



Symbiosis[©]

The newsletter of the Prairie States Mushroom Club

Volume 25:2

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<http://www.geocities.com/iowamushroom>

The Fungi of Iowa

A new website through the Ada Hayden Herbarium at ISU!

by Rosanne Healy

One of the delightful times in life is when goals converge in unexpected ways. It has been a fantasy of mine to develop a website of Iowa fungi that includes not only the edible, poisonous or otherwise common fungi, but also the lovely minute cup fungi one sees coming up in dung, the grotesque fungicolous (on other fungi) fungi and entomophagous (literally, insect-eating) fungi, the ever-fascinating hypogeous fungi (truffles and false truffles), and the underappreciated “LBM”s (little brown mushrooms). So it happened one sunny summer day several years ago, while Dr. Lois Tiffany and I were collecting fungi at Loomis Park in Fort Dodge, my cell phone rang. It was Deborah Lewis from the Ada Hayden Herbarium (ISC) at ISU telling us that herbarium director Dr. Lynn Clark was putting together a grant proposal for her graduate student Christopher Tyrrell to develop some online databases for the herbarium website. She wondered if we would consider including the fungal database that we had been assembling over the past 5 years. Of course we said “Yes!!!”. To our delight, Dr. Clark’s grant proposal to the National Science Foundation was funded and that is how the Fungi of Iowa Website was launched.

Of course, neither Dr. Tiffany nor I know the first thing about putting together a website, so this project would not have happened without Chris Tyrrell. Chris is working on his MS on the systematics and evolution of the woody neotropical bamboo *Rhipidocladum*. He did his undergraduate work at the University of Wisconsin at Steven’s Point, where he was involved in the construction of their vascular plant and bryophytes website: <http://wisplants.uwsp.edu/index.html>. When he and I sat down and talked about putting the fungal database online, I asked if we could link collections in the database to images of species. He showed me the UW website, and talked about different possibilities. We decided that we could adapt the fungal website to the UW model, and include the database, species pages, and an interactive key. Work on it began in August of 2007. In addition to working on the fungal website, doing his own research, and writing, Chris also teaches botany labs, and is working on web pages for bryophytes and the moonwort genus *Botrychium*. He plans to enter a doctoral program in the fall. Luckily for us, he will continue to work on the Fungi of Iowa this summer!

The fungal database went on line at the end of February 2008, and can be accessed here: <http://www.herbarium.iastate.edu/fungi/Fungisearch.html>. This searchable website has over 33,000 records compiled from herbarium specimens, publications, theses, dissertations, and the Prairie States Mushroom Club foray lists, as well as from our own collection data (Tiffany and Healy). To see a list of species, click on the “Fungi Advanced” tab, and then go to #2 “What do you want reported” and click on “show me a list of species only,” and finish by clicking on “search.” Be patient—searches take a little while. After the list comes up, you’ll see it is not in alphabetical order. Double click on “Species List”,

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The Fungi of Iowa

(cont. from cover)

and wait again - it will alphabetize the whole list of species/varieties/forms. You can click on any of the species, and a table of all records of that species will come up. For me, this is one of the most useful aspects of the database. Once you get the species list up and alphabetized, you can select your favorite species, such as *Boletus edulis*, and see how many collection records (39), where (12 counties) and when (July and August) it was collected in Iowa in past years. Undoubtedly there were many more collections of each species than are in the database, but we could only include those for which there are records.

One impediment to accessibility of the database is that you can only search by scientific name, not common name. But there is a solution! If you don't know the scientific name, go to the Fungi of Iowa homepage at <http://www.ag.iastate.edu/grasses/fungi/index.html> and click on "Species Descriptions". A page will come up with a list of scientific names. The bar above "Fungi – Scientific Name" has "Common Name Index" as an option. In the near future, these two indices will be on the same page. For now, click on "Common Name Index", and look through the common names for your fungus. If there is more than one common name for a fungus, all will be listed under the common name that comes first alphabetically. For example, the common names for *Boletus edulis* will be listed under "cep" followed by "porcini" and "king bolete". Click on this and a species page will come up. The species page will give you the scientific name,

"*Boletus edulis*", some images, a description, some diagnostic characters, and an Iowa map indicating (in green) which counties this species has been recorded in. The species pages are not yet complete, so don't be surprised to click on a common name and not get much information besides the scientific name and a map of records. Do check back later this summer, when the database will be further along. If you know a common name that is not listed, please let me know so that it can be added to the list! My email address is rosanne.healy@gmail.com.

