Mycena News

The Mycological Society of San Francisco January, 2011, vol. 62:01

January 18th MSSF Meeting Speaker

Denis R. Benjamin

Human Uses of Mushrooms - An Ethnomycological Journey

Denis Benjamin will illustrate the various and diverse uses mushrooms play in many cultures around the world, throughout history and at the present time. These include food, medicine, dyes, fire starter, aphrodisiac and spiritual.

Denis R. Benjamin grew up in South Africa, emigrating to the Pacific Northwest in 1970. He practiced pediatric pathology at the children's hospitals in Seattle, Washington and Fort Worth, Texas. He became an amateur mycologist soon after his arrival in the USA. He recently returned to the east slopes of the Cascade Mountains in Washington to continue his passion for mushrooms, the outdoors and natural history. He was a consultant to the regional poison control center, a former member of the Board of Trustees of the Puget Sound Mycological Society and a past Chairman of the Toxicology Committee of the North American Mycological Association. He is frequent speaker at mushrooms clubs and societies. His is author of the landmark book on the health effects of mushrooms (*Mushrooms: Poisons and Panaceas*) and recently published a collection of mushroom foraging essays (*Musings of a Mushroom Hunter: A Natural History of Foraging*).

MycoDigest: The Amphibian-Killing Chytrid Fungus

Thomas S. Jenkinson

Amphibian species around the world have been recently driven to extinction at alarming rates. While several factors may be contributing to the decline of global amphibian species, the disease caused by a chytrid fungus is now known to be a major factor. The chytrid fungi are microscopic fungi that have a motile (swimming) stage at some point in their life cycles. Most chytrid species are aquatic, and produce zoospores that swim with a flagellum. Evolutionary biologists have been interested in chytrid fungi because we now know that most chytrids make up one of the most ancient lineages within the kingdom Fungi. The posterior whiplash tail of their swimming spores is thought to bear evolutionary homology to animal sperm cells. The chytrid fungi can be thought of as living fossils, holding clues to a not-so distant common ancestor between animals and fungi.

The fungus *Batrachochytrium dendrobatidis* has recently received a lot of scientific and media attention since its discovery as an amphibian pathogen. Batrachochytrium

An unresponsive mountain yellow-legged frog, Rana muscosa, infected by the deadly chytrid fungus Batrachochytrium dendrobatidis in the Sierra Nevada. Photo provided by Dr. Vance T. Vredenburg.

dendrobatidis (abbreviated Bd in the scientific literature) is an emerging pathogen that has only been described to science since 1999. This fungus had previously gone unnoticed, flying under the radar of biologists, until it suddenly began to wreak havoc on certain amphibian species in the last few decades.

Many mysteries continue to surround the dynamics of this fungal disease, making it a new focus for research mycologists. Scientists are continuing to struggle with the question: why has this fungus become a problem to amphibian populations so recently?

Continued on page 5

MycoDigest is dedicated to the scientific review of mycological information.

President's Post

Happy 2011 MSSF'ers! I hope all of you enjoyed a happy and safe holiday season. As we come into the new year we have our wintertime fungi fruiting full force, with some late Boletes still being taken and chanterelles, candy caps and winter species in abundance.

Looking back at 2010 we achieved quite a bit: Membership management and event signup are now online and several new and energetic volunteers are on our council. We had a great annual trip to Mendocino and implemented a system of collecting feedback from event attendees about what they liked and what we could do better in the future.

We started December with another amazing Fungus Fair: Its quality and scale never ceases to amaze me. With volunteers and our many dedicated members working to collect, ID, build exhibits, staff and manage this event it is our largest and most ambitious project of the year. This year turned out to be as amazing as ever with great attendance given the somewhat more challenging access to the location. Thanks in particular to J.R. Blair for organizing and managing this great fair.

Our annual holiday dinner was also in December. It was a lovely affair held this year at a new location in the east bay. Thanks also go out to those who volunteered and helped at this event especially Stephanie Wright for organizing.

We have lots to look forward to this month and in the new year. January holds weekend forays on the 8th, 15th, and the 22nd. Also in January is SOMA camp in Sonoma and the annual Santa Cruz Fungus Fair put on by the Fungus Federation. Please see the calendar on the Web site for more information about these events.

