilometers per hour.

"The spores took like little cannon balls" says Elizabeth Brainerd, a comparative morphologist at Brown University, who has seen the video.

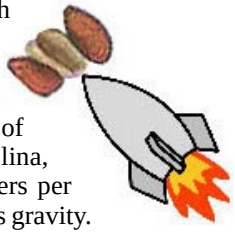
Money studies how the honey fungus (A*rmillaria mellea*), a pathogenic mushroom that infects about 500 woody plant species, spreads. To do that, he has begun with the first step in dispersal: the launching of spores.

His graduate student Jessica Stolze has found that once formed, the spores secrete sugars and sugar alcohols, which suck water out of the air. A drop then forms on a stalk at the base of the spore and expands until it makes contact with the rest of the spore surface.

At that point, the water "rockets over the spore, and its motion pulls the spore off its perch," says Money. Surface tension supplies the energy for this ballistic event, he explained. If someone disturbs the drop, say, with a micropipette, the spores stay put. Bigger drops move faster over a spore and shoot it farther, he notes.

This rapid-fire ejection is critical for spore dispersal. Taking off "is relatively difficult to do because small things have high drag," Brainerd explains. A spore's water-propelled flight may barely be a millimeter long, but on a good day, that distance gets the spore into an air current that whisks it away to a new home.

Of the 74,000 fungi, about 40 depend on water droplets to propel spores. But there are other innovative launch strategies. Money is beginning to study fungi that shoot spores out of tubes akin to pressurized cannons. The speeds attained this way can be remarkable. Steven Vogel of Duke University in Durham, North Carolina, estimates that spores can travel 34.5 meters per second, with accelerations of 870,000 times gravity.



THE WAR BENEATH

Susan Goldhor

Boston Mycological Club Bulletin, Vol. 61, 2006

By the time you read this, spring will be here. The soil will be warming up, and the activity levels of the millions of creatures in each spoonful will be increasing. As you walk through the woods, squelching through the mud, brushing away the black flies, and dreaming of morels, spare a thought for the wars that are raging underfoot.

Think of the hundreds—possibly thousands—of mycorrhizal species linking together the roots of the trees and shrubs, grabbing hold of sugars, handing out minerals, taking from the rich to give to the poor, and sequestering more or less of the bounty for their own purpose: survival. Imagine the battles going on between one fungus and another, and between fungi and bacteria. Imagine the genetic engineering going on, as pieces of DNA move from one organism to another, transmitted by plasmids or, perhaps, by the mycorrhizal net itself. Imagine the minute arthropods that munch on the fungi, and those fungi that attack and consume arthropods. Imagine the underground arms race—the chemical and biological weapons being developed and tried in a world where every cubic millimeter is a test site.

Because this, the ground beneath your feet, is where the real action is. This is where the decisions are made as to which plants will flourish and which will barely survive and which will die. This is where the big-time carbon is sequestered. This is where the rot fungi hang around, waiting for a weakness that they can exploit, moving into the hearts of trees and eating them from the inside out. This is where the machinery lives that keeps the dead wood and the fallen leaves from taking over, and returns them to the soil. The forest's life and death, its thieves, its benefactors, its murderers, and its undertakers are all here. And every now and then, for its own reproductive purposes, one of those thousands of fungi will send up a mushroom. And maybe—if we're in the right place at the right time—one of us will pick it and think that we know something.

MUSHROOM OF THE MONTH

Dick Sieger

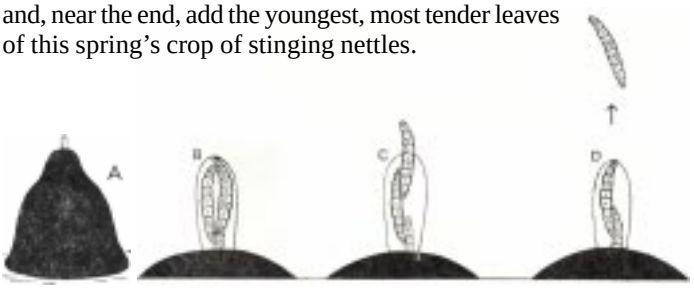
Not all of the common mushrooms that fruit in the spring are large and mouth-watering. Some of the more interesting are tiny specks barely visible to the naked eye. The next time you're out during *Verpa* season, take along a 10× hand lens and look for some dried up canes of last year's nettles (*Urtica* spp.). They shouldn't be hard to find, as nettles grow in many of the same places *Verpa* do.

When you find some, you will notice that most of the canes are covered with black stains, on some of which are colonies of tiny, hard, black cones a half millimeter ($^1/_{64}$ inch) across. These cones are the fruiting bodies of the nettle-rotting fungus *Leptosphaeria acuta*.

Leptosphaeria acuta, like *Verpa bohemica*, is one of the Ascomycetes, but the method it uses to produce its spores is much different. The spores of Verpas, morels, and just about all of the other Ascomycetes that foragers collect are produced in single-walled asci that line an outer surface of the mushroom. *Leptosphaeria acuta* has double-walled asci that are enclosed in a pseudothecium.

