THE NEWSLETTER OF THE WISCONSIN MYCOLOGICAL SOCIETY June 1999

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MESSAGE FROM THE PRESIDENT by Chuck Soden

As I write this, we are leaving the winter doldrums behind us. Spring is more than just in the air. Lilacs are in full bloom. Trillium are beginning to blossom. Jack-in-the-Pulpit are showing their green trumpet shape. All these signs of spring are also signs that morels are up and waiting, ready to challenge even the most die hard mushroom hunter. Early reports are in and there are scattered "finds" but no one has hit the mother lode so far.

The morel foray was successful as always. The quantity wasn't great but several large specimens were found by a young mushroom hunter. She probably has very good eyesight and is built closer to the ground. is that for an excuse for me not finding any morels on the foray?

Summer will soon be upon us. Our annual picnic is June 26th at 4:00 p.m. in Falk Park. The "bring a dish to pass" tradition always makes for excellent food at this outing.

The summer foray, led by John Steinke, will be July 24. This annual event usually produces a few chanterelles, though of course the WMS offers no guarantees. We are looking forward to a a summer of fun and comradeship, gathering and learning about mushrooms.

UPCOMING EVENTS

June 26 (Saturday) - WMS Annual Business Meeting and Picnic, Falk Park (College Ave. and I-94) 4 pm. Bring a dish to pass; brats and beverages provided.

July 24 (Saturday) - WMS Summer Foray. Meet at the Papa Steinke Farm, Mukwonago, 9:30 am. Call John Steinke for details at (414)363-7407.

August 27-29 (Friday-Sunday) - Northwoods Fungi Workshop. Carol Lamphear-Cook and Alan Parker will be teaching a three-day workshop at Treehaven (UW-Stevens Point Field Station) on 27-29 August 1999. Treehaven is a modern facility situated just east of Tomahawk, WI on approximately 1,400 acres of northern forest. The workshop includes field trips, slide lectures, handouts, and extensive displays of fresh specimens collected during the class. Emphasis will be on identifying all the fungi we find, but edible and poisonous mushrooms will receive considerable attention. People with all levels of expertise, from the most inexperienced beginners through more advanced fungi fanatics, are welcome. The workshop starts Friday with dinner and ends Sunday mid-day: rooms and all meals are included in the package price. The course may be taken for one unit of college credit. If you're interested in this opportunity to study fungi in the beautiful northwoods, call Alan Parker (414) 542-7688 or Carol Lamphear-Cook (715) 344-6921 for further information. Treehaven can also provide prices/facilities information (715) 453-4106.

September 11-12 (Saturday-Sunday) - An intensive twoday workshop at the UW-Milwaukee Field Station west of Saukville just south of Hwy 33. Title: Mushrooms and other Fleshy Fungi - Ecology and Field Identification; taught by Dr. Alan Parker. Introduction to the higher fungi with emphasis on field collection and identification; field trips, slide lectures, displays, and handouts. Meets both days from 9 a.m. to approximately 4:30 p.m. Field trips at the field station beech-maple woods and nearby North Kettle Moraine State Forest. To register call the UW-Milwaukee Field Station at (414) 675-6844 or call Alan Parker (414)542-7688 for further

information and details. This workshop is designed to accommodate people with a broad range of experience, from beginners to more experienced amateurs.

September 18 (Saturday) - Retzer Nature Center Apple Festival, just west of Waukesha on Hwy 18. Included in this annual celebration of the grand pome will once again be an educational display of common higher fungi, mostly fresh material frantically collected the day before the festival. This exhibit is co-sponsored by UW-Waukesha (Alan Parker) and the WMS (John Steinke), with great help in the past from Rich Miller and Diana Parker. The biggest problems with this project are limited display space and a need for really high quality specimens. If you would like to collect on Friday 17 September and contribute fresh collections of wild mushrooms and any other fleshy fungi, your efforts would be GREATLY appreciated. Please call Alan Parker (414)542-7688 or John Steinke (414)363-7407 to get instructions on where to take collections. This event attracts approximately 4000 people, so it's a great opportunity to do a little educating about fungi and to promote the WMS as an excellent way to learn more about all aspects of wild mushrooms.