A third feature of the website is an interactive key, found at: <http://www.ag.iastate.edu/grasses/fungi/FungiKey/iafungi.html>. The basic software for this key was developed and made freely available to the public by Gerald Guala (aka Stinger) at <http://stingersplace.com/SLIKs/>. This software was modified by Greg Alexander and then further modified by Chris Tyrell to work for the ISU website keys for the bamboos and fungi. We were fortunate to have a biological illustrations student, Phyllis Shimon, do her internship with us this spring, and as a result, we have a beautifully designed home page, complete with icons for the interactive key. Phyllis has agreed to add some additional icons, because I continued to add characters and character states to the key **after** telling her what needed to be drawn. At this writing, there are about 150 species keyed in, with a goal to have 500 species keyed by the end of summer.

Fortunately, Chris designed the website with the idea that we can continue to add species as time and good photographs permit. To use the key, you need only have a rudimentary knowledge of the fungus of interest. If it is distinctive enough, you may be able to key it out without microscopic data. Follow the directions above the key. When you have selected all the features you feel comfortable with, go to the bottom of the page to see the list of possibilities. You can click on each of these to get further information on them from the species pages they are in (but remember, they are not all complete yet!). If the fungus of interest doesn't match anything in the list, it may not be one of the included species. This is our first attempt at such a wide-ranging key, and we anticipate that there is much room for improvement. We invite you to try it, and let us know how it works for you. Your comments and suggestions will hasten improvement of the site. Please be patient, though! It takes a considerable amount of time to key in the species, and to write the species pages, and have Chris write the web script and work out problems among all the components of this site!

The species pages are probably the most valuable part of the website, but also take the most time to compile. To date, we have about 70 species pages completed (of the planned 500). We are indeed fortunate to have some help in this regard. Melinda Witherow, who graduated from ISU a couple of years ago and plans to continue her education in mycology, is writing species pages for several of the

(cont. on pg. 9)

Stropharia rugosoannulata A Good Invasive

I first encountered *Stropharia rugosoannulata* ten years ago on wood chip mulch and under pines that may have been mulched and subsequently covered by a bed of needles. I began finding them regularly and commonly every year in a variety of urban locations, always associated with wood mulch. I'd been hunting mushrooms for 20 years before first seeing them, so I knew that their abundant presence in a few short years meant they were probably "invasive," arriving on foreign wood mulch. They didn't seem like a harmful invasive, though, such as bugs, worms, and other possible pathogens in that same mulch. I decided that, because these mushrooms tasted so good, they must be a good invasive.

Recently I've learned how good they really are. They are increasingly grown intentionally in gardens both for food and even more to enhance, nourish and protect the garden. As saprobes, they release nutrients to the soil from wood chips. They also attack some types of nematodes and may reduce pests. <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1449000>
Various common names for *Stropharia rugosoannulata* include Garden Giant, King Stropharia, Rough-ring Stropharia and Wine Cap Stropharia. All these names together give us a pretty good idea of these mushrooms. I just call them yum when I find them.

The following description is quoted from Michael Kuo of MushroomExpert.com:

"It is easily recognized by its preference for wood chips and other urban habitats, its purple-gray gills and spore print, and its distinctive ring, which is thick, finely lined on the upper side, and radially split or "cogwheeled" on the underside. Fresh caps are wine red to reddish brown, but they often fade to yellowish brown."

http://www.mushroomexpert.com/stropharia_rugosoannulata.html

I especially like Kuo's description of the ring. The cogs can be seen on the far left specimen in the accompanying photo. The ring is a definitive characteristic of *Stropharia rugosoannulata*. Always harvest them for food when the ring is present. When these mushrooms age the look more and more like other strange mushrooms and they lose their flavor.

