

Mycena News



The Mycological Society of San Francisco November 2008, vol. 59:08

Speaker for the Nov. 18
MSSF Meeting



Brandon Matheny

Bizarre Basidiomycetes

Brandon Matheny is Assistant Professor of Ecology and Evolutionary Biology at the University of Tennessee. His research interests include fungal molecular systematics, evolution of ectomycorrhizal fungi, mycology, biogeography, and mushroom taxonomy. This talk will feature Brandon's recent research on *Wallemia* and *Entorrhiza*.

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MycoDigest: Evaluating Fungal Diversity with Environmental Sampling

Brian A. Perry

In one of her numerous contributions to this column, Else Vellinga made the timely observation earlier this year that mycologists will quite soon be moving beyond the traditional methods used to assess the fungal diversity present in our forests and other habitats. Instead of exploring such environments with basket and favorite collecting knife in hand, soon we will likely carry an array of small tubes and plastic bags in which to place plant tissue samples, leaf litter, and soil cores, which will then be taken back to the lab and liberated of the fungal DNA they harbor. At least when we are not just collecting for the table, that is. Similar methods of sampling environmental DNA have greatly expanded our understanding of the biology and diversity of bacteria and Archaea, and are beginning to do the same for our knowledge of Fungi.



Undetermined species of *Agaricus* from Principe, Africa.
Photograph by B.A. Perry

Estimates of fungal diversity suggest that we have described less than 5% (Hawksworth, 1991, 2001), and in some estimates less than 2% (O'Brien et al 2005), of the fungi present on our planet. When you stop to think about these numbers, they are quite staggering, especially when one considers that we have been discovering and naming species of fungi for well over 200 years. How is it that we are missing so many of these fungi? Well, as all of you know, not all fungi produce the macroscopic, complex sexual structures (i.e., mushrooms) most of us wander

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MycoDigest is a section of *Mycena News* dedicated to the scientific review of mycological information.

PRESIDENT'S POST

I'd like to use this Post to pay homage to one of our most highly esteemed members – Dr. Bill Freedman.

Bill joined the Mycological Society in 1968. I was thirteen years old. I first met Bill in the late 80's. I was a volunteer at the Coyote Point Fungus Fair, an event that Bill ran for 14 years (plus two years at the California Academy of Sciences prior to that). My first impression: wow, what an interesting little old man! My opinion hasn't changed.

I'm sure he doesn't remember this, but shortly after I worked the CPFF I saw him for a checkup when he worked at Kaiser in Daly City. I remember that he told me that that pain in my knee wasn't bursitis. Must not have been because I haven't had a problem since then.

Bill has been the Toxicology Committee Chairperson for about 20 years or so. He's been relentless in keeping up with the latest in poisonings, treatments, *Amanita phalloides* fruitings, and anything else related to mushroom toxicity. One of the best achievements of the Toxicology Committee under his leadership has been our long-standing relationship with the California Poison Control System. Every year, like clockwork, Bill sends them updated lists of Bay Area mushroom experts in case of a poisoning. Currently the TC is working on fine-tuning the identification process and other aspects of public health regarding mushrooms. More on that later.

Bill also has been our liaison with San Mateo County Parks regarding collecting mushrooms on their land for our Fungus Fair. His consistent and forthright approach has created an outstanding relationship with them. For example, the agency has requested lists of the fungi we find and Bill always makes sure that happens.

Speaking of the Fungus Fair, Bill has been a steady and energetic volunteer. He created and developed the outstanding Ecology exhibit for the Fair. He and his wife, Louise, have been staffing the exhibit for at least ten years now. By the way, Bill would like to pass that on to someone else. If you have an interest in how fungi interact with the rest of the planet, then let Bill or me know (no special knowledge necessary, only the interest to learn more and to share what you learn). For many years he has been one of our most well received speakers at the Fungus Fair, too. His talks are always thought provoking and entertaining.

Bill is an energetic and persistent player in nearly everything we do. He truly is a role model for volunteerism in the Society. Hats off to you, Bill. I hope to see many of you at our General Meetings and at our Mendocino Woodlands foray in November. Pray for rain.

