



Potomac Sporophore

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Annual Mushroom Fair



Where:
Brookside Gardens Visitor Center
1800 Glenallen Avenue
Wheaton, Maryland

When:
Sunday, October 4, 2009
1200 - 1700

What:

- Forays for fungi
- Expert fungi identification
- Lectures on mushrooms
- Cooking demonstration
- Books
- Arts and Crafts
- Raffle

Why:
To discover the fifth kingdom

How:
Take exit 31A on Capital Beltway Route 495 North (Route 97 Georgia Avenue). Go 3 miles to Randolph Road and take a right. Go 300 yards to Glenallen Avenue. Follow signs.

From the MAW President

Ray LaSala

Well, it's that time of year again. Fall approaches, bringing with it the promise of abundant fruitings of many of our favorite mushrooms. But it's also time to start thinking about a crop of a very different sort— people to help run MAW next year. While I haven't asked any of the ten current Board members about their plans, experience tells me that about half would be glad to continue on the Board, another quarter would definitely not want to remain, and the rest could be somewhat reluctantly cajoled into staying on the Board if no one else could be found to take over their positions. There's still plenty of time to sort things out— the election of next year's Board won't take place until the December meeting— but we typically start soliciting volunteers to fill the vacancies in September to allow plenty of time to find new recruits.

Some of the positions are definitely more demanding than others; and while some require knowledge of mycology, others definitely do not. The Program and Foray chairs have ongoing responsibilities and require experience and initiative (so does the position of President, for that matter). The Treasurer needs to have skills in handling spreadsheets, and the Secretary needs to be able to prepare written summaries of all meetings for

the record; but neither position requires much knowledge of mycology. The Membership chair requires someone willing to handle simple records and payments; again, no particular knowledge of mycology is required. The positions of Newsletter Editor and NAMA Trustee need to be filled by people who are comfortable expressing themselves and benefit from being filled by people who know mushrooms and the mushrooming community. The positions of Culinary chair and Vice President are best filled people who are good at organizing events. While they can get intense as the date of the event approaches, they only demand a lot of attention a few times a year, specifically leading up to the spring and fall Tasting Meetings and the annual fall Mushroom Fair. All of the positions on the Board really benefit from being filled by individuals who are enthusiastic about MAW and its activities.

Even if you are new to the club, I hope you will consider helping out by offering either to fill a position yourself or at least to assist the person who has primary responsibility. Remember, MAW is what we the membership make it. So please let me, another Board member, or any of the three members of the search committee we will appoint know if— correction, how— you are willing to help.

2009 Scheduled Events

Note: Meetings from September through December will be at the Chevy Chase Public Library instead of the Davis Public Library

Meeting Site Directions - Chevy Chase Public Library

The Chevy Chase Public Library is located at 8005 Connecticut Avenue which is about 2 miles south taking exit 33 on the Capital Beltway (Route 495). If coming from the District of Columbia, it is about 2 miles north of Chevy Chase Village just past the intersection of East-West Highway (Route 410) . The phone number of the library is (240) 773 9590.

All monthly meetings start at 7PM and include a brief review by each of the MAW board members and a summary of monthly events and mushroom finds by the President. The program starts at about 8PM. Light refreshments are available as well as an occasionally mushroom dish prepared by a member

Events:

September 5 Foray: Seneca Creek State Park, Gaithersburg, MD

September 8- Monthly Program TBD **NOTE 2nd Tuesday**

September 12 -14 - Annual MAW Foray at **Camp Sequanota** in Jennerstown, PA. A weekend stay at the Lutheran Camp including all meals and daily forays.

September 19 Foray: Cabin John Regional Park, Rockville, MD

September 24 - 27 Regional Foray Wildacres, North Carolina. Contact Bruce Boyer for details.