It's always worth reading what Michael Kou has to say about a mushroom. He describes a humorous embarrassing encounter with a girl scout leader while collecting *Stropharia rugosoannulata* on his webpage cited above. I wish to take the liberty to offer him a bit of advise for these situations at this time. These mushrooms are often found growing in mulched public areas where scout chaperons and other potentially disapproving citizens might show up. When they happen by, I acquire the persona of a dedicated volunteer removing invasive pests from our beautiful landscaped park. Sometimes I pull up invasive Garlic-mustard to prove the point. All the while, I know full well that the feral Garden Giants are the best thing about that mulch. Oh yeah, they also taste really good with Garlic-mustard flowers on pizza.



Mushroom Poisonings

by Don Huffman

Today as Maxine and I stopped to visit with a friend in McCall, Idaho, she received a call from the Valley County Hospital in Cascade, Idaho. The friend, Hope Miller, has worked for many years in mycology, the study of mushrooms. She and her late husband, Orson K. Miller, were mycological colleagues of mine and all of us have helped identify mushrooms which are poisonous to persons who eat them. The doctors at Valley County Hospital were calling about a case of mushroom poisoning of a husband and wife who had eaten mushrooms about four hours earlier. Both of them became sick and entered the emergency room at Cascade Hospital for help.

The doctors reported that the man and woman had found what they thought were “puff-balls” in the woods northeast of McCall. Because the couple knew most white puffballs were edible, they ate some with their breakfast.

Hope knew the procedure well. First, she asked whether the couple had brought any of the fresh mushrooms along with them to the hospital. Fortunately they had, but the doctors did not recognize what type of mushroom it actually was. They reported that the patients had teary eyes, excessive salivation, and sweating along with nausea and vomiting.

Next, Hope asked whether they could deliver the suspect mushrooms to her home, where she and Orson have studied mushrooms with books, microscopes and other instruments needed for mushroom identification.

Yes, they could, and the mushroom arrived at her home in McCall about half an hour later.

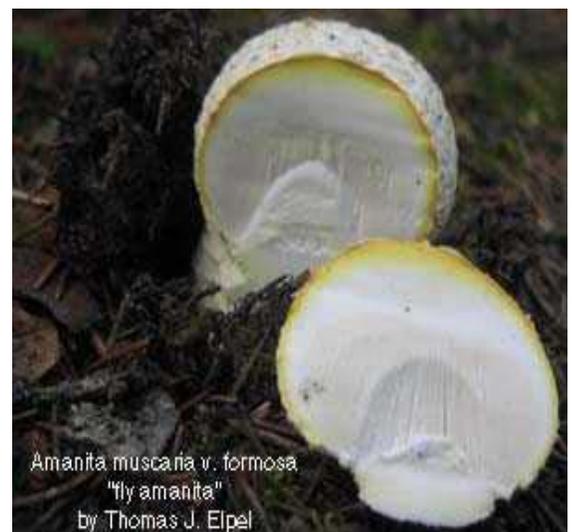
Both Hope and I recognized the mushroom as *Amanita muscaria* var. *formosa*, a variant of the Fly Mushroom which is common at this season in the mountains of this area. It resembled a puffball in shape and was whitish-yellow color, but in fact it was actually the early stage of the mushroom just emerging from the soil.

We cut the mushroom lengthwise and confirmed the presence of the cap with gills, the stem, and we noted a few of the whitish scales present on the upper surface. We confirmed our identification in the *Mushrooms of North America* book which Orson and Hope had completed writing shortly before Orson’s death last summer. If we had not been certain of identification, we would have looked at the spores and other microscopic aspects of the mushroom, or we might have treated it with specific chemicals which cause color changes in the tissue of the mushroom. But, in this case, there were no spores in the immature stage, and no chemical staining was necessary.

Hope returned the phone call to the hospital in Cascade, reported our identification of the mushroom involved, and assured the doctors that the patients would be sick for a few hours, but that they would recover without permanent damage from eating the mushroom.

It is fortunate that there are certified mycologists who are known to medical centers so it is possible to learn exactly which mushrooms are involved in poisoning cases, and to make this knowledge available to doctors treating the patients. Some mushrooms are safe to eat, but others could cause death or serious illness.