-J.R. Blair

ANNOUNCEMENTS

FUNGUS FAIR VOLUNTEERS NEEDED

Volunteers are needed from Friday night through Sunday, December 5–7. Shift obligation is three hours. If interested please send a note to fungusfair@mssf.org.

MSSF SCHOLARSHIP

The Mycological Society of San Francisco offers scholarships to full-time graduate students majoring in mycology and attending colleges and universities in northern California. The scholarships vary in amount from \$700 to \$1,500 and are given in the name of Esther C. Whited and Dr. Harry Thiers. All research proposals are welcomed, but special consideration is given to taxonomic studies of the higher fungi of the Pacific States.

Requirements include two letters of recommendation—one from a professional mycologist, a brief statement describing the research project, and an agreement to present the results at a General Meeting of the MSSF. Note, \$200 of the scholarship will be awarded at the time of this presentation.

Students reapplying or modifying previous proposals need not resubmit letters of recommendation. The deadline for applications is December 31, 2008.

Send inquiries and letters to:

Robert Mackler
157 Mesa Ct.
Hercules CA, 94547.

NEWS FROM THE LIBRARY COMMITTEE

The library committee reviewed donations and updated our catalog. Duplicate books were passed on to the Book Committee for sale to interested buyers, and the funds added to the MSSF budget.

Many thanks to Emmy Lou Miller who gave us about six mushroom books, and various memorabilia, as well. Mrs. Bruce Bajema also donated about a dozen books from her husband's collection. Thank you both!

SOMA CAMP 2009

To be held on the weekend of January 17–19, 2009, SOMA Camp will feature forays, workshops, guest speakers, wild mushroom cuisine, and much more. Check www.somamushrooms.org for finalized event details.

MSSF MENDOCINO WOODLANDS FORAY • NOV 14–16

The annual MSSF Mendocino Woodlands Foray will be held in the mushroom-rich hills of Mendocino, California.

The Mycological Society of San Francisco is very pleased to announce that Gary Lincoff, author of the *Audubon Field Guide to North American Mushrooms*, will be the Foray Mycologist. Also in attendance will be University of Tennessee Professor Brandon Matheny, of the Fungal Tree of Life project.

The weekend includes lodging, meals, forays, classes, and special events. \$150 for MSSF members, \$175 for nonmembers. Under 12, half price (w/ adult), under 5 free. \$90 with offsite lodging.

Registration form available online at www.MSSF.org, or by e-mail request to mendo@MSSF.org. The earlier you register, the closer your cabin will be to the main lodge. Questions? E-mail the above address, or call 707-829-2063.

DAVID ARORA'S ANNUAL MENDOCINO FORAY

Nov. 28-30, 2008. Join David Arora and special guests for a weekend of mushroom hunting, feasting, lectures and workshops. Anthropologists and ethnomycologists recently published in the fall mushroom issue of *Economic Botany* will speak about mushroom hunting in different countries as well as locally. Begins the day after Thanksgiving. \$200 per person includes lodging and most meals (\$165 without lodging). To register, contact maxfun@cruzio.com or call (707) 884-3457.

SF FERRY BUILDING FUNGUS FESTIVAL

On Saturday and Sunday, November 8 and 9 from 10 to 6 the MSSF will have several display tables at the Ferry Building Fungus Festival in the Ferry Building at the SF Embarcadero.

We will have displays of mushrooms for cultivation, ID, and lore, we'll sell MSSF merchandise and memberships, and we'll be promoting to the public our Fungus Fair at the Oakland Museum the first weekend of December. There will also be talks, cooking demos, and special mushroom related offerings at the other gourmet vendors in the Ferry Building.

If you would like to volunteer for this event or can provide wild collected mushrooms for the event contact Ken Litchfield at litchfield.ken@gmail.com or 1-800-752-2136. The Ferry Building Fungus Festival is sponsored by MSSF members John and Toby Garrone's Far West Fungi shop, the San Francisco Ferry Building, the Ferry Building Farmers' Market, and the Mycological Society of San Francisco.



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To subscribe, renew, or make address changes, please contact Alvaro Carvajal: alvaro.carvajal@sbcglobal.net or (415) 695-0466.

