Mycena News

The Mycological Society of San Francisco December 2009, vol. 60:09

MycoDigest - The Moorea Biocode Project: Fungi in a tropical 'model ecosystem'

Todd W. Osmundson

An unexpected downpour erupted just as we began our descent from the summit of Mt. Mouaputa on the French Polynesian island of Moorea, turning the mountain's steep ridge trail with its thin volcanic soil into a slick, treacherous chute. Gripping the knotted climbing ropes semi-permanently anchored to rocks along the steepest parts of the trail, dependent mostly upon dwindling arm strength while attempting to find solid rock footholds, my eyeglasses alternating between fogged-over and fallen-off, we slowly made our way down with our day's cargo of leaf samples from every plant species growing on the summit. This was the first stage of what in the laboratory will become a molecular scavenger hunt for the DNA of every fungal species growing within the tissues of those plants. The physical challenges of specimen collecting in this case mirrored the logistical challenges of our overall task – a comprehensive inventory of terrestrial fungi as part of the Moorea Biocode Project (MBP), a multi-investigator collaboration to document all non-microbial organisms on this small tropical island.

Photo courtesy of Todd W. Osmundson

Moorea is located in French Polynesia's Society archipelago, approximately 9 miles northwest of Tahiti and 2,700 miles south of Hawaii. Produced by an oceanic hotspot, Moorea's topography is defined by a steep, jagged, semicircular backbone and broad low-elevation central valley that together evoke the shape of the island's former volcanic peak. The biological communities of Moorea bear a heavy footprint of human activity, with the island's lower elevations dominated by Polynesian-introduced trees, pineapple plantations and other agricultural fields, and 20th-century introductions such as the Caribbean pine (*Pinus caribaea*), red mangrove (*Rhizophora stylosa*), and she-oak (*Casuarina equisetifolia*). On the steep ridges and high-elevation gullies of the volcanic slopes, however, native plant communities remain, including species unique to French Polynesia. Human activity threatens these forests; introduced, invasive plants – especially *Miconia calvescens* (also a major scourge in Hawaii) – displace native plants, and an accidental fire decimated a large area of native forest in November, 2008.

Inside This Issue...

Because of Moorea's small size (c. 50 square miles), relatively young age (1-2 million years), isolation, and location in the eastern portion of the tropical Pacific biodiversity gradient (terrestrial species diversity generally decreases from west to east across the Pacific), a comprehensive biodiversity survey is more tractable here than in most locations in the world. The research facilities at UC-Berkeley's Richard B. Gump South Pacific Research Station also facilitate this goal. However, the rugged terrain, with some slopes simply inaccessible due to their steepness, make fieldwork a challenging endeavor.

From coral reefs to the summit of Moorea's highest peak (Mt. Tohiea, elevation 3,960 feet), Biocode researchers are documenting marine fish, invertebrates and algae, and terrestrial fungi, vertebrates, insects, and plants. Researchers collect voucher specimens and obtain tissue samples from which a genetic signature (i.e., a "DNA barcode") for each is determined. In characterizing this ecosystem with as much taxonomic completeness as possible, MBP researchers envision a 'model ecosystem' in which detailed studies of the interactions between organisms can be conducted with less of

Continued on page 7

PRESIDENT'S POST

The Green Festival was very successful in getting the word out about us and we have David Gardella and Ken Litchfield to thank for their efforts. Our booth was very busy and we passed out information about MSSF all weekend.

The last few weeks have been pretty good for the fall porcini on the coast. Last weekend I attended the annual Salt Point foray sponsored by Norm Andresen and David Campbell. What a time we all had. Although we were at the end of the fruiting, everyone saw, picked and ate porcini.

