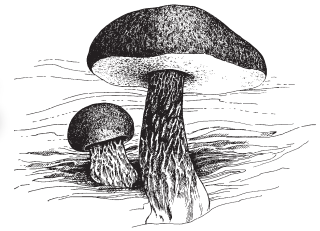


Mycena News



The Mycological Society of San Francisco September 2010, vol. 61:06

September 21st MSSF
Meeting Speaker



Val Wong

Molecular genetics of Rhizopogon

MSSF Officers 2010-2011

The new season begins with the inauguration
of our new officers:

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Vice-President: Curt Haney
Secretary: Donald Hughes
Treasurer: Henry Shaw

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Ginny Garret
David Gardella
Thomas Jenkinson
George Willis

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Books: (vacant)
Culinary: Pat George and Stephanie Wright
Cultivation: Ken Litchfield
Education: Alice Sunshine and Paul Koski
Fungus Fair: J. R. Blair
Forays: Norm Andresen
Hospitality: Liana Hain and George Willis
Library: Monique Carment (leaving soon)
Membership: Alvaro E. Carvajal
Merchandising: Ron Pastorino
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Program: Wendy So
Scholarships: Bob Mackler and Fred Stevens
Systematics: Michael Wood
Toxicology: Bill Freedman
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Scientific Advisor: Prof. Dennis Desjardin

MycoDigest: Killer Fungi and Shape Changers

Else Vellinga

“Billions at risk from wheat super-blight” – “Red menace: Stop the Ug99 Fungus Before Its Spores Bring Starvation” – “Deadly wheat fungus Ug99 hits South Africa” – these are just some of the headlines on a new strain of *Puccinia graminis*, the Black or Stem rust of wheat, that originated in Uganda and spread northeast to Iran, which it reached in 2009, and to South Africa, where it arrived in 2010. Wheat is not resistant to this particular strain of rust fungus, but the race is on to develop wheat that can withstand the rust.

Rusts are ubiquitous plant-pathogenic fungi and affect many plants. On my daily walk to campus their orange or dark brown powdery spots are conspicuous on many garden plants. Rust fungi got their name from the rusty brown spores they produce. They belong to a group of basidiomycetes called the Pucciniomycotina, one of the three main groups in the basidium-forming fungi, along with the Ustilagomycotina (smut fungi belong here), and the Agaricomycotina where our regular mushrooms are accommodated (boletes, *Russulas*, chanterelles, conks, etc.) Just for the record, the next big grouping of fungi, the ascomycetes, with spores produced in tube-like cells called asci, includes molds and mushrooms like morels.

Unlike the mushroom-forming species, rusts in the class Pucciniomycetes do not form obvious fruitbodies and in fact have quite a different lifestyle than mushrooms. They only grow on plants and they form their spores in little heaps, originating from special structures in the leaves and stems. The plants suffer from this foreigner living inside them, and crop plants grown in monocultures are especially vulnerable; yields are severely reduced by rust fungi. The rust fungi form spores in huge quantities, and what kinds of spores these rusts have! They have the most complicated life cycles you can imagine. Bolete and button mushrooms produce just one type of spore (known as basidiospores as they are borne on the basidia that cover the tubes and gills, respectively), but



(a) *Puccinia distincta* on daisy leaves.
(b) *Puccinia malvacearum* on hollyhock.
All photos by the author.

Continued on page 5

MycoDigest is dedicated to the scientific review of mycological information.

PRESIDENT'S POST

Greetings to all! As you perhaps already know, the presidency of the Society was passed from Dan Long to myself in July. I want to thank Dan for all his hard work in the past year keeping the club running smoothly. I'm looking forward to serving as President for the next year, perhaps longer. I can only hope I will do as good a job as Dan has done. I am grateful that we will to have Dan around for his advice moving forward.

As you may also know, MSSF lost an esteemed and extremely long-standing member this summer. Larry Stickney died in late June. Larry was a giant among amateur mycologists and had been a member of the Society for over 40 years. He was president four times. Larry taught many of our members a great deal over the years, and was always fascinating to talk to about hiking in the mountains, his time working at Yosemite, and his countless adventures hunting for mushrooms all over the country.