September 19 - A Sunday afternoon introduction to the higher fungi in general and those found in Lapham Peak State Park in particular. Slide lecture, handouts, small display, and a field trip within the park. This is a brief introduction (1-4 p.m.) to common edible and poisonous mushrooms and other fleshy fungi. Registration required; taught by Dr. Alan Parker; for more information call the park or call Alan at (414)542-7688.

ANNOUNCEMENTS

FOUND: A red cloth bag containing several boxes of slides and a slide carousel was left after the January slide show; some very nice slides. Please contact Chuck Soden at (414)327-0487.

T-SHIRTS: WMS T-shirts are in for those who ordered them during the winter meetings. The cost is \$10.00. Arrangements for pickup can be made through our secretary John Fetzer at (414)771-4165 or the T-shirts will be available at the June Picnic.

WMS ANNUAL "MUSHROOM" DINNER HEAVEN CITY RESTAURANT MUKWONAGO, WI by John Fetzer

Despite the road construction on "ES", the bumps and dust were worth the effort on April 26, 1999. Once again, Chef Scott McGlinchey of Heaven City put together another fantastic five course dinner, featuring those mushrooms available on the market. This year Chef Scott was ably assisted by "Chef Leroux", also known as LeRoy Ciombor, WMS member in fine standing (now that his '99 dues are finally paid!).

The first course was put together by "Chef Leroux": "Pan Seared Morel Mushrooms and Yukon Gold Potato Pierogies with Morel Butter Sauce" served with the wine Fleur de Carneros Pinot Noir, if you so chose. This was a terrific starter considering the time of the year, and a wonderful use of the available morel mushrooms. One of my table partners explained that these pierogies were of the Polish style (made with potatoes), while the Russian style uses cabbage.

The second course was "Fungarian Goulash (Crimini Mushrooms blended with Sweet Peppers, Paprika, and Sour Cream)." Served with a Benzinger Zinfandel, this was a wonderful goulash made the "fungarian" way instead of Hungarian. For those of you at the January wine and cheese social meeting, Chef Scott prepared a large crockpot full of this very same recipe. Instead of a stew meat, the meat texture was provided by plenty of crimini mushrooms.

The salad course was next. "Seasonal Greens tossed with Marinated Oyster Mushrooms and Creamy Garlic Dressing wrapped in Red Leaf, banded with Proscuitto" was presented with Sonoma Cutrer wine. The marinated and poached oyster mushrooms were tucked inside the greenery, but the hit of this service was the dressing. The creamy garlic dressing was made from raw, saut'eed, and roasted garlic -- all blended into a creamy, richly flavored garlic mixture, but not overpowering. Fantastic, next to mushrooms, garlic is best!

Our main course was "Kansas City Style Smoked BBQ Portobello Mushroom Cap with House Sauce, Black-eyed Peas with Shiitake Mushrooms and Cool Broccoli Slaw." A portobello cap was prepared with a dry rub (a terrific blend of seasonings), and smoked for about 2 hours over a hickory fire. The shiitake mushrooms provided a nutty accompaniment to the black-eyed

peas, and the slaw was indeed welcome to help cool the BBQ flavors. Eberle Syrah was the wine.

And finally, back by popular demand, Mushroom Ice Cream served with a Crispy Tuile. A sherry from Sandeman capped the dessert.

Thanks to all at Heaven City for another fine dinner. Since we have brought back the ice cream by popular demand, maybe it is time for a "greatest hits" dinner. Which courses over the past years were your favorites? How about the grilled portobello and caramelized onions? Or the black bean and pork chili stuffed portobello? Or the rich braised beef soup last year? Or the beggar's purse with shiitake mushrooms?