There was a large turnout and I wanted to acknowledge some of the dishes prepared by some of the participants for the Saturday night feast. Liann Finnerty, mysteriously was capable of cataloging the contributions:

Fresh caught abalone and chanterelle pasta in white wine sauce – Curt Haney and Roy Coto

Coccoli salad with freshly harvested mussels, fennel, and celeriac – Moules marinara with dipping sauces - Sea Urchin fresh from the ocean – Eric Multhap

Coccoli ceviche – and sauteed bolete tastings, including butter boletes, boletus edulis, and queen boletes – David Campbell

Tomato and mozzarella salad – butternut squash bread – homemade "Gnarly Oaks" cabernet assortment – Edson and Annie Howard

Fine cheese assortment – Julie Schreiber

Asian noodles with oyster sauce – Maria Symula

Great northern bean, oxtail, porcini, and sausage stew – Nicole and Jeff Novak

Bolete soup – Misha and Kate Romanov

Figs roasted with gorgonzola and bacon wrapped dates – Kathy Terlicher and Karen Devaney

Pear and apple salad with blue cheese – Ben Spencer-Cook

Porcini risotto – Andrea Milius and Scott Paterson

Tortilla Espagnola w/ porcinis – Malcolm Feied

London broil – Al Carvajal

Risotto with caramelized onions and pork tenderloin – Betsey Goodman-Smith

Apple and blackberry pie and brownies – Jollin Chiang

Tiramisu – Claire Bloomberg and Lionel Marks

Another great season! - Dan

Holiday Dinner Volunteers Needed

Our Annual Holiday Dinner is in just a few weeks and we are still in need of volunteers to help with set-up, serving and clean up, beginning at 6 pm and ending at 10 pm. Please help us give the longtime members a break this season and come help out. We also need several volunteers to form an appetizers' group. If interested in either or both please call Lisa Gorman at (510) 881-7825 or email her at lchanterelle@yahoo.com.

Deadline for the January 2010 issue of *Mycena News* is December 15th. Please send your articles, calendar items, and other information to: mycenanews@mssf.org

ANNOUNCEMENTS

Guided Forays

Pt. Reyes Mushroom Camp - Sat/Sun December 12-13th

David Campbell and Pt. Reyes Field Seminars, present the first annual Mushroom Camp at the Clem Miller Environmental Education Center, near Limantour. Rustic lodging is includes at the center Friday and Saturday nights and potluck meals of fresh wild mushroom cook-ups, David's presentation on eating wild mushrooms, and guided mushroom collecting forays into the surrounding wilds; with mushroom identification sessions on Saturday and Sunday led by David and Norman Andresen. $175 ($160 for members of Pt. Reyes National Seashore Association). For registration, go to www.ptreyes.org or call 415-663-1200 ext. 373.

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 16-18th, 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

Other Fungus Fairs

Fungus Federation of Santa Cruz Fungus Fair - Sat/Sunday, January 9th-10th, 2010 Details at: http://www.fungusfed.org

Classes and Workshops

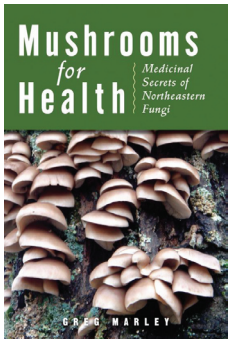
Evolution and Diversity of Mushrooms -Sat/Sun, December 12th-13th

Else Vellinga and Prof. Tom Bruns at UC Berkeley provide an introduction to the biology and identification of California's mushrooms. Register at: http://ucjeps.berkeley.edu/workshops/2009 ($260 course fee).

Cultivating the Anti-Cancer Mushrooms - March 26-28th, 2010
Valley Life Sciences Building, UC Berkeley, Berkeley, CA

In a three-day, hands-on workshop, Mo-Mei Chen will introduce the medicinal fungi Lin Zhi (*Ganoderma lucidum*), Chong Cao (*Cordyceps sinensis*), and Yong Chong Cao (*Cordyceps militaris*) and teach participants how to cultivate them at home. Using her new book, "Fungi Treasures", students will identify edible mushroom species, especially the medicinally useful and cultivable: *Agrocybe*, *Cordyceps*, *Lentinula, Hericium, Ganoderma, Fomitiopsis, Pleurotus* and *Tremella*. In the laboratory, the focus will be spawn techniques, media preparation, growth conditions, isolation and inoculation methods; the first day on Ling Zhi and the second on Yong Chong Cao. Each participant will produce a Ling Zhi kit to take home. On the third day participants will enjoy a guided visit of the retail center of medicinal fungi in San Francisco's Chinatown to study medicinal fungi and herbs in a marketplace setting. The course fee ($310; $285 for Jepson Herbarium members) includes a delicious mushroom lunch on Saturday!