I had the pleasure of driving Larry to San Jose camp in the spring of 2008. Larry was a good person to have along both because of all the stories he regaled me with for the duration of the trip but also because he had just returned from a trip to Happy camp where he and other members had picked morels. This was fortuitous since we had a very slow year at San Jose camp but Larry came through with a bag of morels from Happy Camp so that everyone still got a taste. We will have a memorial for Larry at our first general meeting on Sept. 21st; please see the Web site for details as the meeting approaches.

As the mushroom season begins ramping up, so do the activities of the Society. This is the first *Mycena News* since May. Local and long-distance forays are being planned as you read this, and the Culinary Committee will commence with gourmet monthly dinners on September 13.

Work is being done and remains to be done to prepare the Society to realize our mission of educating and building camaraderie among our members for the coming year. As a volunteer organization we rely on you, our members, to contribute to the planning and execution of MSSF events over the next several months. Please consider volunteering in some capacity this year. Minimally, you can be help by spending devoting a few hours at the Fungus Fair or other event.

If you are able to commit more time, we also have several committees in need of new chairpersons. I am thrilled to welcome Wendy So to the position of Program chair, replacing Mark Lockaby, who ably filled this post for many years. We still need new committee heads for Merchandising, Librarian, and Editor of *Mycena News*, the monthly newsletter that you are now reading. This latter post includes the perk of the editor getting to use the Society's copy of Adobe Create Suite software for the duration of their tenure in this position. It is an excellent opportunity to develop your skills with the CS software if you are a designer or creative person and represents one of the most important roles on the MSSF Council. If you would like to volunteer to help us in the coming year or have any comments, questions, or suggestions please do not hesitate to e-mail me at president@mssf.org.

In closing, I look forward to an outstanding year with all of you and hope to see you at the culinary group potluck and our general meeting later this month. I expect we will have a great season together with your support.

-Lou

CULINARY CORNER

Summers are pretty slow in for the culinary pursuit of mushrooms. However, the cool, wettish weather that has persisted along the coast has brought forth some treasures for those who forage with patience and persistence. Specifically, people have been finding a kind of chanterelle that has been dubbed the "rainbow chanterelle", lovely to look at, difficult to find as it likes to hide out under the leaf/humus cover. There have been reports of *Agaricus augustus* and Boletes in other areas including the Sierras. Hopefully, the "arctic summer" we have been experiencing will bring us more fungi if not more summer outdoor eating.



Lactarius rubidus. Photo by Nathan Wilson.

In the meantime, while thinking about what mushroom to feature this month I recalled a dessert using powdered candy caps made by David Campbell he served at the volunteer appreciation picnic given by SOMA for those of us who helped out at their SOMA Camp in January. We all loved the preparation and David gracefully contributed his recipe; I revised it a bit.

David modified the "cherry crunch" recipe in the old standby "Joy of Cooking" (1973 printing), p. 607, which calls for 1 cup oatmeal, 1 cup flour, 1 to 1 1/2 cup brown sugar, 1/2 cup melted butter. Mix with 1/4 teaspoon each of baking soda, baking powder, salt. Add about 1/4 cup of candy cap powder and a hand full of coarsely chopped pecans. That's the "crunch" part that goes under and over the fruit mixture. For the fruit mixture, David used about 1 1/2 cups of apricot butter he had previously made. That consisted of fresh apricots stewed with homemade sweet white wine (liquor) a friend had given him which he had blended in a food processor. A "slug" of candy cap powder and dashes of cinnamon and nutmeg were added to the apricot butter. Half of the "crunch" was spread into an 8" by 8" baking pan, the fruit butter spread over that and the remaining half of the "crunch" spread over the top. This was baked at 350 degrees for 30 to 35 minutes until brown. A dollop of whipped cream or vanilla ice cream would be a nice topping.

Probably, other fruit could be substituted for the apricots though David has only done this preparation with apricots. There's another recipe for a fresh fruit crisp on the same page that could be made celestial with a good dose of candy cap powder added to the recipe.

