



Symbiosis[©]

The newsletter of the Prairie States Mushroom Club

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Winter 2011

<http://www.iowamushroom.org>

From the Editor

First, I want to thank Glen Schwartz for accepting the PSMC presidency, while still maintaining the outstanding website www.iowamushroom.org. I also want to thank Vicki Coutant for performing a superb job producing *Symbiosis*. She has graciously given her time for three years now, and I still need to bring her some morels.

In this issue of *Symbiosis* we are going to explore interesting and unexpected uses of mushrooms. In our last issue we studied the colors of mushrooms and found that amazing uses are being developed from the pigments in mushrooms alone. We also learned that entrepreneurs are starting to capitalize on new mushroom uses such as using mushrooms for vitamin D supplement. This sparked our interest in what other unusual uses of mushrooms exist or have existed. This interest led Linda Scarth to write the fascinating cover article about human interaction with mushrooms from modern times all the way back to prehistoric discoveries such as mushrooms found in a 5,000 year-old ice mummy's pouch. I attempt to balance this historical perspective with an article about some unusual (and hopefully) modern uses of fungi. Finally, Mike Krebill brings the topic full circle by describing an unexpected use for turkey tails and artist conks. So enjoy letting fungi spark your imagination as you read this issue. Dave Layton

A Surprising Soupstock *The Fungus Among Us: What Are They Good For?*

by Mike Krebill

by Linda & Robert Scarth



Tom Peterson points out decurrent gills to people attending his session at the 2010 Wild Food Summit held in northwestern Minnesota.

104 people attending the 2010 Wild Food Summit consumed over 100 pounds of mushrooms. I was one of them. So was the young man who rode his motorcycle all the way up from Texas just to attend this very special event. He'd done a search and read about it

on the web at <http://www.wildfoodsummit.org>.

It was the fifth Wild Food Summit sponsored by the White Earth Tribal and Community College Extension Service. Set up as a four-day camping event in mid June, this low-cost workshop in northwestern Minnesota offers something for all wild food enthusiasts, and is rapidly growing in popularity.

Those who came were eager to learn more about mushrooms. Tom Peterson, famous in southern Minnesota for his annual mushroom seminar (food included), did not disappoint them. The first evening, he did a slide show & poster introduction to the types of mushrooms and their

(cont. on pg. 2)

While the culinary value of mushrooms is the one most enjoyed, fungi have been used throughout human history for many purposes. It is possible to find reference to some of the ancient, even prehistoric, uses and to note some contemporary uses. A 2007 book, *Healing Mushrooms* by Georges M. Halpern, MD, a widely published proponent of alternative medicine techniques, has a chapter that provides an overview of some of the lesser known uses to which mushrooms and other fungi have been applied. This article is a collection of 'facts', confirmable and not, from a range of books, news sources articles and web sites about fungi knowledge and uses.

The popular news and scientific literature, after the discovery of a 5300 year-old mummy twenty years ago in the Alps, noted that the "Iceman" had a pouch with a type of fungi useful as tinder along with other fire starting materials. The 'tinder fungus' is *Fomes fomentarius*. He

(cont. on pg. 6)

Welcome to a new season of mushrooming. Let's hope 2011 is as productive as 2010. Last year, all of our forays were well attended, despite our lower than normal membership. We found several unusual fungi, including *Pleurotus cornucopiae* var. *citrinopileatus* and *Underwoodia columnaris*, arguably the highlight of last season.

We found *Underwoodia columnaris* at Brushy Creek State Park on a foray lead by Dave McDowell. In December, Dave was seriously injured in a fall. We wish him a speedy recovery.

I would like to thank Dave Layton for leading the club as President for the last 4 years. He has stepped down as President, but continues to serve as Newsletter editor. As such, he is still on the board of directors, per our club constitution. The PSMC is much stronger with a constitution, and Dave Layton deserves much of the credit for its passage.

The club website, www.iowamushroom.org, has been expanded to include a featured mushroom archive. All of your favorite featured mushrooms from the last few years can be found on that page. The club photo website, <http://iowamushroom.smugmug.com>, has pictures from all of our forays for the last 2 years, and fungal photos in several galleries. Also, there are pictures of mushrooms found at other times. If you get quality photos of interesting mushrooms this year, send them to the club E-Mail, iowamushroom@gmail.com, and we will publish your pictures on the smugmug site.

I can't wait to get out there... 

A Surprising Soupstock

(cont. from cover)


parts. The next day, we collected mushrooms and brought them back to our large dining fly, where I assisted people in using references to key them out.