September 27 Foray: Prince William Forest Park, Dumfries, VA

October 3 Multiple forays for the Mushroom Fair at Brookside Gardens

October 4 - The Annual MAW

Mushroom Fair (see above)

October 6 - Annual MAW's Wild Mushroom Culinary Event. 15 - 20 wild mushroom dishes prepared by MAW members. You must be or become a member to attend

October 17 Local Foray Greenbelt Park, Greenbelt , MD

October 15 - 18 - NEMF (Northeast Mycological Federation) Foray, Cape Cod, Massachusetts

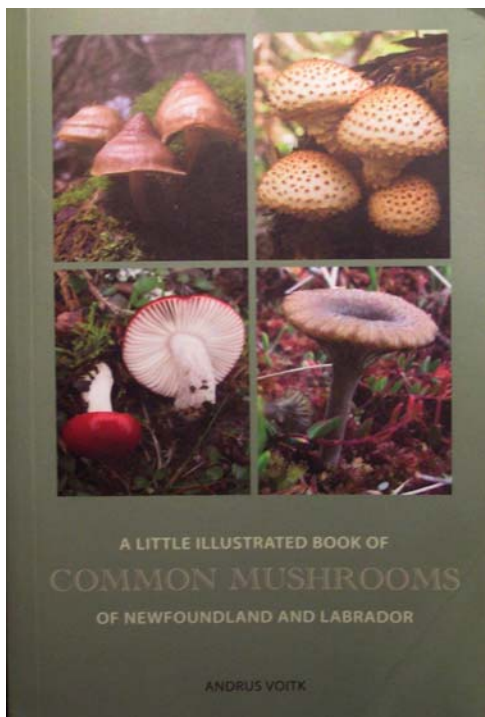
November 3 - Nominations for MAW Board for 2010. Program TBD
November 26 - 29 - NAMA (North American Mycological Association) Foray, Lafayette, Louisiana.

December 1 - Election for MAW Board for 2010. Panel discussion the fungal year in review.

Book Review

A Little Illustrated Book of Common Mushrooms of Newfoundland and Labrador. 2007. by Andrus Voitk.

Last summer I planned to visit Newfoundland, the easternmost province in Canada, a place I always wanted to see because of its beauty. Expecting to find mushrooms at the Gros Morne National Park, one of my planned destinations, I ordered the book entitled "A Little Illustrated Book of Common Mushrooms of Newfoundland and Labrador. I also contacted the author by email to find out what kind mushrooms were there in July. He replied that there are hardly any mushrooms at that time of the year and that the best time for mushrooming is in September, and in the spring time. Disappointed, I decided to spend my vacation in Prince Edward Island where I read the book while laying on the beach.



I found the book very informative and written in a casual, easy-to-read style. My contacts with the Mycological Society of Toronto informed me that the author, Andrus Voitk was a surgeon by profession, and a long-time member of that club. When he retired he moved to Newfoundland and pursued his interest in mycology. Because of the author's work, he had brought to the public attention rare mushrooms that heretofore were not known to exist in Newfoundland. He leads out in forays in that part of North America and is a valuable resource on the subject in that area.

This book is a welcome addition to the growing number of mushroom books that deal with fungi in particular regions. It is indeed a small book: about 7.25 inches by 4.5 inches and about 2/3 inch thick and only 272 pages. The author points out in the preface that the word "common" in the title is a misnomer because there is no "common" mushroom. All are important to the balance in nature. The author notes

that the only species of morels in that area are the black morel and gyromitra. One thing I like about the book is that the mushroom pictures are located on the same page as they are described. This saves the readers the trouble of leafing through the other pages in order to locate corresponding pictures. The author also almost always gives the English translation of the Latin names. He also includes handy tables which makes it easier to identify different boletus by their stem characteristics. The charts at the beginning and the end of the book also aid in identification

While there a lot of good things in this book, there are also some shortcomings. The author, for example, states that all Lepiotas are toxic and could prove lethal. While most of the Lepiotas are not edible, I have found that Lepiota Procera as well as the Lepiota Americana are tasty and choice edibles. Towards the end of the book, he includes, somewhat humorously, a picture of the famous bank robber, William Sutton. I find the inclusion of a picture of convicted criminal somewhat out of place albeit humorous. He also asserts that there are no toxic Suilius, and that people should eat it with "impunity". While this could be true as a general rule,, I would not put it that way, since there have been reports of some people experiencing adverse digestive reactions from eating these slimy fungi. - Danny Barizo

MAW Member Wins \$10,000 Mushroom Grant

Ophelia Barizo, science teacher and department chair at Highland View Academy in MD and member of the

MAW (wife of Daniel Barizo, vice president), was awarded a \$10,000 Toyota Tapestry grant for excellence and innovation in science education. Toyota and the National Science Teachers Association (NSTA), the largest professional association in the world of 58,000 science teachers, honored Barizo on March 20 at the NSTA National Conference on Science Education in New Orleans, La. The grant proposal submitted by Ophelia was one of 50 grants awarded out of approximately 450 applicants.