The earlier editions of "Joy of Cooking" the bible for so many cooks, contained many recipes that were not included in the revised editions from 1997. If you have bear, opossum, raccoon, peccary, muskrat, woodchuck, beaver or squirrel that you want to whip up for dinner you'll have to find the old edition. I have one if you want to borrow it. You'll have to be very careful with it, though; it's falling apart from so much use.

Keep looking and cooking - Pat

What's Bookin'?



Sacred Soma Shamans & Soma Elixir are two books written by Hawk and Venus, shamanic high priest and priestess of Soma, with the assistance of their two sons, Jayme and Mars. Hawk and Venus are modern-day Soma Sacrificers. They hunt, gather, prepare and sacrifice *Amanita* Mushrooms for spiritual sacrament, energizer, medicinal, and uplifting tonic, using ancient Shamanic-Priesthood skills. They have dared to get to know the spirit of this mushroom through extreme experimentation and devoted daily use of Soma for over 25 years.

Due to the topic and nature of these books, I was at first hesitant to write a review on them for the MSSF Mycena news. After reading them, I, or should I say, they, changed my mind. I found *Sacred Soma Shamans* very entertaining as well as highly informative on Shamanic Shaman sacramental use of *Amanita* mushrooms. This book consists of 35 wide-ranging chapters but is easy and quick to read, especially if you already have a basic knowledge of fungi. Whether you're just interested in someone else's adventure for entertainment or want some valuable tips on how to collect, prepare and consume Soma, a guide to Soma consciousness is found in this book.

I found *Soma Elixir* somewhat similar to the first book written by Hawk and Venus. In this book the authors enlighten you on the spiritual qualifications of the *Amanita* family of mushrooms. Through their many years of experience they show how they have learned to translate and interpret the connection between this family of mushrooms and the Soma/Rig Veda. Both of these books contain many drawings, black-and-white pictures, and also very colorful pictures. I can recommend both of these books for entertainment purposes as well as enlightening yourself on the Sacred Shaman practices of using *Amanita* mushrooms, (Soma) as a sacrament in ceremonies. Both are available from the MSSF library. - Curt Haney

Sacred Soma Shamans. Red Angels Ltd., Second Edition, ISBN 0-9743722-1-8
Softcover, 333 pages, 6 x 9 inches, Price: \$29.95, 2005.

Soma Elixir. Red Angels, Ltd., First Edition, ISBN 978-0-9743722-2-8
Venus and Sons. Softcover, 140 pages, 6 x 9 inches, Price \$29.95, 2010.

ANNOUNCEMENTS

THE MSSF CULINARY GROUP SEASON RETURNS!

We start the new season with our annual POTLUCK, your chance to fix a favorite dish and impress us all. Or maybe try something new and you will still impress us. Please bring enough to serve 8 to 12 people. Naturally, we love to eat mushrooms but we love good food in general, so dishes without mushrooms are also welcome.

Because of Labor Day, our first meeting will be on Tuesday, September 7, (see the Calendar for details). We will collect \$8.00 from each person to pay for the use of the facility and the required security person. No raffle this month as our rafflemaster is out of town. If you have questions about the Culinary Group call me at (510) 204-9130 or e-mail plgeorge33@yahoo.com. If you haven't joined yet, what are you waiting for? See you there - Pat

GUIDED FORAYS AND WORKSHOPS

Fri. Sept. 3rd, 7 pm (Auburn, CA) - *Fact, Fiction & Folklore: Fabulous Fungus!*

The Placer Nature Center invites you to their First Friday Lecture Series at the Old State Theater, downtown Auburn. Dr. Michael Davis provides an inside look at how important mushrooms are as an integral part of a healthy ecosystem. Doors open at 7 pm with complimentary local produce samples from Foothill Farmer's Market growers. More info:

<http://www.placernaturecenter.org>

October 21-24th - 25th (OR) Mushroom Gathering: The Incredible Mushroom

Breitenbush Hot Springs, near Portland, OR, hosts their annual mycological conference. For reservations and more info see: <http://www.breitenbush.com/events/oct21-24.html>



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Contributors:

Dorothy Beebee, Pat George, Ron Pastorino, and Else Vellinga.

