

# NJMA NEWS

THE OFFICIAL NEWSLETTER OF THE NEW JERSEY MYCOLOGICAL ASSOCIATION

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## NJMA NEWS

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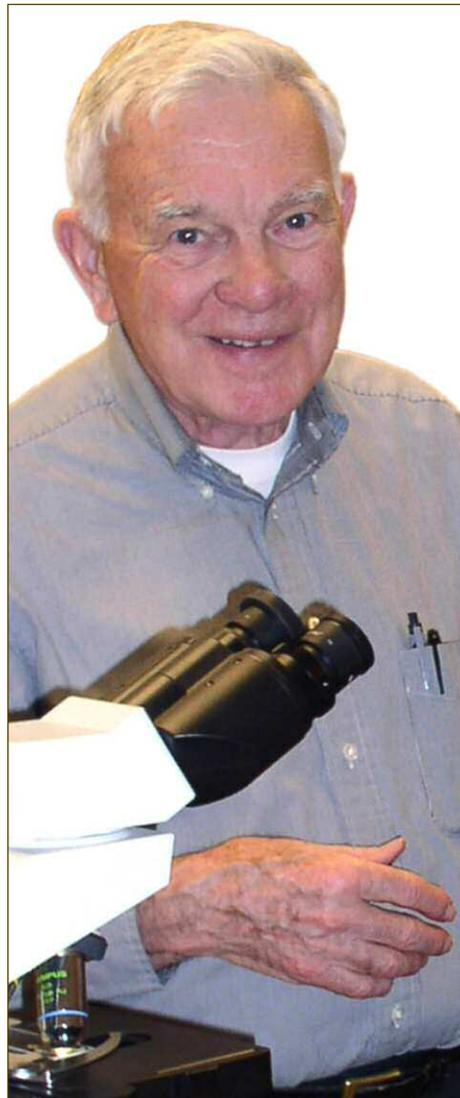
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## NJMA EVENTS HOTLINE

**908-227-0872** for information on  
NJMA events or cancellations due to  
bad weather. It is **NOT** for general  
inquiries or to contact officers!



## IN MEMORIUM

### DR. EUGENE VARNEY 1923 - 2014

by Patricia McNaught

Longtime NJMA member and mentor Dr. Eugene Varney passed away on June 26<sup>th</sup> at home, surrounded by family members.

Dr. Varney joined NJMA in 1976, was a past president and, at the time of his death, an NJMA trustee and member of the Nominating, Scholarship and Education committees. He was Professor Emeritus in the Rutgers plant pathology department, and he had arranged access for NJMA to the teaching lab at Rutgers,

### *Memorial Service for Dr. Varney*

*Saturday, July 12<sup>th</sup>, 2:00 pm*

*at the Unitarian Society  
in East Brunswick*

where we conduct the microscopy and other workshops. He assembled one of the best slime-mold collections in the northeast, which he generously made available to other researchers.

Dr. Varney taught many NJMA workshops, including Microscopy, Medicinal Mushrooms and Cultivation of Edible Mushrooms. He contributed in so many ways to our club that I can't list them all. I will say that his quiet teaching style and encouragement enabled many of us to overcome our self-doubts about being able to do this mycology thing – whether it was rearig slime molds, cultivating mushrooms or becoming comfortable about using a microscope.

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## PRESIDENT'S MESSAGE

Joining NJMA is a first step. For a few fortunate people, it is the first step leading to the discovery of a personal passion.

People most often join NJMA because they are thrilled by the idea of going into the woods and being able to identify and collect some tasty edible mushrooms. They relish the possibility of dining on choice species of mushrooms not available except to the “cognoscenti”. Mushrooming seems to awaken an atavistic drive from our hunter-gatherer days. Mushrooms are certainly one of the most sustainable foods you can gather; the woods are more easily stripped of edible plants like ramps or spring beauties than mushrooms.