Past issues of *Mycena News* can be read on-line at www.mssf.org.

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On Eating Raw Mushrooms

David Campbell

There seems to be an ongoing temptation amongst mycophagists and chefs to serve mushrooms raw or barely cooked. Generally speaking, this is not the best of ideas.

The *mycochitin* composition of mushroom cell walls, as opposed to *cellulose* walls of plant cells, is difficult for humans to digest. Our stomachs resent indigestible items, and often forcibly reject them without further ado. The cooking process helps break down fungal cell walls, rendering mushroom flesh not only more readily digestible, but also releasing significant nutritional value contained within the cells.

Further, many mushrooms considered edible contain irritating or toxic components readily destroyed or eliminated by cooking. Therefore, common and valid mycophagal wisdom dictates that all edible mushrooms should be cooked prior to consumption. Exceptions are made only if one has specific knowledge that a particular pristine species is safe to eat raw. With these few *au naturel* exceptions, the “pristine” part becomes especially important. Environmental or microbial contaminations to the mushroom flesh may pose potential health hazards. By dramatic example, a few free-spirited youths in Hawaii a few years ago blithely consumed blue-staining *Psilocybes* as they went collecting from cow patties. What a downer it must have been a short while later, when the doctor told them they had nematodes!

Bear in mind, there is much yet to be learned about eating mushrooms; wild or tame, cooked or raw...the research is in progress, and we the mycophagists are, by default, the guinea pigs. What we know of mushroom edibility is primarily the result of shared anecdotal information, as compiled and recorded over the course of human history. Hardly do we rest on hard science or a complete body of knowledge when we decide whether or not to eat a given fungus. In fact, another good general reason for cooking one's mushrooms is the blind stab it represents at protecting us from the unknown.

The list of edible mushrooms considered safe for raw consumption is quite short. Even species commonly eaten raw, especially the ubiquitous button mushroom, *Agaricus bisporus*, have their drawbacks. Buttons, and many other edible mushrooms contain various hydrazines, a group of chemical compounds generally considered carcinogenic. For the most part, these compounds are heat sensitive, readily volatilized and expunged from the fungal flesh by proper cooking. This basic understanding is employed by some more adventurous mycophagists to justify eating the false morel, *Gyromitra esculenta*, a deadly poisonous mushroom according to every published description I've read. Those who so indulge in this

species believe the hydrazine compounds present (naturally occurring gyromitrin converts to monomethylhydrazine, or MMH when heated) to be effectively removed, at least to a large degree, by thorough cooking, provided one stands well clear of the fumes during the cooking process. The more conservative mycophagists consider this practice questionable, at best, and argue that gyromitrin is never completely eliminated, that there may well be harmful cumulative factors associated with repeat false morel consumption....I say, “To each his own,” in decisions such as this, cautioning only that the innocent and unaware should never be arbitrarily included in mycophagal experimentation.

The kicker with *Agaricus* species, including the buttons, is that one of their primary hydrazine components, along with gyromitrin, is “agaratine,” a substance somewhat resistant to cooking heat, with a significant percentage (25–75%) of agaratine material typically remaining after being subjected to various methods of cooking. So, the question as far as avoiding hydrazines in *Agaricus* is concerned, actually becomes whether to eat members of this genus at all.

We need to keep in mind that lab tests and subsequent conclusions drawn concerning carcinogenic or mutagenic health hazards of hydrazine involve massive doses of isolated extracts administered to mice in a concentrated time frame. Similarly disturbing test results are likely to be found with many substances present in many, many foods humans commonly eat without suffering or even worrying about any particular health concern. The relatively unblemished human history of consuming edible *Agaricus* species suggests we may continue to do so. The science may suggest we should not over indulge, but we already knew that. As I know of no one stricken by cancer or any other malady as particular result of eating *Agaricus*, and since the genus includes some of the most delectable of all edibles, there are several wild *Agaricus* species that remain firmly ensconced on my preferred edibles list.

