

VOLUME 15, NUMBER 4, WINTER, 2007

Findings Afield

In mid-summer, the rain was still plentiful. It was then, on July 26, that I noticed a small group of very



Lactarius subvernalis v. cokeri

pale mushrooms growing in a damp, shady spot alongside a stream in the South Shore Nature Center in East Islip. They were almost white, only about 3 cm. in diameter, with a depressed center adorned with a tiny umbo, and when I picked them, white drops of latex were evident on the gills. Latex acrid to the taste, and although its color did not change, the mushroom tissue was stained a bright pinkish-orange. As it aged, and was handled, it turned a pale smoky brown. The sporeprint was yellowish cream. Microscopically, the spore was globose to subglobose, 7-9 μm , with large, heavy warts and both light and heavy lines forming an almost complete reticulum. Not many *Lactarii* fall into this category, and the only one which matched all the characteristics completely is *Lactarius subvernalis v. cokeri*.

A common southern species, it is widespread and now occurring more frequently in the northeast. Another addition to our growing list.



Should Mushroomers Think Like Doctors?

By Joel Horman

When my niece was in medical school one of her instructors recommended taking up birdwatching, since he believed that the process of quickly perceiving and assimilating details necessary to be a good birder mirrored that of a good diagnostician. Perhaps the same could be said for mushrooming; with the caveat that even more senses are involved (than in birding) so that smell, touch and taste are all important factors, just as in medicine. And it seems that mushroomers are prone to some of the same errors of “misdiagnosis” as are their medical counterparts.

What these errors are exactly, and how they can be recognized and avoided is the subject of a recently published work entitled “How Doctors Think”, by Jerome Groopman, a professor of medicine at Harvard and a staff writer for the New Yorker.

Genuine sources of uncertainty are (1) the limitations of current knowledge (the state of the science) and (2) individual ignorance of the science (incomplete mastery of available knowledge). No one can have complete mastery of every segment of either medicine or mycology due to their immense complexity, but it is important to differentiate between 1 and 2.

What Groopman calls “pattern recognition” is a cognitive method that relies on an immediacy of perception without conscious analysis to achieve an identification. This is similar to the process we use when recognizing the faces of friends and others known to us. Many times perception must be augmented by focused thought and analysis, drawing together bits of data to form patterns, often by using shortcuts or “heuristics”. All such mental efforts are prone to errors such as “availability”, the tendency to judge the likelihood of an event by how readily it comes to mind; and “representativeness”, thinking guided by a prototype that ignores contradictory possibilities. These errors, which are not unrelated, come into play even more strongly when unfamiliar problems present themselves.

The availability error leads physicians to mistake symptoms of one disease for another with which they are more fami-

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PRESIDENT'S MESSAGE

Now that most of the franticness of the holidays is almost over, it's time to reflect on this past season.

This summer was a disaster with lots of cancelations due to lack of rain at appropriate times, 2007 being the only year that Mushroom Day at Planting Fields was not held. We did have a few bright spots though: Prof. Andy Greller's lecture and walk were absorbing. Even though there weren't many fungi, he showed us parts of West Hills that I didn't know existed and plants I've never seen in New York.

Then there was the honey mushroom foray: the first one was full of ticks and not many mushrooms; the second, however, had plenty of honeys AND ticks. We had a successful foray with Prof. Henry Beker from Belgium, searching

for and finding *Hebolomas*. (He even came back for another foray.) Our luncheon was quite pleasant at The Parkside. Everyone seemed comfortable and the company was great. The middle of November thru mid December had wonderful gypsies, *Tricholomas*, and other late weather mushrooms to offer; sort of like a consolation prize for being such a poor year.

I'd like to thank LIMC's board for their participation: Joel, Monique, Jacques, Bruce, Dale, Rita, Cathy, Tony, Lyle and Lenny: you are the best! All foray leaders also deserve a big "Thanks!"

