

Spore-Addict Times



The Newsletter of the Pikes Peak Mycological Society

VOL. XXX ISSUE 7

OCTOBER 2004

MONTHLY MEETING:

WHEN? Monday, October 25th

WHAT TIME? 7:00 PM; the meeting will come to order at 7:30 PM

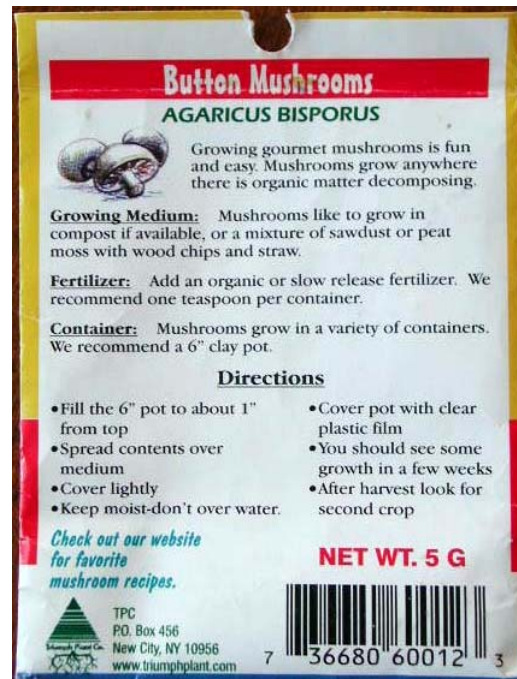
WHERE? Pikes Peak National Bank, 2401 W. Colorado Ave. (across from Bancroft Park). Enter at the door on Colorado Ave. just west of the bank door. There you will find stairs and an elevator. You may use either.

PROGRAM: The program is the annual potluck! So prepare a dish for all to share and show off your culinary skills at this annual event. Even better, share the goodies prepared by other club members for this occasion. You may bring anything you wish; salad, main dish, desert or what have you. The club will provide the drinks. Please bring your own eating and serving utensils. See you there!

President's Notes: by Bud Bennett

I finally "planted" the button mushroom "seeds" that Renee found at Wal-Mart last spring for less than one dollar. The directions call for creating a mixture of sawdust and peat moss or compost. I had quite a bit of sawdust from projects this summer, so I mixed in some compost that we have been aging in a bin for a while and loaded it into a box lined with a plastic bag. Into the bag went enough water to make a wet sponge type of dampness. Then I spread the inoculated seeds into

the top inch of the musty smelling loam. I was tempted to sterilize the loam prior to adding the seeds, but I was unsure how to accomplish this and the directions did



not call for it. The box has been sitting in my cool basement for about 2 weeks now – so what have I got? Well, so far I have some nice bean sprouts. The seeds have sprouted into plants – I don't see any sign of the mycelium

yet. I will bring the box to the next meeting if there is anything happening. If you are interested in growing your own mushrooms this winter, visit these websites:

www.sporeworks.com and www.mycobag.com. They are selling quite a variety of mushroom kits and supplies at reasonable prices. If you are into edibles, there are kits for several Pleurotus species as well as Shiitake and Hericium erinaceus (Lion's Mane). If

you are more interested in medicinal mushrooms, especially after last month's program, there is a kit for Ganoderma lucidum (also know as Reishi or Ling Chi). I might take the plunge again this year.



What Bud Hopes For (file photo)

A Message from the Treasurer by Caren Lacy
I'd like to thank George Davis for his continued dedication and hard work producing the newsletter for our club every month. It is very time consuming and I think everyone will agree with me that George does an excellent job.

Many of you receive the newsletter through the mail, but 35 of our members get it on their computer by way of a PDF file as do I. The members who receive the PDF file have the added advantage of seeing all the pictures in color. It is also a savings to our club of over \$15.00 per month for the cost of stamps, printing and paper. And I'm sure George appreciates the time and effort saved by folding, and mailing fewer newsletters.



We would like to encourage anyone who adds e-mail access to their lives to let George know so you can be added to the list of members receiving the newsletter on computer. Again, thank you George for the great work you do each month

Bits and Pieces Freia Bradford sent me the following:

"I wanted to let everyone know that there is an absolutely delightful book to read. "If You Talk to the Animals" is written by a neighbor and wildlife rehabilitator who dedicated her life to wild animals. The stories are so much fun to read. It is a 'feel good' book, and best of all, the funds from the book go to rehabilitate wild animals so they can get back in the wild after being orphaned or injured."