Unfortunately, the button mushroom industry routinely promotes the use of their product raw, especially on salads, perpetuating the myth that mushrooms need not be cooked. I presume such promotion to be a profit driven policy. A recent Poison Control Center response incident with *Gyromitra montanum* purchased at a Whole Foods store demonstrated the broader danger of public misconception about the safety of eating store-bought mushrooms raw. The blithe and unwitting “victim” reportedly took a nice chomp from her just purchased bull's nose as she walked out of the store! As far as I know, this mushroom contains hydrazine compounds that may be quite similar to those found in *Gyromitra esculenta*, but

in sufficiently reduced concentrations to be listed in many published mushroom guides as edible, *if cooked*. In this case, the immediate effects induced by consumption of the raw *Gyromitra* flesh easily trumped any long-term health concerns.

Cooking of mushrooms generally reduces the likelihood of gastro-intestinal irritation, and allergenic reaction. Popular comestibles such as morels (*Morchella sp.*), hedgehogs (*Hydnum repandum*) and oyster mushrooms (*Pleurotus sp.*) will almost certainly make one ill if eaten raw. Chanterelles (*Cantharellus cibarius, formosus, etc.*) are generally considered stomach irritants in the raw. King boletes (*Boletus edulis*) are known to cause many people gastro disturbance even when cooked, but are nonetheless popular raw in the hard-button stage. Diners served a raw porcini salad are well advised to eat just a tat...or else.

Some small and/or goeey mushrooms are often eaten raw, mostly because they hardly lend themselves to cooking. The witch's butters (*Tremella mesenterica, T. foliacea, Dacromyces palmatus*) and toothed jellies (*Pseudohydnum gelatinosum, Phlogiotis hellvelloides*) are good examples of fungi commonly eaten "as is," sans ill reported effect, or at least I've heard no dire reports. Part of the safety in occasionally consuming oddball species such as these is we never really eat all that much. In fact, the key to safe consumption of any and all mushrooms, aside from proper ID and sufficient cooking, is moderation.

Somewhat ironically, given the nefarious reputation of the genus at large, the most readily digestible, or at least most innocuous, mushroom to eat raw, by my experience, is the coccoli (*Amanita lanei*). I generally eat these mushrooms raw because they so remind me of oysters (mollusks, not the fungus), in that the more you cook them, the less desirable they become. In all fairness, I should mention that I do *chemically* cook my coccoli salad with lemon juice marinade...I have never suffered any discomfort, nor have I heard complaints from those who have consumed my "coccoli ceviche." Of course, you are not likely to see edible *Amanita* specimens for sale in the market, nor should you, methinks. Our markets and the public both lack the knowledge and sophistication to safely trade a product so easily confused with its lethal cousins!

Other methods of chemical cooking, aside from citric acid, involve brining or pickling. I lack personal experience with this form of mushroom processing, but I have heard and read it is used to apparently satisfactory effect in many cultures, notably Russia, where many kinds of freshly collected *Russula* and *Lactarius* species are reportedly tossed collectively into the brine barrel, to be directly retrieved and munched later. Of interest with this method is that some of these species so prepared are considered poisonous when cooked by conventional heat application.

As stated above, cooking with heat destroys many toxins and irritants found in mushrooms. Toxins present in various red-sponged species of the genus *Boletus*, for instance, may allegedly be neutralized with prolonged cooking. Ibotenic acid and related toxic compounds present in *Amanita muscaria* are not heat-sensitive, but are soluble in boiling water. This mushroom may be rendered edible by properly leaching the mushroom toxins into boiling water, tossing the water, and eating what's left of the mushroom. I have been party to this process several times while participating in David Arora's annual Mendocino seminars, where we often served properly processed fly agaric, sliced and boiled, to the assembled throng, free from toxic effect.

Make no mistake, however. Deadly amanitin toxins present in the death cap and destroying angel (*Amanita phalloides, A. ocreata, etc.*) are oblivious to heat and leaching processes, retaining their virulent properties regardless of cooking methods applied. Cooking or not makes no difference with these toadstools; they remain fully capable of killing any sad soul who egregiously partakes, regardless. ☘

To Celebrate the Holiday Season
The Mycological Society of San Francisco
Invites you to the Annual Holiday Dinner

December 1, 2008, 7pm, Hall of Flowers, Golden Gate
Park, 9th and Lincoln, San Francisco.