2011 also holds opportunities to get more involved with MSSF by volunteering to become a member of our council. Council positions teach valuable lessons about management and are a great way to build your skills in the areas of leadership and management. In addition you'll gain a great sense of satisfaction and fulfillment from helping with the operation of a great volunteer society. Presently we have two council positions open. The Library chair has an excellent chance to finish ushering our impressive library into the digital age. We already have much of the collection in a digital catalog on the Web site. What remains is to add the rest of the titles to this catalog so that members can sign out books and other publications in advance and then get or return them at monthly meetings.

The other current opening is for MSSF Merchandising Chair. Because our Web store is already in place this chairperson will be responsible for getting our merchandise added to the store then managing inventory storage and order fulfillment. This is a rare opportunity to contribute directly to the enhancement of our fundraising efforts that support club activities and the MSSF scholarship program. The merchandising chair can also learn some valuable lessons about online retailing that might prove useful in future personal or business endeavors.

In closing, have a great month. I hope to see you at some of the many events this month or out on the trail collecting. As always I thank you for your ongoing support, and I encourage you to contact me if you have questions, suggestions or if you'd like more information about the board-level volunteer opportunities currently available.

~Lou

president@mssf.org

Culinary Corner

Each year, the MSSF holds its gala Holiday Dinner. Culinary Group members play a major part in this event organizing, decorating, setting up and providing the unique and diverse appetizers that load the table before the grand feast officially begins. Gratitude goes especially to Stephanie Wright who organized the Holiday Dinner. It is a work of love and patience.

This year, our chef, Eric Adema, prepared a delicious, abundant mushroom rich dinner including vegetarian choices. Stephanie Wright created an especially delicious and colorful salad and David Lubertozzi and Jenn Clark made us a wide range of desserts including dozens of hand made truffles.(Fortunately, there were some left for me to take home). Ginny Garrett made coffee to help us get home after such a rich repast. Dulcie Heiman and Yvette Blancher rounded out the kitchen crew whilst we diners enjoyed each other's company at the lovely decorated tables. Liana Hain made us a holiday style sweet punch and with George Willis decorated the space. We even had a real Christmas tree. It was a lovely dinner with old friends and new ones to get to know better. All this with the common topic of mushrooms uniting us all.

This month's recipe is from Loraine Berry, a true friend and long time member of the MSSF and mushroomer extraordinaire. She is the grand dame of Marin mushroomers having led many forays, created grand and luxurious mushroom dinners and long been a sought after expert for advice and identification. Chanterelles are still in abundance so I've chosen a comforting, winter recipe using them.

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Pork Tenderloin with Chanterelles and Apricots

Ingredients:

- 2 tablespoons peanut oil

-1 1/2 pounds pork tenderloin in one piece

- 3/4 pounds sliced golden or white chanterelles

- 1 cup sliced dried apricots

- 1 cup sliced scallions

- 1 tablespoon chopped fresh ginger

- 1 teaspoon cumin powder

- 1/2 cup chopped flat parsely

- 1/2 cup dry white wine

- 1 cup water

- salt and pepper to taste

Method:

Preheat oven to 350 degrees

In a heavy oven-proof casserole, brown the pork tenderloin on all sides. Add the rest of the ingredients. Cover tightly and bake in a 350 degree oven for 40 to 50 minutes or until internal temperature reaches 170. Remove to a serving platter, slice the tenderloin and surround with apricots and chanterelles. Spoon pan juices over all. Serve with polenta or mashed potatoes. Serves 4 to 6 people.

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Eat well and have a great New Year,

Pat-

What's Bookin'?

The Complete Mushroom Hunter

by Gary Lincoff

Flexibound, 192 Pages, 8×10 inches; $24.99 2010. Quarry Books, ISBN 978-0-472-03417-8

Renowned mycologist Gary Lincoff, whom many of us had the pleasure of meeting at Mendo last year, has crafted a new kind of mushroom book. It's not the most complete field guide (the Audubon Society guide he also authored may be), nor is it the most authoritative introductory mycology text, and there are many better cookbooks; it's too big to be a pocket field guide and it's not quite a true "coffee-table book" (but almost, at an oversized 8 x 10 with 200 wonderful photos).

