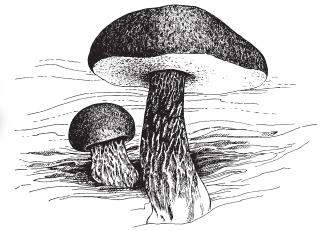


Mycena News



The Mycological Society of San Francisco November 2009, vol. 60:08

November 17th MSSF
Meeting Speaker



Don Hemmes

The History of Mycology in Hawaii

Don Hemmes completed his BS at CC Iowa under past NAMA president Don Huffman, who advised him to go to Hawaii for grad school to work with Hans Hohl on slime molds. On finishing his MS and Ph.D. in Microbiology at the Univ. of HI, Don followed Hans to the Cytology Institute in Zürich, for a post-doc on sporulation in *Phytophthora*. Don returned to U HI in 1973 and continued working on *Phytophthora* in Hawaii. He later joined Dennis Desjardin at SFSU to

Continued on page 7

MycoDigest - Myrmicine Mutualists and Formicine Foragers: A Tale of Ant/Fungal Coevolution

Peter G. Werner

One of the many fascinating stories of fungal symbiosis is that of fungus-farming ants found in the New World tropics and subtropics. This relationship is agricultural in nature and is analogous in many ways to the human domestication of crop plants and the resulting changes in human lifestyles. The primary players in this complex interaction are ants of the attine group (Tribe Attini) and “attine fungi”, mainly lepiotaceous fungi of the *Leucoprinus/Leucoagaricus* group, or in some cases coral fungi allied to *Pterula*. It has also been found to involve at least one other partner, an actinomycete bacterium that lives on the surface of the ants’ bodies.

In all forms of this symbiosis, the ants collect a rich organic substrate which they deposit in underground chambers. The attine fungus, which grows throughout these chambers after initial inoculation by the founding queen, then spreads into on the new substrate. Unlike termite-associated fungi, attine fungi typically do not produce macroscopic fruiting bodies, and instead are restricted to a wholly mycelial or even yeast morphology. In some attine fungal species, the mycelia produce structures called gongylidia, small sterile structures that serve as food for the ants.

The ants benefit from this system in that the fungi transform organic matter that is largely inedible to animals into an edible mass of mycelium or yeast. The fungus benefits in not only getting a rich food source from the ants, but in also being physically cultivated and protected from predators by the ants, as well as chemically protected by compounds manufactured by the actinomycete found on the ants’ bodies. The latter defense is particularly important, as this mutualism also universally involves a parasitic fungus *Escovopus*, an anamorphic ascomycete related to *Cordyceps* and *Hypomyces*. Typically, this parasite is largely kept in check in the attine fungal gardens, but in some cases can take over with devastating results to the colony. *Escovopus* and the ant/fungus/actinomycete system appear to be locked in a long-term “evolutionary arms race”, being selected for defenses and counter-defenses against each other over evolutionary time.

There is a great deal of species diversity among the fungus-cultivating attine ants, and a variety of specialized cultivation types have arisen. The most general type is engaged in by the “lower” attine ants, which live in small colonies with relatively unspecialized castes and provide a mixed substrate of plant material and detritus for their fungi. The “higher” attine ants have larger colonies and often numerous castes that are highly specialized to various tasks of food gathering and fungal cultivation. The most specialized group are

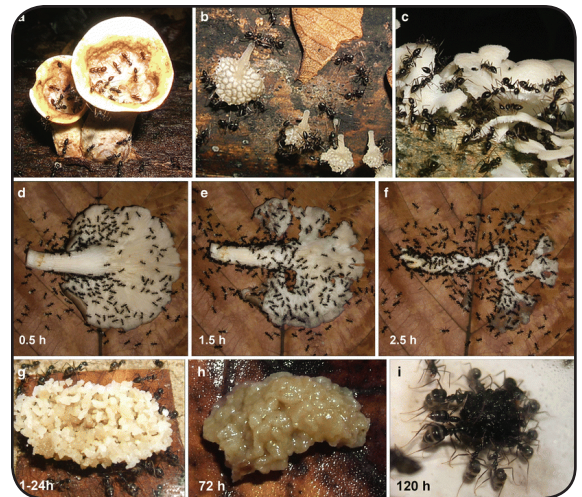


Photo courtesy of Peter Werner

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MycoDigest is dedicated to the scientific review of mycological information.

