Next Meeting Sept. 10th, 2007

SPORESAfield

The newsletter of the Colorado Mycological Society **September 2007**

President's Column

The CMS fair was a huge success! I would like to thank everyone for their hard work in putting this together. The mushrooms this year have been pretty spotty around Colorado. Some areas that were very productive last year are just not producing well this year. In other areas I have found an abundance of *Boletus edulis* as well as other species, both edible and non-edible. I'm starting to realize more and more that in order to find a wealth of mushrooms you have to track the rainfall, specifically, the Doppler rain accumulation from early July to mid August. The best resource that we have for this kind of information is the Internet. A great web site is http://www.wunderground.com/. I follow the Doppler radar total storm accumulation, a long kept secret that I would love to share with everyone. To find this information, go to the Wonderground home page, click on the 'radar' link on the left side of the page under 'maps'. Then choose a state (Colorado) and then a city (Denver). Then click on 'local radar' and then 'total precipitation'. I bookmark this page and then check it every day, early in the morning, before and during the mushroom season. Usually it's blank when I first look at it, but I click 'previous' repeatedly until I get the last Doppler storm total from the day before.

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September Meeting

Annual Cook & Taste

The Cook & Taste will be held at 7:30 in Gates Hall at the Denver Botanic Gardens. Members are encouraged to bring a mushroom dish to share with other members. The Cook and Taste is being organized by MaryAnn Guthrie. Please contact MaryAnn with what you are planning to bring to have a balanced menu. maguthrie@gmail.com or call 720 690-4321. "For the rules, see the August issue of *SporesAfield*, or go to the CMS web-site at www.cmsweb.org."

Volunteers needed for 2008!

CMS is in need of a volunteer to do the newsletter mailing. It a fairly simple task; the newsletter and mailing labels are delivered to you. You will need to pick up the stamps and attach the stamps and labels to the individual newsletters and drop them off at the post office. It takes about an hour once a month February thru September.

We also need a volunteer to take over editing *SporesAfield* the newsletter of the Colorado Mycological Society. This is a minimum 1 season commitment 8 issues March thru October. This also makes you a board member, so you will be asked to attend board meetings and vote on CMS business issues. You will need some type of editing software, I use InDesign. I am willing to help teach someone if need be and can help you out with questions. I have been doing this for 6 or 7 years now and have a good system in place.

Please contact editor Norm Birchler at nbirchler@comcast.net or call 303-440-7123 for more information.

Upcoming Events

Sept. 10th	Cook & Taste. **Gates Hall**
Oct. 8th	Annual meeting and Election of Officers. Speakers: Marilyn Shaw, "Mushroom Toxicology". Also Ed Swanberg, "Sand Mushrooms, Extend the Season".
Oct. 21st	CMS Mushroom Dinner, contact Tom Ruzicka at 303-447-2740 or tomruzicka@comcast.net to make a reservation..

Bring mushrooms for identification and display to any meeting.

All meetings are held the second Monday of each month from Mar. to Oct. at the Denver Botanic Gardens in Mitchell Hall at 7:30 pm unless otherwise announced.

"End of the Season Fungi Feast"

CMS will be holding its fungi feast on Sunday Oct. 21st at the Boulder Cork Restaurant. The doors open at 5:00 pm and dinner is served at 5:30 pm. There are only a few spots left.. For more information and to make reservations contact Tom Ruzicka at 303-447-2740 or e-mail him at tomruzicka@comcast.net.

To find out more about the Boulder Cork Restaurant go to their web-site at www.bouldercork.com. ***Please make reservations through Tom Ruzicka.***

Nominations of Officers for 2008

Election of New Officers will occur at our October 9th meeting. The following individuals have agreed to run for office yet nominations will be accepted from the floor at the Oct. meeting, the nominee must have agreed to be nominated. Please consider offering your talent to CMS.

Nominee	**Office**
President	Rob Hallock
President Elect	Marc Donsky
Vice President	Louis Gaz
Secretary	Joanna Seward
Treasurer	William Windsor
Member-at-Large	Linda deLeon

*(**President's** continued from page 1)*
I do a 'print screen' and paste it in Microsoft Paint and save it to disk. By comparing the storm totals for the last three weeks prior to looking for mushrooms, I can see where most of the moisture falls in Colorado, which is usually the best place for mushrooms!

"100 Edible Mushrooms"

Dr. Michael Kuo's latest book 100 Edible Mushrooms proved so popular at the CMS Mushroom Fair that we sold out within the first hour. We're sorry if you didn't get your copy. However, we have ordered more copies and they will be available at the September meeting.