What Gary has done is to collect a compendium of information on the importance of fungi in the world, with an emphasis on the culinary and medicinal aspects, which is sure to provide something of interest and invoke the sense of wonder for beginners and jaded enthusiasts alike.

Drawing on many sources, the unique subject organization guides us through various locales, seasons and cultures to enlighten us on what mushrooms are all about and why we'd want to go hunting for them and then gives us the tools to do so. Focusing on the best and most easily identified edibles, Lincoff provides the reader with a healthy dose of a sure cure for mycophobia, sprinkled liberally with often-humorous anecdotes.

Having enjoyed his talks and presence at our events, I can say that his personality comes through very well, which can only help to popularize the book. I'm betting that the next generation of mushroom hunters will all have "*The Complete Mushroom Hunter*" on their shelves.

A copy of this book will soon be in the library.

~Dave Lubertozzi

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Contributors:
Dorothy Beebee, Pat George, Curt Haney, Lou Prestia, Hugh Smith, Else Vellinga, and Derek Woods.

Editing and Layout:
Max Garrone

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

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 online at www.mssf.org.

MSSF Officers 2010-2011

President: Lou Prestia
(510) 597-0214
lou@prestia.com

Vice-President: Curt Haney
(415) 333-8820
lingking@sbcglobal.net

Secretary: Donald Hughes
510-919-8866
hard-dharma-sage@sbcglobal.net

Treasurer: Henry Shaw
(925) 551-8243
hfshaw@yahoo.com

Membership Update:

Membership in MSSF expires now. Unless you renew for 2011, you will no longer receive the *Mycena News* or have access to the "members only" section of the MSSF website. You will not learn about forays and other fun events. So, please renew today!

To find out if you need to renew, please check the label on the January *Mycena News*. If you are an e-member, and you download the *Mycena News*, go to the Members section of http://www.mssf.org/ and find your name on the "Membership Status" document.

It is easy to renew. You can do so by mailing a check to MSSF Membership, c/o The Randall Museum, 199 Museum Way, San Francisco, CA 94114 or by using the PayPal option on the MSSF website. If you have not changed any of your particulars (address, Phone, e-mail), the check is all that is needed. The regular, adult/family membership fee is $30.00. For seniors over 65 and for full - time students, it is $25.00. For e-members, who do not receive the *Mycena News* by mail, but must download it for themselves from the website, the fee is $20.00.

If you have changed your name(s), mailing address, telephone number(s), or email address, please notify Alvaro Carvajal, the membership chair, so that he can update the database. You may notify him in writing at the time you renew. Or you may contact him directly by telephone (415-695-0466) or – preferably – by email at membership@mssf.org A few of you will have already renewed for 2011 by the time you receive this notice. Thank you, and please forgive the bother of this reminder.

The rains are finally here and the hills are brimming with mushrooms, so get out there and look at (or pick) the beauties.

Happy New Year and Successful Foraging!

Alvaro Carvajal Membership Chair

Fungus Fair Thank You!

Once again, thanks to our many excellent volunteers, the 41st annual MSSF Fungus Fair was a great success. We ended up with over 2,000 total paid attendees, about a 10% increase from last year. We received significant media coverage as well with articles in the Bay Guardian and USA Today as well as a film crew from the KQED website. Thanks to the following volunteers without whom the fair would not have been possible, let alone such a great success.

