

# Potomac Sporophore



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## **2011 Scheduled Events**

### **Monthly Meeting Location:**

### **Kensington Public Library**

Located at 4201 Knowles Avenue.  
phone number 240 773-9515

Monthly meetings are normally held  
on the first Tuesday of the month.

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.

September 23 - 25 - Annual foray  
weekend at **Camp Sequanota** in  
Pennsylvania.

October 2 - The Annual **Mushroom  
Fair** at Brookside Gardens at the  
Wheaton Regional Park.

October 4 - Wild Mushroom Culinary  
Event

November 1 - Monthly Meeting TBD

December 6 - Election Meeting



## **Foray Schedule for Summer and Fall of 2011**

This is a list of our tentative forays  
for the rest of the year. If conditions  
are not very good such as a lack of  
rain some may be canceled or  
locations changed. On the other hand  
if it looks like we may find some  
things, a few may be added. To be  
updated with time and location before  
a foray be sure to send an e-mail to  
the foray leader ([forays@mawdc.org](mailto:forays@mawdc.org))  
and request to be added to the  
notification list. Happy hunting!

October 22

Lake Fairfax Park  
Reston, VA

October 30

Scotts Run Nature Preserve,  
McLean, VA



## From the MAW President

Between the surge in membership in MAW and the MAWDC Meetup group and the rainy September we just had, I've begun being getting bombarded by email requests for identification of fungi. These typically consist of nothing more than a photograph or two and may even come from someone with no connection whatsoever to MAW.

I have to admit that this really drives me nuts. It usually takes far more time to track down an exact identification for a mushroom than it does to snap a picture and compose an email, and I just don't have the time or inclination to do so as a favor for a complete stranger. Plus, the pictures people send rarely provide enough information to enable a decent ID. So I usually just pass such requests on to others who are more generous with their time. Recently, though, I made an exception to this policy because it was a potentially life-or-death situation.

I received an email on a Tuesday afternoon from a fourth-year medical student at the Georgetown University School of Medicine. They were treating a patient who had presented with liver failure following his consumption of some kind of mushroom. The patient's family had brought some of the mushrooms to

the hospital, and they were asking if I could help identify them. Unfortunately, the photographs provided with the email were of such miserable quality that identification was impossible. The mushrooms were mangled and half-rotten. No supplementary descriptive text was provided. Not that all I did was criticize. I immediately referred them to the National Capital Poison Control Center (1-800-222-1222).

A follow-up email the next day speculated that the mushroom was *Amanita phalloides* and provided additional photos that were hardly any better for diagnostic purposes, but none of the pictures looked to me like any kind of *Amanita*.

The next day I learned that about a week earlier the patient had picked enough mushrooms to carry in both hands. They were of several different colors, but most of them were white. That same morning he made a stir-fry mushroom broth and consumed it. Two hours later he started to develop diarrhea and nausea, which got worse and continued into the next day. The following day he began to feel fatigued and lightheaded, and he finally went to a hospital which transferred him to the liver transplant unit at Georgetown. They contacted the Poison Control Center and consulted with an expert physician on *Amanita phalloides* toxicity. Luckily for the patient, they had access to IV

Silibinin, a derivative of milk thistle, which together with aggressive fluid resuscitation, denial of food, and temporary rerouting of his bile duct to prevent recirculation of the toxins saved his life. He was finally discharged a week after the initial ingestion.

Several days after that, I finally got to see specimens similar to what he had eaten. It was a mixed collection—some *Suillus granulatus* (not toxic, but the slimy cap cuticle can cause diarrhea), some *Amanita rubescens* (toxic raw, but not when fully cooked), and some *Amanita bisporigera* (formerly known as *A. virosa*, and deadly poisonous whether raw or cooked). I pointed out the likely bad boy, not that it mattered at that point because the treatment for *A. phalloides* and *A. bisporigera* poisonings would probably be exactly the same. What did matter was that the treatment with milk thistle, etc. was administered in a timely fashion, thereby sparing the patient the necessity of getting a new liver.

Well, I'm sure you find all of this fascinating, but back to my original gripe about the poor diagnostics provided by people who don't know how to describe a mushroom. If only I had been told about the tall slender stature, pearly white color, free white gills, skirt-like partial veil, and remnants of universal veil on both the cap cuticle and bulbous enlargement at the bottom of the stalk, I could have told them it was probably *A. bisporigera* without having to go down to the hospital. But they didn't know what to look for or how to describe what they had in hand.