The pseudothecium looks like a tiny volcano with an opening (ostiole) at its tip. Inside each pseudothecium are many asci. Each ascus is a double sack, one inside the other. The inner sack holds eight spores that are narrow at each end and have six to ten cross walls. One at a time, in turn, the asci discharge their spores. The weak tip of the rigid outer sack breaks, and the pliant inner sack expands violently. It pokes through the ostiole, splits, discharges its spores, and shrinks to make room for the next ascus.

Edible? Well, you can't eat *Leptosphaeria acuta*, but you can make a fine risotto with its host. Cook the rice with some mushrooms and, near the end, add the youngest, most tender leaves of this spring's crop of stinging nettles.



A. *Perithecium of* L. Acuta *with tip of an ascus protruding.* B–D. *Apex of perithedium showing successive spore discharge from protruding ascus.*

PAPPARDELLE WITH MIXED WILD MUSHROOMS

Recipe courtesy of *The Naked Chef*, Jamie Oliver, Hyperion

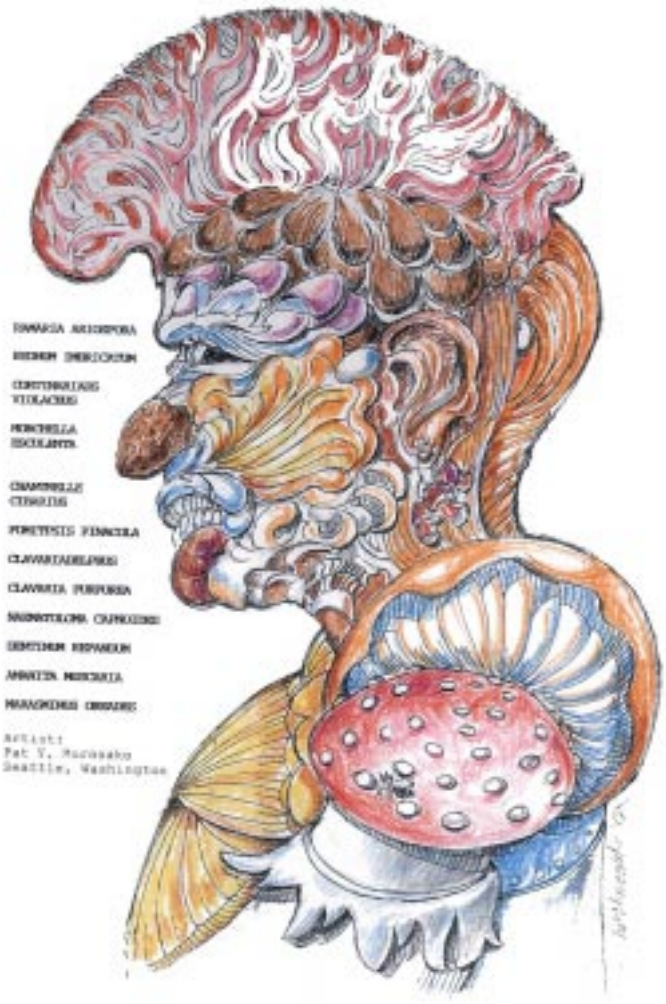
These days there seems to be more and more of a choice of wild mushrooms in the supermarkets. They are not always stored and displayed as I think they should be—I don't like sweaty mushrooms in plastic containers—but I'm sure things will get better. Even as a chef I am surprised to see chanterelles and black trumpets popping up throughout the year as well as the more predictable cremini, shiitake, morels, button, and oyster mushrooms—there is a lot of choice.

9–11 ounces mushrooms (I would probably buy around 14 oz of mushrooms, as you have to trim a bit off)
3 tablespoons olive oil
1 clove of garlic, finely chopped
1–2 small dried red chilies, pounded or very finely chopped
Salt and freshly ground black pepper
Juice of ½ lemon
1 pound pappardelle noodles, dry
A small handful of grated Parmesan cheese
1 handful of fresh flat-leaf parsley, roughly chopped
2 ounces unsalted butter

Brush off any dirt from the mushrooms with a pastry brush or a dish towel. Slice the mushrooms thinly, but tear chanterelles and blewits in half. Put the olive oil in a very hot frying pan and add the mushrooms. Let them fry fast, tossing once or twice, then add the garlic and chilli with a pinch of salt (it is very important to season mushrooms *lightly*, as a little really brings out the flavor). Continue to fry fast for 4–5 minutes, tossing regularly. Then turn the heat off and squeeze in the lemon juice. Toss and season to taste.

Meanwhile cook the pasta in boiling salted water until al dente. Add to the mushrooms, with the Parmesan, parsley and butter. Toss gently, coating the pasta with the mushrooms and their flavor. Serve, scraping out all of the last bits of mushroom from the pan, and sprinkle with a little extra parsley and Parmesan.

Serves 4.



***Spore Prints* always welcomes articles contributed by our members and friends.**

Puget Sound Mycological Society
Center for Urban Horticulture
Box 354115, University of Washington
Seattle, Washington 98195

RETURN SERVICE REQUESTED

Non-Profit Org.
U.S. POSTAGE
PAID
SEATTLE, WA
PERMIT NO. 6545