Two of the more unusual mushrooms that Tom suggested we process were the Artist's Conk (*Ganoderma applanatum*) and Turkey Tail (*Trametes versicolor*). I was astonished by his suggestion. In *All That the Rain Promises and More...*, David Arora says that the Artist's Conk is much too woody to eat (page 194). He writes about T.T.'s edibility, saying that it is "Too tough for food, but some people believe it stimulates the immune system. It can be used raw as a natural chewing gum while hiking, or taken as a tonic" (page 197). Tom agrees with this

assessment, "but," he said, "the Artist's Conk and the Turkey Tail make excellent stock."

To prepare them, we carefully trimmed away the attached bark, inclusions (both species often grow over other things, encompassing them within their flesh), bad spots, etc., scrubbed them off with brushes and rinsed them with a hose. We then dropped them into huge stockpots, added water, and heated them for over an hour before removing them with long-handled strainers. While I've lost my sense of smell, several people told me that the stock had a wonderful odor.

We used the stock as a base. While I wasn't among the cooks at the time, I believe they likely added wild leeks,

wild rice, cattail shoots, burdock stalks and roots, perhaps wild parsnips, possibly Chicken-of-the-Woods, and maybe venison, elk or bison. I'd have to say that the dishes that evening were excellent. It was worth the effort! I will definitely want to try using the Artist Conk and Turkey Tail for soup stock sometime this year. 



New Uses of Mushrooms

by Dave Layton

Writing about the uses of mushrooms is like writing about the uses of sunlight. One can start with “essential for all life on earth” and end many thousand pages later. With mushrooms, as with sunlight, adding a little human invention and technology to what is being naturally produced can achieve amazing results. Paul Stamets is a pioneer of unconventional fungal uses which he describes in his now famous book *Mycelium Running*. In fact he has now trademarked his technique for restoring damaged habitat by combining mycoremediation, mycofiltration and mycoforestry into a product called “Mycorestoration.”

Recently mushroom mycelium has been found to have natural polymers with properties comparable to petroleum based man made polymers. Already these products are being used in packaging and other materials. They come from recycled agricultural processing waste and they return to the environment, unlike many plastics which stay in the environment for 10,000 years or more. In his discussion *Are Mushrooms the New Plastic*, Eben Bayer describes this product on the online program Ted Talks http://www.ted.com/talks/eben_bayer_are_mushrooms_the_new_plastic.html



Mycotectural Alpha sculpture from Philip Ross; website <http://www.philross.org/>

Perhaps the most profound expression of unconventional and multiple mushroom uses comes from artist Philip Ross’ fungal sculpture, *Mycotectural Alpha*. PSMC member Peter Hansen clued us in on Ross’ work by pointing us to Time Magazine’s article *Industrial-Strength Fungus* (Feb. 8, 2010 by Adam Fisher). Actually Fisher only reported on part of the value of Ross’ work, focusing on the excellent properties densely packed mycelium has as a building material, as well as fungi’s ability to recycle waste products like nut husks. He made no mention of the value of the fungi itself. *Mycotectural Alpha* is made out of living, fruiting reishi (*Ganoderma lucidum*) which is highly valued as a medicinal tea having more variety of healthful benefits than any other species. In fact Ross is slowly boiling down his art exhibit for guests who come to view it. He calls it, “A very literal teahouse.”




Ross’ amazingly useful sculpture dramatically points to the varied potential of fungi. Reishi grows naturally in Iowa though not very commonly. Other multipurpose mushrooms grow here in abundance. *Trametes versicolor* is another mushroom that has an ever-expanding list of uses. I feature turkey tails on the PSMC website www.iowamushroom.org and link to

several web pages discussing their many values. Maybe turkey tails can also become mycelial building materials. If so, we will want to pay close attention to Mike Krebil’s article on cooking them, for in the future we may not settle for houses that are “green” and spacious but rather we’ll require residences that are “green,” spacious and delicious. 

Thank You Contributors: More Needed

Thank you to our regular contributors Linda and Robert Scarth, Mike Krebill and Glen Schwartz. Thank you also to frequent contributors Don Huffmann, Dean Abel, Roger Heidt, Marty Augustine and Tom and Erma Keho. Thank you also to Jim Frink, the Scarths and others who’ve contributed great photos both to the newsletter and to the PSMC website: www.iowamushroom.org.

Everyone please contribute your mushroom stories, information and photos. The more voices this publication represents, the more interesting and enjoyable the reading is for all. Thank you all for reading *Symbiosis!* 

Don’t forget its membership renewal time!

