
Mycena News



The Mycological Society of San Francisco March, 2011, vol. 62:03

March 15th MSSF
Meeting Speaker



David Campbell

Fungimental Mycophagy

*A sophisticated discussion of the basics of eating
wild mushrooms*

David Campbell has been collecting, studying, eating, teaching and writing about wild mushrooms for over 40 years. He served for more than a decade on the council for the Mycological Society of San Francisco, including 2 terms as president.

His talk on March 15 will examine and mycophagal practices as we know them. He will discuss the rules, myths and hazards of wild mushrooms, as well as techniques and methodologies for handling them. There will be a consideration of the general use of color, stain reactions, tastes and odors in sorting the edible from the noxious. He will also take a quick trot through the major edible groups and touch on fungal toxins, from the inconvenient to the deadly.

An expert mycophagist leader, David Campbell is Foray Director for Wild About Mushrooms Company.

MycoDigest: Professor Thaxter's Laboulbeniomyces: Sexually transmitted fungal ectoparasites of insects

Nhu Nguyen



Above: One of the few dozens of a Hesperomyces species collected from the distal wing area of a ladybug beetle. The blackened appendage on the right is the foot that connects to the rest of the thallus to the haustorium in the beetle's exoskeleton. The claw-like appendage to the lower right is the male sex organ and the large central club-shaped organ to the left is the female perithecium. The appendages to the far left help to trigger spore release. .

Imagine that you woke up one day and there is a strange club-shaped parasite 3-4" long that digs deep into your skin and hangs on indefinitely like a sea creature hanging on to a rock surface in a reef. This parasite goes with you wherever you go, extracting nutrients from your veins. It develops and matures until it starts reproducing by spreading spores throughout your body and to everyone and everything you touch. Eventually, a single parasite could multiply into 20+ creatures that refuse to let go. Gruesome, perhaps, but this existence is fairly common in the insect world. My analogy refers to a group of fungal parasites called the *Laboulbeniomyces* that hang on to the exoskeleton of insects and some arthropods.

One of the most impressive monographs in the fungal world was produced by professor Roland Thaxter of Harvard University (1858-1932) which includes a monumental 5 volumes, totaling 1199 pages, with the last volume published just one year before his death at the age of 74. The monograph describes all manner of strange creatures that live in close association with insects that we now know belong the fungal class *Laboulbeniomyces* in the Phylum *Ascomycota*. It is a speciose and morphologically varied class with more than 2000 described species, although some would argue that there are cryptic species yet to be discovered (Weir and Blackwell 2005). The order

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MycoDigest is dedicated to the scientific review of mycological information.

PRESIDENT'S POST

March is upon us! With the weather pattern changing during the latter days of February our fungal finds expected at this time of year are returning with the rains. In recent days reports of blacks and chanterelles are again filtering in. We are looking forward to a few more spring forays so keep your eye on the calendar for updates. We are still planning our Yosemite Spring foray May 6-7-8 but plans are still being finalized and will hopefully be announced before you get the next newsletter.

The culinary group had a great Cajun meal in honor of Mardi Gras last month. This month features Vietnamese style crab with all the trimmings as prepared by Al Carvajal and friends. That dinner will be on March 7. See the culinary section of this newsletter of the Web site for more information.

In other news I want to warmly welcome Kevin Sadlier to the MSSF Council. Many of you may know Kevin already. He has joined the council in the role of MSSF Merchandising Chair, taking on a newly combined position responsible for MSSF Merchandising of both T-shirts and books. Kevin's professional background in retail should allow him to serve the Society well in this role. I want to thank our previous T-shirt and Book Chairs, Ron Pastorino and Curt Haney respectively.

As I mentioned last month, Al Carvajal has decided to step down as Membership Chair to pursue other leadership roles for the Society. This means that we are actively seeking candidates for this critical role in our organization. Some familiarity with computers and databases is required but we will support a new candidate in learning the position and automating as much of the work as possible. Please contact me directly or speak to Al if you would like to be considered for this role. We would greatly appreciate your participation in the form of volunteering for this position on the MSSF council.