SporesAfield

SporesAfield is published from March through October by the Colorado Mycological Society. CMS dues are $28 for the first year and $25 thereafter. Send membership dues to Linda deLeon, CMS Membership Chair, 14310 W. Fifth Ave. Golden, CO 80401-5226. All CMS members receive *SporesAfield* as part of their membership

CMS is an affiliated member of the North American Mycological Association.

CMS web site: www.cmsweb.org

2006: A Banner Year for Rocky Mountain Mushrooms

By Debbie Viess

Reprinted with permission from "Mushroom, The Journal of Wild Mushrooming", Winter 2007, pp. 17-19. Ms. Viess' essay originally appeared Aug. 26-29, 2006, on the BAMS online discussion group, bayareamushrooms@yahoogroups.com.

Last week, David and I acquainted ourselves with the wo/men and mushrooms of Colorado, and what a pleasure it was. As foretold, the fungal growth in CO was explosive. Acres of red-capped edulis and muscaria marched up the mountainsides, and pines burst with chanterelles. A vast display of fungal diversity greeted our eager eyes at nearly every stop.

Our trip began at the Denver herbarium, where we met with Vera Evenson, mycologist extraordinaire and author of the wonderful field guide, "Mushrooms of Colorado." She was kind enough to spend two hours talking with us about CO mushrooms. She provided us with access to the herbarium's impressive collection of voucher specimens, where I was able to let my fingers do the walking through decades of rare amanita collections. She told us exactly how to get to a number of local CO collection sites, and she was an invaluable resource. Armed with maps and eager for discovery, David and I set forth into the beautiful and dramatic Colorado landscape.

At the local, well-watered and frequently mowed lawn at Kettring Park in Littleton (a suburb of Denver), we looked for fresh examples of *Amanita prairiicola*, a rare and unusual non-mycorrhizal amanita. Several collections had been made in prior years at this site, but perhaps the mowers beat us to the punch?

After a pleasant interlude with an old friend from Chicago, now living in Littleton, we set off to the "Crested Butte Mushroom and Jazz Festival."

Over the passes and fields, through forests and across rocky, cattle-dotted meadows, mushrooms and spectacular wildflowers were everywhere. Our collections were only limited by our imaginations and the capacity of our baskets/bags/arms.

Our first stop was Kenosha Pass, a moist and verdant paradise of Engleman spruce, pine and aspen. Scattered across the ground was a profusion of colorful wildflowers. Beautiful blue gentians marked the path. Colorful fungi littered the ground as far as the eye could see. Right off, I discovered a fulva-esque amanita, a type of edible, tawny grisette. Fairy rings of clitocybes lined the forest floor. Boletes, colorful suillus, and orange and red-capped leccinum poked their pore-bearing caps up out of the rich duff.

I have never seen so many large, edible agaricus species in one place. Big, pristine, pure-white *Agaricus silvicola* gleamed, their voluminous and delicate skirts dragging to mid-stipe, smelling sweetly, and turning yellow at a touch. Golden-brown capped, shaggy stalked, almondy *Agaricus augustus* were emerging in troops from the thick pine duff. A rainbow of russulas, in a spectrum new to me, popped up across the varied landscape. Some were edible, some were beautiful, and some were just new and strange. I tasted every one, and did spore prints on the most intriguing, and still mostly couldn't key the damn things out. The dark-centered *Amanita pantherina var. multisquamosa* was abundant under the trees and throughout the grasses. Brilliant orange waxy caps formed an attractive grouping, and lactarius wept copious latex tears. It was a freakin' fungal fairyland, and our trip had just begun.

The second stop of our journey from Denver to Crested Butte was at Monarch Pass. This area is loaded with Engleman spruce and other conifers, and Engleman spruce is the preferred host of the local, red-capped *Boletus edulis*. Right away we spotted an abundance of *Amanita muscaria*, in all stages of growth, tumbling down the slopes. These were thrilling enough, but their companion mushrooms, and our primary quarry, were conspicuous by their absence; could we have arrived too late?

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*(**Banner Year** continued from page 3)*
Clambering up through the trees, and fighting the thin air, we viewed many fine fruitings: handsome, rosy-hued *Hygrophorus* including *purpurescens* and *erubescens*, hawks wings *Sarcodon imbricatum*, even an awesome patch of purple fairy fingers *Clavaria pupurea*. But even with all of this abundance, something was missing. Where was the edulis?

Higher and higher I climbed, racing against the clock (after all, we were merely at the first leg of our trip, and we had miles to go before we slept). Fairy rings of muscaria led me ever higher until, at long last, my eye was caught by a half-hidden, robust, red-capped fungus. Edulis! The Colorado version may have a different cap color, but they otherwise look and taste about the same as our California version, which is to say, beautiful and delicious.

