

Spore-Addict Times



The Newsletter of the Pikes Peak Mycological Society

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MONTHLY MEETING:

WHEN? Monday, June 23, 2008 – The fourth Monday of the month.

WHAT TIME? 6:00 PM; the meeting will come to order at 7:00 PM. We are continuing to offer a one-hour study class before the general meeting for those interested in studying and identifying mushrooms.

WHERE? Pikes Peak National Bank, 2401 W. Colorado Ave. (across from Bancroft Park). Enter at the door on Colorado Ave., just west of the bank door. There you will find stairs and an elevator. You may use either. The room is on the second floor near the head of the stairs.

PROGRAM:

Our guest speaker this month will be Mr. William J. Whatley. He will speak on his experiences working with wild plants and fungi during his 32-year career as a professional archaeologist but primarily on his adventures working with the traditional medicine societies and healers at the Pueblo of Jemez. This includes the search for, and gathering of, specific plants and fungi they use in healing treatments and curing ceremonies, as well as for the cleansing of the body and spirit. Readers may enjoy looking at the November 2000 issue of *National Geographic* Magazine to learn about the "repatriation" of over 2000 of their ancestors' remains from Harvard University, which required reburial in New Mexico (involved use of traditional plants). He was the lead coordinator and Principal Investigator for this repatriation, which took almost 9 years of negotiation and legal wrangling. He considers this to be his proudest achievement of his career. In addition he will tell us about some interesting work that he is doing today.

This promises to be an exciting evening. Don't miss it!

The post-meeting goodies will be provided by Jeannene Helvelka and Aericha Burroughs.

PRESIDENT'S NOTES: by Elsie Pope

Dry, dry, dry! Is there any moisture out there? What do mycologists do when they can't find much to study in the wild? They go back to the books and practice up on the basics. Lee Barzee's study sessions make us stir our brains and prod us to read up on the things we thought we knew. Lee reminds me of the old-time one-room schoolhouse teacher; she has to deal with all levels of learning from beginners to knowledgeable mycologists and all levels in between. It was decided that we should add some extra study sessions into our schedule. Esther Price has secured our regular meeting place for 6:00pm on June 2, July 7, August 11 and September 8. Put these dates on your calendar and read the book! (Vera Evensen's "Mushrooms of Colorado") I learned two very important facts from the May 19 session: Study, but do not ingest LBMs (Ed. – That is "Little Brown Mushrooms" for the uninitiated), and study, but do not ingest any of the family Cortinariaceae, quoting Vera, "perhaps the most ubiquitous and important members of the Rocky Mountain mycoflora."

Esther Price gave us an excellent presentation base on the Survival Pack insert in the May issue of *Spore-Addict Times*. We found it amazing and amusing to learn how much can be stuffed into a survival pack – if you can lift it! Lesson – keep a basic pack with the essentials you can't do without – one that you can lift, and don't leave home without it.

(ed. – The following was presented by Esther Price at the May meeting and was requested to be reprinted herein. Its origins are not entirely known.)

FORAYS PROVIDE OUR MEMBERS WITH FIELD EXPERIENCE AND GOOD FIELD EXPERIENCE FORMS THE FOUNDATION OF REAL KNOWLEDGE OF THE FUNGAL WORLD.

Forays provide our members with field experience and good field experience forms the foundation of real knowledge of the fungal world. In short, I want to make sure everyone understands the duties of foray leaders, participants and general etiquette for forays. It is inherently difficult to plan a hunt for a particular mushroom a full month before that mushroom has come up, therefore a foray is no guarantee we'll find mushrooms.

Foray leaders generally arrive 30 minutes early and ensure that everyone signs the release form. Once everyone has arrived at the foray location the leaders give a short introduction that includes a basic lay of the land (so people don't get lost) as well as a designated time and place to meet at the end of the foray.