Editing and Layout:

Dave Lubertozi

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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
hshaw@yahoo.com

NAMA's 50th Anniversary Foray Delivers ROCKY MOUNTAIN HIGH!

Ron Pastorino

"Timing is everything" in most endeavors and certainly with mushrooming the cliché is most appropriate. Thanks to some carry over monsoon rains from the southwest that fell on the high Colorado mountains in early August, the NAMA 50th Anniversary Foray benefited greatly and resulted in a bountiful harvest for those attendees looking for both edibles and variety in their mushroom baskets.

The Foray was held Aug. 12-15th at Snow Mountain Ranch, which is a rather sprawling and extensive YMCA Camp nestled in a wide valley between Winter Park and Granby. It is just about 130 miles west/northwest of Denver at an elevation of around 8,700 ft.

(All photos by the author)



17 bus and car Forays were scheduled at elevations between 8,200 and 11,320 ft. The habitats were mostly lodgepole pine usually mixed with some spruce, aspen and some firs. There were many areas where the lodge pole had been severely attacked Mountain Pine Beetle. However, new undergrowth seems to be rapidly replacing those trees, especially in areas where the dead threes had been logged.

As is usual with NAMA Forays, there was an extensive program for those attendees were also interested in advancing their knowledge of the many facets of Mycology. The Foray faculty consisted of 13 individuals, most with academic backgrounds in mycology and well known in the mycological community. Cathy Cripps from Montana State University was the Co-Chief Identifier for the event. Other familiar names included Walt Sundberg, Tom Volk, and Michael Kuo. West coast faculty included Michael Beug and Michelle Seidl from the Washington and locally, Todd Osmundson from UC Berkeley. Dr. Michelle Seidl, who specializes in *Cortinarius* species, is a local lady formerly from Belmont and a past MSSF member. Besides myself, I believe only Don Hughes and part of his family were the only other MSSF members in attendance.

The weather cooperated nicely during the four day meeting, with temperatures never exceeding the low 80's. There was an occasional brief thunderstorm the first couple of days as well as some early morning fog, all in the interest of keeping the emerging fungi fresh and pristine.

I don't want to give the impression that mushrooms were fruiting profusely at every stop. At those elevations, there are many dry areas and large expanses of sparse vegetation. The best foraging areas seemed to be near rivers, creeks and lakes with relatively dense and diverse growth.

On a personal note, I arrived a couple of days early and opted to stay off campus. I happened to find a good deal on a condominium in Fraser, next to Winter Park and only about 8 miles from the Foray Camp. As luck would have it, using only a bicycling brochure from the rental office, on my first solo try, I stumbled onto an area in the Fraser Experimental Forest that was extremely rich in fungal activity. I later found out that this general area was one of the official Foray sites. I spent most of my time at this same area and, even after the official Foray had gone through, I couldn't detect any evidence of picking on the particular trail that served as my personal shopping and gathering spot. Ironically, the one official Foray bus trip that I attended turned out rather poorly in terms both quantity and diversity of species found. There were however, many excellent Foray locations and people returned with large quantities of interesting and diverse species.



Some of the locals from the Colorado Mycological Society seemed to have their favorite spots and would return with good quantities of King Boletes, many in the 3-5 pound range. Even I was lucky enough to run across three good-sized specimens. The largest (see photo) must have been at least 5 lbs but I did not pick it as it would have been too much to carry. My focus was collecting and photographing new species that I had not seen before. To that end, I was completely satisfied and certainly happy with the results.

Other relatively large species in good quantities were *Leccinum fibrillose*, *Sarcodon imbricates* (Hawk's Wing; see photo), and *Albatrellus confluens*. It appeared to me that the most species rich genus had to be *Cortinarius*. They seem to love these montane and subalpine habitats. Dr. Michelle Seidl had her hands full trying to pin all the collections down to species. The final species list was not yet available at press time but I'm sure the species count for *Cortinarius* had to be over 40, many of which ending up with a *Cortinarius sp.* designation.