I continued to let the amanitas guide me, and I soon filled my arms with fat boletes (we were meeting up with our hosts and loaner baskets in Crested Butte, and all that I had for collecting was a specimen-filled plastic bag). I was late to meet up with David, and afraid that I'd drop my arm load of boletes as I made my way back down the steep slope. I called out for help. When I finally found David, and asked him to take some of my boletes, he laughed and gestured behind him. There was a slope covered in perfect porcini, far too many for either of us to carry.

What to do with all of that edible, fungal abundance when you're on the road? Our collapsible, three tiered, blue-mesh Chinese dryer came with us, for just such an emergency. That night, back in our motel room, David sliced porcini, and laid them out to dry. During the day, we hung the dryer in the back seat of the car, utilizing the "greenhouse effect". Between these tricks, and our new, Colorado friend Bernie Seward's hot air dryer, we managed to fill a number of zip-locks, and eventually, once back home, a tall glass jar. With our edibles safely out of the way, we could now concentrate on collecting and identifying specimens — my real reason for collecting in Colorado.

Mushroom diversity did not disappoint. The soon to be green, orange-capped *Lactarius deliciosus* was abundant throughout the forest. A new-to-me variety of deliciousus, with a cracked and raised cap (reminiscent of *Agaricus crocodilinus*), was fruiting in a sunlit field, next to yet another, unidentified species of agaricus. I was very surprised when I dug the "crocodilinus" up and it bled orange latex!

Enormous fruitings of *Albatrellus* species covered the ground, primarily *ovinus* and *confluens*. Folks at the mushroom festival emphasized that ovinus was edible, but goodness, why eat albatrellus when the woods are full of porcini and chanterelles??!

The collecting around Crested Butte during the next several days was equally impressive. Aspen groves yielded forth an unusual and fairly recently described species of grisette, *Amanita populiphila*. Like most grisettes, this species is edible, but no amanita should be eaten by a beginner; the populiphila bore an uncomfortable resemblance to the bleached-out, poisonous *Amanita pantherina* found nearby.

The conifer habitat was even more productive. It was impossible to bend down and collect a mushroom without seeing several more species nearby, and not just the ubiquitous "little-brown-jobbers" and fat cortinarii. Red-capped russula, that I assumed were an acrid form (and so passed by), turned out to be one of the many color morphs of the edible and delicious *Russula xerampelina* (its "shrimpy" smell clinched the ID for its lucky collectors). Edible green-capped russulas punctuated the pines, as did russulas of brilliant yellow and bright cinnamon brown.

There were many fruitings of the handsome, apricot-pink waxy-cap, *Hygrophorus pudorinus*. In fact, at least a half dozen different species of hygrophorus were collected, much to the delight of me and my fellow IDer, Rob Hallock, from the Colorado Mycological Society.
(Continued on page 5)

*(**Banner Year** continued from page 4)*
These days, I am intrigued by both the many hygrophorus species and, god help me, russulas. I fear my passion for mushrooms has become a hopeless state, regardless of the state that I'm in.

A couple of hours collecting in conditions like these fairly flew by, and it was always with regret that I left the field. Although I did not have the pleasure of finding them myself, a number of folks collected the beautiful and unusual grisette, *Amanita ceciliae*, a large, dark-capped form, with a gray universal veil and an abbreviated volval cup. Like somebody else's trophy trout, I did have my photo taken with it, though.

It was with a tremendous sense of satisfaction that I finally found a field of fat, white puffballs. As we drove from Denver towards Crested Butte, thru the high prairies of Colorado (with their sadly remnant populations of prairie dogs), we kept thinking that we saw puffballs. But either there was no place to pull off the road safely, or our "phantom puffballs" turned out to be white rocks.

Just outside of Crested Butte, after one of our magical group forays, I was using my binoculars to glass a hawk perched along a grassy field. I found the "rocks" in the foreground to be suspiciously rounded, and gleamingly white. Dashing down the slope to check them out, I missed seeing the very last patch of open water in the surrounding boggy, berry patch, and down I went. Dripping with bovine-accented mud, I continued, undeterred, on to my prize: a field of *Calvatia booniana*. Another family had followed me down, and, young and middle-aged, we filled our arms with these very heavy fungi (it only took one!). The friendly fungal family piled their haul into my arms, for yet another fungal photo op (sadly, in the excitement, David forgot to change the settings of the camera, so the picture is blurry. But there is no mistaking the species of this huge mushroom, or my huge grin of delight!).