Under Barizo's direction, students will use the TAPESTRY grant to study mushrooms and the role they play in plant decay and in helping trees get various nutrients. Students will also research mushrooms' impact on medicine, ecosystems and the carbon cycle and present their findings. Barizo's project has been endorsed by NAMA and MAW. Students will be identifying wild mushrooms in Washington County and the surrounding areas, and publish a booklet on their finds. They will also grow and study different species of mushrooms in their lab classroom. Students will be mentored by experts from the MAW on several mushroom forays.

"Supporting excellent teachers who can excite and energize their students is a great way to make an impact on future generations," said Michael Rouse, Toyota's vice president of philanthropy and community affairs. "TAPESTRY's reach over the past 19 years has allowed countless numbers of students to be inspired by the possibilities of science education."

Sponsored by Toyota Motor Sales, U.S.A., Inc. and administered by

NSTA, Toyota TAPESTRY is the largest annual K-12 science teacher grant program in the United States. Award-winning projects are selected from three critical areas for today's youth: environmental science, physical science, and science applications that promote literacy. Fifty grants of up to \$10,000 are awarded each year, along with a minimum of 20 grants of up to \$2,500 each. In total, Toyota awarded \$550,000 in grants to 82 teachers in 2009. More than \$8.5 million has been awarded to 1,064 teams of teachers throughout the program's 19-year history.

The Arlington, VA-based National Science Teachers Association is the largest professional organization in the world promoting excellence and innovation in science teaching and learning for all. NSTA's current membership includes more than 58,000 science teachers, science supervisors, administrators, scientists, business and industry representatives, and others involved in science education.



Ophelia Barizo (second from right) receiving Toyota Teachers Award

Editorial

Mushrooms with Sherry

There are a number of mushrooms that I find in my backyard, thinking

of my backyard as my neighborhood, but the one I want to focus on is Hen of the Woods (*Grifola frondosa*). This mushroom has lots of benefits: it's tasty, nutritional and medicinal and it dries well-and if you find a good deal of hen, the drying is important, though some dispute that the hen dries well. (There does seem to be little that mycophiles agree on).

In my actual backyard I have two scarlet oaks that have produced hens, but one seems to be past its productive days since it died and was cut down to a 4 foot stump three years ago. The other scarlet, which is older and bigger, has produced hen every year for years. One year it produced both a hen and a chicken in the same month, which was a real surprise.

Because these hens grow in my yard, I can observe their early stages of growth- I have seen them when they were as small and thin as a silver dollar, which may be about as small as you will find them at their beginnings, unless you sit by a tree throughout the night with a flashlight on the night that you "know" a hen will appear (mushrooms seem to come out during the night).

It's a surprise when you pluck a hen in that when you look at where it was on the ground there is no sign of what produced it, except, perhaps, a thin white thread. It's as though the hen appeared with no roots. We know that there's a mycelium there, but it's not very much in evidence. I have read, though, that the hen grows from an underground tuber-like structure which is the size of a potato, but more reliable information has suggested that this tuber-like "potato" is a sclerotium: a mass of hyphae.

Most of the other hens that I have found over the years have been found in my immediate neighborhood and most have been found under scarlet

oaks. But there are many white oaks in this area and sometimes I have found hens under the whites. Some other trees which produce hen are maple and beech..

Just down the street from our house, in a field that we refer to as Moises, there's a large scarlet oak which, six years ago, was surrounded by eighteen hens. None was bigger than a basketball and none was smaller than a football and all were edible, though three disappeared before I harvested them. I visit this tree every year but I have never found eighteen again- at the most-six.