Of course, there were large quantities of *Russula*, *Lactarius*, *Tricholoma*, *Inocybes*, *Hygrophorus*, etc. *Amanita muscaria var. flavivolvata* and *Amanita pantherina* were fairly prevalent. Except for a few very small specimens, the yellow chanterelle (*Cantharellus cibarius*) was not well represented. I was particularly happy to find my first Blue Chanterelle (*Polyozellus multiplex*). This was probably one of the more successful Forays in recent years as the weather and fungi happened to cooperate. Everyone seemed to be having a good time and went home with some happy experiences and perhaps some new species implanted in their memory banks. No guarantees how long they will stay there, however.

Although not yet confirmed, it looks like next year the Foray will be held in western Pennsylvania. It should be a good change and I would recommend anyone looking to increase their Mycological knowledge and meet some interesting people to consider attending.

Summer Picnic Report - Liana Orsolini-Hain

We used to have our annual potluck picnic and BBQ in July and then some members started complaining that they could never make it in July. They asked me to rotate the dates. So this year we had it in August. I arrived at Joaquin Miller Park near the Redwood Glen Picnic area in Oakland at around 10 am.

I was really worried about the weather as it had rained the day before and it had been so cold and overcast, however, I was pleasantly surprised by a gorgeous, sunny warm day. It was as if the mycological picnic finally ushered in the summer! I had trouble finding a parking space - what was going on? Did someone set up a grand party in our spot? I set out the MSSF picnic sign, which I handmade, and attached it to a PG&E placard left behind near my house. I set out on foot to the Redwood Glen, paperwork in hand from Oakland Parks and Rec, ready to kick the group out.

Our area was deserted, whew. All the cars were from an off road bicycle group and they left before MSSF members needed spots for parking; crisis averted. I picked up the trash left behind by the previous users and then set off on hiking trails. I explored the beautiful forest of Joaquin Miller Park for 1.5 hours; I passed many hikers, joggers, and even a couple of shrooms (nonedibles) on the trails. As I arrived back at the Redwood Glen, I met David and others who had started trickling in. George started the mesquite coals for the BBQ and we started wine tasting.

I was getting worried. It was now 1 pm and there were maybe only 15 of us. Was changing the date to August a bad decision? Apparently not; by 2 pm I lost count of the number of people that showed up - many of them I had never seen before, not even at previous picnics. We had one of Lisa's famous appetizers: crostini with crab, shrimp, avocado and baby chanterelles. We sampled six different kinds of wonderful salads with homegrown vegetables; I especially liked the corn and morel combo. We had barbecued steak and sausage. The desert table featured fruit pies and cakes. Norm even hosted a sake tasting. MSSF members sure know how to have a great time, especially in the woods.

A favorite dish was:

Lisa Gorman's Seafood-Chanterelle Dip

1/4 lb. fresh crab meat, rinsed
 1/2 lb. shrimp scampi, rinsed
 1/3 lb. baby chanterelles (very small --1inch long), cleaned,
 1 leek washed and trimmed of green leaves
 1/4 yellow onion, thinly sliced
 1/2 yellow (hot) pepper, very finely minced and seeds removed
 2 TB cream cheese
 4TB. creme fraiche
 1 tsp. lime juice
 1 avocado sliced lengthwise
 1 TB butter
 salt and cayenne pepper, as desired

Prepare leek by cutting leek in half lengthwise and then diagonally very finely. Rinse several times to rid of sand. Bring 1/2 cup water to boil in small pan, and then add leek and boil for 2-4 minutes until very soft. Drain and set aside to cool. On medium-high heat in a medium saute pan, heat 1TB butter and add onion. Sautee for a few minutes, and then add chanterelles. Adjust heat to allow quick evaporation of liquids, but not so much as to brown them (about 10 minutes). Remove and stir in vigorously the cream cheese and then the creme fraiche until consistently covers the chanterelles. Let cool. In a separate small saute pan add remaining butter over medium-high heat. Add yellow pepper and saute for 3 minutes on medium-high. Add sliced onion and continue for 3 more minutes. Set aside a let cool 15 minutes and then place all in the fridge to chill for 1 hour.

