

Next Meeting Aug. 15th, 2005

SPORES Afield

The newsletter of the Colorado Mycological Society

August 2005



Bring an end to the 'Dry Spell'!

During the past two weeks I have received many emails and phone calls about the lack of summer mushrooms. The cause is obvious enough, three weeks of high temperatures and no monsoon rains.

Yup, we have ourselves a localized 'dry spell' in the front range. Luckily, long-term forecasts put some rain into the area soon. Hopeful, it will be enough to trigger a good fruiting in time for the mushroom fair.

Thinking about the dry spell, and how so many of the members are discussing it, I realize that there is another localized 'Dry Spell' taking place that you, dear members' can actually do something about. The 'dry spell' I am speaking of is a shortfall of full participation in CMS. While we get good turn-outs at forays, meetings, the cook-n-taste, and the fair, these events are brought to you by a handful of members who have been helping CMS function for many years.

Volunteering to help CMS does not need to be a major commitment. You do not need to jump into a chair position as a first time effort to help. Every chair person could use some help from time to time with meetings, forays and events. An hour of your time can make a huge difference in the quality of CMS events for all members. Take a good look at the July newsletter and note who is chairing different tasks.

(continued on page 3)

Spores Afield

Speaker for the August meeting: Dr. Else Vellinga

"Mushrooms for the 21st century"

Our speaker for August, Dr. Else Vellinga, has graciously agreed to come to Denver to be our Chief Mycologist for CMS's 29th Annual Mushroom Fair. On Monday night, the day after the Fair, she will give a talk to our members which will include both basic and cutting edge information. She gave us the following thumbnail sketch to describe her talk. You won't want to miss it.

"What are mushrooms, what are they doing in the woods when we are not looking, and how can we tell them apart? We'll explore form and function, marvel at their beauty and show how new ways of looking have revealed some surprises."

Else lived, studied and worked in the Netherlands, before she came to the US in December 1998. Her principal interests are in fungal taxonomy and biodiversity. She is an editor and contributor to the Dutch mushroom flora project, *Flora Agaricina Neerlandica*, and has worked on a mushroom distribution atlas for the Netherlands. She got her PhD from the University of Leiden, the Netherlands, and is a post doc in Tom Brunsâ lab at UC-Berkeley investigating *Lepiotas* from around the world. Tom and she introduced a new undergraduate class in Berkeley on "Mushrooms of California" and have taught it twice. She marvels at the richness of the Californian *Lepiota* flora, especially among the redwoods and cypresses; in her spare time she knits, faster than mushrooms grow.

We must have her return one day and give us the Lowdown on *Lepiota*, a most interesting fungal genus.

Page 1

Upcoming Events

- Aug. 12th** Fair foray, see "Upcoming Forays" on page 3.
- Aug. 13th** Fair Setup.
- Aug. 14th** Annual **CMS Mushroom Fair** at Denver Botanic Gardens, The Fair identifier this year is Dr. Else Vellinga.
- Aug. 15th** "Introduction to Mushrooms" Dr. Else Vellinga, of the Plant and Microbial Biology Department at the University of California, Berkeley.
- Aug. 18-21st** Telluride Mushroom Festival. For additional info: call 303-296-9359 www.shroomfestival.com
- Aug. 18-21st** Crested Butte Mushroom Festival For additional info: call Roger Kahn at 303-322-5532 or 970-349-0238 www.cbmushfest.com
- Aug. 20-21st** 11th Annual Buena Vista King Boletus Festival, contact Buena Vista Heritage Museum at 719-395-8458.
- Sept. 12th** Cook & Taste, **Chairperson needed**, contact CMS President William Windsor.
- Oct. 10th** Chef Smailer of the Boulder Cork. His restaurant hosts our "End of the Season Fungi Feast".
- Oct. 23rd** "End of the Season Fungi Feast" at the Boulder Cork.

Bring mushrooms for identification and display to any meeting.

All meetings are held at the Denver Botanic Gardens in Mitchell Hall at 7:30 pm unless otherwise announced.

BRING EM BACK ALIVE!

Some suggestions for collecting mushrooms for further study and identification FROM THE HERBARIUM OF FUNGI AT DENVER BOTANIC GARDENS

When you find a mushroom that you want to show to an expert for identification (and possibly have it preserved for further study), here are some reminders:

Collect only fresh, moist, whole specimens. Unless you believe it to be very rare or unusual, do not bring in a "singleton". Try to get buttons along with other young to mature individuals. Use good collecting techniques, getting base of stipes. Brush dirt off lightly and make sure too much dirt doesn't damage the specimen. Include a few notes. On a small piece of paper to include with the specimen, record habitat, putting sprig or leaf of host plant or tree in with the specimen as a reminder. If the mushrooms are small and in moss or other bryophytes, leave that plant material around the specimen to help keep it moist. If possible, write down obvious features that might disappear, such as veil attachment, colors, odor, or taste. Make a note where you found the mushroom. Put specimen in a container using a firm container for small, delicate specimens and waxed paper for larger ones. Keep each collection separate from other kinds. Place it in a firm container such as a cottage cheese box or other small, lidded box (if the mushrooms are small). We find compartmented boxes used by fly fishermen excellent. Place a piece of damp paper towel in the bottom to keep the specimens moist. Desiccated specimens are hard to identify. Make a spore print for assessment of spore color to help with identification. Slip a piece of white paper under the gills. By the time you get home, you may have a usable print if you arrange the paper just below the gills. RosaLee uses the shiny side of freezer paper!
(continued on page 6)

