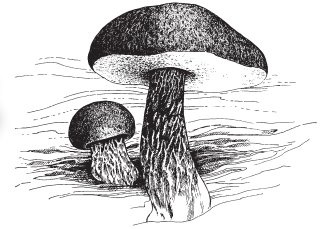

Mycena News



The Mycological Society of San Francisco April 2010, vol. 61:04

April 20th MSSF
Meeting Speaker



David Arora

*Meetings with Remarkable
Mushroom Hunters*

David Arora, lately of Mendocino County, is the author of *Mushrooms Demystified*, *All that the Rain Promises and More*, and most recently the major contributor to an ethnomycology issue of the peer-reviewed journal, *Economic Botany*. He has hunted and documented mushrooms and mushroom uses all over the world. Note that the meet and greet will start at 7 pm and the talk will start a little earlier than usual at 7:45.

David Arora says of his photo: "These mushrooms are becoming a nuisance crop along my driveway and I sometimes invite people up to help me clear them away. Unfortunately I don't remember the names of my lovely helpers but I do remember the name of the bothersome mushrooms: *Boletus edulis* var. *grandedulis* Arora & Simonini.

MSSF LIBRARY IS OPEN FOR BUSINESS

Members may sign out books from our vast holdings, (over 600 books for circulation) prior to the General Meetings 7-8 pm in the Basement of the Randall Museum. Our catalog is available on the MSSF website. Categories include field guides, culinary, ethnohistorical information, etc.

For more information contact our librarian, Monique, at moniquecarment@yahoo.com.

MycoDigest:

Diversity of Microscopic Fungi in Beetle Guts

Nhu H. Nguyen

Earlier this year we were exposed to the fascinating world of fungi that eat insects in an article written by Thomas Jenkinson. To continue on the theme of insect and fungi (although not quite as ominous), I would like to turn the fine-focusing knob on the microscope to one of the smallest unicellular fungi, the yeasts.

Beer, wine, bread – these are the things we think about when we think of yeast. As different as these products seem, they are the fermentative results of one species, *Saccharomyces cerevisiae*, and occasionally several of its close relatives. The only other species of yeast commonly encountered is *Candida albicans*, most of the time considered a normal component of the human mucosal tissue, but is poised to take over as a pathogen when the host health is impaired.

Little known, however, is the fact that there are hundreds of other yeasts, more or less cryptic and almost never encountered in everyday life. The current number of described yeast species is a little more than 1,000. However, this is just a scratch on the surface of yeast diversity and many more await discovery.

Prior to the molecular age, yeast identification relied solely on assimilative abilities of the unknown strain to utilize or ferment certain types of sugars. We still use this method, although it had been greatly supplemented with DNA sequencing of the D1/D2 gene region of the large ribosomal subunit.

Dr. Meredith Blackwell's lab at Louisiana State University is one of the few labs in the world that studies yeast diversity, but the difference is that she studies yeasts in the most unexpected places – the guts of beetles. There are two functional classes of beetles being studied. The first are the mushroom-feeding beetles, where the whole life cycle of these insects is dependent on mushrooms. The second are the wood-feeding beetles where the life cycle of the insects is completely dependent on decaying wood.

In the cooler regions of the West Coast, mushrooms collectors don't have to fight with beetles (although maggots and springtails are in abundance). Mushroom collectors in the Eastern US not only have to get to their prize before the flies



Various mycophilic beetles feasting on a resupinate fungus. The largest beetle (*Iphiclus conspicillatus*), is a common resupinate feeder. Barro Colorado Island, Panama.

Continued on page 5

MycoDigest is dedicated to the scientific review of mycological information.

PRESIDENT'S POST

I hope that you local members will be able to come to the General Meeting on the 20th, for a very special night. David Arora is coming to town! His talk "Meetings with Remarkable Mushroom Hunters" will undoubtedly be interesting.

I remember going to one of our Fungus Fairs a while ago when I knew absolutely nothing about mushrooms and I asked someone what book I should buy to help me with identification. "All that the Rain Promises and More" was the answer and besides all of the good pictures, it was loaded with useful information about classifying mushrooms. This mushroom stuff can be overwhelming to beginners and David's light-hearted humor and razor-sharp wit made me feel as if he understood my plight. Without it, I would have probably put the book on the shelf and forgotten about mushrooms. I wonder how many other people are picking mushrooms today because of David and his sense of humor.

