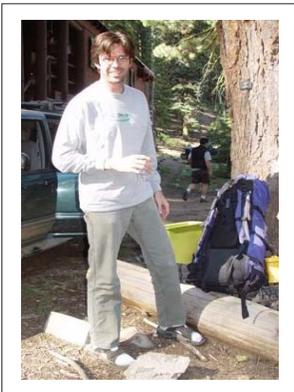


**Speaker for
May 17
MSSF Meeting**



Andy Wilson
(photo: Denise Gregory)

The May lecture will be given by Andy Wilson, a budding young mycologist who is currently a Ph.D. candidate at Clark University in Massachusetts, studying under Dr. David Hibbett. His thesis is on the ecology and evolution of the basidiomycete genus *Calostoma*.

Andy's lecture will focus on his work describing the taxonomy and systematics of *Gymnopus*. In addition he will give a brief discussion of his current work on *Calostoma*.

Andy Wilson earned a BA in Humanities and BS in Biology

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Mycena News

The Mycological Society of San Francisco May, 2005, vol 56:05

**Decoding the Mycorrhizal
Symbiosis:
Why Plants Like Fungi So Much**

Peter Kennedy

Many of the mushrooms that we enjoy collecting so much are symbiotic with trees. These symbioses are referred to as mycorrhizas, literally "fungus-root." In the traditional view of this symbiosis, the plants photosynthesize and provide carbon to the fungi in return for nutrients that the fungi take up from the soil (I say traditional because mycorrhizal fungi can also provide other benefits to their hosts such as helping them deal with summer water stress and protecting them from pathogens that attack their roots). We all know that plants are able to take up nutrients without fungi, so why is it that so many of them "pay" to get nutrients from the fungi?

Mycorrhizal fungi help plants acquire nutrients in many ways. The first is by greatly extending plant root systems. Nutrients are often quickly depleted in areas directly around plant roots and the fungal hyphae are able to grow out beyond low nutrient zones into places where more nutrients are available. Fungi also often build special hyphal structures known as rhizomorphs that allow for very efficient transfer of nutrients from the areas where the nutrients are being taken up back to the plant root. In addition to extending the root system, fungal hyphae are often much smaller in diameter than roots, which allows them to access nutrients and water in smaller soil pores. This latter mechanism effectively increases the soil volume exploited by the plant. Finally, fungi have higher surface-to-volume ratios than roots, which increases the rate at which nutrients are absorbed.

It has also been suggested that mycorrhizal fungi may be more effective nutrient competitors against free-living soil microbes than roots, or that mycorrhizal fungi may alter the bacterial community in the rhizosphere (the area of soil influenced by a plant root) in ways that help plants acquire more nutrients (e.g. attract nitrogen fixing bacteria). Although there are few studies providing evidence to support either one of these mechanisms, both are certainly possible ways that fungi help plants acquire nutrients. However, there is strong evidence showing that fungi produce a large diversity of enzymes and chelating compounds that allow them to capture nutrients from the soil that are not normally accessible to plants (chelating compounds bind metals into different forms in the soil to prevent their interference with uptake of other nutrients). Some of the best evidence for this mechanism involves mycorrhizal fungi that are able to take up nitrogen in an organic form. Because this maybe

Continued on page 3

MycoDigest is a section of the Mycena News dedicated to the scientific review of recent Mycological Information.

President's Message

Mark Lockaby

My time on the council as one of the officers will be over soon. It's hard to believe that 5 years has past by already. During the time while serving on the council I left my long-time business and went back to school to start a new career. I finished my education and just recently acquired the job I was hoping for. I also have been able to overcome one of the biggest fears that I have had all my life: Public Speaking. I still don't know if on my first time a the podium Norm's gesturing that my fly was unzipped helped my fears or not. I may not have become a good public speaker but at least I'm comfortable now. The greatest thing that has happened to me while being on the council was meeting and falling in love with one of our fellow members: Miyuki Irie.