With that in mind, I've put together a list of macroscopic (observable

without a microscope or other aids) criteria that can be used to describe a specimen, particularly one with a stalk and a cap. Here it is, for use with a good field guide that will provide descriptions along these same lines. And please don't start sending me detailed emails requesting an ID, because I still won't do it unless you're dying!

### **Macroscopic Identification of Mushrooms**

-note the date and recent weather conditions when the mushrooms were collected

-note the geographic location

-note of the immediate habitat—what kinds of trees and other plants were in the immediate vicinity, including what kind of tree was overhead and what the mushrooms were growing on or in (e.g., dirt, wood, grass, etc.)

-photograph the mushrooms in a number of different stages of development (button, cap fully expanded, cap partially expanded) and from several different points of view (from above at a 45° angle, from the side, from above with some of the mushrooms turned upside down), trying to fill the picture frame in a close-up but also including a shot showing the entire patch

-carefully uproot several entire specimens by digging them up from beneath so that the very bottom of the stem can be inspected for features such as the presence of an enlargement, ornamentation, or other attached material

- note the shape of the mushrooms (cap and stem or other shapes);

measure the dimensions (length and width) of the various parts

-note the color of all parts of the mushrooms in various stages of development

-see if the cap cuticle has a distinctive appearance or texture such as smooth, velvety or hairy, slimy when wet, scales, attached bits of membrane, raised bump in the middle, irregularities, etc.; if there are striations around the cap margin; and whether the margin is even or uneven

-check for the presence or absence of an annulus (ring), even just remnants, on the stalk or around the margin of the cap, and note whether it is a membrane or fibrous

-note the nature of the underside of the cap or fruiting body (gills, teeth, or pores)

-if gills are present, note the gill attachment to the stem (decurrent, adnate, adnexed, free, etc.), gill edges (even or uneven), and spacing (crowded, widely spaced, split)

-if pores or spines are present, note their size, shape, and arrangement

-see if the stalk is attached centrally to the cap, off to one side, or altogether lacking; is fibrous or hollow; has any kind of surface ornamentation such as fibrils, dots, or irregularities; is uniform in diameter or is wider at the top or bottom; and is firmly attached or easily separates from the cap

-scratch and break all parts to see if there is or has been any staining reaction (change of color) in response to bruising or aging

-sniff the gills or pores to see if there's any odor

-taste a very small bit—about 1/32 of a teaspoon will do -- of the mushroom (or its latex if there is any) to see if it is acrid or bitter, but keep it in front of your teeth and spit it out when done

-take a spore print on clear plastic or black and white paper; preserve it by wrapping it in plastic

-preserve several specimens by wrapping them in waxed paper and keeping them refrigerated

- Ray LaSala



### **Editorial** **Mushrooms with Sherry**

#### **Quo Vadis**

Though the numbers may be increasing, most Americans are not interested in looking for wild mushrooms. When I meet an American in the forest looking for mushrooms he usually has a Russian uncle in tow. In the couple of instances when I failed to find chanterelles at a favorite spot, it was, I learned, because other MAW

members had arrived earlier than I did and picked them. I did meet an old codger in the Pennsylvania mountains the other day (I think he was younger than I) who asked me if I was looking for mushrooms. He said that he had only found 15 this year when in previous years he had found as many as 50. I asked him what mushrooms he had found but he didn't seem to know. I didn't learn whether he had found 15 species or 15 mushrooms. He lived on a farm on the mountain where I was foraging. I came to the conclusion that he had a narrow interest in mushrooms; perhaps he looked only for mushrooms he ate as a child. This general disinterest by Americans in mushrooms is said to be due to an attitude set by the Anglo-Saxon in the early centuries of our country.

In the 1930's many Americans did not have enough to eat, but I never heard that they went into our fields and forests to find and eat mushrooms. In the 1960's John F. Kennedy, in his campaign for the American presidency, said that many children go to bed hungry, but no one took an interest in the free food that was mushrooms. Now there are freegans, who dumpster-dine for their meals; they live on some of the 96 billion pounds of food discarded by restaurants and the rest of us each year, but they are not showing an interest in wild mushrooms. The only people who show an interest in wild mushrooms are the well-fed and many of them have had a membership in a mushroom club. The hungry would probably sell any mushrooms that they found.

Over the years the number of mushrooms clubs in America has grown. There are now three in Pennsylvania. New York has at least

eight clubs and so does California. There was a story a few years ago about a couple of men who were quite upset because someone took their hen of the woods. They had found the hen but didn't pick it because they wanted it to grow larger. These were men who taught others in a mushroom club about finding and eating mushrooms. The person who reported the story didn't think the men's anger over the missing hen made much sense because mushroom clubs are likely to increase the number of people who look for mushrooms.