What's Bookin'?



I was solicited by the publisher of "Mushrooms for Health" to review this new book. At first I was hesitant because there have been several books published in the past that focused on medicinal mushrooms. After reviewing this new book, I was pleasantly surprised. I found this book refreshing and just plain enjoyable to read. The book starts with an introduction and a section on how to use it. The author then describes what a mushroom is and how they are beneficial to our health. After explaining elements of the human immune system and how it works we are led through the medicinal components of mushrooms, with mushroom polysaccharides explained in detail. The majority of the book focuses on ten medicinal mushroom species found in New England. In the center of the book there are 20 color photographs of medicinal mushrooms that will assist foragers with identification. As a bonus, there is a formula at the beginning of the Appendixes for making a double-extraction mushroom tincture. When I first saw the title of this book, I thought "What can mushrooms of the Northeast offer me?" I'm going to tell you; the majority of the ten medicinal mushrooms discussed in this book can also be found right here in California! I think you will like this book, I did.

About the Author: Greg Marley, of Rockland, Maine has studied mushrooms for more than 30 years. He has a B.S. in Botany with a minor in Chemistry and a focus on plant taxonomy and ecology, and he is a volunteer consultant for the Northern New England Poison Control Center and various hospital emergency rooms for cases involving mushroom ingestion and identification. He also cultivates edible and medicinal mushrooms and provides wild edible mushrooms to professional chefs.

Mushrooms for Health by Greg Marley 2009, Down East Books www.downeast.com
Soft back, 143 pages, 6 X 9 inches, Price: $15.95

Currently in our library but not yet available for sale from MSSF ~Curt Haney

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

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

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On the Oregon Mushroom Trail

Hugh Smith

It was early October. The rain had come and the rain had gone.

There had been a reasonable amount of time between when the rain visited and when we visited. The temperature was perfect, day and night. Six days! It's 460 miles to where we were going on this 2nd foray in Oregon. It took 9 hours plus stops. Of course, some of us don't need stops, but alas, some genders do. As we arrived across the border, we called ahead. Some of our party had started out days ahead of US!...us who couldn't quit our jobs. They, of course, had been hunting in several of my favorite places already; Oregon, for one.

We asked how it was going and they began to describe in detail everything we had missed (Imagine, three cell phones talking to three cell phones). Cauliflowers had been found this day, but being fairly new to the hunt, they (those ahead of us) had no idea what they had discovered.

So they picked one. But when they found out what it was, they cursed themselves for not picking the other (We found many in the days ahead). Fortunately for them (and us), when we called and asked where we might stop for a hunt, they were able to give us the two-mile markers where the discovery had been made. Of course, we easily found the two mile markers, but we stopped in the wrong place. A mile is a big area, no?

Do you know what it's like to drive for 9 hours, pull off the road, get out of the car and immediately begin finding mushrooms? Bliss. Ecstasy! The Vulcan word is... unpronounceable. I never wanted it to end. Sandi says I'm married to a Mushroom Widow. What does she know? She likes to hunt too, it's just that I don't want to quit while there's still daylight. And there's daylight tomorrow.

That night we ate mushrooms in everything. I was pretty worried about what I would be getting for dinner in regards to meat. There were Princes, Boletus, Matsutake, Hedgehogs, Lobsters, Chanterelles...I've never liked Chanterelles, not even once. That Chanterelle soup was soooo good! And the Princes!

Wait. I don't like mushrooms! Can I have some more of that? (Then pointing at a friend's bowl saying, "Are you gonna eat that?") We DID have some of the finest chefs available though. The others were in Greenville and Fort Bragg. Maybe these chefs are why I liked them (ya think?). Or else I was starving. I even like Zucchini if it's cooked with Bacon. And Chicken is pretty good if it's cooked with skin.

OK, that's enough talk of food! ENOUGH!

Blackberry dessert.

Huckleberry dessert.

A local expert from Oregon joined us the next day. He said he was a pot hunter. I told him harvest was over. Mushroom season comes AFTER harvest. "What are you doing here?", I said. Actually though, he is very knowledgeable in the field of Fungi. I hope to meet him again. This day was our first major hunt of the trip,

MY first major hunt of the season. I can't tell you where we were. Sure I know where we were. It's one of my secret laughing places. I would be glad to show you. Who's driving?