I hope to see many of you this month at the Culinary dinner or out on the trail. Don't miss David Campbell's presentation at the general meeting on March 15. David will speak on the topic of Fungimental Mycophagy, a topic in which he is a distinguished expert. I will be traveling and so will miss the general meeting but Curt Haney will preside in my absence.

Thanks for reading.

-Lou

president@mssf.org

CULINARY CORNER

Not long ago we had a Spring teaser of beautiful days and balmy weather but February did not give up easily so we are assuredly back to winter weather. Perhaps fooled by the lovely weather, the more often pastel-colored but sometimes white, Springtime Amanita, *A. velosa*, made an appearance. Eyes lit up and culinary dreams came alive. However, a secure knowledge of just what this mushroom looks like, experience finding it and a knowledgeable identification must be the rule before even the slightest nibble. Toni Kiely found and brought to the ID session before our last MSSF general meeting three impressive, large white Amanitas she found deep under oak trees. They were most definitely NOT velosas. They were *Amanita ocreata*, aptly named "Destroying Angel." The bad guys are out there and can look like good guys to the novice. Best to enjoy other genera at the table whilst learning your Amanitas.

With that admonition and without choosing a specific mushroom to highlight in a recipe here's something simple to serve that is nice for a cool night.

Spoon Bread Custard with Mushrooms

3 tablespoons of butter

1/2 pound of fresh, wild mushrooms, wiped clean and cut into bite-sized pieces

1/2 cup yellow onion, chopped into small pieces

2 1/2 cups cold water

1/2 teaspoon salt

1 cup cornmeal

1 cup buttermilk

4 well beaten eggs

salt and pepper to taste

How to make it:

Preheat the oven to 375 degrees. Butter a 2 quart casserole

Melt the butter in a 10 inch skillet over medium heat. Add mushrooms and onion. Cook, stirring, until mushrooms soften and onion is translucent, c.5 minutes. Place in casserole.

Bring 2 cups of water to a boil in a saucepan and add the salt. Put the cornmeal in a small bowl and add the remaining 1/2 cup of water. Stir to dampen the cornmeal and then add it to the boiling water. Cook, stirring constantly, for a minute or two, until the cornmeal gets thick.

Add the buttermilk and blend well. Stir in the eggs. Season with salt and pepper then stir into the mushrooms and onion in the casserole.

Bake for 30 to 40 minutes, or until lightly golden on top. Serves 4.

This recipe can be tweaked by adding herbs, etc. I repeat the wise words of Madame Jehane Benoit, "I feel a recipe only a theme, which an intelligent cook can play each time with variation".

Our February Culinary Group dinner was on a Mardi Gras theme. A large crowd enjoyed each other's company and a fine New Orleans menu prepared by Chef Edwin Caba. It was the first time for many of us to sample turtle soup and alligator, traditional Cajun, Mardi Gras fare. Edwin also prepared truly excellent jambalaya and bread pudding, the best I've ever eaten. Supplanted by prepared appetizers and a delicious punch we ate very, very well. We return to our regular member prepared Culinary Group dinners for the rest of the season. Our dinners are open to MSSF members and their guests. Members volunteer to take part in the preparation of the dinners and bring appetizers if they are not on the cooking crew for the night. Go to the website, mssf.org, to learn more.

See you out in woods or at dinner,

Pat

within the *Laboulbeniomyces* that I highlight in this article is the *Laboulbeniales*, which we commonly shorten to “labouls”.

The labouls are minute fungi that live on the exoskeleton of mostly insects (80% on beetles) from which there is a broad range of associations, centering mostly around moist climates. They are amycolic perithecial (producing ascospores within a protective pouch with an opening) ascomycetes that are composed of several to a few thousand cells together called a thallus. However, many of them tend to stay on the smaller side. Depending on the species, this thallus could be exclusively male, exclusively female, or both. This has important implications on the biology of the organism – they may occur specifically on just one host sex, the wings, legs, or even antennae (Alexopoulos et al. 2004).