After hunting, people congregate at the meeting place, have lunch, socialize, go through each other's finds, and lay out the mushroom finds in a common area. At this time, the identifier(s) assigned to the foray will go through the findings and talk about the mushrooms they know. Participants are encouraged to go through their field guides and keys and work on identifying unknown mushrooms. When I first started mushrooming, I had a goal of learning one new mushroom on each foray. I took field notes about the habitat, drew some pictures, and briefly described the salient characteristics of the mushroom. When I got home, I'd go through my notes and read about that species in my books. I would find other pictures of it, learn its habitat, and read about the mushrooms that look like it. I still do this on every foray, and suggest that new mushroomers do this as a way to learn new mushrooms. Reading about mushrooms and looking at pictures is great, but there is no substitute for studying a mushroom that is physically in your hand and talking to people in the field who have experience with that particular mushroom.

Responsibilities of participants:

Encourage carpooling for two reasons. First, many of the locations we travel to have a limited vehicle capacity. Second, gas is expensive. We highly encourage all participants to carpool from the meeting spot as well as give the driver some

cash for gas. It is important to keep in close contact with the people in your car throughout the foray: if you are late the rest of your car will be severely inconvenienced. If you go home with someone else, please make sure that you let your driver know. On every foray, there are always a few people who have to leave a little early and there are always a few people who want to stay a little later and hunt some more. It is your responsibility to carpool in the right vehicle.

A list of suggested equipment participants should bring on forays includes: food and drink, a basket or mesh sack, wax or paper bags, a knife, a brush, a magnifying glass, a whistle, compass, and mushroom key. Please be prepared for appropriate weather – conditions on forays range from trudging through snow and mud on the annual snowbank mushroom hunt to mid-afternoon thunderstorms on our August or September hunts. Please be prepared for the worst.

Let the leader know if you need to leave early. If you are a driver, do not leave the foray site before making sure that all of your passengers are accounted for.

Collecting Mushrooms:

Collect mushrooms properly. Try to collect a few good specimens of each species for identification. Take some field notes and make sure to get the entire specimen. If you don't provide habitat and growing conditions, it is likely that we can only give a best guess as to its identification. Place each species in a separate paper bag, do not simply place every mushroom in your basket - you wouldn't want to mix up a deadly *Galerina* with a delectable *Flammulina*! If you have to dig up mushrooms, cover up any trace you were there. If you see where others have dug for mushrooms, take a moment to cover up their divots – the mycelium will reward your effort next year.

If you pick a mushroom and decide not to bring it back, place it gill side down in an inconspicuous location – don't just toss it over your shoulders or set it near the trail. Never pick every specimen you find; always leave a few specimens for others to find, and always leave the smallest ones behind so they will mature. At the end of the foray, do not dump your species at the end of the parking lot – make sure to dispose of them correctly in the woods. Lastly, never eat a mushroom unless you have verified the identification and safety of the species with a club expert.

Contrary to popular belief, the primary function of a foray is an educational experience, not for people to bring home a few pounds of choice

edible mushrooms. I encourage experienced hunters to let a newbie tag along with them for a while. I encourage everyone to take a few moments before they pick a mushroom and look at surrounding trees, look at its growth pattern, and call a few people over to appreciate it as well. People can find mushrooms much easier when they can match a sample based on a target 'template'. Looking at a mushroom in its natural habitat from several different angles allows people form the template, so they can effectively scan the environment looking for a match – and their own little mushroom spot. Lastly, I encourage people to share a few mushrooms with a friend who wasn't as lucky as they were, or give their driver a couple of extra boletes.

I hope this article encourages you to volunteer to lead a foray and ensures you have the tools for the simple preparation of a successful foray as well as inform individuals about what they can do to make the foray enjoyable for both themselves and others. See you on the forays!

FORAY REPORT:

There were no scheduled forays since the last meeting. Beaver Creek yielded not one morel this year. Calypso orchids were found during a hiking trip in Woodland Park. These orchids are a well known indicator for *Morchella angusticeps*, but the finicky fungi were no shows.

FORAY SCHEDULE

To go on any of the forays simply call the leader to find out where and what time to meet. You must have your dues paid for the current year and you must have a signed liability waiver on file to go on forays. **If you want to lead a foray call Esther Price at 632-5880. Esther is also the contact for ad hoc forays. Check with her to see if anyone has decided to go on an ad hoc foray that does not appear on the schedule.** Some forays will probably be to unscouted areas. Foray leaders do not guarantee success.