We are having a little bit of a hard time with our annual spring trip to the San Jose Camp near Yosemite. Apparently, the dining hall was deemed unsafe. Imagine that! Well they had to close the Camp down this year for repairs. We will have to find another camp that will open up that early in the year. As of this date (3/19) we haven't found one.

Last month's issue of the *Mycena News* was pretty stark. Dave Lubertozzi the Editor has been doing a marvelous job this year. His job is to do the layout and organization, we supply him with content. We, meaning you! Please write a paragraph or two and send it to mycenanews.org.

Because of the lack of content last month, I want to ramble on for a few more paragraphs. This might be my last opportunity to address you all as President. I am going to have spinal surgery in about 3 weeks due to someone running a red light in Oakland last March. I'm pretty sure that I will miss the mid-month deadline for the *Mycena News*, and besides that, I don't know what to expect. It's uncharted territory for me. No more picking up sheets of plywood for me. Hey! Maybe David Arora will hire me to get rid of those bothersome boletes that invade his driveway! That would be nice.

I want to especially thank J.R. Blair for all of his past-president knowledge. The board meetings are always a hoot because I don't know the protocols and J.R. is always nudging me. J.R. and I are about the same age and we have similar interests. We are both fairly smart. He was the guy who went to school and got a degree and I'm the high school drop out! I'm pulling for you J.R...

Pat George has helped me out immensely with her 40 years experience with the MSSF. Thank you for grounding me when the politics got ridiculous, as they always do. The Drama Queens!!! Curt Haney helped me out a lot with the San Francisco media. It really pays to have local spots, eh Curt? Ginny Garret and George Willis, I am honored to have met you. I love you too Monique, thank you.

This is starting to sound like an Oscar speech with all the thank yous. I want to thank Dr. Bill Freedman and his lovely wife Louise. I have been fortunate to be able to spend some time with these two and I always have fun. Bill has been able to answer the many toxicology questions that I received from members and the general public.

Members, thank you for having me! See ya, Dan

CULINARY CORNER

What a year for mushrooms this has been! As of today (March 10th), I'm still finding chanterelles and the smallish freezer in my fridge is overflowing with mushrooms. I'm going to dig out some of the packets with older dates and use them now. With that in mind, I will be making a classic risotto recipe using a mixture of chanterelles and hedgehogs and who knows what else at this point. I prefer to make my own stock but do not salt it.

MUSHROOM RISOTTO

4 cups of good chicken broth, heated and kept to a simmer

6 tablespoons of butter, divided

1/2 teaspoon salt

1 teaspoon fresh thyme

4 cups of so of chopped mushrooms

1 onion, finely chopped

1 cup Arborio rice

3/4 cup of dry white wine

pepper to taste

2 tablespoons or more to taste of grated Parmesan cheese, optional

1 tablespoon chopped parsley

Saute the mushrooms with the thyme and salt in 3 tablespoons of the butter until the mushroom juices evaporate. If you are using frozen mushrooms you probably already sauteed them so just chop them and taste a bit to see if they are still good then add the thyme and salt to them along with the butter. I do not salt mushrooms I saute for freezing.

Melt the remaining butter in a good saute/sauce pan on medium heat and add the onion. Saute until soft and translucent then add the rice stirring until all grains are shiny. Pour in the wine and cook until most of it has been absorbed. Don't stop stirring! The rice sticks to the pan if you leave it alone for long. Add 1 cup of the broth and cook, stirring, until it has been mostly absorbed. Add another cup of broth and cook, stirring, until it has been absorbed. Add the mushrooms and then stir in the remaining broth, 1/2 cup at a time until the rice is slightly chewy and the sauce creamy. Your total cooking time will be about 20 minutes. The rice is best cooked "al dente", not soft. Season to taste with salt and pepper. Let it sit for 5 minutes or so before you serve it.

This is a good first course and is best served in warmed, shallow bowls. If you like, sprinkle a bit of Parmesan on the top. Definitely sprinkle your servings with the parsley.