Upcoming Forays

Please note all forays meet at 9:00 am in the northeast parking lot (also known as the T-Rex lot) of the Morrison exit at I-70 unless otherwise announced. If you carpool from that point which is strongly encouraged, due to limited parking at most foray locations, please chip in gas money. You must be a member of CMS to take part in the forays.

August 6th (Saturday) Tom Ruzicka (303-447-2740) will lead a foray into the Winter Park area.

August 12th (Friday) Ellen Jacobsen (303-741-3836) will lead a foray with Dr. Else Vellinga to collect specimens for the Fair.

Be sure to bring your CMS membership card or your current copy of *SporesAfield* with you. If you are not a member you can become one at the foray for the standard new member fee of \$23, which will also get you copies of *SporesAfield* for the rest of the year.

Forays may be cancelled in the event of dry weather. Call first if in doubt.

We have a need for people to lead forays. You do not need to be an expert identifier to lead a foray. You only need to be willing to lead a group of people to a location where mushrooms can be found. If you would be willing to lead a foray, please contact Tom Ruzicka 303-447-2740 or via e-mail at: tomruzicka@mindspring.com.

(Presidents continued from page 1)

Find one you think might be interesting to you and contact that person to offer some help.

The dry spell in the weather is resulting in a lack of mushrooms for our diner plate and to study. Likewise, the continued dry spell in participation in CMS could at some point result in a lack of meeting events, forays and a less interesting fair. Unlike the dry spell in the weather, you can do something about participation. Spend some time helping with events, I promise you, the experience will be rewarding and you might even have some fun doing so.

MycoDigest: The Question is Blowing in the Wind

By Dr. Else Vellinga

Reprinted from the February 2005 issue of 'Mycena News', The newsletter of The Mycological Society of San Francisco.

Like a cake covered in icing sugar, so powdery-white are the honey mushrooms and the ground around them. A typical one of these spores is only 1/3000 of an inch long. Every single mushroom in the clump sheds an estimated 15 billion of them but many don't go far. Is there a single one which makes it high enough into the air to get transported away from the parent?

For any spore trying to travel a long distance, survival is the first challenge because conditions in the atmosphere are downright hostile, it is cold, very dry, and there is strong UV-light to break down essential molecules. Spores with thin walls don't last long. Those with thick walls and a covering of pigment have the best chance of making it. But after its journey a spore faces other challenges. It has to land in a suitable place (sea or ice won't do); it has to germinate (desert areas are usually too dry), and then it has to find a mate (species that do not need a partner are at an advantage), and ally itself with a compatible substrate (an ectomycorrhizal partner of pine will not survive in a South American monkey puzzle forest). Success only comes with escape from the parental 'home', survival of the journey and expansion into the new environment.

The wonder is that some species are very good at long distance dispersal and achieve wide distribution. Puffballs are notable examples and I have seen the same earthstar, *Myriostoma coliforme*, on the Big Island of Hawaii and in the Dutch dunes in Europe. The spores of these guys are not just thick-walled and well-pigmented, but they are hydrophobic and many have spines, both of which are excellent, additional adaptations to airborne transport. *Pleurotus djamor*, a close relative of the oyster mushroom, is widespread in the tropics, *(continued on page 4)*

(*MycoDigest* continued from page 3)

and yet, its spores have been detected as far north as Canada and Switzerland! But is this typical for most species? For only a few spore dispersal has been investigated, and here are highlights of what we have learned.

The Split-gill, *Schizophyllum commune*, is found all over the world, and is completely interfertile. In other words every *Schizophyllum* can mate with any other, regardless of its place of origin. In this way it is like humans, but just as with humans, there are regional differences due to geographical barriers such as seas, and high mountains. The South American Split-gill is different from the North American populations, so a natural question is: what happens in the Caribbean? Do both forms occur there and do spores from both groups get there? To find out, researchers set baits to trap the *Schizophyllum* spores. Each bait was a petri dish with mycelium from one spore of *S. commune*, on which other spores could land, and germinate. Subsequently the two different mycelia fuse and produce a third which can be distinguished from the original mycelium. What the researchers found was that spores could indeed migrate over long distances. There were many spores a mile out at sea, and not all of them came from the closest land. Yes, they did find South American spores in the Caribbean, but not further north. On the other hand, North American spores failed to turn up in the Caribbean. It was estimated that every hour around 18 spores land on every square meter of surface. This research suggests that seas do pose a spatial barrier, but one that is not absolute; with wind in the right direction and at the right time, spores may be transported over wide expanses of water.