Of course, Oregon is Mushroom City, O O O O Oh! (is it always like this up here?), so we immediately began finding, picking and/or photographing the mushrooms and slime molds. As any photographer would, one of the people in our expedition sat down next to the trail to photograph a specimen (for pictures of any subject, whether it's Coprinus on Dog Doo, Spiders, Snakes, or your kids, you generally need to be at the same level as your subject). Now, the first 100 yards of this trail is sometimes called Dog Doo Alley, no doubt because some dog owners, not wanting to be responsible for their family, use the first section, out of sight of the parking lot. So here's the scoop (no pun intended).

I had already taken some pictures of some Coprinus on some of the many piles on the trail. But someone had been polite enough to move their dog just off the trail so no one would step in it... right where one of our group was now sitting. No one knew this while photos were being taken, but upon standing, a large, wet, brown, did I say Large? smelly patch was discovered on the thigh of their jeans. We all gagged, laughed, gagged, laughed and gagged some more. It was wet and thick, soaking yet viscous. Should I elaborate? There was nothing to wipe it off and it was difficult enough just to get near. The car was too far away (we were at the maximum range of dog owners) and not one of us had any paper. But it was eventually dealt with and the jokes flew for the rest of the trip. They may still come up occasionally... or incessantly. Who could forget?

The next day we went to another great spot (all places must be good hunting here). We found some Matsutakes and the King Boletes were starting to show. Beautiful! No competition like at home. Or else there's just too many to pick.

On the trail, we happened upon a famous mushroomer, famous for his video showing how to hunt Matsutakes. He was recognized immediately by some of our group. He may have recognized some of us too, but he didn't have any time to run. We all got along great though, so we took a group photo in one of his special places and he showed us all of his secret Matsutake spots.

The last day of our trip to Oregon was the longest hike (not to say that it wasn't rewarding). In one section of this forest, a mountain of sand was pushing eastward from the ocean (over a mile away) through the woods and across the trail, burying this piece of the forest. It is fascinating to see how the sand actually encroaches upon the land, steadily, patiently, relentlessly...naturally.

And we actually got to see the ocean! After all, we WERE on the coast. "Yes, there it is...see it through the trees?"

So, I'll stop here. I saw many mushrooms new to me, Cordyceps (Podostroma alutaceum and Cordyceps capitata), Gastroboletes, Blue mushrooms (a Blue Ganoderma oregonense and Tyromyces caesius), mushrooms growing in Dead mushrooms (Asterophora parasitica), what I thought was a Fistulina hepatica on Sitka Spruce but what actually turned out to be Ischnoderma resinosum... and Slime Molds and Snakes, Skinks, Newts, Slugs, Snails...so many things, so much to discover, so much to ponder...

What a planet!

Mendocino Woodlands Foray 2009

The Mendo Foray was great fun and the weather even cooperated by raining (mostly) when we weren't out hunting! A lot of fun and fungi were had. Thanks go to David Campbell for organizing the whole shebang, and to our special guest, Gary Lincoff, who gave two entertaining and educational talks.

Our chefs, Sven Revel and Johhny Jenkins, cooked up a storm with the piles of chanterelles the foragers brought back, and David and Andy Maxon and Andrew Stile cooked up samples of the more exotic mushrooms for the crowd to taste.

We had a great crew of volunteers, without whom the event simply could not have happened. Thanks to all of them, and all the others who helped clean up and donated food, beverages and time, and their foraged fungi!

Special thanks go to our volunteer coordinators: George Willis and Stephanie Wright and our registrar Lou Prestia.

Our volunteers: Norm Andresen, J. R. Blair, Marcus Brehmer, Eric Broberg, Sally Carson, Alvaro Carvajal, Sherry Carvajal, Kerry Deehan, David Eichorn, Yelena Filipchuk, Guido Frosini, David Gardella, Dulcie Heiman, Don Hughes, Thomas Jenkinson, Jeanette Larsen, Celine Laubsch, Deane Lindbloom, Ken Litchfield, Dave Lubertozzi, Andy Maxon, Murdoch McDonald, Phillip Minnick, Paul Plotkin, Monika Roy, Kimi Shell, Julie Schleuder, Andy and Gayle Still and Catherine Wesley.