ANNOUNCEMENTS

GREEN FESTIVAL NOVEMBER 13-15 FRI-SUN

S.F. Concourse Exhibition Center, 635 8th St. @ Brannen

For the first time the MSSF will have an information table at the annual Green Festival event in San Francisco. The Festival hosts renowned speakers and educators (including Paul Stamets of Fungi Perfecti) in the sustainability movement alongside a variety of eco businesses, live music, and delicious vegetarian food. MSSF is attending this year to help spread awareness of the fungal kingdom and our activities to a broader public. Hours are Friday from 12pm-7pm and Saturday from 10am-7pm and Sunday from 11am-6pm. We need volunteers at the booth to sign up new members, provide wild display mushrooms, etc. Contact David Gardella <david_gardella@hotmail.com>.

For more information go to www.greenfestivals.org

GUIDED FORAYS

David Arora's Annual Thanksgiving Weekend Mendocino Mushroom Foray & Class Friday Nov. 27-Sunday Nov. 29

Guided forays, lectures, feasts and ID workshop. Guests this year include William Rubel, noted cookbook author & culinary historian. \$250 includes lodging. For info and reservations email: maxfun@cruzio.com or go to: davidarora.com.

Yuba Watershed Foray - Friday Saturday Dec 12th 9am- 4pm

Saturday field collecting will wrap up with afternoon lectures, identification, tasting, discussions, and fungus-inspired activities for the whole family. Saturday event \$22.00 (YWI members \$18.00, under 18 free).

December 11th evening lecture: *Sacred Mushrooms: Paths in History and In Myth* with Dale Pendell - 7\$ (members 5\$).

For more information, contact Daniel at 530/292.3589 or danmadrone@yahoo.com (no registration necessary).

SOMA Wild Mushroom Camp 2010 January 16-18, 2010

For the 13th annual SOMA Wild Mushroom Camp we are planting a theme: **Trees and Mushrooms**.

Mushroom forays, gourmet mushroom cuisine, classes & workshops on: mushroom identification, cooking, dyeing, felting, polypore paper-making, medicine making, photography, cultivation, and much more!

Featured speakers: Tom Bruns and Tom Volk.

Register online at: www.somamushrooms.org

FUNGUS FAIRS

Sat/Sunday, November 21st-22nd - Humboldt Bay

Mycological Society Fungus Fair

Redwood Acres Fairgrounds, Eureka, CA.

Sat/Sunday, December 4th-5th - MSSF Mushroom Fair

Lawrence Hall of Science, Berkeley

See page 3 for details and how to volunteer.

Sat/Sunday, January 9th-10th, 2010

Fungus Federation of Santa Cruz Fungus Fair

Details TBA at: <http://www.fungusfed.org>

Mendocino Woodlands Foray

November 20-22, 2009

Featuring Gary Lincoff, author of *The Audubon Society Field Guide to North American Mushrooms*.



Register online at:

www.mssf.org/Mendo

Deep in the Mendocino woods, MSSF members, fellow mushroom enthusiasts, friends and family, gather once again for our annual north coast fungal rite of autumn. This weekend-long spectacular mycological event includes guided forays, a variety of classes, cooking demos, workshops, presentations and activities, and special programs for children - and plenty of mushrooms!

All on-site meals and lodging (Friday night through Sunday lunch) are included in the basic \$150 dollar per person member rate; \$75 for children aged 5-12 years (if accompanied by a paid adult). A reduced rate of \$90 per person (\$45 child) is available for those staying at off-site lodging. Non-MSSF members, please add \$25 per adult / \$15 for children. (You might as well become a member!).

Important Note: The Camp 1 kitchen and dining hall we have long used is currently under renovation, so we will be moving further down the road this year to Camp 2. The lovely Camp 2 grounds are more level with better parking facilities than Camp 1, however, the cabins are a bit more rustic, with screened windows (ambient air) and no fireplaces. Registrants will be offered the option of using our familiar cabins at Camp 1 if they prefer to drive the three miles between camps to attend activities. Please inform the registrar if you prefer this option at the time of making your reservation.