A second study had a rather different emphasis and investigated not only how far spores can travel, but also how viable they are. Here the setting is Sweden, and the species in question are the old-growth forest dwellers, *Fomitopsis rosea* and *Phlebia centrifuga*. These species do not grow in areas where the forests have been chopped down, and are rare in places with small relicts of forest.

Where the regions of forest are more extensive, in the north of the country, the two are more common. The question the study addressed was: how large do the forests need to be to sustain viable populations of these species? The same approach was used as in the *Schizophyllum* study, with the difference that wood discs were used to grow the mycelium, to better mimic the natural conditions. Baits were put out in seven locations in widely separated latitudes. Many more spores were found on the northern baits than on the southern ones (where scarcely any were found.) Significantly, the spores from the small, stressed populations tended to have more problems germinating than the ones from the large, healthy populations. It appears that the size of the population and the presence of old-growth forest both play a role in sustaining the fungi.

No one has investigated this kind of effect in California and it would be interesting to see whether there is direct contact between populations of, let's say, *Amanita lanei* (formerly *Amanita calyptroderma*) in the coastal oak forests and in the Sierra foothills. Do spores travel through the air over the Central Valley between those populations, or is there only more local spore transport? Will the Sierra populations still be viable when all the coastal live oak has succumbed to sudden oak death.

Humans are very good at transporting all kinds of organisms, both inadvertently and deliberately. With their help, mushroom species have jumped, again and again, to new territory in modern times. The Octopus stinkhorn, *Clathrus archeri*, is a good example. It arrived in Europe from Australia at the end of the First World War, probably with military equipment or in bales of wool. It settled in the northeastern part of France and from there, helped by the local flies, it spread like ripples in a pond, until it is found in virtually every country in Western Europe, recently it has also appeared in California undoubtedly with human help, though we do not know whether it came directly from Australia or via Europe. We should all keep our eyes and noses open to record its progress here.

(continued on page 6)

SEPTEMBER MUSHROOM TASTING

SEPTEMBER 12th, 2005

We are planning a wild mushroom Cook & Taste for the September meeting. The Cook & Taste will be held at 7:30 in Mitchell Hall at the Denver Botanic Gardens. Members are encouraged to bring a mushroom dish to share with other members. Those who have no time to cook or cannot cook may bring drinks, desserts, salads, or bread (prepared food from the grocery is fine.) The Cook and Taste is being organized by President William Windsor. Contact him at 303-544-6069 or wnwindsor@comcast.net to let him know what you are bringing. We don't want all the same dish.

Only the following mushroom species may be used:

Boletus barrowsii

Boletus edulis

Cantharellus cibarius

Commercial mushrooms from a grocery

Coprinus comatus

Dentinum repandum

Flammulina velutipes

Hydnum imbricatum

Lactarius deliciosus

Marasmius oreades

Matsutake - Tricholoma magnivelare or Tricholoma caligatum

Morchella angusticeps

Pleurotus ostreatus

All the dishes brought to the Cook & Taste must follow these rules:

- 1) All mushrooms must be well cooked. Raw mushrooms will not be allowed in any dish.
- 2) Use only one species of mushroom in each dish.
- 3) A written recipe prominently showing the species of mushroom in the dish and the cook's name **MUST** accompany each dish.
- 4) Leccinum species are not allowed!
- 5) If you have a supply of a good, common edible species of mushroom that you would like to use in a dish, but it isn't on the list above, call Marilyn Shaw at 303-377-1278. All exceptions must be approved in advance of the Cook & Taste.

(MycoDigest continued from page 4)

However, the story of *Armillaria mellea* in South Africa shows that not all transplants are that successful. Dutch settlers in the 17th century planted a garden in Cape Town, to provide fresh provisions for seafarers making the long voyages between Europe and the far east. With the roots of grape or citrus, or perhaps some other European plant, came the honey mushroom. Even now the original garden still harbours the very same honey mushrooms, all genetically identical. But the species has not made the jump into nature and has affected only the plants within the original garden.

Unraveling those stories, and determining what makes a species a successful long-distance flier or a perfect invader will keep amateur and professional mycologists busy for years to come.

Dr. Else Vellinga will be our fair identifier this year.

There is some related reading she offers, but due to space constraints in this issue they will be published next month. The Editor.

Spores Afield

(Bring em back alive continued from page 2)

A FEW 'DO NOT' SUGGESTIONS:

Do NOT freeze or wash or put specimens in water.

Do NOT leave specimens in a hot car. Refrigerate or put in cooler.

Do NOT collect specimens in plastic bags. They sweat!

If you give a properly collected specimen to an expert (or bring it in to the Fair in August), your specimen may be preserved "in perpetuity" for science! We at the Herbarium are always grateful for your contributions. You may bring us a new Colorado record, or a new species! We have hundreds of great specimens (and some very rare ones) donated by members of CMS. Come see them!

By Vera Evenson, Curator
RosaLee Brace, Volunteer