****Our Menu****

A grand array of appetizers & Holiday Punch
*Your choice of one entree: **Beef Tenderloins with Porcini***
Sauce / Salmon with Morel Sauce / Vegetarian Mush-
room Pasta

Brussels Sprouts sautéed with pistachios, shallots, and garlic
Parsnip and Potato Puree
Green Salad / Olive Bread Rolls
Candy Cap Crème Brulee / Coffee

The dinner cost is \$35.00 for members, \$40.00 for non-members. RESERVATIONS ARE REQUIRED and must be made no later than Tuesday, November 25th. As at last year's dinner, you will receive a ticket for our raffle if you contribute an appetizer to share with fellow diners. You may contact Pat George at plgeorge33@yahoo.com or (510) 204-9130 for more information about bringing an appetizer.

Bring your own tableware as the Hall of Flowers does not provide any. Also, bring your favorite beverage to go with dinner. This wonderfully festive event is not only a chance to enjoy superlative food and socialize with fellow fungi lovers, it is a fund raiser for your MSSF. Come join us!

REGISTRATION FORM ON NEXT PAGE

MycoDigest continued

the woods in search of. In essence, only a fraction of the fungi do this. A vast majority of fungi are microscopic, living in the soil, litter, water, and in close association with plants, animals, and other organisms. Due to the nature of these fungi, they are typically overlooked using traditional survey methods. Many of these fungi also have very specific substrate requirements and/or very slow rates of growth, and are therefore not recovered in studies attempting to isolate them from their substrate or host/symbiont using culturing methods. For these reasons, and others I will touch on later, a method of assessing fungal diversity that does not rely on the production of macroscopic structures, substrate requirements, or growth rate (such as environmental DNA sampling) is very attractive to many researchers.

The technology for sampling DNA from the environment has been around for a number of years, and the constant advancements in DNA sequencing continue to make faster and cheaper the processing of large volumes of material for researchers. In a very simplified view of the process, DNA is isolated from environmental samples of soil, plant tissues, etc., and the portion of the genome of interest (i.e., gene) is amplified (many thousands of copies are made). Because there is likely DNA from many different organisms present in the environmental samples, fungal specific primers (small fragments of DNA that recognize and bind to the region of the genome desired for amplification) are typically used. Next, because DNA from multiple species of fungi is typically present in the samples and amplified together in the same tube, individual copies of the gene amplified are isolated via cloning. Now, we're not making sheep here folks; we are just taking a single fragment of DNA, forcing it into the genome of the bacterium *Escherichia coli*, and allowing these bacterial cells to make many copies for us as they replicate themselves. Simple, huh? Right. Once these cloning reactions have been screened to confirm the presence of the fungal DNA of interest, it is sequenced. As you can imagine, this process typically results in numerous cloning reactions and, potentially, numerous molecular DNA sequences that represent different species of fungi present in the same environmental sample.

Sampling of environmental DNA has already had great impact on our understanding of fungal diversity, indicating higher than expected levels of species richness in various habitats, and even revealing entirely novel lineages. Once researchers have obtained DNA sequences from environmental samples, these are typically compared with sequence data existing in the large, open access database known as GenBank. Ideally, molecular sequence data from the environmental samples will be a close match to a sequence in GenBank, or an existing molecular data set that was obtained from a known and properly identified fungal specimen. Depending on the level of similarity, such matches allow researchers to make inferences regarding the identity of environmental samples. As you can imagine, there

has been a bit of disagreement among researchers regarding what level of similarity is sufficient to identify unknown sequences at various taxonomic levels. One aspect nearly all studies agree upon, however, is that all environments sampled thus far contain greater than expected levels of diversity for saprotrophic, mycorrhizal, and endophytic fungi (Lynch & Thorn, 2006; Higgins *et. al.*, 2006; O'Brien *et. al.*, 2005). A study of tundra soils in Colorado (Schadt *et. al.*, 2003), and a subsequent analysis of soils from North America, Europe, and Australia (Porter *et. al.*, 2008), revealed the presence of previously unknown lineage of Ascomycetous fungi. These fungi, which are currently being referred to as "Soil Clone Group I," are known only from molecular sequence data. This presents a bit of a problem. If these organisms are to be recognized as formal taxa, how does one designate a type specimen for a taxon known only from sequence data? Designate the soil from which the DNA for such sequences was isolated? Such issues will undoubtedly become more common as the sampling of environmental DNA increases.