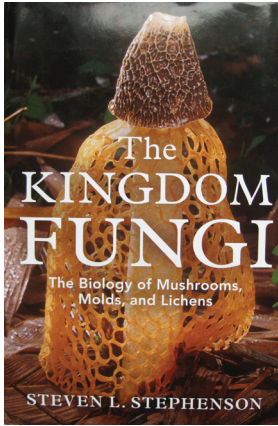
If you decide to make your risotto using some dried boletes cover them with hot water for 20 minutes, drain them, chop them finely, add them with the other mushrooms. Be sure to add the soaking water to the stock

Our March dinner was very well attended and appreciated by all. Norm fixed us a punch of a lurid dark pink color that was delicious and just a bit dangerous was accompanied by a large and diverse selection of appetizers brought by participants. The we traveled to North Africa with Zoe and Jeannette's lamb and vegetable tagines, Lisa's couscous, Toni's flatbread, Honoria's salad and made our way to Greece for dessert, galaktobouriko made by the Bells.

For April we will have a Spring menu with rabbit as our main course. Don't tell the kids.

Happy Vernal Equinox Everyone -Pat

What's Bookin'?



The Kingdom Fungi provides extensive information on the biology, general structure, and morphological diversity of these very necessary organisms. It sheds light on their ecologically important roles in nature, their fascinating relationships with people, plants and animals, and their practical applications in the manufacture of foods, beverages, drugs, and various biocontrols. The text covers “true” fungi, fungus-like creatures (slime molds and water molds), and a group of “composite” organisms (lichens) that are more than just fungi. Particular attention is given to examples of fungi that might be found in the home, encountered in nature, or mentioned in the public media. This book is beautifully illustrated with 124 color photographs, and will serve as a useful introductory text for the general naturalist, amateur mycologist, or interested lay-person who simply wants to become more familiar with, and more appreciative of, the fascinating

world of fungi. (Jacket front and back photographs by Taylor Lockwood).

Steven L. Stephenson is a research professor at the University of Arkansas in Fayetteville, where he served as director of a worldwide project funded by the National Science Foundation to document the distribution of all the slime molds and their relatives. Prior to this he taught biology at Fairmont State University in West Virginia for nearly three decades. Dr. Stephenson has studied fungi and slime molds on six continents in climates ranging from the tropics to the polar regions of both the Arctic and Sub-Antarctic. He is author/co-author of numerous publications, including *Myxomycetes: A Handbook of Slime Molds* (Timber Pres, 1994) and *Edible and Poisonous Mushrooms of the World* (Timber Press, 2003).

The Kingdom Fungi, (The Biology of Mushrooms, Molds, and Lichens, First Edition), ISBN 978-0-88192-891-4 by Stephen L. Stephenson 2010, Timber Press, Portland, Oregon. Hardcover, 272 pages, 6.5 X 9 inches, Price: \$34.95.

The Kingdom Fungi will be available for check out from the MSSF library. - Curt Haney

ANNOUNCEMENTS

GUIDED FORAYS AND WORKSHOPS

MushRoaming Tours in Tibet

Daniel Winkler is organizing two MushRoaming Eco-tours in Tibet in 2010:

- *Cordyceps* & morel expedition (E. Tibet) May 24th to June 6th
 - Fungal & Floral Foray in Tibet, July 14th to 27th
- More details at: www.MushRoaming.com.

NAMA 2010 - 50th Anniversary Foray

August 12-15, 2010, at the Snow Mountain Ranch, Winter Park, Colorado

For registration and more information visit the websites at NAMA

<http://www.namyco.org/events/index2010.html>

and the Colorado Mycological Society

<http://www.cmsweb.org/NAMA2010.htm>

Marvelous Mushroom Workshops at UC Berkeley

Mo-Mei Chen conducts two cultivation workshops at the Jepson Herbarium:

- High-volume commercial production - April 30th (\$80)
 - Morel cultivation - May 1-2^d (\$100)
- (20% discounted fees for MSSF members)

For registration and more information email momeichen@berkeley.edu



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

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15th Annual Winter Chef's Foray

Wow, was that the 15th Annual Winter Chef's Foray?

I can't imagine what the other 14 were like!

This was the first one I attended though, so I wish I hadn't missed the others. I hadn't heard of it before, but Todd



Spanier puts on this annual event... every year.

Three Januaries ago, Sandi and I entered the raffle at the Fungus Federation of Santa Cruz' 34th Fungus Fair. Todd had been more than generous to offer such a weekend of Hunting, Wining and Dining in the Anderson Valley. Pretty generous Todd.