We hope that if new mushroomers spend enough time in the woods with NJMA, they will undergo a subtle transformation. People may start with seeing the woods as primarily a source of extractible resources: mushrooms, berries or timber. But as they become aware of the complexity of plant-fungal interactions and the consequences of land use decisions (*i.e.*, 60 years of lead arsenate use in orchards), it's hard to maintain that attitude. Long time members often describe their interest in mushrooming in terms that are almost spiritual.

For some of us, once we got going with mushrooming, we were bitten by a bug, and it's not a chigger or a tick. It's a fascination with some aspect of mushrooming. It might be photography, or using mushrooms for dyeing (color), or an attraction to a particular group of fungi (slime molds anyone?).

Over the years, there have been many members who have embraced the role of “citizen-scientist”. They collect specimens requested by university mycologists, or conduct long-term studies of mycological biodiversity, or provide the fungal identification expertise needed for Bio-Blitzes and other field studies.

A few members have gone even farther – to become recognized experts in some aspect of mycology. Ray Fatto was one of the first (in Russulas), and he encouraged others (a bit relentlessly, I've been told) to find their passion and lose themselves in it. Rod Tulloss (*Amanitaceae*) and Susan Hopkins (dye mushrooms) are among those who have followed Ray's example.

So, as you are mushrooming this crazy season (with boletes fruiting in early June!), keep an open mind. If mushrooming becomes your passion, find the time to pursue it. I'm reminded of Sinclair Lewis' character Babbitt, who said to his son, “I've never done a single thing I've wanted to in my whole life!” Well, maybe you'll carry things on further...Go ahead! The world is yours!

– Patricia McNaught



## EDITOR'S NOTES

In following up on Patricia's President's Message, we would like to make special note of the tremendous range of interests of the NJMA membership. And while the vast majority of members join because they want to find out where they can collect edible mushrooms, many do become interested in the wide variety of experiences that are possible. Some people add to their original interest in edibles by joining the Culinary Group and attending the regular meals. Others become interested in the more scientific approach and become taxonomists. Some move to the artier and craftier areas, whether photography, sketching, dyeing with mushrooms, or using fungi to make paper or jewelry, or writing poetry. Some want to learn how to grow mushrooms, so they join the Cultivation Group.

What we would like to see are articles from you about your areas of interest. We have not had many technical or “how-to” articles except from other clubs' newsletters. We would really, really like to see more of this kind of information from NJMA members. If you would be willing to share some of your expertise with your fellow club members, please contact editor Jim Richards at [njmaeditor@gmail.com](mailto:njmaeditor@gmail.com) with your ideas. If you have a lot of information to share, we would be glad to run a series of articles about your “speciality”. If you are hesitant because you are uncomfortable with writing, contact me and we can work things out. There are plenty of our “correspondents” that would be glad to help you put your ideas on paper or take photos of your work, etc. (And, that is my job – to edit! And maybe just to nudge a little from time to time.)

If there are things you would like to see in the newsletter, please let us know. Maybe we can find someone to help fill that void.

As we have said (repeatedly), “This is YOUR newsletter. Help make it work for YOU!”

– Jim Richards

### WELCOME TO THE ONLINE EDITION OF NJMA NEWS

For the great majority of you who are viewing the online PDF of this newsletter, please note that **most web links and email addresses are clickable**. Clicking on a web or email address will launch your web browser and take you to the specified page or open your email software so you can send us an instant email. Just look for the “click finger” when you hover your mouse over these items.

**No more clumsy “writing it down”  
or copying and pasting!**

## CALENDAR OF UPCOMING EVENTS

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Saturday, July 12  
10:00 am

**FORAY: MEADOWOOD PARK**, Mendham, NJ  
*Leader: Sharon Sterling*

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Saturday, July 19  
2:00 pm

**CULINARY GROUP SOUTHWEST COOKOUT**  
Harry Dunham Park, Basking Ridge  
*Reservations required.* Contact Jim Richards ([jimrich17@me.com](mailto:jimrich17@me.com))

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Sunday, July 20  
10:00 am

**FORAY: HOLMDEL COUNTY PARK**, Hill Top section  
*Leader: Bob Hosh*

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Sunday, July 27  
10:00 am

**FORAY: WAWAYANDA STATE PARK**  
*Leader: Patricia McNaught*

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Saturday, August 2  
10:00 am