It's really all of the committee chairs that do most of the work in the society and I would like to thank them for their great effort... So alphabetically by position I would like to thank our Archive Chair: Emmy Lou Miller, Book Sales: Norm Andresen and Mark Thomson, Culinary Chair: Alvaro Carvajal, Cultivation Chair: Ken Litchfield, Education: Debbie Viess, Fair Chairs: Dan Long and Ken Litchfield, Foray Chairs: Tom Sasaki and Norm Andresen, Librarian: John Lennie, Membership Chairs: Jane Collier and Polly Shaw, Newsletter Editor: William Karpowicz, Newsletter Layout: Rose Flaherty, Sonja Norwood, and Ruth Erznoznik, Program Director: David Rust, Scholarship Chairs: Bob Mackler and Fred Stevens, Systematics Chairs: Michael Wood, Fred Stevens, Bob Mackler, and Else Vellinga, Toxicology Chair: Dr. William Freedman(retired), and Webmaster Michael Wood.

I would also like to thank the officers who have put in a lot of work as well. Vice President: David Campbell, Secretaries: Carol Hellums and Mark Thomson, Treasurers George Collier and Shawn Johnson, Councilors: Peter Werner, Ron Pastorino, Dan Long, Denise Gregory, Hilary Somers, and Gary Wolf. I would especially like to thank our past president David Rust for helping me so much in my position as president. I know I can say that this Thank You comes from all of the members of the society.

I am also pleased to announce our slate of nominated officers for the next season. President: David Campbell, Vice President: JR Blair, Secretary: Mark Thomson, Treasurer: Hilary Somers, Councilors: Gary Wolf, Bill Hellums, Lorrie Gallagher, and Curt Henny.

Thanks to everyone who made my time on the council an enjoyable experience for me.

Speaker for March 15

Continued from page 1

from San Francisco State University in 1998. He then studied under Dr. Dennis Desjardin, and earned an MA in Biology: Ecology and Systematics in 2002. While at SFSU, he studied the genus *Gymnopus* from Java and Bali, traveling to Indonesia twice. Andy was privileged to work overseas with eminent mycologists Dr. Egon Horak and Dr. Roy Halling.

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MSSF Discussion Group on Yahoo Groups

The MSSF email discussion group facilitated through Yahoo Groups is a great way to keep in contact with other members and is one of the primary ways in which members keep up on news about the Society. The list features often-intriguing discussion of fungal-related topics, tips about current fungal activity, and up-to-the-minute news about MSSF functions.

The list is available in both individual-message and digest formats. Additionally, you can also subscribe to the group in "Special Notices" mode. That means that if you wish to receive only official announcements from the society and not email traffic from other members, you can subscribe using this method. (Subscribers to the list in regular and digest formats also, of course, receive official announcements in addition to posts from other members.)

To sign up, go to:

<http://groups.yahoo.com/group/mssf/>

Follow the link that says "Join This Group". (You will need to sign up for a free Yahoo Groups membership if you do not have one already.)

Mycodigest**Continued from page 1**

particularly important where nitrogen is believed to be the most limiting nutrient to plants (e.g. forests such as those here in California), let me elaborate.

In soil, nitrogen comes in two forms, either organic (attached to carbon) or inorganic (without carbon). Plants take up inorganic nitrogen directly (e.g. ammonium or nitrate), but they lack the enzymes necessary to take up complex forms of organic nitrogen. In temperate forest soils, there is often an abundance of organic N and much less inorganic N available for plants to utilize. Fungi were long known to take up amino acids (the building blocks of protein), but until the mid 1980s, their ability to utilize protein (a more complex form of organic nitrogen) was less clear. Using a set of lab experiments, researchers grew fungi on media containing different forms of nitrogen and documented that a number of mycorrhizal species did very well with protein as their only source of N. Interestingly, the fungi used in these experiments fell in one of two groups; those that could grow with protein and those that could not. The 'protein fungi' included *Amanita muscaria*, *Cenococcum geophilum*, *Paxillus involutus*, *Rhizopogon roseolus*, *Suillus bovinus*, and *Hebeloma crustuliniforme*, while the 'non-protein' fungi included *Laccaria laccata* and *Lactarius rufus*. Not surprisingly, plants growing with 'protein' fungi had a higher N content than those plants growing with 'non-protein' fungi.