In a way, mushroom hunting is a stealth activity. There's not a lot of reporting on it and, as I said, I rarely meet anyone who is looking for mushrooms when I am out there. Even the members of a wild mushroom lover's family are often suspicious of his activity. The public doesn't pay much attention to people who search for mushrooms on public land but authorities who look after the well-being of public lands tend to take a darker view.

They aren't interested in seeing large numbers of people searching their land for anything. But mushroom hunters typically do their thing without much regard for this wrong attitude. Looking for mushrooms is a natural pursuit, it's a blessed activity.

Of the five fabulous mushrooms, one can always find the chicken anywhere and the hen without leaving a neighborhood with oaks, and pleurotus down by the stream. It's the morels and chanterelles that are found on public lands and which require a select attitude.

- Jim Sherry

## Fungus Notebook



**Common Name: Sulphur Shelf, Chicken-of-the-Woods, Chicken mushroom, Rooster Comb, Polypore souffré (French), Schwefelporling (German), Трутовик (Russian – pronounced 'troo tow vick')** – The fungus grows in overlapping shelf-like, semicircular brackets with a spore-bearing pore surface on the underside of the bright orange caps that is sulphur yellow in color – it is a Sulphur-colored Shelf-type fungus.

**Scientific Name: *Laetiporus sulphureus*** - The Latin word *laetus* means 'fat' or 'rich' when applied to animals and 'fertile' when applied to either land or plants. The generic use here probably refers to the refulgent appearance of the pores (Latin *porus*). *Sulphureus* is Latin for sulfurous; the yellow-hued element sulfur (atomic number 16) was a well-known in the ancient world as both a medicine and as a means of fumigation. An alternate scientific name that is often used is ***Polyporus sulphureus***.

Sulphur or Sulfur (both are correct orthographies) Shelf is among the most recognizable of all the edible fungi and is accordingly gathered with justifiable reckless abandon by

neophyte mycophagists; it has no look-alike doppelgangers (at least in the Mid-Atlantic States region). The exploded rosettes of violent orange are hard to miss and can be discerned in even the densest of woods even from across a ravine. The profusion of individual and overlapping fan-like fruiting body caps from a single source readily fills a large rucksack from which many meals can later be created; a veritable forest fungal cornucopia. Charles McIlvaine in One Thousand American Fungi provides the anecdote that: “On an old willow at Mt. Gretna, a cluster 18 inches across afforded a dozen meals. Whenever a meal was wanted a pound or two was broken off. It lasted until January.” They can and do get quite large; the 2009 Guinness Book of World Records lists a Chicken-of-the-Woods mushroom found in New Forest, Hampshire in the United Kingdom on October 15, 1990. It weighed 100 pounds (45.35 kg).

The common name Chicken-of-the-Woods captures the gustatory sensation elicited by the fungus; when cut into small chunks and sautéed, it has the look, texture and taste of the white breast meat of a chicken. It doesn't look anything like a chicken, unlike the Hen-of-the-Woods (*Grifola frondosa*) which actually does look like a hen sitting in the woods. The Chicken-of-the-Woods should also not be etymologically confused with the Fried-chicken mushroom (*Lyophyllum decastes*) which tastes like fried chicken – the two “chicken mushrooms” bare no physical similarity. McIlvaine, the audacious and self-proclaimed American authority on fungal edibility (mycophagism) - his stated quest was to research mushroom varieties (he

relishes in calling all fungi ‘toadstools’) that would “appease the appetite of a hungry naturalist” - offers the following advice: “If *P. sulphureus* is cooked properly it is a delicious fungus. Cut fine, stew slowly and well, season, add butter, milk with a little thickening.” The photograph affords a cook's eye view of the commendable result.



Sautéed Chicken-of-the-Woods

There are a few caveats to the universal appeal of the Sulphur Shelf as an edible fungus. It is an unlikely looking food source, as bright colors quite frequently indicate toxicity, the aposematic coloration of animals such as the poisonous red eft a case in point. With characteristic aplomb, David Aurora offers his version in the classic Mushrooms Demystified: “There is always an element of disbelief in stumbling onto a large cluster – it looks like something out of a Jacques Cousteau movie. You would no more expect to find it on an aging eucalyptus stump by the railroad tracks than you would expect to find a freight train at the bottom of the sea.” He also addresses the other caveat to eating this fungus; there have been reports of Sulphur Shelf poisoning, particularly in California and the Pacific Northwest. Most field guides offer cautionary notes relating to observed side effects. Gary Lincoff, the generally acclaimed

doyen of amateur mycologists and author of The Audobon Field Guide to North American Mushrooms, writes that “It becomes somewhat indigestible as it ages and, in some, causes an allergic reaction, such as swollen lips.” He also notes that the apparent toxicity is related to the host on which the fungus is growing, with a specific caution against those found on eucalyptus trees, which are native to Australia and which were introduced into California and thereafter spread northward through the Pacific Northwest. Is there a need to be cautious when eating Chicken-of-the-Woods? Depending on where you gather them, yes.