I'm not making any predictions for the New Year. We'll all be surprised together with what ever comes our way. I wish you all a happy and healthy 2008!

EDITOR'S NOTE

Now that the season has ended, few of us are thinking of mushrooms, but winter is a time of rumination as well as hibernation, and there is fuel aplenty, both electronic and wood derived, to feed our internal mental engines.

If there are books that intrigued, but that were not available locally or exorbitantly priced, think of requesting an inter-library loan from your local library. Almost any title, including those out of print, can be obtained from either the NYS library or University libraries across the country by this method. For a modest fee, you can then photocopy

what you need at your local office goods store.

The internet is extremely rich in up to date mycological information, more so than any one reference. Google a species name and you will be overwhelmed by the resulting amount of material.

Lastly, for non-couch potatoes, the NYMS will be presenting the Emil Lang series of mushroom lectures at the American Museum of Natural History on the following Sundays at 1 PM: Jan. 27, Feb.24, March 30, and April 13. Speakers to be announced. As soon as we learn more, we'll pass it on via email.



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(Submissions should preferably be typed or submitted in Rich Text Format on PC floppy disk or by e-mail)

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The COMA 2007

Clark T. Rogerson Foray

By Dom Laudato

This foray was held from August 23rd through breakfast on August 26th. Rooms and meals were provided by Cave Hill Resort located in Moodus, Connecticut except for bag lunches which COMA volunteers prepared the evening before the forays.

The foray forests and state parks rest on the complex mountains of pre-cambrian and metamorphic Paleozoic rocks. The forest soils were quite productive since the first day's collection numbered more than 300 species albeit Connecticut also experienced drought conditions as did Long Island as of this date. The figure is slightly higher for the entire three plus days of collecting: 338 according to the COMA website, including 46 new to their checklist. Habitats of these forests were coniferous (lots of Hemlocks), deciduous, swamp lands with extensive fields of ferns, wet borders of ponds and streams and open areas of cropped grasses.

The mushrooms collected varied as is the case when all large forays are conducted and species that are rare, exceptional or untimely make their appearance. One strange specimen worthy of note is *Fistulina pseudoradicata* which looks nothing like the familiar *F. hepatica*, but has a long stipe and is known to occur in eastern US hardwood forests on Oak and Chestnut trees; also known as *Fistulina radicata*.



Rod Tulloss expounds while Dom and others harken.



Fistulina radicata

There were discussions around the tables and evening programs that included slides and talks on mushroom subjects, COMA's 30th anniversary and the passing and memorializing of a modern day naturalist, Peter Katsaros, a COMA member, who amassed a wealth of color slides, drawings and descriptions of mushrooms, many of which were of enormous value in naming new species. He accomplished this while living simply in his upstate New York cabin. His photos were featured in the National Audubon Guide to Familiar Mushrooms (1990) which he authored.

At 4 P.M. each day there were informal get-togethers at poolside where a variety of the edible mushrooms collected were tastefully prepared and avidly sampled together with wines, cheeses, hors d'oeuvres, fruits and nuts.

The primary identifier was Leon Shernoff, editor of Mushroom The Journal, whose task certainly was a daunting one. Others included Roz Lowen (asco expert), Bill Bakaitis, Walt Rode, Noah Seigel, Dianna Smith, and the indefatigable *Amanita* scholar Rod Tulloss.

Rod offered some interesting morsels of information concerning familiar Amanitas:

What we usually refer to as *ceciliae* (aka *inaurata*) and *vaginata* are not valid names, but refer to European species which may not occur here. He labels those similar to *vaginata* as N34 meaning that he has seen 34 look-alikes of the above. The grey remnants on the volva, if present, do not necessarily provide a clue as to the species name. Rod hopes to publish complete descriptions and valid names at some future time.

Regarding *volvata*, if a young specimen exhibits visible striations on the cap edges, the correct epithet is *pseudovolvata* (nom. prov.); *volvata* specimens have no striations.