Once all is chilled, slice avocado into 5 or 6 long pieces and then into halves. Fan them out on a flat serving dish. Transfer all cooked and cooled ingredients into a bowl. Add shrimp, lime juice and crab meat. Toss lightly and adjust the creaminess by adding more creme fraiche in desired. Season with salt and cayenne pepper. Spoon dip into middle of fanned avocado pieces. Dip seems best served slightly chilled but not too chilled.

Hospitality News - Liana Orsolini-Hain

The Hospitality Committee is morphing as serious wild-mushroom foodies slowly take it over! The ranks of the committee have swelled to include new hospitality members Eric Multhaupt, Lisa Gorman, Ginny Garrett and Chef Paul Plotkin. George Willis has graciously offered to co-chair the committee with Liana Orsolini-Hain. Other members include Tom Sasaki and Roy Coto.

This committee has become the dream team of hospitality. If you have been attending the General Meetings at the Randall Museum you will have noticed that Eric features wines that can be paired well with wild mushrooms. Eric states, "Regarding the wine selection, the mushroom flavor is the engine and the wine choice is the caboose." He will be working closely with other members who will feature special appetizers to more closely pair wines.

Eric has also been stopping off at Ferrari's to pick up some Italian cheese made with wild mushrooms to accompany the fine vino. Lisa and Pauly have unleashed their creative juices to come up with mouth watering wild mushroom appetizers. We have even reserved the Randall Museum kitchen for every meeting so there is no telling where this will go.

What does this turn of hospitality events mean to MSSF members? We need more of your participation. If you would like to help with appetizer making or have wine recommendations, let us know. Perhaps you would like to join this committee and learn new recipes and more about wine pairings, or maybe you can just ante up more for the tip jar to cover our increasing expenses?

To get involved, please contact George Willis at:

george_willis@sbcglobal.net

IN MEMORIAM

Laurence M. Stickney 1926 - 2010

Larry Stickney of Hayward, CA passed away on June 12, 2010 at the age of 85. Larry was a four-time former president of the Mycological Society of San Francisco and also served as newsletter editor and volunteered at the Fungus Fairs.



Larry at Emigrant Gap in 2009. Photo by Mike McCurdy.

In his forty years of mushrooming, Larry was always supportive of newcomers to the game and made them feel welcome, freely sharing information about mushroom hot spots. He also actively campaigned for the right to forage on public lands in California.

Larry traveled widely to attend forays and had many tales to tell about mushrooms and mushroomers worldwide. Among his other adventures, as a younger man, Larry worked in Yosemite, helping to create the Firefall at Curry Village.

I first met Larry when he showed up at a talk and walk for beginners, where he kindly provided handouts of mushroom keys. I saw him at many subsequent events; one of my favorite memories was the time we bumped into him last spring on the way back from the American Canyon fire with a bag full of morels. We'd stopped to inspect what looked like good bolete habitat, and there he was. As we walked along the road, I complained to Larry that I wasn't finding any. By way of a reply, he poked his walking stick at a mushroom I'd just passed by: "Here's one", he said; "here's another". He let me keep them, too! I hope I can still get out and hunt for mushrooms when I'm in my 80s, and eventually develop as good an eye for them as he had.

A memorial service for Larry will be held on Sunday, October 3, 2010 from 10:30 am – 1:00 pm at the Randall Museum, Buckley Room, 199 Museum Way, San Francisco, CA.

If you have a story about Larry, please stand up and share it. If you have items to share for Larry's Memory table, bring those along. For those far-flung friends who might be unable to attend, please send letters, photos, or emails in advance, which will be read at the gathering. All letters will be given to Larry's family after the service. Larry's sister Marion as well as his niece Judy will be flying out for the Memorial.

For more information and to view a page in progress in tribute to Larry visit:

http://bayareamushrooms.org/laurence_stickney_tribute.html.

- Dave Lubertozzi

Mark Haley 1956 - 2010



Mark with *A. augustus* in May, 2009.
Photo by Jane Northrop of the Pacifica Tribune.