All of us (you & me) are very busy of course, and Sandi & I weren't able to collect on our prize until now. It was certainly



worth the wait.

We arrived at the Screaming Lizard Ranch to meet up with everyone at the house where we would be staying. Sandi and I took the cabin away from the main house. There are Redwoods, Oaks, Fir(s), Pine, and many other types of trees on the 40 acres. Our bathroom was inside, but our shower was

outside. Imagine me, in my outside shower, with hot running water, in the woods, naked ... OK, don't.

Hungry?

We picked greens from the back yard for our salad.

Everyone brought something for the first night's Pot-Luck and there was plenty of food to go around. People are what make a party great, but the first thing I did when we arrived at the property, was to get out of the car and start the hunt. There is always something to find at this time of year. Lots of things! Exciting things!

Gyromitra esculenta, *Ganoderma applanatum*, *Craterellus cinereus*, *Phlogiotus helveloides*, *Helvella compressa*, and far too many other mushrooms to name here.

Y'know, really great stuff.

There were also *Cantherellus californicus*, *Craterellus cornucopioides*, Spring Coccora, *Hydnum umbilicatum*...the usual. There were many other things to do too.

We went to the Yorkville Winery, Todd showed us a place where Oak Trees have been inoculated and French truffles are being propagated, and there's a grove of virgin Coastal Redwoods (Hendy Woods) - but the real treat came Saturday night.

After a day of hunting, wine tasting, sack lunches and sunshine, we picked some more of our salad in the yard, had a campfire, and had some of the most awesome dishes created for us that I think I have ever tasted. Although Todd is a great chef in his own right (he was the head chef Friday night), he invited a man named Marc Vogel for Saturday night. Marc, I had no idea mushrooms could taste that good. I don't really like mushrooms, y'know. I'd usually rather trade them for Chicken. It's about the hunt, y'know? The discovery! But with cooking like that, I'm rethinking if I know what I have talked myself in to, or out of. Could mushrooms really taste this great?

That was a terrific weekend, Todd.

Thank you very much!

- Phalluscybe (Hugh Smith)

Morchella spp.

Seek the shattered shadows in charcoal, in ash, of the renewing yellow pine forest, above the dogwood and redbud in bloom, below snow melt, on warm shaded slopes, where fire crossed the road, in needle duff, under burnt fir, in the moist lee of logs, at the sheltered base of trees, almost like fallen cones, almost like upturned leaves.



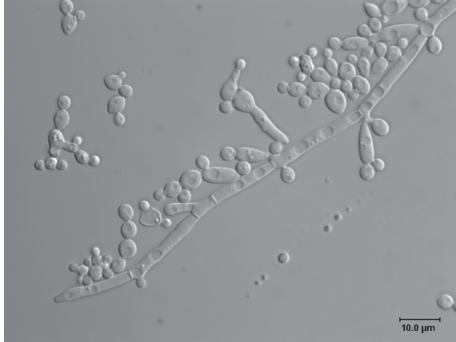
- by Chris Rust, Berkeley, CA

MycoDigest continued

and springtails but they struggle to find a specimen that is free of beetles. To collect yeasts, the Blackwell lab goes out looking for mushrooms that are infested with beetles, which is not a difficult task. Various agaric mushrooms such as *Pleurotus*, *Ganoderma*, *Formitella*, *Laetiporus*, and certain resupinates are chock-full of beetles. Large beetles such as the patent-leather beetles (*Odontotaenius disjunctus*) is a target for studying yeasts in the gut of wood-feeding beetles.

Yeasts were cultured and identified from the guts of these beetles. The results turned out to be more than just exciting. To date, the Blackwell lab has discovered at least 300 new yeast species! That is to say, they have added 40% of new species to the current list. I will highlight a couple of interesting examples from among these yeasts.