Hi to all my friends. Hope to see you soon.

Dom



Amanita N34

(All photos courtesy Dianna Smith from COMA website <http://www.comafungi.org/>)



Chemical Secrets of the Matsutake Mushroom

*Press Release from Professor William F. Wood
Humboldt State University, Arcata, CA*

Mushroom hunters know how hard it is to find the elusive matsutake. They hide in the forest duff, just peaking out with a small portion of their cap or only showing as a hump in the ground cover. In spite of their secretive nature, they are actively sought out by amateur and commercial pickers because of their exquisite taste and high commercial value.

Because of its unique flavor, the matsutake has been revered for hundreds of years in Japan and has become deeply ingrained in the culture. In recent years, the harvest of the Japanese matsutake [*Tricholoma matsutake* (Ito et Imai) Sing.] has declined and so the American matsutake [*Tricholoma magnivelare* (Peck) Redhead] is imported to fill the gap.

The chemicals that make up the exquisite taste of this mushroom have been the focus of many scientific studies on the Japanese species. In fact, the very first studies as to the compounds responsible for odors in mushrooms were done on extracts of Japanese matsutake. In 1936 and 1938, the Japanese scientist, S. Maruhashi isolated and identified two highly odoriferous compounds from matsutake extracts. The substance that is most characteristic of the distinctive odor of the matsutake is the ester, methyl cinnamate. Esters are pleasant smelling compounds and are found in many edible fruits. In this case the ester is related to the compounds that give cinnamon its spicy flavor, hence the origin of the name "cinnamate."

The other compound that Maruhashi identified as being important to the flavor of the matsutake was an alcohol. This compound has been dubbed, "mushroom alcohol," because it is found in many other mushroom species. The proper chemical name for this alcohol is 1-octen-3-ol, and it is responsible for the typical mushroom odor.

A recent scientific study explains why these two pleasant tasting compounds are found in the matsutake. In the September issue of *Biochemical Systematics and Ecology* [volume 35, 634-6 (2007)], William Wood and Charles Lefevre report the production and function of these substances in the American matsutake. The spicy ester, methyl cinnamate, is a potent slug repellent. The matsutake uses this compound defensively to protect the sporocarp from being eaten by slugs before it can release its spores.

The second compound, the "mushroom alco-

hol," is even more interesting. When Wood and Lefevre extracted mushrooms that were not cut up or crushed, they found this "mushroom alcohol" was absent. If they crushed the mushroom before their analysis, large amount of this chemical is formed. This is a second and equally potent way the matsutake protects itself from slug predation. Previous research by William Wood has shown that "mushroom alcohol" is a potent banana slug repellent (*Biochem. Syst. Ecol.* 29, 531). When a slug tries to eat a mushroom, the chewing causes this alcohol to be released, which repels the slug. It is interesting that these two chemicals, which humans find as flavorful, are in reality produced by the mushroom to protect them from slug predation.

Besides looking into the chemicals produced by the fruiting body or sporocarp, these researchers investigated the chemicals found in the mycelium of the American matsutake. This mushroom is mycorrhizal and only grows in association with the roots of trees. In this association, the trees exchange sugars produced in their leaves for nutrients collected by the mycelium from the soil surrounding the tree roots. Because of this special mutualistic or symbiotic arrangement these mushrooms cannot be artificially grown and harvested.

As part of his Ph.D. studies Charles Lefevre was able to culture American matsutake mycelium in the absence of the symbiotic tree roots. These cultures were slow growing, taking a number of months to grow to a reasonable size. When these cultures were analyzed by William Wood, the chemist on this study, he found to his surprise that the slug repellent chemicals observed in the sporocarp were absent in the mycelium. The secret chemical life of the matsutake continued to unravel.

The major chemicals Wood found in the mycelium were of a type rarely found in terrestrial plants or animals, they contained organic chlorine compounds. These types of compounds are best known as substances that humans have used as pesticides, such as the insecticide DDT or the herbicide 2,4-D. Why are these compounds being made by the mycelium? This is the question these researchers asked.