Maybe it is time for a WMS Favorite Mushroom Recipe cookbook ---

MOREL FORAY May 22, 1999 by Peter Vachuska

We have found less on morel forays - but not much less. Fewer than two dozen morels were found (probably closer to 15). They were all found in very small groups with finds of one to five. The weather was cooperating and they were out in other locations - though not in large quantities, but our location was not paying out.

Some nice clumps of Flammulina velutipes were found, as well as Polyporus squamosus and Coprinus atramentarius. Also seen were Helvella acetabulum, Collybia dryophila, and Galerina and Mycena species.

So, for the twenty-five or so hopeful foragers who showed up, a walk in the woods, good conversation and companionship were mostly all there was to be had. Afterward everyone appeared to be in good spirits, talking, drinking and eating their lunch as Jay Kempinger shared his mushroom brie and crackers; so that no casual observer would have guessed that we left with fewer than one Morchella per person. Even the mosquitoes couldn't put a damper on the occasion.

MYCOBRIEFS by Colleen & Peter Vachuska

Fungus-growing ants use antibiotics: Millions of years before man discovered farming, many species of ants had already discovered it - keeping fungus gardens. Now it appears that the ants may have preceded us in the use of antibiotics, too.

For 100 years scientists have known about the symbiotic relationship between certain species of ants and certain species of fungus. But new research by Cameron R. Currie of the University of Toronto and colleagues have changed this relationship from a 2-party to a 4-party relationship.

Like all farmers, ants are plagued with weeds. The fungal mats require constant upkeep to keep invading fungal species out. One of the most invasive species is the Escovopsis fungus, which seems to prey only on ant gardens. But Currie and his team discovered that the ants carry with them antibiotic bacteria to combat this menace. Whitish patches on the ants were found to contain Streptomyces bacteria (the same genus that yields many antibiotic drugs). Extracts from these patches did nothing to most fungi tested but slammed Escovopsis. The Streptomyces bacteria was found on all of the 22 species of fungus growing ants that were checked. Young queen ants carried it with them as they set out to find new nests - but non-farming males didn't carry it.

The feeling is growing that many of the long-standing mutualisms in biology may be found to involve such overlooked microbial partners. (Science News, April 24, 1999)

Fungus may be source of future diabetes pill: A fungus growing deep in the African forests may hold promise as the source for an insulin-replacement drug. The fungus, Pseudomasaria, originally collected years ago near Kinshasha in the Republic of Congo, was recently found by researchers at Merck Laboratories to produce a compound which mimics insulin. Like insulin, the compound works by activating insulin receptors, causing them to begin the process which allows cells to use glucose and lowers blood sugar levels. In a screening assay involving more than 50,000 mixtures, the fungal compound, known as L-783,281, was found to stimulate insulin receptors up to 100 times more than other natural compounds tested. However, unlike insulin, the compound is not a protein, and thus could probably withstand the stomach's digestive juices. This would mean it could be given orally rather than by injection and this would be a great boon for the millions of diabetics who must now inject themselves daily with insulin. Moreover, the compound, a member of the quinone family, appears to be quite specific in its effects and thus would

probably have fewer side effects than the current oral antidiabetes drugs in use. In preliminary testing the compound lowered blood sugar levels by up to 50% in mice with diabetic symptoms, an effect which is similar to that of current oral antibiotic drugs. (Science, May 7, 1999)

A WISCONSIN BIODIVERSITY QUIZ by Alan Parker

The term biodiversity essentially means all the different species of organisms found in a given area. These life forms include all representatives from microscopic bacteria through the most advanced species of plants, fungi, and animals. If all the different species found in Wisconsin were counted, what would be the total number? Specialists in various groups have come up with numbers based on solid research and educated guesses. Some groups are smaller and much better known than others, so some numbers are very accurate and others are very speculative. Try your luck at MATCHING each group on the left with the probable number of species found in Wisconsin listed on the right (see end of this newsletter (just after recipes) for answers):