Hope will send a written report of this poisoning incident to the Rocky Mountain Mushroom Poisoning Center where it will be recorded in the national records of mushroom poisoning in North America. These records are published each year so that, at least, mycologists know how many poisonings are reported, and which mushroom type is responsible for each poisoning case reported. 



Amanita muscaria v. *formosa*
"fly amanita"
by Thomas J. Elpel

Common Edible Iowa Fungi

Common Name (*also present earlier in the yearly seasons)	Latin Name: Genus & species (scientifically legal) names	Key Characteristics	Ways to use the mushrooms	? Dangerous look-a-likes (how they are distinct)
<i>LATE SPRING / EARLY SUMMER:</i>			NOTE: I eat a few wild mushrooms raw. Other people warn against this.	
Shaggy Manes	<i>Coprinus comatus</i>	Tall, narrow inky cap mushrooms with shaggy cap. Find scattered on lawns or on recently disturbed ground. Also in lowland woods	barely sautéed and served with cream sauce on toast	Other inkys are shorter and in clumps. Once caps (of Shaggy Manes turn black they are NOT edible
Curbside Agaricus	<i>Agaricus bitorquius</i>	Very similar to commercial mushrooms but much more flavorful.	Like store bought but much stronger flavored. Hard to clean fine sandy soil from dense gills.	Watch for signs of road side contamination. Pink to chocolate gills and understanding of the variants of the genus Agaricus are crucial for positive identification
Wine cap Stropharia or Garden Giant	<i>Stropharia rugosoannulata</i>	sharp coglike ring and wine colored cap distinctive when young	All purpose. good in Chinese or with vegetables	Mushroom loses distinctive characteristics as it matures turns brown like. Agrocybes and other brown mushrooms on wood chips
Bonnet Caps	<i>Marasmius oreades</i>	Often in fairy rings. Cap is umbonate (bonnet shaped with knob for head). Has wide cream colored gills. tough long narrow stem. on grass - urban	Delicious even raw**	Many inedible Agrocybes, Haymakers mushrooms and poisonous Clitocybe dealbata all inhabit the same space.
Sulfur Mushrooms	<i>Leatiporus sulfureus</i>	Distinctive large orange mass growing from dead or live wood	Use only outer margin of older specimens. Strong flavor	Nothing like it. One variety is sulfur colored underneath. The other is white underneath. Both are good
*Oyster mushrooms	<i>Pleurotus ostreatus</i>			(cont. on pg. 6)

Common Edible Iowa Fungi

(cont. from pg. 5)

Common Name (*also present earlier in the yearly seasons)	Latin Name: Genus & species (scientifically legal) names	Key Characteristics	Ways to use the mushrooms	? Dangerous look-a-likes (how they are distinct)
MID SUMMER:			NOTE: I eat a few wild mushrooms raw. Other people warn against this.	
Chanterelles	<i>Cantharellus sp.</i>	All orange and yellow species are edible. Gills are actually indistinct shallow ridges. Grow on soil.	Look for Chanterelle recipes that compliment their distinct flavor – French cuisine	Most similar poisonous species <i>O. illudens</i> grows around stumps or where stumps have been and is large with distinct gills.
Green Russulas	<i>Russula aeruginea / virescens complex</i>	<u>Mychorhizial with oaks. Brittle short squat. Green-tan patches on virescens cap.</u>	<i>Virescens</i> is especially delicious raw in salads, if gotten before the worms.	All green Russulas are safe. Some folks say that any Russulas that taste good and aren't peppery are okay
American Parasols	<i>Lepiota americana</i>	Large beautiful white gilled parasol mushroom often in clumps on disturbed ground brick collar scales and chrome yellow to orange rust colored stain where stem broke or bruised	All purpose mushroom cooks lobster red to make food look strange and exotic.	Several parasol mushrooms are beautiful and delicious, but they resemble deadly Amanitas. Plus the most common and beautiful parasol is the POISONUS <i>Chlorophyllum molybdites</i> : Know this and the genus <i>Amanita</i> well.
Silky Volvaria	<i>Volvaria bombycina</i>	Rare, large, beautiful and easy to identify with white to pink gills silky shag cap and growing on soft maple	Delicious when young but becomes strong when gills darken	Looks similar to an Amanita with vulva but grows on wood; gills turning pink are distinctive. I think these are the most beautiful mushroom in Iowa.
*Curbside Agaricus	<i>Agaricus bitorquius</i>			
*Oyster mushrooms	<i>Pleurotus ostreatus</i>			
*Sulfur Mushrooms	<i>Leatiporus sulfureus</i>			