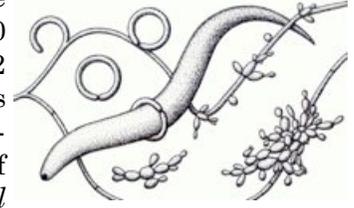
The mycelium is not under threat of being eaten by slugs since it is growing underground with the tree roots. However, at this stage of its matsutake's life cycle, there is competition with other fungi for space on the tree roots. The chlorinated compounds found in the mycelium, 3,5-dichloro-4-methoxybenzaldehyde and 3,5-dichloro-4-methoxybenzyl alcohol are known to stop important

(Continued on page 6)


Cleanings

■ **ANCIENT MEAT-EATERS:** Not some fearsome Dinosaur but a microscopic fungus that consumed nematodes (roundworms) has been discovered in 100 million year old amber, by Alexander Schmidt et al of the Natural Science Museum at Humboldt University, Berlin. Among the 70 different insects were tiny fungi sporting adhesive rings 12 microns

in diameter, similar to those used today by genera such as *Pleurotus* to trap nematodes. Fossilized nematodes were found nearby, providing strong circumstantial evidence which failed to convince University of Guelph biologist George Barron, who awaits a fossilized capture. (*Spiegel online*, 12-14-07; *Original article in Science*, Dec 2007, Vol. 318, no. 5857, p.1743)



■ **PSATHYRELLA SUNDERED:** In recent years DNA studies have juggled with our species concepts, and the trend continues with a recent study of the genus *Psathyrella*, which sequenced DNA data from 57 species (10% of known species worldwide) as well as representatives of coprinoid genera (*Parasola*, *Coprinopsis*, *Coprinellus*). Results showed that *Psathyrella* was polyphyletic (having multiple lines of descent rather than one) and could be divided into at least 11 clades, amounting to 5 genera. Several species, e.g., *P. rugocephala*, fell outside Psathyrellaceae and grouped with *Hebeloma* & *Conocybe*. Most of the species (49) grouped in a clade with *Coprinellus*, the genus which now contains the familiar mushroom formerly known as *Coprinus micaceus*. (*Molec. Phylogen. & Evolution*, Nov 07; *The Mushroom Family Psathyrellaceae: evidence for large-scale polyphyly of the genus Psathyrella*; Padamsee, Methany, et al.)

■ **BACKYARD BROWSING:** Data from Regional Poison Control Centers were reviewed to reveal instances of mushroom “exposure” by children under 6 years of age grazing on lawns. For the years 2000-2003 there were 322 instances (excluding cases involving forest or fields) with no effect in 80% of cases, and unknown or little effect in most of the remainder, with only minor effects in 6 patients. A search of the literature from 1965 to the present revealed only 3 instances of “yard” toxicity, all due to *Chlorophyllum molybdites*. The authors conclude that “backyard” mushroom ingestion by children under 6 “does not present a toxicity hazard in casual exposures and need no gastrointestinal decontamination.” (*Backyard Mushroom Ingestion: No GI Decontamination— No Effect*, *J of Emergency Medicine*, Vol. 33, N.4, pp.381-3)

■ **CALVATIA OR LANGERMANNIA?** Most of us refer to the giant puffball as *Calvatia*, having discarded the older name as outmoded. Research into the development of the gleba (fruiting structure) has found that *L. gigantea* develops in a unique way, with fan-like hyphae contrasting with other Lycoperdonaceae, including *Calvatia*, which show lacunar and coralloid development. The author therefore suggests retaining the genus *Langermannia* separate from *Calvatia*. (*The gleba development of Langermannia gigantea* (Batsch: Pers.) Rostk. (Basidiomycetes) compared to other Lycoperdaceae, and some systematic implications, *Mycologia*, 99(3), 2007, pp. 396-405.)