For more information about the camp, go to:

www.MendocinoWoodlands.org

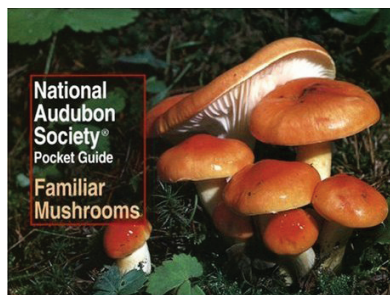
Mendocino Woodlands Foray 2009 Weekend Schedule

Friday

3 - 9	Check in @ Camp 2, Mendocino Woodlands
3:30 - 5:30	Early Bird Foray
6 - 7	Potluck appetizers
7 - 10	Dinner
8 :30 pm	<i>Fungimental Mycophagy</i> presentation by DC

(schedule continued on page 6)

What's Bookin'?



This compact little book is designed to fit in your pocket and is packed with useful information. It contains 79 full-page color photos of the most familiar mushrooms. Each corresponding page includes information on Identification, edibility, similar species, habitat, and range. This pocket guide also includes sections on mushroom hunting, mushroom poisoning, mushroom family guide, spore color chart, and a detailed glossary.

National Audubon Society (Pocket Guide) to Familiar Mushrooms

An Andrew Stewart publishing edition by Peter Katsaros.

1990, Alfred A. Knopf, Inc. Soft back, 191 pages, 4 X 6 inches, Price: \$9.95

It will be available for sale at the next MSSF general meeting at a 10% discount to members in good standing. ~Curt Haney



November 2009, vol. 60:08

Contributors:

Dorothy Beebee, J.R. Blair, David Campbell, Pat George, Curt Haney, Don Hemmes, Bob Sommer and Peter Werner.

Editing and Layout:

Dave Lubertozzi

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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 on-line at www.mssf.org.

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40th ANNUAL MSSF FUNGUS FAIR

at the LAWRENCE HALL OF SCIENCE

December 5th and 6th 2009

We need your help!

Mushroom collection forays

Friday, 10 am to 2 pm

Contact Norm Andresen at n.andresen@comcast.net

Set up: small tasks for all levels of experience

Friday, December 4th

3:30 to 7:30 pm or 7:00 to 11 pm

Volunteers needed during the Fair

Saturday and Sunday 10 am to 5 pm

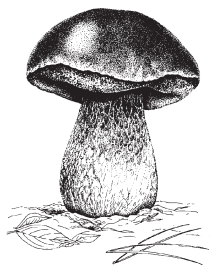
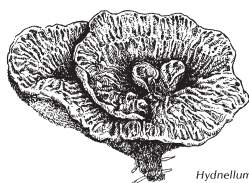
To sign up for Friday evening, Saturday or Sunday shifts contact Stephanie Wright fungusfair@bytewright.com

Dinner will be provided Friday evening; lunch will be provided Saturday and Sunday. Shift obligation is three and a half hours and includes free admission to the museum for the weekend.

For more information go to:

<http://www.mssf.org/fungus-fairs/index.html>

Please help promote the Fair by putting up the enclosed poster in public places – libraries, schools, stores, etc.



Don't Discuss Pickled *Lactarius*...

Bob Sommer

Mushroomers are individualists linked only by a common interest in mushrooms. There are no demographics that define us. We are not referring only to members of mushroom clubs. Mycophiles include a lot of people who aren't in clubs, including older folks whose grandmothers collected coccora in Italy; people from Eastern Europe whose parents took to the forest during periodic wars and famines; those from South East Asia, the subject of Arora's essays, who sell to wholesalers; survivalists who lack trust in the commercial food system; and laid-off lumber workers who commercially forage in winter.



Some of us hunt alone in secret locations, while others enjoy the camaraderie of organized forays to popular destinations. Most of us collect for the table; others resemble birders who keep lists of whatever they find to satisfy intellectual curiosity. Friends take art photographs - my hobby is painting mushrooms. Some of us pay close attention to changes in technical nomenclature, others are willing to rely upon unchanging common names.