MSSF at the Green Festival

Over three days, thousands of attendees descended on the SF Concourse Exhibition center to see hundreds of vendors, speakers, organic foods, and the MSSF! This was our first year of creating a booth for the Festival and it turned out to be a great success. Our goal was to spread awareness to the public about our local Society and the various programs and events that we offer. Attendees were drawn into our booth by our fresh and dried mushroom displays, old fungus fair posters, ornaments, artwork, books, etc. Many visitors that were new to the idea of finding wild mushrooms were amazed that our fresh mushrooms were found almost entirely in San Francisco over the course of just a couple hours. The fact that mushrooms could be used in cookies, dyeing fibers, and home cultivated contributed even more to the attendees expanded interest in mushroom possibilities. Overall, we received many compliments on the presentation of our booth; many told us it was the best looking booth in the Festival and a wonderful educational resource.

It was nice to see some new friends and members we made at the Green Festival at this month's general meeting and also up at Mendocino camp. We're definitely looking forward to future events and venues where we can share our mushroom message. Many thanks to all the volunteers that helped out with the event. Those that talked with the public, donated display items, and helped with logistics made this a worthwhile and productive venture and a wonderful representation of the MSSF. - David Gardella

Culinary Corner

Due to the Bay Bridge outage, the November Culinary Group was cancelled. The November menu, "The Rewards of Foraging", has been moved up to the January 4, 2010 dinner. Other 2010 meeting dates: Feb. 1, March 1, April 12 (for a break after Easter Sunday), May 3, September 7 (a Tuesday, as Monday, September 6, is Labor Day), Oct. 4, Nov. 1.

Enjoying a great culinary experience as well as enjoying good mushrooming were the rewards at the November 14, 15 Salt Point Gerstle Cove foray. After a beautiful day in the woods finding boletes, coccoli, edible russulas, etc., and the low tide offering a chance to get goodies from the sea including abalone, mussels and uni, foragers cooked up a storm and presented rare and delicious potluck dishes. Thanks to David Campbell and Norm Andresen for providing gas burners and leading groups on the hunts. Curt Haney, Roy Coto and Eric Multhaup donned their wet suits and brought us food from the Pacific (and prepared it in wonderful ways). David Campbell was his usual generous self teaching about and cooking all those porcini, butter boletes, etc., and always providing answers to ID and culinary questions. There were excellent mushroom preparations from our participants including risottos, beans with porcini and unusual ingredients like elk. There so many unusual and creative dishes and they were cooked in primitive conditions. Oh, yes, and homemade wine and other spirits were in evidence, not to mention campfire camaraderie and stories.

Recipe of the Month

As chestnuts are in abundance at the grocers, I chose a recipe that includes them as well as fungi. Just about any good fresh wild mushroom would work in this recipe with the exception of matsutake, which doesn't like butter. Use it in stir fries or rice instead.

Fettucine with chestnuts, mushrooms and cream

1 pound fettuccine
3/4 pound fresh chestnuts, an X cut in the flat side and then boiled for about 10 minutes and shelled, chopped coarsely
2 tablespoons olive oil
3/4 pound mushrooms, halved and then sliced if large
salt and pepper
2 tablespoons unsalted butter
1 small yellow onion, minced
2 teaspoons chopped fresh thyme
1 cup chicken stock
1 cup heavy cream
2 tablespoons finely chopped parsley

Saute mushrooms, seasoned with salt and pepper, in olive oil over high heat until browned, about 5 to 8 minutes; remove, let the skillet cool for a minute then add butter and onion and saute onion on medium-low about 10 minutes until softened but not crispy. Add chopped chestnuts and thyme and season with salt and pepper. Add stock, bring to a simmer then cover and simmer until chestnuts are tender, about 12 to 15 minutes. Uncover and stir in mushrooms and cream. Simmer enough to reduce a bit; not too much as the pasta will absorb lots of sauce. Taste and adjust salt and pepper as needed. Stir in parsley and keep warm. Cook the pasta in a large pot of boiling, salted water until al dente. Drain but reserve about a cup of the cooking water. Put the pasta in a large bowl, add the sauce and toss to coat, adding reserved water if the pasta seems dry. Serve in warmed bowls, if possible, for your first course, as do Italians.