MSSF's Mark Haley died in a skin-diving accident off of Pacifica last week. He was 54. Mark was a good friend and a remarkable person. I got to know him through his interest in *Agaricus*. He would bring over a bucket of *Agaricus* and we'd sort through them, separating the edible and toxic species. Eventually he got to know them cold and even pointed out when I slipped up.

Mushrooms, however, were only a part of his life. If it was possible to live off the land, Mark did. He had little need for supermarkets. He grew vegetables, raised chickens, picked native greens, poke-poled for eel at low tide, fished off the rocks for crab, netted night smelt, hunted abalone, shorefished, and of course picked mushrooms. Mark did it all and he often mused that he should have been born in another century in which case he surely would have been a mountain man.

Mark was of wiry build with extraordinary stamina and energy. For Mark it was nothing to ride his bike for miles, walk up and down hills several more miles looking for mushrooms and then ride his bike home. He rarely complained of fatigue. He once invited me to go to Rockaway Beach in Pacifica for a session of netting night smelt. Night smelting involves wading into the surf, holding up an A-frame net, letting waves break over you washing smelt into the net. Sometimes 10 pounds of smelt can end up in your net in a single scoop. Sometimes you go for a swim. It's a high-risk, high-reward endeavor and being a wimp I declined.

Mark was not an extrovert and few in the MSSF knew him, but he was quick to share his love of the outdoors and mushrooms. Mark would often call me from his cell phone in the middle of one his forays, many of which were at the Lands End golf course, and Pine grove. The conversations would invariably start, "Fred, you won't believe what I just found!" It would frequently be a dinner-plate sized Prince, or maybe a dozen rock-hard Shaggy Parasol buttons. Then there was always a mystery mushroom like the time he found a beautiful purple-capped, yellow-gilled, *Russula*-like mushroom which turned out to be *Calocybe onychina*, a rare find.

As far as I can tell, Mark spent most of his life in the Pacifica-San Francisco area. He probably knew its parks, green belts and golf courses better than anyone, and he had his share of run-ins with land managers, though he avoided most confrontations by collecting with a three-gallon container hidden inside a back pack. Mark never collected in the Sierra, and I once suggested that we go morel hunting. Mark was excited and ready to go but one thing led to another, I got busy, and morels didn't happen for me this spring. It's something I'll think about for a long time.

- Fred Stevens

MycoDigest continued

your typical rust species is capable of forming four different types of spores. Needless to say, the number of nuclei and the number of chromosomes differ according to the type of spore. In the literature cited below you can find complete descriptions of life cycles for the various species.

Rusts grow on all kinds of plants – I see them on grasses, pines, geraniums, fava beans, *Baccharis* (Coyote bush and related species), juniper trees, roses and hollyhocks; I could go on and on. One of the crazy things rusts do is to spend different parts of their life cycle on different plants. So, the infamous wheat rust *Puccinia graminis* overwinters in the fields as spores in the wheat stubble, infects *Berberis* (barberry) or *Mahonia* bushes in the spring with one kind of spore, then jumps to the wheat with the other three types of spores to complete its cycle before it goes back to the barberry bushes. This is a classic example of a rust life cycle. Another group of rusts has simplified life by only growing on one host and skipping part of the life cycle; it forms just two types of spores. The hollyhock rust, *Puccinia malvacearum*, which is restricted to hollyhocks and related plants, is a good example. You can easily find it as little orange to mauve-lilac humps on the undersides of the leaves of hollyhocks (the color indicates the kind of spore that is produced).



Left: *Euphorbia cyparissias* without rust.
Right: *Euphorbia cyparissias* with *Uromyces pisi*.

However, for the really cool stuff we need to explain a little more about the life cycle. After the basidiospores have germinated, the fungus forms structures called spermogonia, each of which derives from one or another type of genetic makeup (roughly equivalent to male and female). The spermogonia produce spores (actually the fifth kind of spores), which must find a receptive hypha of the opposite “sex” for the next phase in the rust’s life to begin.