Once you have found a few hens, you are unlikely to misidentify them but the black- staining polypore (*Meripilus sumstinei*) is its closest look- alike..

Cleaning the hen is not simple, and it is controversial. Some dunk it in water a number of times and spin-dry it on a salad drier. Others think that this method does not relieve the hen of those little waste bits that are dropped by the sow bug-the bug that is often found languidly moving about inside the hen. I scrape clean each cap that has any visible thing on it, hence the rhyme:

Oh Grifola, my Grifola
You're so hard to clean.
I scrape away at your little caps
And make you very lean.

The hen is said to be a parasite because it will eventually be a major cause of the death of its host tree; some have called the hen a "benign" parasite because it kills its host slowly-"it doesn't want to get rid of its source of food too quickly."

Any tree with a hen at its base is dying. Death might easily come from a wind blowing down the tree. This happens because the hen's mycelium

has been feeding on the lignin and cellulose cells of the tree's roots and lower trunk, thereby, weakening the tree's attachment to the ground. This process may take twenty years; the disease is white butt rot, so called because it spreads from the roots up the tree trunk to the height of a man's butt.

White butt rot fungi, like hen, cause death to trees and are a scourge to the lumber industry, park officials and home owners, but they give value too; for in addition to their food value they are increasingly studied for their enzymes' ability to degrade stuff that we want to degrade, such as: PCBs, TNT, pesticides, cyanide and some hydrocarbons, among other things.

One day Maria and I were foraging with the MAW group and were finding few mushrooms so our group went off the path and eventually saw on a small hill a log which was covered with chicken (*Laetiporus sulphureus*). We all ran up the hill to it.

Later Maria and I decided to return to our car and got lost; well, we didn't know which way to turn to reach the park exit. Then, we met another MAW member who was scouting for mushrooms by himself. He gave us directions from his GPS and left but somehow we remained disoriented. Then the MAW group came toward us and we joined them and headed for the park exit.

We got close to the exit when we came upon a massive display of hen. It wasn't immediately apparent what the hen was growing on. There was a broken stump that looked like it had been deteriorating for years in the middle of all the hens and the hens looked like they were romping over and around it.

After we got over our stunned moment we fell upon this treasure-

lode, and when we had filled our baskets we saw the sign near the path which read: "Do not go off the path and do not pick any plants." I returned to the spot the next year, but no luck - Jim Sherry

Cartoons by Sherry, Page 8

Fungus Notebook



Common Name: Meadow Mushroom, Field mushroom, Pink gill - The mushroom is most typically found in grassy meadows and open fields.

Scientific Name: *Agaricus campestris* - The generic name is from the Greek *agarikon* meaning fungus which is thought to derive from either the city of Agaria or the river Agarus which were located in a region called Sarmatia on the north shore of the Black Sea. *Campestris* is the Latin word for flat, level country, like a field.

The meadow mushroom may well have been one of the first of the fungi to be tested for edibility by humans in search of alternative sustenance during temporal periods of scarcity. This hypothesis is supported by the characteristics of its habitat, appearance and geographic dispersion. Meadow mushrooms are found in open, grassy habitats such as pastures, gardens, compost piles and

other cultivated areas that are associated with human habitation. They are whitish in color and stand out starkly against the green of their surroundings, growing singly in frequently abundant groupings.

They sometimes take the form of "fairy rings," which occur due to the outward growth of the mycelium, the underground body of the *A. campestris* fungus; the mushroom fruiting bodies occur at its outer perimeter. The gills of the immature mushroom are pink, which, combined with the pallid cap, have an inviting appearance of edibility, supported by their generally pleasant fungal aroma. They have a global presence with widespread distributions in Asia, Europe and North America.