 Insects Fish Amphibians (frogs and salamanders Reptiles (snakes and turtles) Birds (breeding in the state) 	В.)С. D.	20,000 12,000 1,825 1,300 575
6. Mammals	F.	532
7. Fungi 8. Algae		252 157
9. Mosses and liverworts 10. Ferns		72 62
11. Conifers	к.	35
12. Flowering plants - native 13. Flowering plants - non-native		20 13

MUSHROOMING AT PINE ISLAND, ROWAN CREEK by Steve Nelsen

The Rowan Creek Fishery Area lies north of Hwy. CS in Columbia County, between I-90/94 and Poynette. There are two parking areas off CS. The path leading north from that closer to Poynette goes through a dry oak woods down to the start of the swamp. At the start of a path leading east to Oak Island, we found in July 1997 a patch of the pallid-capped, beautifully pink-gilled Laccaria lavendulipes, easily recognizable from the key in Bessette, Bessette, and Fischer, Mushrooms of Eastern North America (we do not know of a manual that illustrates this species, described by Mueller in his monograph). We've also found the unusual Clytocybula lacerata near here. We usually, however, continue north across two boardwalks over the swamp to Pine Island, a sandy hummock featuring a 70 year old white pine plantation, along with a few planted spruces, with a circle trail around the pines. The area we have found the most productive is around a large sand blow that lies to the right of the boardwalk. The sand blow usually has the purple-gilled sand-loving Laccaria trullisata, and the earthstar look-alike Astraeus hygrometricus. We have also seen Lactarius and Russula species we cannot identify growing in the sand. The pine trees between the sand blow and the swamp are rich in Suillus (mostly pictus and granulatus) and Tricholoma (sejunctum, vaccinum, aurantiacum, and the seldom-discussed odorum [Phillips shows a picture]). This area is also good for "Horn of Plenty" (Craterellus). In August and September 1997 we found a few Boletinellus russellii, boletes with impressively long and lacerate-reticulate stems. In October, 1998, Adrienne dug out the first Boletopsis we have seen from a needle hummock at the base of a pine tree here. Four or so species names are around for it, but more recent manuals usually say they are only color varieties. Ours looked like a dessicated, dark-grey sub-scaly bolete having stuffed, pallid pores, with an especially hard and gnarled stem, but its thelephoroid warty brown spores are a giveaway for identification with a microscope. Hydnellum spongiosipes also occurs, and we once found a pair of white but brown fibril-streaked long-stemmed fungi with small, deeply cracked brownish caps having short white spines. I suspect it is a Sarcodon that didn't develop fully from lack of rain, but I have no idea which, and we haven't found it again. The pines produce an embarrassing number of Clitocybes, Entolomas, and small Cortinarius that I cannot name, and the wet late fall of 1998 produced an enormous fruiting of what I presume is Mycena griseoviridis (well illustrated in BBF, but not in most manuals; I must admit, however, that I cannot distinguish it reliably from yellow-stemmed varieties of epipterygia, which I think is the name used in most books for what must be this very common species). Usually, the ash-tree bolete, Boletinellus meruloides (also called Gyrodon, incorrectly according to Smith) is common in one area growing on well rotted pine (there are a few dying ash trees in the area, presumably explaining how it got started). We also once found a fine sulfur mushroom, Laetiporus sulfureus, growing on a

dead pine (we didn't eat it because of a couple of published cautions about poisonings from sulfur mushrooms growing on unusual substrates). I've mentioned only a small fraction of the fungi we've found on Pine Island, which also has a huge number of red raspberries, a welcome distraction if it hasn't rained much.

ON BEING A RARE FUNGUS -- PART II by Alan Parker

Part I of this note emphasized how important but difficult it is to determine the relative abundance and distribution of most fungi. An accurate understanding of nature must include knowledge about fungi -- where they occur and what they're doing. Combining this data with that about other organisms then makes it possible to make better conservation decisions -- saving habitats and ecosystems. Another point from Part I is that a critical element in conserving fungi is knowing their life cycles. This is made difficult by the very nature of how fungi both live and reproduce. Fungi spend almost all their life hidden in the soil or various food sources and only appear to disperse their spores. Even when thousands of species do appear in the spore production phase, the associated structures are so minute that they are overlooked by all but the most specialized collectors.