(Compiled by editor from cited sources.) 

The Sonoma County Mycological Association
(SOMA) Presents the 11th Annual

SOMA WILD MUSHROOM CAMP '08

Tom Volk and Else Vellinga are featured speakers! Also presenting will be Taylor Lockwood! Others TBA.

Save the date: Martin Luther King Weekend,
January 19th, 20th & 21st.

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This camp is held in the beautiful hills of
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LOW FEES!:

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Includes lodging in shared, comfy cabins, all meals, and great mushroom camaraderie. Three days of great fun! Expert speakers--TBA! Forays, classes & workshops, artwork, specimen tables, feasting, presentations, mushroom chefs and much more!



Val Rossi, longtime LIMC member, passed away on Nov 21, 2007, at the age of 81. Our condolences to his wife Vicky, and their three children, Maria, Manny & Adeline.

A soft-spoken, gentle person, he was universally liked. He had an artistic bent, and composed poetry and songs.

For many years, his signature espresso was a fixture at our Mushroom Day exhibit.

He will be missed by all his many friends.

Chemical Secrets (Cont'd from page 4)

aspects of fungal metabolism. They inhibit an enzyme that produces cell walls in other fungal species. These compounds also halt the production of fungal melanin, a pigment that protects fungal hyphae by forming a physical barrier between the cell and its surroundings. Chemical warfare between different fungi for space on plant roots is not frequently observed, but must be an important aspect of fungal life.

To exclude the possibility that these chlorinated compounds were only produced in the artificial medium in which the mycelium was grown, these researchers analyzed soil containing matsutake myce-

Mushroomers and Doctors (Cont'd from page 1)

liar or have seen more recently. Once they have fixed upon one possibility to the exclusion of others, they have committed the error of "anchoring". Mushroomers fall into a similar mental state when they fail to recognize, say, the one *Clitocybe dealbata* masquerading as a *Marasmius oreades*. That is, concentrating on a few features of a case (or a mushroom) and overlooking contradictory information leads to distorted pattern recognition, with possibly dangerous consequences. Medical students are cautioned, "When you hear hoof beats, think about horses, not zebras"; but sometimes, a zebra might turn up.

Another shared error is "diagnosis momentum": once a diagnosis is made, it is passed on to

Truffle Oil?

By Peggy Horman

When is truffle oil not truffle oil? When it is olive oil containing the chemical 2-4 dithiapentane. I'm sure many of you have seen these small bottles of oil in upscale markets or at regional forays. These oils are used in some of the best restaurants as well. I used to buy some once in a while; either black or white truffle flavor. (The cost is the same, although black truffles are much more expensive.) They are over-priced and now I feel ripped off. \$15 and up for 4 ounces of olive oil and chemical...unbelievable! Over 99% of truffle oil has nothing from a truffle in it. (The labels state that they contain aroma or essence.) There is also a flour with truffle taste and aroma which I bet is artificial too.



To read more about this, google "synthetic truffle oil" on the computer and lots of articles will come up.

lium. They identified the most abundant of the chlorinated compounds in the soil, so these compounds are not artefacts and are produced by free-living mycelia.

Thus, the matsutake uses defensive chemicals throughout its life cycle. When it is underground and associated with tree roots, it fights off other fungi's mycelium with exotic chlorinated compounds. On fruiting, it protects the spores in the sporocarp with the volatile and spicy ester, methyl cinnamate. Furthermore, if slugs trying to eat this mushroom are not repelled by this potent ester, it releases large quantities of distasteful mushroom alcohol upon tissue disruption.

others with increasing conviction, contradictory data being jettisoned. This medical phenomenon finds its counterpart in misidentifications being perpetuated and persisting for years among various clubs.

What lessons can be drawn from this incisive analysis? I think it is to never jump to conclusions, to be thoughtful, and to ALWAYS CONSIDER ALTERNATIVES. A certain humility in the face of complexity is not out of place. We must discard the old surgical maxim, "Sometimes in error, never in doubt". Self doubt, and self questioning are more likely avenues to the truth. In the words of one physician, "know not only what people know, but how they know it".