The very best mushroom of the trip was discovered at our next to last stop. Peter Werner, who has been working on the Strophariaceae at SFSU, first told me about the rare and unusual *Amanita nivalis*, a small amanita found above tree-line, growing in association with dwarf willow. Originally described from Europe, Vera Evenson told us where to look for it at the Continental Divide, and our mushroomer's luck held.

Three years to the day where the late Orson Miller collected this species, in a miniature and magical habitat, David located our rare amanita. Another member of the vaginata group (like grisettes, coccora and velosa), this handsome amanita was poking up out of the dried grass and lichens, at the edge of the dwarf willow copse. What a thrill to find it. I hardly noticed the thin air, at elevations of close to 13,000'. *Amanita nivalis* ranges in color from pure white to pale buff, slightly darker at the center of the cap, and with a pronounced umbo, long striations (practically half the length of the cap) and a pinched and flaring volva sac. Its flavor was sweet, if a mite sandy; the triumph of locating it, sweeter still.

There were a number of other, single species growing in that extreme habitat, from tiny puffballs to fat cortinarius, to a lovely fruiting of clitocybe in a bed of lichens and tiny plants. These were all dutifully photographed and collected, and deposited the next day at the Denver herbarium.

Our very last stop before we returned to Denver was at a pullout just past the Eisenhower tunnel, along Hwy 70. A flowing creek, wildflowers, and a procession of Engleman spruce, as well as other conifers, made it an aesthetic as well as "mushroomy" stop. Again, muscaria fruited everywhere, and there was a smattering of Colorado porcini, including a monster that would have made a nice armrest. Tall grass along the dirt road hid major fruitings of *Pholiota squammosa*, and yet more of the ubiquitous albatrellus, fruiting by the megaton. Clitocybes were also in abundance, including fairy rings of the huge, funnel-capped *Clitocybe gibba*.

What drama! What pleasure! What a great trip.

MycoDigest: Fruits of the Forest

By Else C. Vellinga
Reprinted from the Mycological Society of San Francisco Mycena News

When and where mushrooms fruit is one big mystery. Water and temperature are the main factors, but we do not have a formula to tell us when the boletes will show up at Salt Point. So many days after the first rain, a daily high temperature of x and a low of y, and then they should be popping up. No, it doesn't work like that.

However, there is a small group of mushrooms that requires some other trigger than just moisture and the right temperature. Some will only fruit when ammonia is available. This can be in the form of a carcass, an animal latrine, or an old wasp nest. In an experimental plot at Salt Point State Park where urea was added to the soil, *Tephrocybe tylicolor*, a small greyish mushroom, responded immediately and its fruit bodies appeared. This species normally grows on places where cows have peed, around carcasses, and on dung; but here it only grew on the plots treated with urea. The more urea, the better it did.

Such mushrooms are called ammonia fungi, as they only form fruit-bodies where ammonia and similar chemicals are available in great quantities. Tephrocybe is a saprotrophic species, but there are also ectomycorrhizal fungi that only fruit in the presence of ammonia. *Hebeloma radicosoides* from Japan is a striking example. Fruiting of such a species is rare, as there has to be both the host tree and the right amount of ammonia in the same place. It is a big, showy, yellow species, with a long "rooting" stipe and a fringed ring. Whereas most Hebeloma species have very well defined smells, such as earthy beet leaves, cacao, or orange blossom, *H. radicosoides* lacks any particular smell.

The Hebeloma species have been found on a wide range of strange habitats. They have been reported at the latrine area of a Boy Scout camp, a deserted wasp nest, and on raccoon or dog excrement. They like a wide range of chemicals, such as urea, milk casein, arginine, and sodium glutamate. *Hebeloma radicosoides* is so far only known in Japan, but its look-alike, *H. radicosum*, is widespread and known in Japan, Europe, and North America. Again, there is a rooting fruitbody connected to an animal midden, but it is inhibited by ammonia. This species has been found mainly on the abandoned latrines of moles. These latrines are in the ground, and there the fungus has its connection with the tree. The soil is full of fine roots with mycorrhizal tips and fungal mycelium.

In more northern regions where moles do not occur, e.g. in Scandinavia, wood mouse middens (Apodemus) are an alternative. Similarly, in a beech forest in Switzerland, the mushroom was found growing out of a wood mouse nest. Just like moles, the wood mice have their nests deep in the ground. The mushrooms start at the level of these nests and surface one to two feet above them. In other words, it is what we call a deep rooting species; but of course, it starts at the bottom and grows upwards, not like a plant, which sends its roots down. These two Hebeloma species have been thoroughly investigated by a Japanese mycologist who traveled all over the world in pursuit of these mushrooms. The two substrate types on which the mushrooms grow seem very similar—urea treatments (including carcasses and raw excrements) versus abandoned middens of moles and wood mice—but apparently there is a difference in the chemicals the fungus can absorb and use.