Life for a laboul starts as a single ascospore with one septum. Upon landing onto an appropriate host (or even host location) part of the spore will germinate and place a haustorium into the host exoskeleton and the rest will develop into the spore producing perithecium. The haustorium acts as a conduit from which nutrients flow from the insect to the fungus. For the most part, it does not seem to harm the insect in any observable manner. In the case of a hermaphroditic (monoecious) laboul, the germinating spore continues

to develop several cells, one of which will become male and the other the female sexual cells. Once the female cell is fertilized with a nucleus from the male cell derived from either the same or different thallus, infectious ascospores will develop and eventually be discharged to continue to life cycle. In many cases, the tops of the perithecia are adorned with appendages that help trigger spore release (Alexopoulos et al. 2004, Vega & Blackwell 2005).

However, the most remarkable biology does not lie in thallus development but the labouls’ location specificity on the insect host. Some labouls are reported to be specific on only one sex of the insect host and others have become so specific that they can only be found on certain appendages of the insect. One outstanding example of position specificity has to do with *Stigmatomyces baeri* that occur only on the dorsal surface (back) of the female and the ventral surface (chest) of males. It is thought that this could be a way for transmission of spores or spermatia during mating. The next example involves the remarkable *Triainomyces hollowayanus* from New Zealand that only infects the second pair of legs on female millipedes! What it’s doing only on that one pair of legs is still a source of speculation (Vega & Blackwell 2005). However, it has been reported multiple times that the remarkable little labouls have adapted ways to hijack mating behavior of animals to spread their spores – fungal STDs!

Because of their size, our inability to culture them, and seemingly unimportant economic importance, we still do not understand their biology like other groups of fungi. One active mycologist working with this group is Dr. Alex Weir at SUNY-ESF, NY. He and his students work with beetles from New Zealand and have discovered a number of new species in the past few years. If all of the world’s beetles (arguably the largest group of insects with about a quarter million species) were to be sampled for labouls, mycologists could come up with a tremendous number of new species.

I chose to highlight one of the most provocative associations in this group but there are many, many other species that have different biologies that we are still trying to understand. However, labouls are not so far away from you. The next time you find yourself near a ground beetle or a mite, put them under the microscope to check for labouls. Or if you’re in a building where plenty of cockroaches reside, grab one and look at their antennae. You may be surprised by a species of *Herpomyces* that dwell amongst the antennal segments.

References

- Alexopoulos CJ, Mims CW, and Blackwell M. 1996. Introductory Mycology, 4th Ed. New York: John Wiley & Sons.
 Weir A and Blackwell M. 2005. Fungal biotrophic parasites of insects and other arthropods. In Vega FE and Blackwell M eds. New York: Oxford University Press.



Nhu Nguyen is a PhD candidate at UC Berkeley studying under Tom Bruns. He enjoys collecting and eating mushrooms (the edible ones of course) and photography of plant and fungi. His research interest is in symbiotic interactions between fungi and other organisms. For more of his work, see his web page at <http://plantbio.berkeley.edu/~bruns/people/nn.html>.



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Please e-mail photos, comments, corrections, and correspondence to mycenanews@mssf.org.

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Past issues of *Mycena News* can be read online at www.mssf.org.

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MSSF Calendar March 2011

March 7th: March Culinary Dinner

Our annual Culinary Group crab dinner features Vietnamese style crab and all the trimmings.

March 15th: Speaker David Campbell

This month's General Meeting will feature David Campbell's talk on Fungimental Mycophagy: A sophisticated discussion of the basics of eating wild mushrooms. 7PM Randall Museum.

Check the MSSF online calendar at:
<http://www.mssf.org/calendar/index.php>
for full details, latest updates and schedule changes.

CALL FOR VOLUNTEERS

Membership Chair

Some familiarity with computers and databases is required for this very important role in the Society. Al Carvajal has used and developed the systems we use to make this process work without it being too much work for the Chair, and is ready to train a replacement. Please consider donating your time to the Society and helping with the important task of membership management.

Librarian Chairperson

The library has been purged, revised and organized. This great club asset is ready for a new caretaker. Don't be shy! Monique Carment will help you get started. Remember, our great organization would not survive without volunteers.

The submission deadline for the April, 2011 issue of Mycena News is Sunday, April 17th. Please send your articles, calendar items, and other information to: mycenanews@mssf.org