We must, of course, realize that such methods are not just applicable to samples of DNA isolated from the environment, but may also be applied to any fungi we encounter. I am sure that we have all collected mushrooms and other fungi whose identification eluded us. And for those familiar with attempting to key out such specimens, you know one of the most difficult hurdles to overcome can often be simply accessing the necessary literature. The situation is no different for researchers, and in many cases may even be worse if they have large numbers of specimens to identify, especially those from taxonomically difficult groups. A recent study by Geml *et. al.* (2008) assessed the molecular diversity of one such genus, *Agaricus*, in boreal and arctic habitats across Alaska. Molecular sequence data from these undetermined specimens was subjected to phylogenetic analyses within a broad sampling of sequences from identified *Agaricus* species. The results of their analyses indicate that two sections of the genus, *Arvenses* and *Agaricus*, are prevalent in the boreal and arctic habitats of Alaska, respectively. Based upon various levels of sequence identity, these authors also concluded that between 11 and 13 "operational taxonomic units" of *Agaricus* are present in the areas of Alaska sampled.

The concept of operational taxonomic units, or OTUs, is just one of the many pitfalls that one must consider when conducting or reading about these types of studies. As I mentioned earlier, researchers disagree as to the level of DNA sequence identity that can be used to reliably place undetermined sequences at various taxonomic levels. For these reasons, most researchers are hesitant to recognize undetermined or environmental sequences at the species level for anything less than a 100% match in sequence identity, preferring rather to consider them as OTUs. For example, in the study by Geml *et. al.* (2008) of Alaskan *Agaricus*, different numbers of OTUs could be recognized depending on whether the researchers used a 95%

or 98% sequence identity criterion, and also depending on the method used for sequence comparison. We know that various regions of genomes evolve at different rates, and therefore that gene selection will also have a large influence on the amount of divergence we would expect to see between closely related species, genera, etc. To confound things even further, we also know that different lineages of fungi evolve at different rates, so that the amount of change we observe in a genus like *Agaricus* may be quite different than that we observe in *Morchella* for a given gene. For these reasons, it will likely not be possible to find discrete levels of sequence identity we can utilize to recognize undetermined sequences of fungi at the levels of species, genera, etc.

One final point I would like to make about environmental DNA sampling methods, and bar coding in general, is that they are not and likely never will be a replacement for traditional morphological systematic studies, nor are they meant to be. Remember that all of these molecular methods rely upon a certain level of baseline data. If there were not researchers out collecting mushrooms and other fungi—which are in turn identified, preserved in herbaria, sequenced, and placed in GenBank—none of the environmental or otherwise undetermined sequences would have a framework upon which to be evaluated. We must realize, however, that given the current estimates of fungal diversity, it is not realistic to assume that we will ever be able to document all fungi using traditional methods. Environmental DNA sampling methods appear to promise a quick, efficient, and in some cases the only means of assessing fungal diversity in a number of habitats. Such methods could be especially useful to assess the fungal diversity of endangered or otherwise threatened environments. It is for these reasons that I believe both traditional methods of taxonomy and systematics should work in concert with studies utilizing environmental DNA sampling and molecular

identification of undetermined fungal specimens. ☼

Further Reading:

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Higgins, K.L., Arnold, E.A., Miadlikowska, J., Sarvate, S.D. and F. Lutzoni. 2007. Phylogenetic relationships, host affinity, and geographic structure of boreal and arctic endophytes from three major plant lineages. *Molecular Phylogenetics and Evolution* 42: 543-555.

Lynch, M.D.J. and R.G. Thorn. 2006. Diversity of Basidiomycetes in Michigan agricultural soils. *Applied and Environmental Microbiology* 72(11): 7050-7056.

O'Brien, H.E., Parrent, J.L., Jackson, J.A, Moncalvo, J.M. and R. Vilgalys. 2005. Fungal community analysis by large-scale sequencing of environmental samples. *Applied and Environmental Microbiology* 71(9): 5544-5550.