- Alice Sunshine, Pat George and Lou Prestia: Media Wrangling
- Thank you to all the volunteers who distributed posters.
- Lucy Martin for her rendition of *Amanita calytroderma* for our poster and T-shirts. Lou Prestia and Ron Pastorino for design.
- Norm Andresen for coordinating forays; Bill Freedman, Fred Stevens, Thomas Jenkinson, Mark Lockaby, Chris Schoenstein, Mino de Angelis, Theresa Halula, Dan Nicholson and Wade Leschyn for leading forays; and to all the folks who brought mushrooms to the Fair, whether on an organized foray or on their own.
- Jim Miller for being our duff czar
- Dennis Desjardin, Mike Wood, Fred Stevens, Tom Bruns, Else Vellinga, Dimitar Bojantchev, Norm Andresen and everyone else who helped with the sorting and identification process.
- Dulcie Heiman and all those who helped feed volunteers.
- David Eichorn and Dave and Peggy Manuel for organizing the soup sales and to those of you who made the many delicious soups.
- David E. for arranging chef demonstrations and David Campbell, Sven Revel and Todd Spanier for their demonstrations.
- Dorothy Beebee's dyeing demonstration was a big hit.
- Curt Haney and Roy Coto, Ron Pastorino and Lou Prestia, and Robin MacLean and Liana Hain for help with sales.
- Henry Shaw for dealing with the treasury through the weekend.
- George Willis for his expert handling of all the vendors for the fair.
- Al Carvajal and his crew for staffing the Membership table.
- - Our excellent suite of speakers: Taylor Lockwood, Bob Mackler, Else Vellinga, Ken Litchfield, Daniel Nicholson, and J.R. Blair.
- Paul Koski, Alice Sunshine & Thomas Jenkinson for their intro to mushrooms course.
- Jane Wardzinska, Chris Thayer and Pat George for their tables.
- The California Lichen Society, the San Francisco Microscopy Society and Sonoma Mycological Association for their tables.
- Alan Rockefeller for his presentation.
- Dan Nicholson, Mo-Mei Chen and voluntters for their displays.
- Ken Litchfield et al for an excellent display on cultivation.
- Don Hughes & Annie Blair for the very popular family center.
- Theresa Halula for help with transport and take down.
- Very special thanks go to the hard working Lawrence Hall of Science staff: Especially Emma Duran-Forbes, Sue Guevara and Gretchen Walker

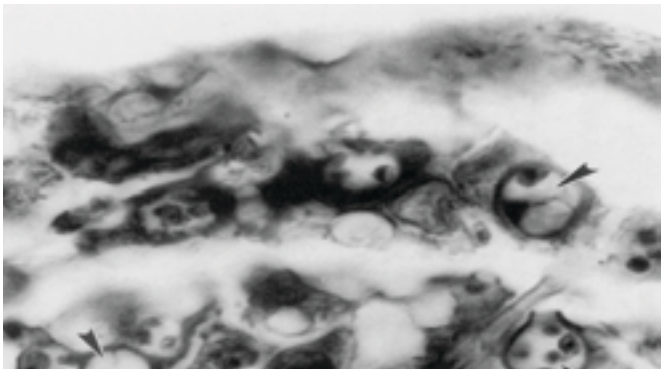
Finally, I want to express my deepest thanks to two people without whom I could not have done this: Stephanie Wright for being the best volunteer coordinator one could hope for and for spending hour after hour checking in them all in; and to Annie Blair, for being there. We had over 200 volunteers for the weekend and you all deserve thanks, even if I did not list your name here. We depend upon you immensely. Look for an invitation to the Volunteer Appreciation Party later in the spring.

Happy New Mushroom Year!

J.R. Blair

MycoDigest continued

There are two hypotheses that can be made about why these fungi have recently "emerged" or become an ecological problem. One possible explanation is that this fungus has always been endemic to areas where we see disease outbreaks, and that the fungus has only recently become a killer due to changes in the environment that have made certain amphibians more susceptible to infection. The other major hypothesis is that this fungus has recently spread to new geographic areas it has never been before. While neither hypothesis completely explains the disease patterns observed globally, there is now good evidence that the disease outbreak in many geographic areas is due to the recent introduction of the deadly chytrid. In certain regions experiencing amphibian extinctions including Panama, Australia and here in California, the evidence is convincing that the fungus was recently introduced.



Batrachochytrium dendrobatidis sporangium ready to release swimming spores observed in the skin of an infected blue poison dart frog, Dendrobates sp. Photo reproduced with permission of Dr. Joyce E. Longcore.

New genetic evidence hints that the current pandemic appears to be caused by a strain of Bd that has been rapidly dispersed around the globe. If this is true, the next obvious question becomes: how was this strain of B. dendrobatidis spread so quickly? There is little doubt that such a rapid dispersal of this disease-causing fungus was human mediated, but exactly how, and from where is still a mystery. One very possible mechanism of a rapid global spread is through the amphibian trade. A couple of the most commonly traded amphibian species are known to be carriers of the fungus without suffering symptoms or death.