Until recently, the Sulphur Shelf had been thought to be a single species with perhaps one variation; it has long been observed that a variant of *L. sulphureus* could be occasionally found that had white pores instead of the standard sulphur-colored pores. This variant was known as either *Laetiporus sulphureus* var. *semialbinus* (Latin for ‘half white’) or as *Laetiporus cincinnatus* (from the Ohio town of Cincinnati where it was first identified).

Recent research has revealed that there is much more complexity to the genus than macroscopic observation alone would provide. A seminal paper entitled “The Genus *Laetiporus* in North America” by H. Burdsall and M. Banik was published in the Harvard Papers in Botany (Vol. 6 No.1 pp. 43-55) in 2001. This paper reported on a number of separate studies on the taxonomy of *L. Sulphureus*. Based on an analysis of 116 separate Sulphur Shelf collections, which involved not only the genotypic methods of polymerase chain reaction and restricted fragment length polymorphism but also the

traditional pairings to determine sexual compatibility, the unexpected conclusion was reached that there may be five or six separated species in North America.

The species of *Laetiporus* can be distinguished based on geographical, environmental, and growth factors. In addition to the original *L. sulphureus* and *L. cincinnatus*, the taxon now includes *L. conifericola*, *L. gilbertsonii*, *L. huroniensis* and *L. percinus*. One of the major findings of the Harvard study is that the fungi on the west coast are different from the fungi elsewhere. These are *L. conifericola*, which, as its name implies, grows only on conifer trees and *L. gilbertsonii*, which grows only on oak (*Quercus*) and eucalyptus trees; it is named for Robert Gilbertson, a noted mycological taxonomist. As can be seen in the photograph taken of a Sulphur Shelf type fungus growing on a fallen conifer tree in Olympic National Park, *L. conifericola* is essentially indistinguishable from its Eastern cousins.



*Laetiporus conifericola* on fallen conifer log in Washington State

Reports of the apparent toxicity of Sulphur Shelf that emanate from Western North American sources are indubitably due to the fact that they

are talking about a different species. For example, Michael Beug, a mycology professor at Evergreen State College in Olympia, Washington, reports that ingestion of either of the western variants can cause gastro-intestinal distress in the form of nausea and vomiting. Further, he states that “One young British Columbian girl who ate *Laetiporus conifericola* raw became disoriented, lost coordination, and described visual hallucinations.” The constituent components of any species are a direct result of what it ingests from its environment. It is therefore quite probable that the unique enzymatic content of the *Laetiporus* species that grow on conifers and eucalyptus trees is at the heart of the mysterious reports of Sulphur Shelf sickness.

The Harvard study also addressed some significant differences between *L. sulphureus* and *L. cincinnatus* other than the readily discerned difference in the lighter color of the spore-bearing pores on the underside of the cap of the latter. This is of some importance as the two species overlap in geographical habitats in Eastern North America. The differences are associated with the manner in which the nutrients are extracted from the host tree. *L. cincinnatus* extracts nutrients from the tree’s roots or from the butt of the tree which is that part adjacent to the roots. It is therefore the only *Laetiporus* species that can be found fruiting on the soil (the hyphae extending to the roots below), though it is also found further up the tree to a height not exceeding five feet. *L. sulphureus*, on the other hand, is a heart rot fungus, meaning that it extracts its nutrients from the heartwood of the tree



*Laetiporus cincinnatus* (Note that this fungus is normally found at the base of the tree growing from the roots but can also be found “up to a height of five feet” according to Burdsall and Banik study).

When a tree grows and the trunk diameter increases, the innermost part or “heart” at the center of the bole relinquishes its role of water and nutrient transport to the outermost layer, which is called the sapwood. The heartwood provides the core support at the center of the tree. When the heartwood is parasitized by the *L. sulphureus*, the tree is weakened by the reduction in its load carrying capacity. This can have dire consequences for the (mostly) oak trees that are its predominant host. According to [Fungal Strategies of Wood Decay in Trees](#) by F. Schwarze, a study conducted in 1990 in England after the “Great Storm of 16 October, 1987” found that “*L. sulphureus* was the second commonest fungus species associated with failure of tree stability and fracture-safety of all trees investigated.” The cause was reputed to be the destruction of the heartwood of the trees and the concomitant loss of strength against wind shear forces.