See you at the Holiday Dinner (and in the woods, and the Fungus Fair) - Pat

MycoDigest continued

the taxonomic bias common to most ecological studies. Working with principal investigator Matteo Garbelotto (UC Berkeley), co-PI Sarah Bergemann (Middle Tennessee State University), and research assistants Lydia Smith and Lydia Baker, with laboratory support from Wesley Shipley, I spent five months over the past year in Moorea conducting samples across a broad range of taxonomic groups and habitats for the fungal component of the MBP. Because conspicuous mushrooms represent only a small portion of an ecosystem's fungal diversity (most fungi are hidden from view, as microscopic hyphae or yeasts in decaying matter or living plant or animal tissue), a significant portion of our efforts involve indirect observation of species – culturing them from the environment or isolating their DNA from substrates. In doing so, we expand the MBP's boundaries by straddling the line between the non-microbial and the microbial, while enhancing its value for ecological inference by including organisms involved in a number of critical ecosystem functions such as decomposition and nutrient cycling.

As might be expected from a project of this scope, we employ a wide variety of sampling approaches for a wide range of environmental substrates (e.g., leaves, wood, soil, and air samples) over a broad habitat gradient (from agricultural fields to native cloud forests). For conspicuous 'macrofungi', we can perform morphological examinations and obtain DNA samples directly from the specimen. Finding non-conspicuous fungi requires a more complicated process. Because environmental substrates can contain many fungal species, characterizing hidden diversity through DNA samples requires first obtaining all of the DNA present in a sample (e.g., a leaf sample is likely to contain plant, fungal, bacterial, and possibly insect, protozoan, and viral DNA), then using molecular genetic techniques to isolate the fungal DNA. To achieve this end, we use the polymerase chain reaction (PCR) to demarcate fungal-specific locations within a particular gene of interest and exponentially copy them; from the resulting (fungal DNA-dominated) mixture, we isolate individual DNA pieces using molecular cloning. We then sequence the DNA to determine the composition of the isolated genes and compare these sequences to large DNA sequence databases to determine the identity of the fungi present in the sample.

Macrofungal collecting in Fall 2008 yielded approximately 100 species (estimated by gross macromorphology only). Although this number suggests rather low diversity, a graph of the accumulation of new species found per collecting event shows no sign of leveling off; therefore, a substantial increase in our species estimate with further collecting is likely. Sporocarp diversity is highest among wood decomposers, with polypores, marasmioid, mycenoid and xylarioid fungi commonly encountered, as well as species of *Gymnopilus*, *Pleurotus*, *Auricularia*, *Pluteus*, *Galerina*, and *Hypholoma* among many others. Litter and grass decomposers (*Lepiota*, *Leucocoprinus*, *Agaricus*, *Gymnopus*, and *Psathyrella*, among others) are another substantial component of the mycota. A number of widely-distributed mushrooms such as *Cyptotrama asprata*, *Lentinus sajor-caju* (both found in other parts of the tropics), and *Schizophyllum commune* (found nearly worldwide) can be found in Moorea; the pathways by which these fungi arrived in Moorea are still a mystery, but hopefully one that our data can help to examine. Ectomycorrhizal (EM) host plants are mostly absent, with the only confirmed exception being the introduced Caribbean pine (*Pinus caribaea*); we have recorded only one EM sporocarp collection (a *Rhizopogon*) thus far, though DNA analysis of EM roots is likely to reveal additional fungi. Common edible mushrooms are few in Moorea, with *Auricularia polytricha* and small-sized *Pleurotus* two not-so-notable exceptions. Preliminary comparisons with GenBank indicate that our surveys are uncovering previously undescribed diversity and filling a number of gaps in the data in public DNA sequence databases.