In the high mountains of the American west, small rosette-forming plants of the genus *Arabis* (a relative of cabbage and such) go berserk as their appearance changes totally when they are infected by basidiospores of *Puccinia monoica*. Instead of a long, leafless flower stalk, a stocky leafed stem grows out of the basal rosette, while at the top of the stem bright, yellow fragrant leaves appear. Insects are attracted by this flower-like structure, and bring the spermatia to the receptive hyphae, thereby playing an essential role in the life of the rust. The insects are lured by the colors, fragrance, and stickiness of the

leaves. Although the smell emitted by the infected plants is different from that of the real flowers, and also from the flowers of the other plants around, it still does its job of attracting “pollinators”.

Uromyces pisi does the same thing on the European spurge *Euphorbia cyparissias*. Instead of whorls of thin leaves with widely arranged flowers at the top, the plant forms short, relatively broad leaves along a long stem, with a denser set of yellow leaves at the top, luring insects to disperse the rust spores. It is hard to imagine that the two forms of the plant are really the same species, they are so different. The changes in plant morphology are much more dramatic than those in the roots caused by ectomycorrhizal fungi.

In the case of the *Arabis*- and the *Euphorbia*-rust symbioses, there is no benefit for the plants; the rust prevents them from forming flowers, and for them there will be no offspring. Conversely, the fungus’ well being is obviously enhanced, as a critical step in its life is taken care of. The “pollinators” get some sweet reward, so they are happy too.

Try sniffing other rusts, to see whether they are fragrant. If you are lucky you may find the rust that covers the underside of leaves of *Cirsium arvense* (a European thistle species that has invaded North America, but is named Canada thistle) – it emits a very nice sweet honey smell!

Rust fungi not only shape plants, but by their presence and importance on human food plants they affect all our lives.

More on rusts:

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Else Vellinga, Ph.D., is interested in mushroom taxonomy and has been studying parasol mushrooms from California and beyond for years. A frequent contributor to *Mycena News*, she is also fascinated by interactions between fungi and other organisms. In her free time she knits, and knits, and knits! For more of her work, see: <http://mollie.berkeley.edu/~bruns/people/ev.html>.

Mycological Society of San Francisco
c/o The Randall Museum
199 Museum Way
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September 2010, vol. 61:06

MSSF Calendar September 2010

Tuesday, September 7th, 7 pm - Culinary Group Dinner
(Monday is Labor Day - note the day and date change!)

San Francisco County Fair Building, Golden Gate Park, 9th and Lincoln, SF. As always, our first dinner of the mushrooming year is a potluck. Bring your favorite dish to share. Unlike our other dinners, no reservations are required. Expect to eat mushrooms. Be sure to bring your tableware and a beverage. The SFCFB does not provide dishes, etc. Future dinner dates for 2010 are October 4th and November 1st. We have our annual Holiday Dinner in December. Details will be forthcoming.

Tuesday, September 21st, 7 pm - MSSF General Meeting
Randall Museum, 199 Museum Way, San Francisco.

7 pm, mushroom identification and refreshments.
8 pm, Val Wong of UC Berkeley talks about the molecular genetics of *Rhizopogon*.

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

CALL FOR VOLUNTEERS

We have three important volunteer positions to fill:

Mycena News Editor - This will be my last issue. I will be happy to assist the incoming editor in laying out the October issue. This position requires a commitment of about eight hours per month. If you are interested in helping the Society and gaining some editing experience, please contact me at: dave.lubertozzi@att.net. Adobe Creative Suite software (InDesign, Photoshop, Illustrator, Dreamweaver, Acrobat Pro) will be provided for your personal use.

Book Sales Chairperson - Curt Haney will be moving on to the Vice Presidency. Be the first to read (and review!) all the books the MSSF sells. A storage cabinet is being installed at the Randall Museum so you won't have to haul the books back and forth to each meeting. To assist in the transition he will help the new chairperson with ordering in the first year. If you are interested please talk to Curt at the next general meeting or call him at (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 September General Meeting (7-8 pm in the basement of The Randall Museum).

Don't be shy, we'll help get you started. Remember, our great organization would not survive without volunteers!