Annual dues of \$15.00 can be paid to:

PSMC Treasurer, Roger Heidt
125 Timber Lane
Robins IA 52328-9632

Recipe Corner


Cooking *Hypsizygus ulmarius*, the Elm Oyster Mushroom

This fall I had the pleasure of finding *Hypsizygus ulmarius* in relative abundance. The previous fall at New Pioneer Coop Marty Augustine shared his simple method of dipping them in flour and frying. This fall I experimented with cooking them in a variety of ways – all tasty! Following are some interesting ideas for cooking *ulmarius* from the website *Imaginary Farmer*.

Sauté slices in olive oil with a little garlic, or scallions, or mild onion, until the mushrooms give off some moisture and brown a little. Alicyn Hart, chef/owner of Circa in Cazenovia, NY, does them with garlic and tosses them with linguini pasta and a bit of spinach, parley, or arugula, for a simple, delicious dish. Cook them longer, and they eventually get dark and crispy, with texture and flavor almost like bacon.

Use them in soup recipes. People have told us it makes the best cream of mushroom soup they have ever tasted! Or substitute them for the wild oyster mushrooms called for in Steve Brill's great vegan Wild Oyster Mushroom Stew recipe (www.veg-world.com/recipes/oyster.htm).

Grill them. Baste them with oil or a marinade of your choosing and grill them until slightly browned, or even to the point of crispness. To prepare them for grilling, slice them lengthwise, making sure the pieces will lie flat on the grill, to make sure the stems cook well enough.

Roast them. Chef Doug Walters came up with this approach, serving them with a secret garlic and wine sauce for a spectacular side dish with steak and potatoes. Try our simple imitation: rub whole mushrooms or large pieces with olive oil and kosher salt, then roast them at 425° for 10-15 minutes, until the cap edges get crisp and golden. <http://www.imaginaryfarmer.com/index.php/rr/cooking-elm-oysters> 



PSMC Happenings

It's midwinter and our thoughts turn to green things and mushrooms and so do our talks.

On February 19th Marty Augustine will speak in two segments at the Linn County Master Gardeners Winter Fair out at Kirkwood Community College, Cedar Rapids. He is planning to talk about some easily identified edibles, not morels.

On March 8th PSMC will have a booth at the Prairie Preview at Parkview Evangelical Free Church in

Iowa City. Any members wishing to join Dean at the booth are welcome.

On March 26th Dave Layton will speak about identifying edible mushrooms and cook some *Grifola* from his freezer at the All-Iowa Horticulture Exposition III, 2011 in Ottumwa, IA. 

Foxfire Funnies

Taking terrible tons of time trying to troll through *Trametes* types? Try the terrific template to test *Trametes*, the "Totally True Turkey Tail Test" from Micheal Kuo at Mushroom Expert.com: http://www.mushroomexpert.com/trametes_versicolor.html 

Prairie Preview PSA

Prepare to be inspired to take action at the Johnson County Heritage Trust's 28th annual Prairie Preview, to be held **Tuesday, March 8th, at Parkview Evangelical Free Church, 15 Foster Rd., Iowa City, beginning at 6:30 p.m.**

The public is invited to attend Prairie Preview and discover the many possibilities for improving environmental health through landscapes. Learn how to create beautiful, low-maintenance and resilient landscapes that also help protect our local watersheds, reduce flooding and decrease erosion, among other benefits.


There will be panel discussion on **"Rain Gardens & Beyond . . . Time for ACTION!"** The panel of experts will include:

- Liz Maas, restoration ecologist
- Judith Krieg, Professional Wetland Scientist, president of EarthView Environmental, LLC, and president of Take a Kid Outdoors
- Fred Meyer, Executive Director, Backyard Abundance
- Chant Eicke, Senior Environmental Scientist, EarthView Environmental, LLC and community conservationist
- Jason Grimm, Food Systems Planner, Iowa Valley RC&D

Prairie Preview also includes inviting displays and information from local environmental organizations and agencies. Doors open to the public at 6:30 p.m. for registration and viewing exhibits. The presentation begins at 7:30, with refreshments served afterward. Contact Tammy

Richardson (319) 338-7030 or visit www.jcht.org for additional information.

Prairie Preview is sponsored by the Johnson County Heritage Trust, Friends of Hickory Hill Park, Project GREEN, Four Seasons Garden Club, Environmental Advocates, Johnson County Songbird Project, Johnson County Conservation Board and the Iowa Department of Natural Resources. Prairie Preview XXVIII is funded in part by a grant from Iowa's Living Roadway Trust Fund.