"You can get the book at wtmtwild@mindspring.com or 877-288-4737 or from www.iuniverse.com. A good cause and a book worth having."

Following excerpts are from a letter Noel Damon sent me recently: ...We had several fungal finds this summer. I Went back to a spot where I had accidentally found a flush of chanterelles while satisfying a nature call several years ago and there was another beautiful crop, which furnished a number of meals. Perhaps best and strangest of all was when we returned to our home in the Springs last week and found (are you ready for this) a whole row of morels growing in our front yard near the roots of a dead aspen. They were somewhat dried out but seemed to be fairly recent (mid Sept.?) We found only a few morels this past spring in Idaho despite ample moisture. Go figure.

Shrooms: Not Just For Salad Anymore.

By Kelly Hearn, AlterNet

Posted on August 29, 2004, Printed on September 26, 2004 <http://www.alternet.org/story/19680/>

To lots of folks, a middle-aged man who says mushrooms can save the world falls into the category of turbo-freak. But to some environmentalists, scientists and major investors, Paul Stamets is the trippiest of profitable kings.

"Mushrooms restore health both on the personal and ecological level," says Stamets, mycologist and owner of Fungi Perfecti, a family-owned mushroom business in Shelton, Wash. "Mushrooms can heal people and the planet."

Stamets, a former logger turned scanning electron microscopist, is bent on showing that fungal mycelium and mushrooms (the actual mushroom is the fruit of the mycelium) are the cornerstone of several earth-friendly, multi-billion dollar industries. To him, there's no end to what spores can do.

Collaborating with public and private agencies from Batelle Industries to the National Institutes of Health, Stamets is giving shrooms their 15 minutes of fame, promoting them as anti viral and antibacterial agents, as well as key boosters to the human immune system.

Outside the body, Stamets says he has cloned mycelia and mushrooms that can kill pests, absorb radioactive material, filter toxic wastes and, according to an article in Jane's Defense Weekly, even degrade surrogates of deadly VX and sarin gas.



Stamets, who has collected over 250 strains of wild mushrooms, says that until now, they were largely ignored by environmentalists and scientists. He has filed for dozens of patents, he says, with more to follow. "Every failure is a cost of tuition of the education you have come to learn," he says, "You graduate to greater and greater techniques."

Survivors of Catastrophe

Mushrooms graduated through evolution to become acute survivors that recycle life after devastation. About 250 million years ago, after a massive extinction from a meteorite, Stamets says fungi inherited the earth and "recycled the post-cataclysmic debris fields."

Today they are a keystone species spanning large swaths of land and secreting enzymes and acids that break down plant matter (which, lucky enough, has chemical bonds similar to contaminants like petroleum and pesticides).

"The 21st century will be the century of the biologist," Stamets says in a nod to technologies that are exposing life's basic micro cellular relationships. Teasing apart those relationships has helped Stamets come up with some seemingly killer techniques. One aims to stop silt runoff on logging roads, for example, by spreading bark and wood chips that have been coated with mycelia of local native fungal species. The mycelia's natural filtration properties stop the silt flow and prompt the re-growth of the topsoil.

In another technique he calls "mycorestoration," Stamets uses fungi to filter out pathogens, silt and chemicals from water (mycofiltration) and to denature

toxic wastes. The low-tech devices – which often involve placing the fungi in straw, for example – can be placed around farms, watersheds, factories and roads. Stamets uses fungi to hurry the natural decomposition of logs on the forest floor. Knowing that local habitat better evolves when the sequence of decomposition is sped up (rather than burned), Stamets devised a way to put spores in chain saw oil. The result: When a logger cuts a tree, he also coats it with spores that help it decompose.

As proof of mushrooms' ability to mop up humanity's deadly mistakes, Stamets tells of mushrooms growing near Chernobyl that were found to have accumulated high levels of the deadly Cesium 137 that leaked from faulty reactors. Why not put mushrooms near environmentally wrecked sites, allowing them to work as a natural immune system?



Nonpolluting Pesticides

Stamets' key project – which has attracted the attention of Ben DuPont, an investor from the famed family – is U.S. Patent number 6,660,290.

Somewhere during his study of the dialectic relationship between fungi and insects, Stamets came up with a way to use one to kill the other. "Mycopesticides," he says, are nonpolluting tools that could upend the global pesticide industry. One version of the idea involves using parasitic fungi that act on specific insects. The fungus, which can be presented on tasty foods like grain, kills the pest when digested.