The ubiquity, obtrusiveness and the pristine appearance of the meadow mushroom have made it one of the most common of the wild edible mushrooms. The only major problem is that it has a deadly doppelganger that grows in the same habitat and can be found intermingled with the agarics. The *Amanita virosa* is commonly known as the "destroying angel" for a very good reason. It is angelic in appearance, standing out in graceful shining white perfection against a brown or green background. However, it is destroying in its effects if eaten; gastrointestinal distress in the form of cramps and diarrhea is followed after about 24 hours with kidney or liver failure that not atypically has a fatal result absent aggressive treatment up to and including organ transplantation. One of the theories that has been advanced about the association of mycophobia with some countries like Great Britain and mycophilia with other countries like Russia is that in the former an amanita was first

selected for trial and in the latter it was an agaric.



Amanita virosa Destroying Angel

The taxonomic history of *Agaricus bisporus* is not clearly established; it was cultivated in France in the early 18th Century as a apparent variety of *A. campestris*. The Danish mycologist Jakob Lange named it *Psalliota hortensis* var. *bispora* in the early 20th Century, the genus name is from the Greek word *psallion* which means "ring" or "chain" which was probably in reference to the partial veil remnant annular ring around the stipe (stem). It was sequentially renamed *Psalliota bisporus* and finally *Agaricus bisporus* about 60 years ago. It is sometimes also called *Agaricus brunnescens* to account for the tendency of the mushroom to stain brown when bruised (according to Tom Volk of the University of Wisconsin). The species name *bisporus* means two spores, which is a very significant distinguishing characteristic. Gilled mushrooms are in the class Basidiomycetes named for a structure called the basidium on which four basidiospores are produced. *A. bisporus* only produces two spores instead of four. When the reproductive nuclear division called meiosis occurs, each of the two spores ends up with two nuclei, one from each parental mating type. The consequence of this is that each spore of the button mushroom is capable of

sexual reproduction without the need to find a compatible sexual mate like the other basidiomycetes with their four spores each with a single parental nucleus. The self-fertilization of the button mushroom contributed to its spread, if limiting any variation experimentation with the species.

Among the largely forgotten English culinary traditions of the 18th Century is the production of ketchup from mushrooms. This predates the introduction of the first commercial tomato catsup which was marketed by the Henry J. Heinz in 1875. If one looks up the word ketchup in any of the more thorough dictionaries, the mushroom provenance is evident. The Oxford English Dictionary defines ketchup (or catsup) as "a sauce made from the juice of mushrooms, walnuts, tomatoes, etc." This may seem a contradiction as the British are notoriously mycophobic, contemptuously referring to mushrooms as toadstools (a calque word of German origin - *todesstuhl* literally means "death chair"). The English herbalist John Gerard opined in the seminal *Herball or Generall Historie of Plantes* in 1597 that "most of them [mushrooms] do suffocate and strangle the eater." It seems that Continental excursions by the English gentry resulted in their eventual familiarity with French traditional cuisine which included truffles, morels and cultivated *champignons*, a relative of *A. campestris*.

The meadow mushroom was thus one of the only wild mushrooms accepted by the British and it gained attendant approbation as a comestible. This is supported by historical literary evidence. In 1847, Anna Hussey wrote in *Illustrations of*

British Mycology that *Agaricus campestris* were "tender, succulent, friable and digestible, nourished on pure earth, in air redolent of wild thyme and the breath of kine, by dew which might be Fairies' nectar it is so free from the impurities of city miasma." It is also more than likely that *A. campestris* was the mushroom used in ketchup, as M. C. Cooke wrote in *British Edible Fungi* in 1891: "In rural districts where ketchup is an annual autumnal event, the meadow mushroom is preferred as more highly flavored." A typical English home recipe for ketchup consisted of mace, cloves, and ginger added to whole or diced meadow mushrooms. After about a week, the now deliquescent mixture was heated, strained and mixed with red wine, port or brandy. The consumption of mushroom ketchup was likely the prevalent form of fungal consumption in Great Britain in the 18th Century. George Watkins mushroom ketchup is still available commercially to this day for the adventurous gourmand.