Taken from the website Backyard Abundance <http://www.backyardabundance.org/ClassesandEvents/Calendar/tabid/65/ctl/ViewDetail/Mid/385/ItemID/170/d/20110308/Default.aspx> 

Speakers announced for All-Iowa Horticulture Exposition III


Home gardeners and professional horticulturists alike should mark their calendars for the All-Iowa Horticulture Exposition III on March 25-26, 2011 in Ottumwa, IA. The Expo, billed as the state fair of horticulture, is sponsored and coordinated by the Iowa State Horticultural Society (ISHS) and supported by over 25 in-state horticulture associations and Iowa State University Extension.

The ISHS is pleased to welcome award-winning garden author Felder Rushing, founder of the Slow Gardening® concept, and Rita Randolph, one of America's top

container gardening experts, as keynote speakers for the two-day event. Mr. Rushing will present the Friday keynote session titled "Slow Gardening" and will be on hand to autograph copies of his books. Ms. Randolph will present the Saturday keynote titled "Creating Outdoor Rooms". Copies of her Fine Gardening Container Gardening magazines will be available for sale.

The Friday and Saturday rosters are full of top-notch seminars presented by some of Iowa's most recognized horticultural experts. Friday topics and speakers include weather and gardening (Dr. Elwynn Taylor),

biomass production (Dr. Emily Heaton), garden design (Lisa Orgler), flower arranging (Dr. Cindy Haynes) and the latest gardening tools for 2011 (Susan Appleget-Hurst). Saturday will feature green roofs (Jennifer Boussetot), identifying and cooking mushrooms (Dave Layton), planning a kitchen garden (Susan Appleget-Hurst), overlooked woody landscape plants (Bob Henrickson), growing lilies (Sue Williams), and maintaining a healthy lawn (Marcus Jones).

Additional information about the Expo will be available at county extension offices in early February. For more information about the Expo please visit www.iowahort.org. 

The Fungus Among Us...

(cont. from cover)

also had a pouch with two pieces of *Piptoporus betulinus* (commonly called birch polypore) which has antibiotic properties. It also can cause short-term diarrhea. And as 'Iceman' had intestinal parasites, Dr. Halpern suggests that the fungus could have been used as a worm-killer and laxative. A more modern use of birch polypore is as a razor strop to put a smooth sharp edge on an old-fashioned razor. [We have included images of both species.]



The 'Iceman' provided one of the few indications that mushrooms and other fungi were used in prehistoric Europe. There are some records of the use and

importance of fungi in early Europe and Africa. Ancient Egyptians appeared to have believed that mushrooms were involved in immortality and associated with power. They thought that lightning transported mushrooms to Earth. As food, they were also reserved only for royalty. The Greeks considered mushrooms important for the strength of soldiers in battle. Romans thought mushrooms were the food of the gods. It seems that the belief that mushrooms conferred special and super powers continued in many cultures across the world, even up to the present.

People were well aware of the poisonous qualities of some mushrooms and several early European medical and plant publications warned against fungi. Western Europeans largely avoided mushrooms as food although mushrooms were cultivated near Paris, France in the 1600s. The rural people of Eastern and Southern Europe did enjoy and use their considerable knowledge of mushrooms and other fungi. This was often lost as cultures became more urbanized.

The concern in Europe about the lethal nature of some mushrooms was probably intensified by the story of the poisoning of the Roman Emperor Claudius in 54 C.E. Some people believe that the Buddha died from eating a poison mushroom while others believe that he choked on a piece of pork. Euripides, an early Greek dramatist, wrote about the deaths of four people from eating poison mushrooms.

It appears that indigenous people in North America also had great knowledge of, and reverence for, mushrooms and other fungi. Among the important species in the Pacific Northwest was the Agarikon (*Fomitopsis officinalis*). This large bracket fungus was used for medicine prescribed by shamans and large ones were carved into grave guardians when a shaman died. *Fomitopsis officinalis* is also thought to have been used in Europe and Asia for treating a number of infectious diseases. It is now extinct over much of its ancient original Northern Hemisphere range though still found in Washington State.

In Asia there is more extensive documentation from quite early in history. A Chinese book on plants and medicine appears to have been written early in the Common Era (100 - 200 C.E.) and includes mushroom and herbal descriptions and medical uses. It appears to be a compilation of information that was formerly shared orally over time and among different groups. In traditional Chinese medical literature there are over 25,000 herbal (including mushroom) combinations.

In contrast, modern Western Medicine uses a few very important fungi, including *Penicillium notatum* (the antibiotic penicillin), and *Tolypocladium inflatum* (cyclosporin used with organ transplants). There is a large grass-roots interest in folk and herbal medicine that includes fungi. Alternative therapies are increasing. Conservationists stress the fact that we do not necessarily know what important medical and industrial uses are waiting to be discovered.