Given the rampant individualism, organizing a foray is an uncertain proposition with no likelihood of precision. It's not only the weather that affects attendance. Twenty people sign up and you end up with six;

six register and twenty appear. Some people regularly sign up and never show. Perhaps they died and friends register them for sentimental reasons. Others, fearful of commitment, don't confirm and always show. People you think live alone arrive with an extended family; people you believe to be in stable relationships arrive with new partners. On a recent foray, we received confirmation from members of a "tracking club." What or who they tracked wasn't specified and it seemed prudent not to ask. Some folks are scrupulous about time; you can set your watch by their arrival. Others are habitual latecomers. For our friend Henry, lateness is a power play. If you want him to show up on time, set the time on his invitation a half-hour early. For others, lateness isn't a power trip— they have difficulty reading maps and frequently get lost. There are also helpful folks who, after a foray, want to share their photographs. Nice idea within limits, but to send all of the pictures, without culling, editing, or reducing file size? Everybody's mailbox becomes clogged, and without a spore print, there is no way to identify an LBM, even from six photographs taken at different angles. In regard to unsolicited photographs, Frank Lloyd Wright had it right— less is more, fewer are better.



Organized forays have many positive features. They are a good way to introduce newcomers to mushrooming. There will be an experienced leader to check collections and ID unusual specimens, many eyes on the ground, and an ethic of sharing food, knives, even collected boletes. Permission to collect has been obtained in advance and carpooling arranged. You can carry baskets in public without the need to worry about the park ranger. Another nice aspect is the possibility for vicarious experience. Not everyone has to return with a loaded basket for a successful foray; those who don't find any morels can identify with people who do.

Given the divergence of interests, an unwritten rule on a foray is to avoid talking politics until you know who you are dealing with. There may be folks who you'd rather didn't vote in the next election. We ran into such people on an early foray. Things were fine so long as the conversation centered on mushrooms.

Once it strayed to politics, group spirit dissolved into heated argument. Survivalists saw things getting worse and no resolution except taking to the woods with guns. We wondered if they were packing on this foray. Eco-types wanted to ban guns from national forests. Eastern Europeans, whose parents ate pickled *Lactarius*, maintained that Westerners were naïve about government. We felt they exaggerated the culinary properties of pickled *Lactarius*.

Despite, or perhaps because of, the group dynamics, the gains of an organized foray far outweigh the costs. Our conclusion is that mushroomers comprise a very special and enthusiastic group of folks.



Pickled *Lactarius* (2-3 pounds of mushrooms, about 2 quarts)

Wipe or brush-clean the mushrooms, quarter or slice if too large. Toss with ½ cup of pickling or Kosher salt; leave overnight, tossing occasionally. This is to wilt them, drawing out some water so they will then re-absorb the pickling brine and plump up again. For variety and flavor, you can add some small sweet or hot peppers, onions, carrots, celery or peeled garlic to the pickle; also salt these overnight along with the mushrooms - slit the peppers to allow the salt and brine to get inside.

The unpalatable “peppery” *Lactarius* species are reportedly rendered more edible by salting or pickling; opinions apparently differ on this.

Pickling brine:

- 3 cups cider or white vinegar (5% acetic acid)
- 2 cups water
- ½ cup sugar
- 3 Tbsp. pickling or Kosher salt (pure salt)
- 2 Tbsp. each: whole black peppercorns, allspice
- 1 Tbsp. each: whole coriander and mustard seeds
- 2 each: bay leaves, cinnamon sticks, and cloves

Combine the brine ingredients in a non-reactive pot that is large enough to hold the brine and the mushrooms. Stir over low heat until the sugar dissolves, and simmer for a few minutes. Take care, as the mixture can foam up a bit. Clean and sanitize the jars and lids.

Meanwhile, place the salted mushrooms in a colander or sieve; drain, squeeze, rinse and shake to remove as much salt and moisture as possible. Add the mushrooms to the boiling pickling brine; simmer for a minute. Use a slotted spoon to fill the jars with the mushrooms. Pack them in; you want to fill the jars nicely! Then pour the hot brine mixture over them. Use a small spatula along with gentle tapping and rotation of the jars to fill the air spaces with the brine. Final filling should be to within ½ inch of the top.

Wipe the rims of the jars. Put the lids on and screw the rings on until just finger-tight, then back off a quarter-turn. Lower the jars into a boiling-water bath, deep enough to go an inch above the tops, for 10 minutes at altitudes up to 1,000 feet, 15 minutes from 1,000 to 6,000 feet and 20 minutes over 6,000 feet. Pull the jars out with tongs and let cool for a minute or two; re-process any jars having lids that don't pop down with a vacuum. Screw the lids on tight when fully cool. Leave in the cellar for 4 - 6 weeks before use for best flavor; refrigerate after opening.