One of the most striking examples of collecting in the right place to find the rare specimen has



An undescribed beetle-gut yeast showing budding and hyphal forms.

to do with a yeast called *Candida tanzawaensis*, first isolated by T. Nakase in 1966 from mosses Japan. He was reluctant to describe a new species based on the single yeast isolate but searched for many years in vain. He eventually described the species in 1988 (Nakase et al. 1988). Only 35 years later, in 2001, Kurtzman described six more related species within the same phylogenetic clade (Kurtzman 2001). These isolates were more or less associated with beetles and their homes in the United States and South Africa. At about the same time, the Blackwell lab started their work on beetle-gut yeasts and in 2004 described 16 new species from the guts of mushroom-feeding beetles (Suh et al. 2004). These 16 species made up 30% of their yeast collection which then consisted of 650 isolates. We may never know if a beetle visited and defecated on the mossy patch in which *C. tanzawaensis* was first isolated, but based on current evidence, this yeast could perhaps be found in the gut of a certain mushroom-feeding beetle in Japan.

The next group of beetles and their yeast associates has gained a lot of attention lately because of our immediate state of global environmental concern. How can fungi, specifically yeasts, play a role in solving the global warming crisis? The gut of the beetle *O. disjunctus* is home to many fascinating fungi both on the exterior and the interior. However, their stories will have to wait for another time as this is a story of yeasts. Inside the gut there is a very important yeast, *Scheffersomyces stipitis* (formerly *Pichia stipitis*), almost always isolated with these beetles (Suh et al. 2003). For some 20 years now Dr. Thomas Jeffries at the USDA research facility in Milwaukee, WI, has worked on capturing the natural ability of this yeast to ferment xylose for industrial ethanol production. Xylose is an important structural component of the plant cell wall and can only be degraded by some organisms, mostly fungi. The ability of yeasts to ferment these substrates and produce ethanol as a waste product sets

them apart from the rest of the fungi. The current rush to break down plant “waste” and make a carbon-neutral biofuel makes this yeast one of the hottest research model organisms today. In the genomics world, the yeasts in the *Saccharomyces* clade were the very first to have their genomes fully sequenced. Outside of that group only *S. stipitis* has a full genome sequenced published and fully available to the public. A relatively new genus and species discovered in the gut of the same beetle, *Spathaspora passalidarum* (Nguyen et al. 2006), is being sequenced by another lab at the University of Wisconsin, Madison. It has an even stronger ability to ferment xylose than *S. stipitis*. I look towards the future with high hopes that genome research into these fungi will help us solve a piece of the global warming crisis.

In the meantime, the work goes on in the Blackwell lab to isolate, characterize and describe more novel yeasts. After all, they predict that if they were to sample all the world beetles in the family Erotylidae, there would be the potential of at least 4,500 new yeast species (Suh et al. 2005), and that’s only one family out of the 20 that the Blackwell lab studies! So with the tremendous diversity to be discovered, what does one do with 300 new species discovered so far? Beetle-Belly Beer anyone?

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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 (both photos in the article were by Nhu). 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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MSSF Calendar April 2010

Monday, April 12th, 7 pm - Culinary Group Dinner
(please note date change!)

SF County Fair Building (aka. Hall of Flowers), Golden Gate Park, 9th and Lincoln. We will feature rabbit at this dinner (awwww). The dinners are open to MSSF members and their guests. Reservations are required and must be made no later than Friday, April 9th. To make a reservation contact Pat George at (510) 204-9130 or plgeorge33@yahoo.com. We accept up to 60 total reservations for our dinners. Remember to bring your own tableware, beverage and an appetizer to share. For more information contact Pat George.

We meet on this date as the first Monday, our usual dinner night, follows Easter weekend. Our next dinner, the last of this mushrooming season, will be May 3rd. We do not meet in June, July or August but have a splendid potluck in September.

Tuesday, April 20th, 7 pm - MSSF General Meeting
Randall Museum, 199 Museum Way, San Francisco.
7 pm, mushroom identification and refreshments.
7:45 pm, David Arora presents *Meetings with Remarkable Mushroom Hunters*.

ANNUAL ELECTIONS

Elections for next year's officers will be held at the May 18th General Meeting.

The Nominees are:

President: Lou Prestia

Vice-President: Curt Haney

Secretary: Don Hughes

Treasurer: Henry Shaw

Councilors: George Willis and Thomas Jenkinson

Other nominations may be made in writing, signed by five members of the MSSF and presented to the Secretary on or before May 18th.

Retiring President Dan Long will take a seat on the council as Past President. The other council seats are filled by committee chairs who are appointed by the President.

The submission deadline for the May 2010 issue of *Mycena News* is Monday, April 19th. Please send your articles, calendar items, and other information to: mycenanews@mssf.org