Most of the information on the history of fungi uses is about hallucinogenic and religious uses. There is an effort, even in the absence of documentation, to assume that the practice is ancient and widespread across the world. That which is known and verifiable can be found in books like *Magical Mushrooms, Mischievous Molds* by George W. Hudler and *Fungi, man and his environment* by R.C. Cooke, among many others. These two writers concentrated more on fungal pathogens for plants and animals and the industrial uses at the time they were written, than they do on hallucinogens. They do, however, provide some interesting stories.

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The Fungus Among Us...

(cont. from pg. 6)


Hudler relates the story (among others) of Valentina and R. Gordon Wasson who founded ethnomycology as a branch of mycology, the study of human cultures and their relationships with mushrooms. This grew out of an experience on their honeymoon in 1927 when Tina, a Russian immigrant, was delighted to discover a number of edible mushrooms and Gordon was terrified that he would be a widower, after she cooked and ate them with relish. They looked at the differences in cultural literatures to find almost no positive images of mushrooms in English language books. They became experts on the use of the sacred mushrooms of southern Mexico.

In Cooke's densely packed 1977 book are stories of bioluminescence mentioned in the epic poem, *Beowulf* and stories about the hallucinogenic properties of *Amanita muscaria* (as did the two previously mentioned authors). He also includes illustrations of carved mushroom rocks from Central America.

This overview is an effort to collect some of the interesting bits of information and include some pointers to other sources. Several authoritative sources on the www are:

Cornell University's Mushroom Blog:
<http://blog.mycology.cornell.edu>

Aboriginal Australians uses at the Australian National Botanic Gardens
<http://www.anbg.gov.au/fungi/aboriginal.html>

University of Sydney Fungi Biology page and follow links to the uses of fungi pages on drugs, food processing, papermaking, and fermentation
<http://bugs.bio.usyd.edu.au/learning/resources/Mycology/> 

Pot Hunters Corner

A Bone to Pick

by Dave Layton

One of my secret fall mushroom spots is an old mixed hardwoods along a ravine right in the middle of town. The oaks have been infested with honey mushrooms (*Armillaria mellea*) for a long time. *Ischnoderma resinosum* and wood puffballs *Lycoperdon pyriforme* are also abundant – usually.

My first clue was the lack of green undergrowth. The next clue was the suspicious lack of defined deer trails – there was no square foot where deer hadn't stood and the undergrowth was almost entirely denuded. Then the horror. My delicious treasures (several pounds) of *Ischnoderma* and *Armillaria* had been bitten unceremoniously off of old dead oaks. I looked up in dismay to see an overfed buck laying too comfortably

on the ground to flee when I shook my fist at him. Eventually he stood up and ambled away and his extended family all emerged from the forest floor to join him.

These deer were the remainder of a herd that had been culled and driven from neighboring urban wood lots by hunters with a special bow hunting permit. I realized that the hunters weren't aware of these woods or weren't allowed to go in for whatever reason. I guess that didn't really matter to me. If the deer hunters were there, I couldn't go in for mushrooms anyway. So I satisfied myself with thoughts of revenge. My son is also a deer hunter, and I thought about how the mushrooms I did manage to harvest would taste with the venison roast he'd given me earlier.



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PSMC Web Site:
www.iowamushroom.org



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Linn County IA Master Gardener Winter Garden Fair PSA

Date: February 19, 2011 at 8:30 am

Location: Kirkwood Community College, 6301 Kirkwood Blvd. SW, Cedar Rapids, IA

The Winter Gardening Fair includes over 60 presentations to choose from on a variety of horticulture topics ranging from yard art to common tree problems and from building raised beds to gardening in small yards and containers. It will be of interest to both new and experienced gardeners alike. The keynote presentation is “*On Garden Design: Practical Artistry in the Home Garden.*” Tuition for the day is only \$49 and includes a box lunch.

Hours: 8:30 AM - 3:30 PM

Admission/Fees: \$49.00

* Reservations are required.

Type of Event: Show; Lecture; Workshop; Seminar

For Further Information Contact: Bev Lillie

Linn County ISU Extension Master Gardeners

Mailing Address:

3279 7th Ave., Suite 140; Marion, IA 52302

Email: lillieb@iastate.edu

Phone: 319-377-9839

Web Page URL: <http://www.extension.iastate.edu/linn>

Please mention you saw this listing at the GardenWeb calendar when making reservations or ordering tickets!

Taken from the *Events Calendar* page of the website *Village GardenWeb*: <http://www.gardenweb.com/>