Integral to understanding the abundance and distribution of fungi --common, rare, and everything in between -- is knowing their nutritional needs. Just like all other organisms, fungi need nutrients to stay alive and to grow and reproduce. Although it's technically not a nutrient, water is also essential. Fungal nutrition is key to predicting where fungi occur (or may potentially occur) in nature. Fungi cannot photosynthesize, so they are in the broad category called heterotrophs. Within the fungi three different means of getting nutrients have evolved -- they live as parasites, saprotrophs, or mutualistic symbionts. Each category will be considered below and correlated with the general distributions of fungi in each group.

Parasitic fungi are a very common group. Many are plant pathogens and cause a multitude of diseases on native, non-native, and cultivated plants. Consider such common problems as corn smut, oak wilt, Dutch elm disease, black knot of plum, and powdery mildews. There are at least 3,000 species of plant parasitic fungi in Wisconsin, but a number of fungi in this group would be considered uncommon or rare — those occurring on uncommon or rare native plant species. A more fascinating problem is when a common plant species is rarely attacked by a particular fungal pathogen. Most people have heard of athlete's foot, other ringworms, and Blastomycosis; fortunately for us, relatively few fungi are human pathogens. Among the most interesting parasitic fungi are those that attack other fungi. Certain of these mycoparasitic fungi are proving to be relatively common in the state; it just takes experience in knowing where to look and what to look for. That statement could be used to describe just about all fungi collecting by adding the phrase "when to look."

Saprotrophic fungi are probably the group with the largest number of species in Wisconsin. These fungi are essential to the health of all ecosystems. They are, along with bacteria, nature's recyclers -- feeding on dead plant and animal remains and excrement, breaking down complex compounds, and returning simple chemicals to the soil. These chemicals are then available as starting point nutrients which travel through ecosystems again and again. The earth is a gigantic place, but it's a finite world with finite resources (chemicals). You and I have atoms of carbon, hydrogen, and oxygen in our bodies that were once in the bodies of dinosaurs and other ancient organisms -- thanks to the recycling abilities of decomposer fungi and bacteria. There are probably at least 5,000 species of saprotrophic fungi in Wisconsin. Of the three nutrition groups, saprotrophs are the most diverse in many respects. There are generalists that seem to use a wide range of dead plant (and animal) remains for food, and there are specialists that are confined to a very limited diet (or at least greatly prefer a particular plant species or group). There is very limited data available on the nutritional range of most saprotrophs. To cite one example that may be considered significant specialization, I identified 67 different Ascomycetes from cotton-tailed rabbit dung and 71 from white-tailed deer dung in Illinois. Many of the fungi occurred on both kinds of dung, but several were restricted to either deer or rabbit dung.

Being a mutualistic symbiont sounds like a very complicated life style, but it's actually straight forward: Two organisms growing together with each providing something(s) the other needs. Both partners benefit, and each is obligated to grow with the other. An Ascomycete fungus growing together with an alga to form a lichen is an excellent example; once one learns how to recognize lichens, one realizes how diverse and common

lichens are in Wisconsin. Everyone that has picked an Amanita or bolete has had first hand experience with another type of symbiotic fungi. Boletes, Amanitas, and many other Basidiomycetes are ectomycorrhizal; they grow in obligate association with the root system of certain tree species. The distribution of ectomycorrhizal fungi is determined by the distribution of their plant partners, or vice versa!. Any collector would recognize a number of mushrooms from the following list of mycorrhizal genera: Lepiota, Amanita, Boletus, Leccinum, Suillus, Cortinarius, Inocybe, Hygrophorus, Lactarius, Russula, Cantharellus, and numerous others. A small number of Ascomycetes, most notably truffles and false truffles, are also ectomycorrhizal. Truffles and other hypogeous fungi are almost always considered rare in Wisconsin; a better characterization would be rarely seen. It's rather difficult to spot fruiting bodies buried in the soil. A very tentative guess about how many different ectomycorrhizal fungi occur in Wisconsin would be around a thousand; it could be lower or considerably higher. Another group of mycorrhizal fungi form endomycorrhizae; they grow in association with many plant species, but are difficult to detect and won't be discussed here. To give some indication of their importance, it has been estimated that about 95% of all plant species are capable of forming endomycorrhizae.