PSMC Foray Report

by Dave Layton

As I write this, PSMC has had 4 forays. The first was at Palisades-Keplar near Mt. Vernon on April 26th. It was a very cool day and the Morels hadn't really started yet. Still there was some interesting fungi and Robert and Linda Scarth found a *Gyromitra brunnea* just waiting for a photo-op. The *brunnea* was actually quite abundant which hinted at an abundance of other fungi to come.



The second foray at Cou Falls on May 4th was more interesting. We had to find a log jam to cross Swisher Creek. Because of flooding on the Amana road, but once we were in the woods we saw that less morel hunters than usual had been in there. The *Morchella Semi libera* were quite abundant and nearly everyone found morels but they were mostly small. Still it was a very successful and well attended foray.



Photo by: Chris McCarthy

The third foray was on May 10th at Dows Forest Preserve across the Cedar River from Palisades. This is a large tract of forest with mostly second growth woods and some old growth stumps. It has a beautiful diversity of plant life and we were there at the height of morel season. We were only five hardcore foragers though. It began raining, and I was the only one who didn't bring rain gear, so I decided to head back. As soon as I started back the rain stopped and the sky cleared, so I continued with the group. I was glad I did, for Marty Augustine found an excellent mushroom tree and shared it with the rest of us. There were plenty of morels for all five of us. Thank you Marty! We also found some other interesting fungi with the most colorful; being some type of bright orange goopy fusarium-like "imperfect fungus" growing from a severed grape-vine. We also enjoyed a tour of the Dows observatory which was quite impressive.



Front row: Arnold Christian, Glen Schwartz, Sally Myers, Roger Heidt, Dave Layton, Marty Augustine

Back row: Tyler Overturf (standing), Sam Overturf, Bob Toom, Peter Hansen, Dean Abel

The fourth foray was at Pinicon Ridge. The group included guests from the San Francisco Mushroom Club. Rosanne reports that highlights were *Morchella esculenta* - one of the SF visitors was treated to a bagful collected throughout the woods. Martin Augustine collected a basketful of oyster mushrooms from a couple of sites in the woods. Glen and Roger showed us a gorgeous fruiting of *Polyporus squamosus* on a dead standing tree. Lisa Bacon found a lovely fruiting of *Peziza badiocnufa* fruiting on soil and wood in soil near the ridgetop, and also a convocation of *Lycogala epidendrum* on a log. 



More pictures, species lists and interesting information can be found at the PSMC Website: <http://www.geocities.com/iowamushroom/>

Submissions are requested. If you have a fungi article, picture, recipe or joke to share please submit it to:
email: davelayton@q.com
fax: 309-793-6807
mail: Dave Layton
542 9th Ave., S
Clinton, IA 52732

Recipe Corner

Mozzarella-Stuffed Burgers



- 4 oz. Mushrooms, chopped (blewits are especially good!)
- 1 lb. Lean ground beef
- 2 T. Worcestershire sauce
- 1/4 t. Liquid smoke
- 1 oz. Shredded mozzarella cheese (1/4 c.)

In a large bowl, combine the mushrooms, ground beef, worchestershire sauce and liquid smoke. Shape the beef mixture into 4 balls. Make an indentation in the center of each ball; place one-fourth of the shredded cheese into each indentation. Shape the ground beef mixture around the cheese, making sure to enclose the cheese completely. Flatten each ball into a patty. Preheat a nonstick skillet, add the patties and cook to desired doneness, turning once. Makes 4 servings.

These are even better as leftovers!