Not everything, however, is lost for 'non-protein' fungi. *Laccaria bicolor*, a putatively 'non-protein' fungus, has figured out a way to get extra nitrogen. In a recent study, J. Klironomos and M. Hart found that *L. bicolor* can be a very effective predator of springtails, an abundant fungal-feeding soil insect. They noticed that when they added springtails to pots containing *L. bicolor*, springtail survival was very low (~5%), while in other pots without *L. bicolor* springtail survival was very high. Looking closer, they observed that the springtails were internally infected with *L. bicolor* hyphae and they wondered if *L. bicolor* could be preying on the springtails for their N. So they set up a second experiment examining whether N in the springtails ended up in the leaves of plants growing with *L. bicolor*. Plants growing with *L. bicolor* contained significant amounts of N derived directly from the springtails, while plants grown without *L. bicolor* showed no similar N enrichment, suggesting that *L. bicolor* was indeed preying on the springtails for their nitrogen! Interestingly, the researchers did the same experiment with another mycorrhizal fungus, *C. geophilum*, and that species had no negative effect of springtail survival and no N enrichment for their plant partners.

Although we do not know exactly how many mycorrhizal fungi are insect predators or protein eaters, their unique abilities to access different nutrient sources makes them an essential symbiont of most plants. So the next time you are out in the woods looking for mushrooms, take a break for a

minute, and marvel at the amazing symbiotic role that these fungi play in keeping our planet green.

Further Reading:

Klironomos, J.N. and M.M. Hart. "Animal Nitrogen Swap for Plant Carbon." *Nature* 410 (2001) : 651-652.

Abuzinadah, R.A. and D.J. Read. "The Role of Proteins in the Nitrogen Nutrition of Ectomycorrhizal Plants. I.

Utilization of Peptides and Proteins by Ectomycorrhizal Fungi." *New Phytologist* 103 (1986) : 481-493.

May Morel Foray

Norm Andresen

The morel car camping weekend will be right off hwy 88. The Power fire, an excellent burn, is our target this year. The Mokelumne Campground will be our starting point. This camp is low elevation, i.e. warm 3K ft. Our cultural adviser Bill Hellums has declared the Saturday meal a lamb fest and will bring roast lamb to the pot luck meal sat night. Please bring a spring oriented dish to match this meal.

Morels have started to appear in lower areas and, by the time you read this, I expect to hear of some in the higher elevations. With weather the way it is, I think we can expect to see good fruiting somewhere in this fire sight, the trick will be to find it. Generally the early bird gets the smallest worm, with the most informed, the fullest bag.

The foray will leave the Mokelumne Camp ground 9:00am Sat, May, 14. Some folks will stay Friday night. Pot luck will be at 7:00pm Sat night; bring libations and treats for yourself and others. David Campbell is our Quality control inspector for food and wine, so we will have fun. To get there take Highway 88 to Tiger Creek Road to the river, bear left at the power station follow the windy road 30 miles to the camp. Remember to get your collecting permit at the ranger station a little past Tiger Creek Road.

See you thar!



Mushroom Haiku

David Campbell

*Morels on my mind
My eyes though closed
still see them
Eyelids etched behind*

Cultivation Corner

Ken Litchfield



SF Flower and Garden Show Thanks

This year's San Francisco Flower and Garden Show was a great success for the MSSF. For the first time, instead of an 8' x 16' vignette in the breezeway between the two exhibition halls on the lower level building, we were in the main domed hall of the Cow Palace with a "Beneficial Mushrooms in Your Garden" exhibit that was over three times larger and competed with the professional landscapers' designed garden displays. Our educational display consisted of a shady wild garden of woodland species on the left to show what can be done in an area too shady for most plants, a raised bed ornamental edible vegetable garden with mushrooms in the mulch, compost pile, and in the palisade style logs on the right to show how to incorporate edible mushrooms into the home kitchen garden, and a lawn in the center with a mushroom fairy ring to show that these mysterious formations are beneficial not detrimental to a healthy lawn. There were thousands of people that visited the show and most of the time they were stacked 5 and 6 deep to see the display.