The first possible culprit is the African clawed frog *Xenopus laevis*. The clawed frog was widely exported to Australia, Europe and the United States for use in pregnancy tests. For decades — before more advanced pregnancy assays were available — the clawed frog was used to test for the presence of pregnancy-associated hormone HCG in women's urine. Female frogs injected with human urine containing HCG would begin to ovulate within 24 hours. Huge numbers of the African clawed frog were transported around the world for this reason, and for their later popularity as a model organism in research laboratories. The clawed frogs are known to be good at establishing feral populations if they escape from captivity. A feral population of these frogs was even recently documented in San Francisco's Golden Gate Park.

The hypothesis that the global trade in *Xenopus laevis* was responsible for the spread of the deadly chytrid gained momentum with a 2004 scientific paper. The authors of that study proposed Africa to be the geographic origin of Bd. They also propose the global trade in the African clawed frog as the mechanism for the dispersal of this chytrid. The paper reported the observation of Bd in a preserved museum specimen of Xenopus laevis collected in 1938 from South Africa, which at the time was the earliest report of the occurrence of Bd. Since that 2004 study however, an even older example of Bd has been documented in museum specimens from Japan. Furthermore, new genetic studies have shown that genetic diversity of the deadly chytrid isolated from clawed frogs is relatively low, indicating that African clawed frogs may not harbor the genetic diversity of Batrachochytrium dendrobatidis that we would expect if they were the hosts of the original source populations of Bd. We would expect to see high genetic diversity in the populations of Bd that are source populations of the global pandemic, and low genetic diversity in populations that have only recently dispersed away from source populations.

In the latest studies, genetic diversity is highest in isolates of Bd collected from North American bullfrogs. The North American bullfrog, Rana catesbeiana, is native to Eastern North America, but major production of the species for human consumption is widespread, with a large volume of production in countries as far apart as Brazil and Taiwan. The industrial scale farming of these amphibians creates perfect conditions for the propagation of Bd. The bullfrogs, like the African clawed frogs, are also able to carry the deadly chytrid without disease symptoms, or death. Bullfrogs from these industrial scale farms are sold and shipped around the world. The global trade in the North American bullfrog is a likely vector for the rapid global transmission of the deadly chytrid fungus from its original source population.

It is important to keep in mind that none of these mechanisms have been conclusively proven to be the cause Bd dispersal. It also remains a mystery how the fungus is transmitted from these reservoir populations to remote, pristine habitats where it has caused dramatic population declines and extinctions. In fact, more questions than answers still remain about the biology of this newly described fungus. Whether the fungus can persist in the environment without an amphibian host is still unknown. The role of fungal parasites and pathogens in controlling the populations of their associated species has been finely tuned through a history of co-evolution. The case of Bd may be another example of how human mediated events have disrupted that process, and are changing our ecosystems in a way that has never been seen.

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Thomas Jenkinson received his master's degree focusing on systematic mycology from SF State University with Dr. Dennis Desjardin. He has worked as a collaborator in scientific field surveys of fungal biodiversity, and in laboratory studies on fungal evolution. Thomas is currently a lecturer at SF State coordinating and teaching introductory biology laboratory.

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

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MSSF Calendar January 2011

January 3rd: January Culinary Dinner

January 7-9: Santa Cruz Fungus Fair

January 8:

Mills Canyon Introductory Foray with Jr. Brown
Jouquin Miller walk with Pat

January 9th: Beginners' Fungus exploration at Phleger Estate

January 15-17: SOMA Camp 2011

January 15th: Beginner's Mushroom Hike with biologist Terry Sullivan

January 18th: General Meeting with speaker Denis R. Benjamin

January 22nd: San Mateo walk with Al Carvajal

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

Call for Volunteers

We have two remaining volunteer positions to fill:

Book Sales Chairperson - Be the first to read and review all the books the MSSF sells. To assist in the transition the former chair (Curt Haney, now our VP) will help the new chairperson during the transition. If you are interested please talk to Curt at the next meeting or call (415) 640-6233.

Librarian - Monique Carment will also be moving on soon. Please contact her at moniquecarment@yahoo.com if you are interested in taking over this important position, or talk to her during Library hours at the October General Meeting (7-8 pm in the basement of The Randal Museum). Don't be shy, we'll help get you started. Remember, our great organization would not survive without volunteers!

The submission deadline for the February, 2011 issue of Mycena News is Sunday, January 16th. Please send your articles, calendar items, and other information to: mycenanews@mssf.org