To summarize what it means to be "rare," the concept as seen by an ecologist needs to be studied at three levels: geographic range, habitat specificity, and local population size. A fungus that has a wide geographic range, is a generalist in obtaining food and is very efficient at getting water, and occurs in large numbers at many locations would be ecologically "common." Plug in the opposites and you have "rare." With a great deal of study we can usually answer why a particular fungal species is rare, common, or somewhere in between. We cannot answer the general question "Why are species rare?" because there are several different kinds of rare. As with most aspects of studying fungi, the more you learn the more you realize how little we know about this great kingdom.

RECIPES

Contributed by Jay Kempinger

WMS got some excellent press in the March 10, 1999 issue of the Milwaukee Journal Sentinel. Member Jay Kempinger contributed several portobello recipes that ran in the recipe request column of the food section that day. Jay also put in a plug for our club and, according to secretary John Fetzer, this generated several requests for information on the WMS. Thanks, Jay! The first recipe below, "Marinated, Grilled Portobello Caps" is actually due to Bill Blank and was featured at our annual WMS picnic two years ago. The second recipe that we print below, "Portobello Fajitas", is one that Jay also contributed to the newspaper, but that had to be cut because of space limitations.

Marinated, Grilled Portobello Caps

- 6 large Portobello mushrooms, cleaned (remove stems, reserving them to make stocks or soups)
- 1 bottle (8 ounces) Italian salad dressing

Place mushrooms in a non-metal container and cover with dressing. Let stand 1 to 2 hours. Drain. Grill over medium heat or in a nonstick skillet until mushrooms just start to wilt and turn dark. Mushrooms can be brushed with drained dressing while cooking if desired. Makes 6 appetizer servings.

Portobello Fajitas

- 1 cup tomato sauce Juice from 1/2 lime
- 4 tsp Ancho powder (available from El Rey food store)
- 1/2 tsp black pepper
- 3/4 tsp salt
- 1/2 tsp cumin powder
 - 3 TBS corn oil
- 2 cloves minced garlic
- 6 to 8 portobello mushrooms cleaned and cut into strips

 - 2 medium onions peeled and cut into strips
 - 1 large green bell pepper cleaned and sliced into strips 1 medium red bell pepper cleaned and sliced into strips
 - 1 large carrot scraped and sliced on the diagonal very thin
- 1 to 4 jalapeno peppers chopped (optional)

In a small bowl mix together the tomato sauce, lime juice, and spices. Heat the oil in a large open fry pan. (Don't crowd the veggies or they will get mushy). Add the garlic and saute a few seconds. Add all the rest of the veggies and stir-fry over high heat for about 3 minutes. Pour tomato sauce mixture over the veggies and continue to cook until the

veggies are just starting to get limp. Serve with hot flour tortillas, guacamole, refried beans, salsa, and sour cream on the side.

Answers to the Biodiversity Quiz: 1-A: 20,000 Insects, 2-H: 157 Fish, 3-L: 20 Amphibians, 4-K: 35 Reptiles, 5-G: 252 Birds, 6-I: 72 Mammals, 7-B: 12,000 Fungi, 8-D: 1,300 Algae, 9-F: 532 Mosses and liverworts, 10-J: 69 Ferns, 11-M: 13 Conifers, 12-C: 1,825 Native flowering plants, 13-E: 575 Non-native flowering plants.

WMS Officers and Directors

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Officers and directors are elected each year at the WMS annual business meeting and picnic in June.

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The editors are always looking for newsletter material, including articles, recipes and artwork.