Mendocino Woodlands Foray 2009 Schedule continued

Saturday

Foray notes: There will be both long and short forays. The short forays will return by 12:30 or so, and the long forays will return later in the afternoon. People who want to take afternoon classes should go on the short forays, and those who just want to foray, should go on the long forays. Norman Andresen will organize and plan the foray schedule.

8:30 - 9:30	Breakfast	
9 - 9:30	Make lunches	
10 - 10:30	Forays depart - long and short	
12 - 12:30	Lunch – self-serve sandwich materials available in the morning, make your own lunch then.	

Short forays return for:

2-4	Beginning mushroom identification	JR Blair
1 - 4	Polypore paper making	Catherine Wesley
2 – 5:30	Cultivation Seminar Session	Ken Litchfield
4-5:30	Cooking class	Andy Maxon
5:30-6:30	Foray Fruits Cooking Session	DC or ?
6:30	Potluck appetizers	
7 - 8	Dinner	
8:30	Gary Lincoff Presentation in Dining Hall	

Sunday

8:30 - 9:30	Breakfast	
9:00-10:00	Sandwich materials available. Last chance to make lunches.	
9:30- 11:30	Mushroom sketch/draw/paint class	David Gardella
9:30 - 11	Intermediate ID class at specimen tables	J.R. Blair
9:30 – 11:30	Mushroom Dye Seminar	Julie Schleuder
9:30 – 11:30	Cultivation seminar continued	Ken Litchfield
11:30 – 12:30	Specimen Discussion with Gary Lincoff, Michael Wood, JR Blair, Norman Andresen...	
12:30- 2:00	All participants clean their own cabins Check out by 2PM	

Note – schedules subject to adjustment.

Culinary Corner

The October Culinary Group Mediterranean feast was enjoyed by a large and enthusiastic group. We had a diverse and extensive array of delicious appetizers while Al and Bill watched over the young goat and legs of lamb cooking in our caja china. When done, the guys carved up the meat and served it along with our other courses: Liana with her complex, delicious couscous; Liann with her creamy, tart raita; Stephanie with her melange of vegetables and mushrooms; Dave with his lovely roasted figs and, of course, Remo's coffee which sends us off to our homes, far and wide.

Our next dinner, November 2nd, will feature foraged foods. Members of the MSSF are invited to join the Culinary Group. We are people who love mushrooming and cooking. Please see the Mycena News Calendar or go to the MSSF website for a description of the Culinary Group.

In lieu of a recipe here in the Culinary Corner, our editor has included a recipe for mushrooms not often prepared in the US but enjoyed by many other people in this world. I remember when I lived in Europe I saw species picked and enjoyed by the locals that most of us here in California disdain. Years ago, MSSF members who came from Eastern European countries brought pickled and otherwise prepared species we generally did not eat for us to try. It was great fun.

See you at dinner- Pat

Deadline for the December 2009 issue of *Mycena News* is November 16th.
Please send your articles, calendar items, and other information to:
mycenanews@mssf.org



Agarics

Mycodigest continued

the leafcutter ants, which provide substrate solely in the form of fresh leaves, which are then broken down on an assembly line-like system, until the final substrate is produced. Leafcutter colonies are often very large (with a volume on the scale of a city bus) and consume vegetation on the scale of a large mammalian herbivore.

Although it has been established that the attine/fungus symbiosis sprang from a single evolutionary event, the details of the origin and course of evolution of this system have been less well-understood. Recently, several discoveries have shed some light on these questions. A 2008 paper by Ted Schultz and Seán Brady of the Smithsonian Institution produced a broad phylogeny of 65 species of attine ants, which was compared against the cultivation specialties of this species. It was found that lower attine agriculture was indeed the most widespread and “primitive” condition among the attines. The shift from lower to higher attine agriculture was found to be restricted to a single specialized line representing a single evolutionary event, as was the shift from general higher attine agriculture to leafcutting. Similarly, fungal cultivar switching, a change from mycelial leucocoprinoid fungi to yeast forms of these species, or to pterulaceous coral fungi, were also found to be singular evolutionary events.

The details of how ants first domesticated fungi also remains an open question. There are two broad hypotheses on how this took place. One is the “transmission first” hypothesis, which posits that the ancestors of attine fungi were dispersed by ants, perhaps living on their colonies in a parasitic or commensal relationship, until eventually becoming utilized as a food source. Another is the “consumption first” model, in which free-living leucocoprinoid fungi were consumed by the ants as a food source, then brought into cultivation.