Agaricus campestris and the closely related *Agaricus bisporus*, the button or white mushroom, are central to the inchoate cultivation of wild mushrooms. The French agriculturalist Olivier de Serres is credited with the hypotheses that mushrooms could be vegetatively propagated in his seminal agricultural primer *Théâtre d'Agriculture* in 1600. The origins of the cultivation of mushrooms is somewhat uncertain. The most reliable account is that of Joseph Pitton de Tournefort, who was a renowned French botanist credited with the concept of genus as a means of classifying plants. In a paper to the French Academy of Sciences in 1707, he wrote of the "Parisian" method of mushroom growing which

"favorise la pensée de ceux qui croient que les champignons naissant de grain de meme que les autres plantes," - favors the idea that mushrooms grow like plants. He credited the botanist Marchant père (the father) with having demonstrated the propagation of mushrooms in horse dung in 1678 - the theory being that the horse dung contained mushroom seeds. From its humble beginnings in the fields (*les champs*) of France, the champignon became the world's most popular edible fungus; in 1975 it comprised 73.1 percent (670,000 metric tons) of the global market. The original mushroom farms tenuously operated on the empirical observation that mushrooms emanated from transplanted mycelial substrate from earlier mushroom growth in a mixture of manure and plant detritus such as straw. Over time, it was discovered that champignons did not need to be in the "*les champs*" at all, and that, in fact, they thrived in total darkness. Further, the uniform cool temperatures and high humidity of underground caverns proved the ideal habitat, and the *Champignons de Paris* grown in the caves near Paris became the cynosure of the nascent cultivated mushroom industry. As the button mushroom spread to other countries and demand increased, the grower as spelunker gave way to advanced composting technologies. *Agaricus bisporus* is known as a secondary decomposer, for, unlike most other (wild) mushrooms, it does not decompose plant cellulose and lignin directly. The process of compost formation for the growth of *A. bisporus* growth thus necessitates a binary process. The first step consists of the familiar exothermic breakdown of plant nutrients by bacteria; the second step is essentially a Pasteurization process to kill off

any unwanted organisms, including other undesirable, though prevalent fungi. Once this is accomplished button mushroom spawn is introduced so that the mycelia will permeate the partially decomposed and purified compost. Fruiting is induced by a covering layer of "casing soil," and, after about three weeks, the first of three to five flushes of mushrooms are ready to harvest.

The spread of the white *Agaricus bisporus* and its increasing popularity led to the development of mushrooms with superficial variation to appeal to a wider market. The crimini mushroom was first grown in Italy in the 19th Century as the Italians co-opted the French champignons, preferring a variety of *A. bisporus* with a brown cap (pileus). The Portobello (aka portabella or portobella) is a fully grown and expanded crimini. It is thought to be an American invention that emerged in the late 1980's and is not named for Portobelo, Panama, nor for anything else so far as is known.



Button, Crimini and Portobello *A. bisporus*

Since the white button mushroom is widely consumed by diverse populations, there has been some investigation into its nutritional, medicinal and toxic qualities. Like most mushrooms, *Agaricus bisporus* is highly nutritious with generous levels of potassium, phosphorus and

calcium in addition to all of the nine essential amino acids used in protein synthesis. Several studies have shown that the button mushroom suppresses aromatase activity and the biosynthesis of estrogen and can be used medicinally to reduce the risk of breast cancer in women. *Agaricus* mushrooms contain agartine, a hydrazine derivative that has been found to be carcinogenic in mice. However, heating the mushrooms above 100 degrees Centigrade for 10 minutes volatilizes the hydrazine to minimize any potential deleterious toxic effects.

- William Needham

From the Philadelphia Inquirer:

The nation's mushroom production, dominated by Chester County's 62 growers, is about as flat as a portobello. Total mushroom production increased 1 percent this year, according to U.S. Agriculture Department statistics released yesterday. But the crop's value declined slightly, to \$957 million. Pennsylvania mushroom farmers produced 65 percent of the nation's crop of 801.5 million pounds of *Agaricus* mushrooms, the most common type. Second-ranked California produced 15 percent. Growers in Pennsylvania were the nation's most productive mushroom producers, growing 6.49 pounds per square foot, compared with the national average of 5.98. But they got paid less - 88 cents per pound, compared with the national average of \$1.13. *Agaricus* mushroom production is down about 6 percent since it peaked in 2000 at 854.4 million pounds. Mushroom canners are processing less than half the volume they were 13 years ago