- Sat. June 28, Jack Richards (719) 591-6996
- Sat. July 12, Pat Gustavson (719) 495-4344
- Sat. July 26, Frieda Davis (719) 630-7140
- Thurs. August 7, Eva Mattedi (719) 687-9848
- Sat. Aug. 23, Dennis Craig (719) 596-5676

There will be two possible overnight forays: one to the wet mountains; and a September foray to Creede via Lake City. Keep in touch through your foray leaders, PPMS newsletter, and calling committee. Happy hunting.

PLEASE PAY YOUR DUES:

The PPMS By-Laws state: "Members who have not paid their annual dues by the 15th of July will be dropped from the active membership list and will no longer be permitted to go on forays and they will not receive the monthly newsletter". Thank you to all who have paid their dues and to those who will before the deadline. **If you still have not paid, please pay at the June meeting or mail the payment to PPMS, PO Box 39, Colorado Springs, CO 80901-0039. Thanks!**

Snowbanker's:

The annual Snowbanker's trip was held on June 12. Attendees were Frieda Davis, Esther Price, Lee Barzee, Bud and Renee Bennett. In a complete break with past year's traditions, the target location this time was Cottonwood Pass and Cottonwood Lake. We had heard that there was no snow on Monarch pass.

Cottonwood Lake, at 9700 feet above sea level, was cold and windy. There was no evidence of recent snowbanks – it was very dry and no fungus was found, but there were some rare and beautiful spring flowers about. The group drove up Cottonwood Pass until we could see frequent snowbanks among the trees, and we parked at the Ptarmigan trail parking lot (about 9500 feet). After a few minutes it was obvious that we were too early for this altitude. No flowers or fungus here.

We decided to travel back down to a few hundred feet to see if spring had sprung at a lower altitude. Here we were rewarded with a few snowbank mushrooms – *Gyromitra esculenta* and a few *Mycena* sp. Growing on a log in the snow.

The group then decided to travel to Monarch pass to determine if the snowbanks were still there. Upon arriving at the usual spot we found that the snow was still about four feet deep in many places and it was difficult to pick a path through the woods! Some of the group plowed ahead and were rewarded with additional fungi finds – *Oligoporus leucospongia*, *Lyophyllum montanum*, *Coltricia perennis* and *Caloscypha fulgens*.

All in all, a great day in the mountains!



Gyromitra esculenta

The Sangre De Cristo mountains hold a different mix of fungi than that found in the front range. The *Gomphus floccosus* is very common and looks like a huge chanterelle with a scaly top. Hence its common name: scaly vase chanterelle.



Mycena sp. (note the snow at the base...)

Newsorthy:

Genetic technology reveals how poisonous mushrooms cook up toxins

November 12, 2007 - Michigan State University EAST LANSING, Mich. — Heather Hallen spent eight years looking for poison in all the wrong places. Alpha-amanitin is the poison of the death cap mushroom, *Amanita phalloides*. The Michigan State University plant biology research associate was looking for a big gene that makes a big enzyme that produces alpha-amanitin, since that's how other fungi produce similar compounds. But after years of defeat, she and her team called in the big guns – new technology that sequences DNA about as fast as a death cap mushroom can kill.

Photo Gallery:

Don Pelton found this *Pleurotus* growing on a stump surrounded by concrete and a brick wall in Manitou Springs.



The results: The discovery of remarkably small genes that produce the toxin – a unique pathway previously unknown in fungi. The discovery is reported in today's Proceedings of the National Academy of Sciences. It is work that not only solves a mystery of how some mushrooms make the toxin – but also sheds light on the underlying biochemical machinery. It might be possible one day to harness the mushroom genes to make novel chemicals that would be useful as new drugs. "We think we have a factory that spits out lots of little sequences to make chemicals in Amanita mushrooms," said Jonathan Walton, MSU plant biology professor who leads Hallen's team. "Our work indicates that these mushrooms have evolved a mechanism to make dozens or even hundreds of new, previously unknown chemicals, besides the toxins that we know about."

Of the thousands of species of mushrooms, only about 30 produce alpha-amanitin. Most of them look much like their edible cousins. But poisonous mushrooms are powerful in folklore and in history. In 54 A.D., Emperor Tiberius Claudius was fed a death cap mushroom by his wife Agrippina to put her son Nero on the throne of Rome.