While this question remains unanswered, several recent discoveries provide some evidence for the “consumption first” hypothesis. The first is a recent paper by Tracey Vo and others of the Ulrich Mueller lab at University of Texas, who carried out a phylogenetic study of free-living leucocoprinoid species and attine fungal strains. It was found that some strains of attine fungi are more closely related to free-living, mushroom-producing strains of *Leucocoprinus* and *Leucoagaricus* than they are to each other. These species are typically found unassociated with ant colonies and are capable of wind-dispersal of spores like other mushrooms. This lends support to the idea that attines “captured” free-living species and that they have possibly gone in and out of attine cultivation a number of times.

The second discovery is that *Euprenolepis procera*, a Southeast Asian species of formicine ant (a group not directly related to attine ants), subsists largely on wild fungi. This research was carried out by a pair of German entomologists, Volker Witte and Ulrich Maschwitz of University of Munich. As an initial test of *Euprenolepis* food

preferences, Witte gathered some 80 species of wild mushrooms and placed fruiting bodies in the middle of ant trails. While the ants ignored many types of mushrooms, they swarmed and consumed some 30 species. Another experiment demonstrated a line of ants could consume an entire 40 gram oyster mushroom over a course of 3 hours. Although *Euprenolepis* was found to be capable of an omnivorous diet, sampling of food particles carried by non-baited ants revealed that over 99% of their diet comes from fungal sporocarps.

While *Euprenolepis* is not a close relative of the attines, and hence, does not directly answer the question of the ancestral diet of that group, the study does provide an example of ant consumption of wild mushrooms that had not previously been observed. It is entirely possible that many other examples of ant consumption of wild fungi exist, but have simply been overlooked. How widespread fungivory is among the ants and what role it played in ant domestication of fungi looks to be a promising area of study.

For further reading on fungus-farming ants:

Angier N. 1994. Ant and its fungus are ancient cohabitants. *New York Times*, December 13, 1994. Available from: <http://tinyurl.com/yg2bdyo>.

Social Insect Research Group, Universities of Copenhagen and Aarhus. 2007. Fungus-growing ants (website). Available from: <http://tinyurl.com/yjhdabr>.

Mueller UG, Rabeling C. 2008. A breakthrough innovation in animal evolution. *PNAS* 105(14):5287–5288. DOI: 10.1073/pnas.0801464105. Available from: <http://www.pnas.org/content/105/14/5287.full>.

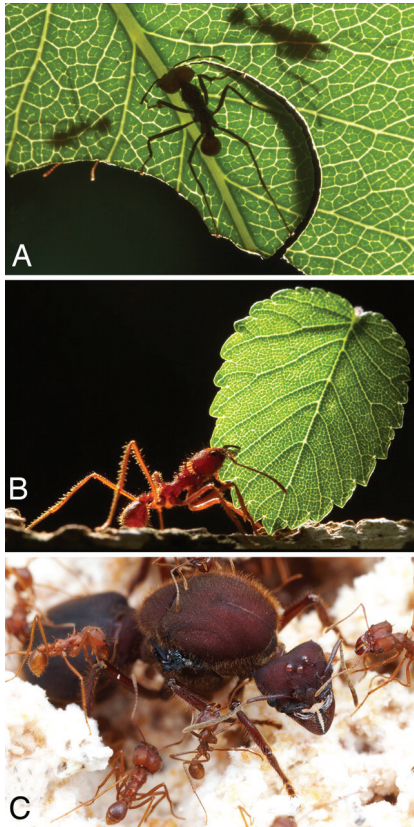
Schultz T, Brady S. 2008. Major evolutionary transitions in ant agriculture. *PNAS* 105(14):5435–5440. DOI: 10.1073/pnas.0711024105. Available from: <http://www.pnas.org/content/105/14/5435.long>.

Vo TL, Mueller UG, Mikheyev AS. 2009. Free-living fungal symbionts (Lepiotaceae) of fungus-growing ants (Attini: Formicidae). *Mycologia* 101(2):206–210. DOI: 10.3852/07-055.

Fungus-foraging ants:

Milius S. 2008. Nomadic ants hunt mushrooms. *Science News*, July 25, 2008. Available from: <http://tinyurl.com/yfulcot>.