FORAY RESULTS HIGHLIGHTS

In addition to continued cancellations during Sept, no forays were held until Oct. 20, and our Annual Mushroom Day Exhibit was cancelled for lack of fungi, an unprecedented event.

SEPT 29, WEST HILLS SOUTH: Only 16 species, but even that was welcome. The lack of fungi was fully compensated for by Dr. Andrew Greller's informative botanical slide show and on-site walk through, which attendees thoroughly enjoyed.

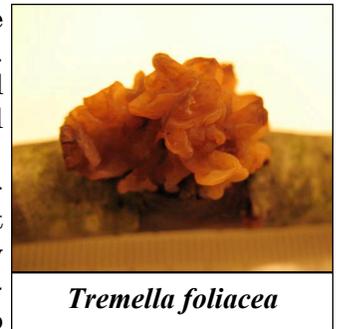
OCT 20, SOUTHAVEN CO. PARK: Although the drought period still affected many sites, Southaven came through with 48 species, including good amounts of Blewits and Bricktops, as well as some *Suillus pictus*, *Agaricus campestris*, two species new to our list, *Laccaria proxima* & *Suillus subalutaceus*, and a widespread, bright pink large *Mycena* in the *M.pura* group.

NOV 10, WADING R. & PECONIC HILLS: We combined these two sites to make up for lost time, coming up with 28 species at the first site, and 13 at the second. Good numbers of Grayling and *Suillus* (*brevipes* & *subluteus*) at Wading R. and more *Suillus* plus ample Gypsies for all at Peconic Hills. *Mycena mirata* and *Tremella foliacea* were added to our list.

NOV 17, EDGEWOOD PRESERVE: Accompanied by the Belgian Hebeloma researcher Dr. Henry Beker, we spent over 5 hours here, resulting in 41 species not counting the 4-6 species of *Hebeloma* which have yet to be identified but which may have included *H.colossus*, a European species. New species were *Cortinarius nigrellus*, *Lactarius hibbardae* (id'd by Aaron Norarevian), *Lepista tarda*, and an albino *Cystoderma*, which merits further scrutiny. Edibles included Grayling, Pine spike (*Chroogomphus vinicolor*), *Suillus* and *Tricholoma equestre*.

NOV 24, WADING RIVER:

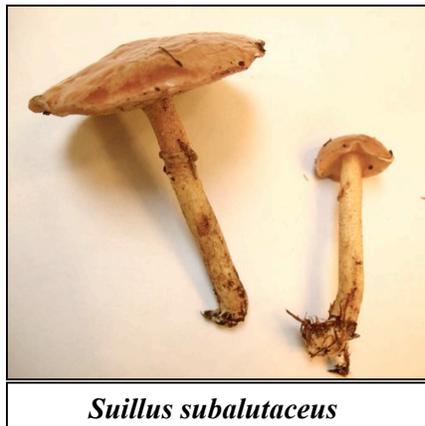
This was a last minute switch, as Wellwyn was unproductive. 36 species was a good total for this time of year and included ample edibles, e.g: Grayling, several *Hygrophorus* (*agathosmos*, *hypothejus*, *ponderatus*), *Laccaria* (*laccata*, *trullisata*) *Suillus brevipes*, & *Tricholoma* (*equestre*, *niveipes*, *portentosum*),



Tremella foliacea



Laccaria proxima



Suillus subalutaceus



Lactarius hibbardae

WELCOME NEW MEMBERS

TONY EGIDIO

ALMA CARLIN & FAMILY

DAVID & MARISA SENSI

SALVATORE SOFIO

MARY BETH & PAUL TOMKO



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"We miss more by not seeing, than by not knowing."

Sir William Osler, 1849-1919



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MEMBERSHIP RENEWAL FORM INSIDE