Alpha-amanitin kills people by inhibiting an enzyme necessary for expression of most genes. Without the ability to synthesize new proteins, cells quickly grind to a halt. The intestinal tract and the liver are the hardest hit as they come into first contact with the toxin. By the time symptoms show up, a liver transplant is often the only hope. Hallen, a mycologist, gathers mushrooms in the Michigan woods and often is called upon to help identify mushroom species for veterinarians, parents of small children and local hospitals – often in a desperate race to beat alpha-amanitin's effects.

Walton's lab works to understand the biochemical pathways by which natural products are synthesized in fungi. Fungal natural products that benefit human health include penicillin and the immunosuppressant drug cyclosporin. Studying their biosynthesis could lead to the discovery and development of new medicines.

To find the elusive gene for alpha-amanitin, they used what they term "brute force" – a new machine at MSU that can sequence immense quantities of DNA quickly. The 454 LifeSciences pyrosequencer generates 100 Mb DNA sequence in one overnight run - twice the size of a fungal genome. Traditional sequencing methods require months to yield the same quantities. What they found was a gene that encodes the toxin directly – with no need to first synthesize an enzyme that in turn would make the toxin.

"The RNA goes in, and out comes the backbone of the toxin," Hallen said. After its initial synthesis, the toxin is then modified in several ways by the mushroom to make it exceptionally poisonous.

Walton said the discovery poses some interesting evolutionary questions. For example, why do only some mushrooms produce this toxin? And how did a handful of other, unrelated mushrooms evolve the same trait? Finding the genes points to how the trait could appear in one mushroom, but not how it evolved in mushrooms that aren't related to Amanita.

Hallen and Walton also see the doors opening to a diagnostic test that could use DNA to determine if a mushroom is toxic or not. Identifying a mushroom by shape and color alone is often impossible if the mushroom has been cooked or partially digested, yet rapid and accurate identification in an emergency room situation is critical.

The work was funded by a grant from the U.S. Department of Energy to the Plant Research Lab, the MSU Michigan Agricultural Experiment Station and a Strategic Partnership Grant from the MSU Foundation.

What's Cookin':

Mushrooms with Chilled Noodles

14 oz. Dried soba noodles
14oz. Canned nameko or canned button mushrooms
11 oz white radish, peeled and shredded
½ sheet seaweed paper, shredded

Broth:

2 cups water
1 ½ inches dried kelp, wiped with a damp cloth
1 ½ oz bonito flakes
2/3 cup Japanese soy sauce
2/3 cup sweet rice wine

Prepare broth by heating kelp in water – remove kelp just prior to water boiling. Add bonito flakes just as the water begins to boil and turn off heat. Strain through paper filter, add soy sauce and rice wine and then chill.

In large pan, bring a quantity of water to a boil and cook the noodles for 5-6 minutes, or according to package directions. Rinse under cold water and drain well.

Mix the mushrooms and white radish together in a bowl, then pile them into the noodles. Sprinkle with seaweed paper and pour over the chilled broth immediately before serving. Serves four.

The Pikes Peak Mycological Society, a nonprofit organization dedicated to the advancement of mycology, publishes Spore-Addict Times monthly from April-October. Membership is open to anyone wanting to study mycology. Annual dues are \$15 for individual and family memberships. **Submission of ideas, articles, reviews, letters, artwork and recipes are welcome.**

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The mystery mushroom for April 2008 was a *Boletus barowsii*. Mary Fielder was picked as the winner. There were three correct answers out of the seven entries.

MYSTERY MUSHROOM

by Mary Fielder

I have a fleshy whitish cap with yellowish cracks, thin layer of white tubes, terrestrial near conifers. I am an edible! My cap is convex, roughly circular, at times fused and irregularly shaped, 4-15 cm across.

The odor is aromatic and taste mild. Spores are white, sub-globose, smooth and non-amyloid. I am common at high elevations in the Rocky Mountain region under conifers late July through September; montane and subalpine ecosystems.

Who am I?

The Spore-Addict times is the official newsletter of the Pikes Peak Mycological Society (PPMS) and is published monthly April – October. All articles appearing in this newsletter may be freely reproduced, unless otherwise noted, for use in other newsletters provided the source and author are acknowledged. We consider this to be a reciprocal agreement for clubs that send their newsletter to us unless we are advised to the contrary.

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