Our exhibit received a Silver Medal and made a profit for the society. For pictures of the exhibit and the show you can go to these official show photographer's web addresses:

<http://www.gregorycase.com/2005sffgs/mycological/index.htm>

<http://www.gregorycase.com/2005sffgs/index.htm>

Many thanks go to cultivation committee folks Sherry Carvajal, Norm Andresen, Debbie Collins, Enrique Sanchez, and Dan Long for all their great support and work creating the exhibit and staffing it for the public. Thanks for staffing also go to Tom Sasaki, Monique Carment, Beryl Durnell, Bill and Louise Freedman, J. R. Blair, Betty Jean, Denise Gregory, John Lennie, David Sarasua, Honoria, Sarmiento, Polly Shaw, and Mark and Miyuki Lockaby. Thanks also go to John and Toby Garrone and their Far West Fungi for providing the Oysters, Lion's Mane, Maitake, and Shitake for the display.

Summertime Communications

If you are a current member of the MSSF and haven't been to the MSSF yahoo group you should get yourself a yahoo ID and go to the yahoogroups.com website to register for our members only egroup. Here you can get information and discussions any time of the year but especially during the summer when there are no meetings or newsletter. Here you can find information on higher elevation burn morel sites for the late season, thunderstorm fruitings of summer boletes, and announcements for mushroom cultivation committee activities.

Volunteers Volunteer to Make VOLUNTEER APPRECIATION DAY Grand Event!

David Campbell
MSSF Vice-President

On Sunday afternoon April 17th, a modest fete was held to honor all the people who have materially contributed to the operation and mission of the MSSF during the last year, or at least all of those whom I was able to identify and successfully contact. The invite list included Society officers, councilors and committee chairs, as well as volunteers for the annual mushroom fair, chat room moderators, newsletter producers and supportive members of the scientific committee. We who attended all had a grand time, ate some wonderful food, and participated in the dispersal of an intriguing cache of mushroom-oriented door prizes in a fun-filled drawing that capped the event.

Oysters, raw and prepared, were the main attraction. Our crack shucking crew included President Mark Lockaby, Miyuki Irie, Phil and Carol Brown, Alvaro Carvajal, Bill Hellums and Fred Kron. A marvelous spread of mostly mushroom containing appetizers was provided by several inspired attendees, with David Eichorn leading the gustatory charge with no less than four wild mushroom dishes. Louise Friedman, Carol Reed, Curt Haney, Ginny Garret, Peggy Manuel, Jeanne Campbell and David Campbell also contributed various sumptuous culinary delights. A modest assortment of appropriate wines was served, and Norman Andresen unleashed a pair of boiling cauldrons of chilled non-alcoholic punch, uh, one red, the other orange.

Pat George and Hillary Somers organized the nametags and set up the prize drawing, with Hilary and Yu-shen's toddler son, Ponshu, contributing his unassailable innocence to selecting the lucky prize winning names from the drawing basket. Prizes included decks of mushroom ornamented playing cards; several MSSF t-shirts; books contributed by Mark Thomsen's book sales committee, Jeanne Campbell, and especially Norman, who pulled a few rather rare books out of his stash to share; and a pair of deluxe Italian mushroom hunting knives, contributed by MSSF members Kevin Saddlier and Xander Wessels, taken from their inventory at Green Jeans Nursery in Mill Valley.

The Foragers' Report

May 2005:

The Last of The Season

Patrick Hamilton

It seems almost sad—the final column of our mushroom year together. We will go in different directions without the bond of this report to keep us coupled. I hope that any emptiness will be filled by basketsful of fungal goodies gathered by information gotten elsewhere. (Psst!—try our Internet Yahoo group, and/or become or be a member of SOMA and use their groups list too.)

Morels are being landed all over the place. From the very north of our golden state to right here in Sonoma County plenty of those tantalizingly tasty nuggets of goodness have been taken. The Geysers burn near, well, Geyserville, has been sort of productive, in a handy way, for locals who only had to drive several miles, instead of the usual 100's.

It is still too snowy and cold at the mid elevations of the Sierras for many spring mushrooms, as of this writing (04/23).

I know of several folks who wait until the first of May to check out their spots for “naturals” at around 4,000 feet near Highway 50. Some morels have already been found and then found to be snowed upon.

A subject that has been discussed amongst some of us is “how many dried mushrooms in the pantry is enough?” Friend of mine is an avid bow hunter who happens to supply this larder with wild boar, caribou, turkeys, etc., in trade for mushrooms. His wife tells him that if their meat freezers are full how can he justify killing more animals and say that he is “hunting for the freezer?” Is there a parallel with any of us here?