DuPont's company, Yet2.com, matches new technologies with bigger business partners. Stamets, however, wouldn't discuss Yet2's plans for his pesticides, saying only that the group is involved in talks with major companies.

Mad Mycoscientist or Visionary?

Kind and undeniably brilliant, Stamets' passionate, rapid-fire descriptions of fungal experiments and patents can give the feeling he's a mix of scientist, inventor, environmentalist and snake-oil salesman. He admits he has his detractors – "Some mycologists think I'm a heretic." But he also has a loyal following. "There are very few people capable of combining the breadth of understanding and the academic rigor to naturally based problem solutions than Paul," says Dr. Eric Rasmussen, formerly of the Defense Advanced Research Projects Agency (DARPA), the Pentagon's high risk, high-payoff scientific entity. "His combination of factors in his intellect and experience are a somewhat rare combination. And his work is likely to prove to have significant benefit to the United States."

(Though he would not discuss details, Stamets says he has isolated a strain of mushroom from the Old

Growth forest that has shown activity against viruses that could be potentially weaponized.)

Dr. Donald Abrams, who is collaborating with Stamets on a National Institutes of Health-funded trial to investigate the effects of the oyster mushroom in lowering cholesterol in people taking HIV therapies, concurs. The study is the first medical mushroom clinical study in the U.S.

"I think that Paul Stamets is a visionary thinker and a passionate spokesperson for the Mushroom Kingdom," said Abrams, a researcher at the University of California San Francisco School of Medicine. "I am always engrossed in his articulate presentations of the power of mushrooms in healing people and indeed the planet."

Phil Stern of Yet2 says that for all Stamets' scientific acumen, at the end of the day, he's about his beliefs. "One of the best things about Paul is not just his groundbreaking technology but his principals," says Stern. "He says, 'If I license this product to you, you have to uphold these principals.' I respect his integrity."

Fungal Intelligence

Stamets has a few things working against him, especially when promoting his ideas in the mental lockdown of 21st century America. He did, after all, conduct now famous research on psilocybin hallucinogenic mushrooms at Evergreen State College in the late 1970s. And he wrote "Psilocybin Mushrooms of the World." What's more, to conservative minds, the trippy- -dippiness of some of his ideas can come off as silliness. In one breath, for example, he ticks off a riveting observation that neurological landscape looks like mycelium or that brain neurons and the Internet share mycelia's basic structural arrangements. In another he talks of "fungal intelligence" or ability to use spores to put life on other planets.

In the draft of his new book, "Mycelium Running: Growing Mushrooms to Heal People and Planet." Stamets writes that, "The mycelium is an exposed sentient membrane, aware and responsive to changes in its environment. I especially feel this when I enter a forest after a rainfall. Interlacing mycelia membranes form, I believe, a complex neuron-like web that acts as a fungal collective consciousness."

Whether or not corporate investors will ever vibe with the fungal collective consciousness, Stamets says his ideas are helped by a shift in scientific culture that's more accepting of nonwestern, natural solutions to problems. Whether or not corporate investors will ever vibe with the fungal collective consciousness, Stamets says his ideas are helped by a shift in scientific culture that's more accepting of non-western, natural solutions to problems. (Concluded on Page 4)

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And he's never short of evidence to back his theories.

"The idea that a cellular organism demonstrates intelligence may seem radical if not for work by researchers like Toshuyiki Nakagami, published in Nature 2000," Stamets writes. "He placed a maze over the nutrient agar filled Petri dish and introduced nutritious oat flakes at the entrance and exit. He then inoculated the entrance with a culture of the slime mold *Physarum polycephallum* under sterile conditions. It grew through the maze and consistently chose the shortest route to the oat flakes at the end. Rejecting dead-ends, the slime mold demonstrated, according to the researchers, a form of intelligence."

That intelligence, according to Stamets, might one day be used to extend life throughout the solar system. Mushrooms are the first organism to restart an ecosystem after catastrophes like tornadoes or forest fires, popping up from the ground to return nutrients back to the food chain. The mushrooms' scent attracts insects which then attracts birds and animals that bring in seeds, creating a life generation domino effect raising the possibility of using fungi for creating habitats on other worlds.

For now, his most secure convictions are planted here on earth.

"I believe ecosystems are conscious," he says. "These mycelia networks, like the Internet, share information on changes in the environment such as the availability of new food sources or responses to cataclysmic changes. So really these are information sharing networks. I think they are micro neurological networks and I think science will prove they have a form of consciousness that we do not recognize."

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

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