Different fungal species, or even different strains of the same species, use a different form of nitrogen. Some species, such as *H. radicosoides*, are only able to use ammonia and its derivates; others will only thrive on nitrates. Another group of ectomycorrhizal fungi uses peptides or proteins as its sole nitrogen source. So here again, as in many other aspects of fungal life, much is possible. In Europe, *Hebeloma radicosum* associates with deciduous trees (beech, etc.), which may be the reason that it does not occur in our area; but the wide array of burrowing little rodents here might invite other species. Perhaps we have not yet recognized the connection.
(Continued on page 8)

September's Mushroom Recipe of the Month:

By Mary-Ann Guthrie

The August meeting with Michael Kuo, the English teacher from Illinois and an amateur mycologist was a fun and special event. Members packed into the meeting salon to hear Michael's funny and interesting notes about mushrooms and mycology. In honor of this event, I created one of Michael's favorite recipes which was served at our meeting: Mushroom Medley with brown rice.

Several members requested the recipe thus, here it is featured in our September news letter:

Mushroom Medley with brown rice.
Serves 4-6 people

Ingredients:
1/3 cup of olive oil
2-3 pressed large garlic cloves
1 medium yellow onion, chopped
2-3 cups of chopped mushrooms
(I used seasonal fresh mushrooms, lobster mushrooms, portabellas, shitake and button mushrooms)
4-6 cups of beef broth
3 cups of brown rice
One cup of chopped celery
One cup of toasted almond slivers.

Using a deep cast iron kettle with a lid, heat the kettle and add the olive oil. Simply sauté the mushrooms in the olive oil and garlic. Set the mushrooms aside when tender reserving the liquid which has been expelled from the mushrooms.

Next, in the same kettle, add two tablespoons of olive oil and sauté the chopped onion. While the onion is sautéing, drain the mushroom liquid into a large measuring cup. Add enough beef broth to measure 6 cups of liquid. Once the onion is tender, pour all six cups of beef broth mixed with mushroom liquid into the kettle. Heat until it begins to simmer.

When the liquid is boiling, add 3 cups of brown rice and stir. Cover the kettle and lower the heat to a medium flame to allow the rice to simmer and expand. The rice will take about 20 minutes to completely cook. Leave the lid on during this process and just let the rice slowly cook.

At this point you may toast the slivered almonds in a small frying pan or a sauté pan. Simply heat the pan, add the almonds and stir until golden brown. This will create a deep nutty flavor of the almonds which compliments the mushrooms very nicely.

When the rice is tender and warm, add the celery and mushrooms and bend. The celery will cook slightly but add a nice texture in the rice. Add the slivered almonds on top and serve while warm!

Remember to submit your Cook & Taste recipes in advance that I may make copies for everyone attending. maguthrie@gmail.com For those of you who are not bringing mushroom recipes, salads, desserts and beverages are appreciated! You may call me at: 720 690-4321 if you have any questions about the Cook and Taste, our annual Pot-luck September 10th, Monday at 7:30 in Gates Hall. "For Cook & Taste rules see the August *SporesAfield* or go to www.cmsweb.org."

*(**Mycodigest** continued from page 6)*

Further reading:
*Kaneko, A. & N. Sagara, 2002. Responses of *Hebeloma radicosum* fruit-bodies to light and gravity: negatively gravitropic and nonphototropic growth. Mycoscience 43: 7-13.

*Sagara, N., 1995. Association of ectomycorrhizal fungi with decomposed animal wastes in forest habitats: a cleaning symbiosis? Canadian Journal of Botany 73 (Supplement 1): S1423-S1433.

*Sagaro, N., B. Senn-Irlet & P. Marstad, 2006. Establishment of the case of *Hebeloma radicosum* growth on the latrine of the wood mouse. Mycoscience 47: 263-268. SCMS MUSHROOMER APRIL 2007 PAGE 2 OF 4.

*Sagara, N., T. Hongo, Y. Murakami, T. Hashimoto, H. Nagamasu, T. Fuiharu & Y. Asakawa, 2000. *Hebeloma radicosoides* sp. Nov., an agaric belonging to the chemoecological group ammonia fungi. Mycological Research 104: 1017-1024.

*Yamanaka, T., 2001. Fruit-body production and mycelial growth of *Tephrocybe tesquorum* in urea-treated forest soil. Mycoscience 42: 333-338.

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