Can we justify picking more when we have so many? Do we have to? And, back to that “how many is too many” question, how do you measure such a thing?

For a party of food and wine geeks recently a mushroom soup for fifteen was made, generally following Louise Freedman's fine recipe in Wild About Mushrooms. Crimini were being sold at the local fruit and vegetable stand for way below the usual price so approximately 2 pounds of them became the base mushroom. About 3 cups of dried ten-year-old *B. edulis* and maybe 1 ½ cups of five-year-old black chanterelles were re-hydrated to be sautéed with the crimini.

I don't know how many of you have stashes large enough to “cellar” some but if you can manage this the flavors coming from the varnished layers are extraordinarily intense and have been known to make famed chefs offer undoable trades for them. Who wants their children anyhow? Picky gourmets at five-years-old? Not in my house.

The chopped mushrooms were sautéed in gobs of unsalted butter, chopped sweet onions, some dried thyme, sea salt and freshly ground black pepper. To this was added a couple of handfuls of sliced, oven roasted, shallots, a pint of chicken stock and enough half and half to make the required amount of servings. It was cooked for about 30 minutes, not allowed to boil, cooled and then put through a food mill for a fabulously silky texture. Some water and white wine was put back with the pressed mushroom mix and cooked again to grab any flavors still present. This was re-milled, combined with the first pressing and chilled overnight. Next day, at service, a tad bit of freshly ground nutmeg and a teeny float of good brandy were added. Service portion was purposefully a half-cup. This was for sipping only and it married especially well with a red Chablis (yes, red) and another, more traditional, red Burgundy.

Aged dried morels don't seem to improve at the same rate, nor to the same increased depth of flavors, as the older porcini and blacks. Yes/no?

For those of you with connections for ramps (“wild leeks”) and fiddlehead ferns (actually probably an ostrich fern) try combining either, or both, with this season's morels. Good butter, shallots, onion or leek, some Madeira or Sherry, gray sea salt and pepper how could you not go into summer feeling not quite so lonely about this last column?

That's all for now folks!

The Kibbe Ridge Chump

George and Jane Collier

Norm Andresen informed us about Kibbe Ridge morels. We went up today [June 28, 2004]—the only day we had free this week before going off to Chiapas with the Carvajals and Hellums.

On the way down, we encountered a kayak abandoned on the trail, about 1/4 mile from the trailhead! Then a bit further we found an abandoned backpack—right at the wilderness sign board! Then, down at the trailhead, we found this forlorn young man desperately looking through the bear boxes for something to drink. Turns out that Bobby, a schoolteacher from Maryland, had got separated from his

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Mycological Society of San Francisco
c/o The Randall Museum
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May, 2005, vol 56:05

MSSF Calendar, May, 2005

Friday-Sunday, May 13-15: May Morel Foray. Mokelumne Campground. See inside for more information or contact Norm Andresen at n.andresen@comcast.net.

Tuesday, May 17: MSSF General Meeting, Randall Museum, doors open at 7:00 pm. Andy Wilson will speak about the taxonomy and systematics of *Gymnopus*.

Sunday, July 10: MSSF Annual Picnic. For more information, contact Mark Lockaby at marklockaby@sbcgolbal.net or 510-559-4606.

Kibbe Ridge

Continued from page 5

friends heading up-stream to kayak down the Cherry Creek. Bobby had spent two days out in the wilderness, lost and without water. One of his eyes was almost swollen shut from mosquito bites.

So there Bobby was, almost delirious. We had him slosh down all our water, went and got his kayak and backpack, and drove him down to the fire station by the entrance to Cherry Lake. The fire rangers were very kind to him — gave him bottles of GatorAid and water and two days worth of military rations. We left him in the campground near there, having put a message on his “friends” car at the trailhead that that was where they could find him. Just goes to show that there

are more Chumps out there in the world. At least Bobby was intrepid to begin with. Apparently he freaked out that he was going to get attacked by bears and that he would never again see his 4th grade students in Hagerstown, Maryland.

With all that, we drove like a bat out of hell after leaving Bobby to his fate, and managed round trip from S.F. to Kibbe Ridge and back in about 12 hours. We bought a good steak on the way back to enjoy with our morels.

Epilogue: We received a nice thank-you note from Bobby after he returned to Maryland.