Preliminary surveys of fungi associated with Tahitian chestnut (*Inocarpus fagifer*) support the hypothesis of 'hyperdiversity' of leaf associates (Arnold et al., 2000), with a much smaller, though still substantial, diversity of wood associates. We are currently conducting culture- and DNA-based surveys of several common tree species and a variety of native plants in order to better characterize plant-associated fungal diversity on Moorea. In addition, we are collaborating with MBP entomologists to examine food webs involving fungal-associated insects. While discovering all fungi on even a small, isolated island is too large a task for a small group of researchers, we hope that contributing to the knowledge of fungi in this 'model ecosystem' will in turn contribute to the mechanistic understanding of how ecosystems work and how they respond to environmental change.

Panoramic view of Cook's Bay with Mount Mouaputa (left), Mount Mouaroa, aka Mt Bali Hai (center) and Mount Rotui (right) Photo courtesy of 100zax Wikimedia Commons.

NOTE: Participation of MSSF members, particularly with strong computer programming (especially Perl or Python) or advanced polypore identification skills, is welcome; email toddo{at}berkeley.edu.

LITERATURE CITED

Arnold, A.E., Z. Maynard, G. Gilbert, P.D. Coley and T.A. Kursar. 2000. Are tropical fungal endophytes hyperdiverse? *Ecology Letters* 3: 267-274.

Todd Osmundson is a postdoctoral researcher in the Garbelotto lab, UC Berkeley. His research interests include systematics, biodiversity, conservation and ecology of fungi. He recently completed a Ph.D. working on boletes with Roy Halling (Columbia University / New York Botanical Garden), and would be interested in *Tylopilus* specimens from MSSF members.

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December 2009, vol. 60:08

MSSF Calendar December 2009

Wed., Dec. 2d, 9th, and 16th, 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

Friday, December 4th, 2009 - Fungus Fair Forays
Help us collect fungi from San Mateo County for the MSSF Fungus Fair. Call the leaders for reservations and directions.
- Fred Stevens will go to Memorial/Sam MacDonald Parks
Call 650-994-1374, or fstev@sonic.net
- Wayne Leschyn leads the group in Huddart Park, Woodside.
Call 650-591-6616, or wade@belmateo.net
- Marcus Brehmer brings science to the forager at Wunderlich Park, in Woodside. Call 650-867-5908 or brehmer@lclark.edu.
- Bill Freedman will lead an outing near Pulgas Temple, S.F. Watershed, Woodside. Call 650-344-7774 or loufreed650@yahoo.com
Meet at 10 am, leave by 3 pm. Bring lunch and beverages. Rain does NOT cancel. Prepare for wet roads; wear warm, waterproof clothing. Baskets and boxes for storage are needed to return specimens to Oakland in good condition. Bring waxed wrapping paper for large specimens and small waxed paper sacks for smaller ones. A knife or other instrument is useful to pop the fungi out of the ground to preserve the bases. You must sign our volunteer list to grant you free admission to the Fair.

Sat/Sunday, December 5th-6th
MSSF Fungus Fair at the Lawrence Hall of Science, Berkeley
Our **40th** year! See page 3 for details. To volunteer, contact:
Norm Andresen at n.andresen@comcast.net (forays)
Stephanie Wright fungusfair@bytewright.com (fair workers)
(see what's available at: http://mushrooms.bytewright.com/fungusfair)

Ongoing: December-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, December through March. Contact Eric Multhaup at mullew@comcast.net.

Monday, December 14th, 2009, 7 pm - MSSF Holiday Dinner
SF Country Fair Building (Hall of Flowers). Reservations are required. See the details in this issue and on the MSSF website. As our November meeting was canceled we moved our "Rewards of Foraging" menu to the next regular Culinary Group dinner on January 4, 2010.

Saturday, January 9th - Annual Mills Canyon Foray with J.R. Blair
10:00 am -12:30 pm. Limited to 25 guests by reservation only; call or email Bill Freedman @ 650-344-7774 , or loufreed650@yahoo.com.

Sunday, January 10th - Annual Beginners' Fungus Exploration
10 am at the entrance to the Phleger Estate watershed area. This is not a collecting trip. Attendance is limited. Please contact Bill Freedman for details and reservations at 650-344-7774 or loufreed650@yahoo.com.

Wednesday, January 13th, 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.

Thursday, January 14th, 7pm - Intermediate ID Workshop
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. To register for either workshop, contact J.R. at jrblair@mssf.org or at 650-728-9405. Cost: Free to MSSF members, $5.00 for non-members. Limited to 15 participants.