Porter, T.M., Schadt, C.W., Rizvi, L., Martin, A.P., Schmidt, S.K., Scott-Denton, L., Vilgalys, R. and J.M. Moncalvo. 2008. Widespread occurrence and phylogenetic placement of a soil clone group adds a prominent new branch to the fungal tree of life. *Molecular Phylogenetics and Evolution* 46: 635-644.

Schadt, C.W., Martin, A.P. Lipson, D.A. and S.K. Schmidt. 2003. Seasonal dynamics of previously unknown fungal lineages in tundra soils. *Science* 301: 1359-1361.

2008 Annual MSSF Holiday Dinner Registration Form

Monday, December 1, 7 pm. Hall of Flowers, GG Park, SF. Reserve by November 25, 2008.

Mail to: *MSSF Holiday Dinner c/o Phil Brown*
 89 Menlo Pl. Berkeley, CA 94707
 (510) 526-4325 towltek2000@msn.com

Member(s): _____ (\$35/person)

Non-Member Guests(s): _____ (\$40/person)

Address: _____ City: _____ State: _____ Zip Code: _____

Preferred Phone: (_____) _____ E-mail: _____

Please indicate entree choice for each member of your party:

Beef _____

Salmon _____

Vegetarian _____

Please make checks payable to MSSF (note payment is for MSSF Holiday Dinner).

Total amount enclosed \$ _____

Mycological Society of San Francisco
c/o The Randall Museum
199 Museum Way
San Francisco, CA 94114

First Class Mail
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Oakland, CA
Permit No. 1451



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MSSF Calendar, November 2008

Monday, November 3, 7pm, Culinary Group Dinner.

We meet at the Hall of Flowers, Golden Gate Park, 9th and Lincoln, San Francisco. The dinner cost will be \$14. As usual, reservations are required. Contact Pat George, plgeorge33@yahoo.com or (510) 204-9130 no later than Friday, October 31 (boo to you, too) to make your reservation. Don't forget to bring your tableware as the Hall of Flowers does not provide utensils, dishes, etc. Also bring your favorite beverage and an appetizer to share. We will feature lomo relleno as our entree. There will be no Culinary Group dinner in December, as we will participate in the MSSF Holiday Dinner. Our next regular group dinner will be January 5, 2009.

Saturday, November 8, Foray at Salt Point State Park. In the tradition of the David Campbell, Pot Luck, Memorial Foray, (he's still with us and he will most likely be there) we will be assembling at the Gerstle Cove Camp Ground. (Look for Paperplate directions at the bulletin board). Be there Saturday morning, and you can join a group for mushroom wisdom and identification. Stay for the Pot Luck dinner of culinary treats, and sample tastings of what we picked on the Foray. Beginners and experts welcome!

Thursday, November 6, 7pm, Beginning Mushroom ID Workshop. San Francisco State University, Hensill Hall 401. This workshop will introduce participants to the macroscopic features and terms used in the identification of mushrooms.

Instructor: J.R. Blair. Please sign up by contacting J.R. at jrblair@mssf.org or by calling 650-728-9405. Limited to 15 participants.

Friday-Sunday, November 14-16, MSSF Mendocino Woodlands Foray with Gary Lincoff. See full description on page 3.

Tuesday, November 18, 7pm, MSSF General Meeting. Randall Museum. 7pm, mushroom identification and refreshments provided by the Hospitality Committee. 8pm, Brandon Matheny will present **Bizarre Basidiomycetes**.

Wednesday, November 19, 7pm, Intermediate Mushroom ID Workshop. San Francisco State University, Hensill Hall 401. This workshop will utilize popular field guides to identify fresh mushrooms. The Beginning ID Workshop is a prerequisite for this course. Instructor: J.R. Blair. Please sign up by contacting J.R. at jrblair@mssf.org or by calling 650-728-9405. Limited to 15 participants.

Monday, December 1, 2008, 7pm, MSSF Holiday Dinner. Hall of Flowers, SF. See page 5 for menu and page 7 for registration form.

Saturday-Sunday, December 6-7, 2008, MSSF Fungus Fair at the Oakland Museum.