Ranch Dressing Mushrooms

- 1 pkg. Hidden Valley Ranch dressing mix
- 1 stick melted butter
- 3 - 8 oz. pkgs. button mushrooms

Wash mushrooms. Melt butter and add all ingredients to a slow cooker and mix together. Let cook on low 4 - 5 hours.



The Fungi of Iowa

(cont. from pg. 2)

mushroom genera. Prairie States Mushroom Club members Sybilla Brown and Dean Abel have agreed to write species pages for the boletes and the slime molds and polypores, respectively. Rich Pope, an ISU extension agronomist is writing partial etymologies for the scientific names. The etymology, the basis of a scientific name, is very useful because it gives the story behind a name, and thus is helpful in remembering the name.

In addition to the things already listed, **you** can help with this project by letting us know what additional species you would like to see included in this website. Good photographs (with voucher specimens) are most welcome, and will be attributed to you. Voucher specimens should be dried and sent to us (Rosanne Healy

2427 Waterford Dr., Ames, IA 50010, or Lois Tiffany EEOB Dept. ISU Ames, IA 50011). We will verify the identification (or ask an expert of that genus to verify it), and Deb Lewis will accession it.

What is a voucher specimen? It is the actual specimen from a record that has been dried, labeled with its location, collector, habitat, and date of collection, accessioned into a herbarium as a record, and then is available for further study. Much of the DNA work that is revolutionizing our understanding of the true relationships among the fungi has come from herbarium specimens! The more complete the information from a fresh collection (including photographs), the more valuable is the collection.

Our hope for this site is that it will help people who wish to identify fungi they see in the woods, prairies, or even their own lawns and gardens. I also hope that it will help all of us who are interested in fungal diversity in Iowa to better understand the species we have, where they occur, and when they are fruiting. Finally, we welcome the opinion of experts who visit the website to help us by verifying or correcting any of our identifications. Voucher specimens are available for most of the images, and will be sent upon request. The contact person for voucher specimens is Deborah Lewis, curator of the ISU herbarium. Her email address is dlewis@iastate.edu.



Foxfire Funnies

Actual untouched photos of Morels



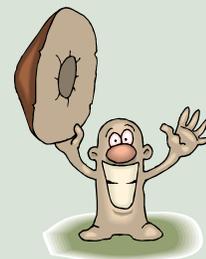
Found next to a nuclear plant, this specimen was actually sneaking up on Dr. Tiffany when she “turned suddenly thwarting its evil plan”.



Displaying this prize Glen was heard to say, “The little ones are tastiest.”

Why did the algae and the fungus get married?

The took a lichen to each other.



Dave Layton, President
Prairie States Mushroom Club
542 9th Ave. S.
Clinton, IA 52732

PSMC Web Site:
[http://www.geocities.com/
iowamushroom/](http://www.geocities.com/iowamushroom/)



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Prairie States Mushroom Club Summer Foray Schedule

June 14, 10:00 AM

Bill and Marlys Brown’s farm -
Canton

June 22, 10:30 AM

Ledges State Park - Boone
Meet at the picnic shelter above
Inspiration Point

July 12, 9:00 AM

Iowa City Bird Club foray -
Kent Park, Tiffin
Meet at the Conservation Education
Center

July 12, 10:00 AM

Wickiup Learning Center - Hiawatha
There’ll be a presentation on edible
fungi by Marty Augustine at 1:00 PM

July 19, 10:00 AM

Lucas County Foray - Two miles
south of Chariton on Highway 14.
Meet at Pin Oak Marsh and
Educational Lodge. PSMC will host
a pictorial presentation at 1:00 PM

August 9, 9:30 AM

Wildcat Den – Muscatine
Meet in main parking lot by the mill

August 16, 9:00 AM

Hickory Hill park – Iowa City
Meet at the shelter on the N. Dodge
St. entrance.

For more information about Prairie
States Mushroom Club forays, go to
the PSMC Website [http://
www.geocities.com/iowamushroom/](http://www.geocities.com/iowamushroom/)
or contact Dean Abel PSMC
Secretary, 319-354-3510, email
dean-abel@uiowa.edu

SAVE THE DATE:

October 4-5th – 2 days of forays at
Browns and Walnut woods near Des
Moines