Witte V, Maschwitz U. 2008. Mushroom harvesting ants in the tropical rain forest. *Naturwissenschaften* 95:1049–1054. DOI: 10.1007/s00114-008-0421-9. Available from: <http://www.bio-nica.info/biblioteca/Witte2008MushroomHarvesting.pdf>.



Peter Werner has worked in mycology since the 1980s. His studies began at the Univ. of WA and as a grad student at SFSU he completed a monograph of California *Psilocybes* with Dennis Desjardin. A frequent *Mycodigest* contributor, Peter is an avid photographer and microscopist. He recently completed a professional microscopy certification at Merritt College and wrote a buyer's guide to microscopes in *Mycena News* (59:04).

Speaker continued

catalog the fleshy fungi of Hawaii on an NSF grant. This and other collaborations led to the 2002 field guide *Mushrooms of Hawaii*. A long-time member of the Mycological Society of America, Don was awarded the Society's Weston Award for Excellence in Teaching Mycology in 1986 and named a Fellow of the Mycological Society in 2004. In 2007-2008 Don served as MSA President.

Don retired this year after 36 years at UH Hilo, but continues to work with Else Vellinga at UC Berkeley on the Lepiotaceous fungi of Hawaii and is also concentrating on the gasteromycetes including stinkhorns, earthstars, and puffballs found in the islands.

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

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November 2009, vol. 60:08

MSSF Calendar November 2009

Monday, November 2^d, 7 pm - Culinary Group Dinner

SF County Fair Building (Hall of Flowers), Golden Gate Park, 9th and Lincoln. Our menu will be centered on foraged food. Contact Pat George at (510) 204-9130 or plgeorge33@yahoo.com by Friday, Oct. 30th to reserve; limited to 60 diners. Remember to bring your own tableware as the venue does not provide dishes, etc. Also, bring a beverage and an appetizer to share, preferably, but not restricted to, mushrooms or other foraged foods. There is no Culinary Group meeting in December as we have the Holiday Dinner, the general group's grand feast. Our next Culinary Group dinner will be in January, 2010.

Monday, November 4th, 10 am - Marin Mushroom Hike

The latest in a series of weekly forays with Terry Sullivan; for more information and to reserve a spot, go to Terry's blog:
<http://biologyhikes.home.comcast.net/~biologyhikes/mushroom.htm>

Thursday, November 12th, 7pm, Beginning Mushroom ID Workshop. San Francisco State University, Hensill Hall 401. This workshop will introduce participants to the macroscopic features and descriptive terms used in the identification of mushrooms. Prerequisite for Intermediate ID Workshops. Instructor: J.R. Blair. Sign up by contacting J.R. at jrblair@mssf.org or 650-728-9405. Cost: Free to MSSF members, \$5 for non-members. Limited to 15 participants.

Saturday, November 14th, 7 pm - Salt Point pot luck foray

Meet at Gerstle Cove campground at 9:30 am for a walk and talk. Return to the campsite about 2:00, commence preparing a potluck. I will bring a stove, lamps and a tarp. Be prepared to cook the mushrooms we find or not if the collecting is poor. This can often be the beginning of the bolete season, with many toothsome companion fungi.

Tuesday, November 17th, 7 pm - MSSF General Meeting

Randall Museum. 7 pm: mushroom identification and refreshments provided by the Hospitality Committee. 8 pm: Don Hemmes will talk about the mycologists who have made major contributions to our knowledge of fleshy fungi in Hawaii and show many examples of mushrooms and other fungi found in the islands.

Thursday, November 19th, 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 workshop. Instructor: J.R. Blair. Sign up by contacting J.R. at jrblair@mssf.org or calling him at 650-728-9405. Cost: Free to MSSF members, \$5.00 for non-members. Limited to 15 participants.

Sat/Sunday, November 21st-22^d - Mendo Woodlands Foray

See page 2 for full announcement with schedule and registration, or go to: www.mssf.org/Mendo

Sat/Sunday, November 27th-29th - Arora's Mendo Foray

For info and reservations go to: davidarora.com.

Ongoing: November-March - Land's End study collections

We need volunteers to make early morning sweeps of assigned sectors of the Land's End area between 7:00 and 8:30 am, November through March. Contact Eric Multhaupt at mullew@comcast.net.

Sat/Sunday, December 4th-5th - MSSF Fungus Fair Lawrence Hall of Science, Berkeley

Our 40th year! See page 3 for details and how to volunteer.