The mild toxic qualities of some species of Sulphur Shelf are due to the production of proteinaceous substances synthesized by the fungus over the course of evolutionary history. One such enzyme is

tyrosinase which is used to assist in the oxidation of the phenols in the heartwood of the host tree. The likely source of *Laetiporus* toxicity is a lectin called LSL, which induces both hemolytic (release of hemoglobin) and hemagglutinating (coalescence) of red blood cells. Foods with high concentrations of lectins (which include some beans, seeds and nuts) can cause gastrointestinal distress, particularly if consumed uncooked and in excess. This is the fundamental reason why it is advised to cook all fungi and to eat them in moderation. It should come as no surprise that Sulphur Shelf enzymes, if used in appropriate quantities against an appropriate malignancy, would likely have medicinal properties as well; lectins are known to lyse some cells. There is some evidence that *Laetiporus* fungi inhibit the growth of some bacteria, notably *Staphylococcus aureus* of staph-infection infamy.

-William Needham

**ERRATA:** It was pointed to the editor that the picture of *Gyromitra esculenta* that was in the Summer Issue of the Sporophore (V. 26 No.3) may have been *G. brunnea*. This was based on a description of *G. esculenta* as having very tight pits/ridges/folds. *G. brunnea* was described as having lobes that are much smoother than those of *G. esculenta*. The former is reported as edible, the latter is reported to be poisonous. As with all wild mushrooms, caution is always appropriate and an expert's opinion should be obtained in advance of consumption. The following summary of mushroom poisonings from the North American Mycological Association (NAMA) is

provided as further cautionary note (there are bold mycophagists and old mycophagists but no old and bold mycophagists):

During 2010, 76 incidents of mushroom poisoning involving 93 people were reported through the NAMA website and/or through our nationwide team of toxicology identifiers. One previously ill elderly person's death was hastened by having consumed *Amanita phalloides*. Six other individuals survived poisoning by potentially deadly *Amanita* species (two cases involved *Amanita phalloides*, two cases involved *Amanita ocreata* and one case involved *Amanita bisporigera* or a look-alike). One possible amatoxin case involved a *Psilocybe* seeker who apparently consumed *Galerina* by mistake and may have suffered some liver damage. Another amatoxin case involved a small *Lepiota* species that looked a lot like *L. rubrotincta*. This case plus the reported death of a dog from *Lepiota subincarnata* (syn. *Lepiota josserandii*) should remind people once again not to eat small species in the genus *Lepiota*. Of the 84 people not involved in confirmed or suspected amatoxin cases, 58 consumed known poisonous mushrooms or mushrooms where the identification was unknown and 26 consumed mushrooms that are edible to most people. The most serious of the non-amatoxin cases involved a woman who consumed an *Amanita smithiana*, after having been told that it was Matsutake. She suffered kidney problems but was successfully treated and did not require dialysis.

Consumption of raw mushrooms was the downfall of several people. Two consumed Morels raw, one consumed

a raw *Leccinum*, another a raw *Russula* and one person ate a raw *Pleurotus*. Nearly all of the *Chlorophyllum* cases involved munching raw mushrooms. Even consuming raw *Chlorophyllum rachodes* or *C. brunneum* is likely to cause distress. *Chlorophyllum molybdites* poisoning is much worse if they are eaten raw – even though *C. molybdites* makes most people ill even if cooked. All mushrooms, even the sliced ones you see on salad bars, should be cooked before consumption. Mushroom cell walls are made of chitin which we cannot digest well without the aid of cooking. Many mushrooms also contain compounds that damage red blood cells (hemolysins) unless denatured by cooking. Because freezing only slows down but does not stop bacterial decay, mushrooms should be cooked prior to preserving in the freezer.

One person began to feel ill from drying Matsutake – it is important the mushroom dryers be operated in well ventilated areas because the spores given off in the process can cause problems for some people. There was also the first formal report I have received of someone having GI distress after eating Matsutake. For every edible mushroom, there appears to be some people who are sensitive and will get an upset stomach from eating it. Severe anaphylactic shock is rare, but there appears to be a case this past year involving *Laetiporus sulphureus* where the reaction was very severe. Several years ago there had been a death from shock after consumption of *Laetiporus conifericola*.



These button MUSHROOMS ARE  
Free-LOADERS who CONTRIBUTE NOTHING  
TO OUR FOREST ECONOMY. JIM SHERRY