**FORAY: STEPHENS STATE PARK**  
*Leader: Jim Richards*

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August 7-10

**NEMF 2014 Samuel Ristich Foray**, Brunswick, Maine

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Saturday, August 16  
10:00 am

**FORAY: SCHIFF NATURE PRESERVE**  
*Leader: Dorothy Smullen*

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Sunday, August 17  
10:00 am

**WORKSHOP: MICROSCOPY FOR MUSHROOMERS**  
Foran Hall, Rutgers University, New Brunswick. *Instructor: Mike Rubin*  
*Advance registration required.* See our website [www.njmyco.org/education.html](http://www.njmyco.org/education.html) to sign up.

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Sunday, August 24  
10:00 am

**FORAY: HOFFMAN COUNTY PARK**  
*Leader: Igor Safonov*

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Saturday, September 6  
10:00 am

**FORAY: MANASQUAN RESERVOIR ENVIRONMENTAL EDUCATION CENTER**  
*Leader: Patricia McNaught*

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Sunday, September 14  
10:00 am

**FORAY: WASHINGTON CROSSING STATE PARK**  
*Leader: Virginia Tomat*

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### **DR. EUGENE VARNEY - IN MEMORIAM** *(continued from page 1)*

It is in line with Dr. Varney's unassuming manner that we have no foray or other event named after him. He is, however, the only recipient of NJMA's Lifetime Service Award, which he received in 2011 for 30 years of service to NJMA. NJMA is a stronger organization due to his contributions and guidance.

Those of us who knew Gene admired him for his generous spirit, and his unpretentious manner. Gene had a very honest and solidly-grounded way of approaching things. I am not the only president of NJMA who would phone Gene for advice if there was a knotty problem where the "right thing to do" wasn't clear. He always helped me find my way through the difficulty.

We will miss him very much.

*Terri Layton reported on Dr. Varney's receipt of the Lifetime Service Award in [NJMA News 41-6](#). To leave your condolences and memories of Dr. Varney, visit <http://tinyurl.com/nqbec6m>.*



# ONE MORE REASON TO USE PROTECTION...

by Patricia McNaught

...Protection from ticks, that is. Sensationalist news coverage about the Powassan virus has unduly alarmed some NJMA members. After a New Jersey woman died in 2013 from this tick-borne virus, the media reported that the fatality rate from Powassan is 30%. The actual mortality rate in the US is 10%, with 50% of patients suffering long-term neurological consequences. The 30% fatality rate is based on three deaths among the 12 reported cases in Canada over a 41 year time span. Yet 6% of all Canadians are sero-positive for the virus (showing they have been exposed to it), so, clearly, **most people experience no symptoms.**

Here's what you need to know about the Powassan virus: It is rare. In the Northeast, it is usually carried by the groundhog tick (*see photo below*), which rarely bites



humans. The symptoms (headache, high fever, neck stiffness and soreness) appear seven to 30 days after exposure. Antibiotics are useless against the virus; the only therapy is to treat the symptoms. Powassan is considered an emerging disease threat, and its virulence does seem to be increasing.

There are many tick-borne diseases in New Jersey: Lyme, Ehrlichiosis, Anaplasmosis, Rocky Mountain spotted fever and Babesiosis. We all should already be taking precautions. Powassan virus is just one more reason to use DEET, wear long pants treated with Permethrin, and shower as soon as possible after trekking through the fields and woods.

Go to [http://www.state.nj.us/health/cd/izdp/documents/tbd\\_brochure.pdf](http://www.state.nj.us/health/cd/izdp/documents/tbd_brochure.pdf) (no hyphen in the word “documents”) for a rundown on the other tick-borne diseases in our state and a complete description of how to minimize your risk from them.

For more information on the Powassan virus, go to <http://www.cdc.gov/powassan>.



## BYTES, BITS, & BITES TASTY LITTLE TIDBITS FROM OUR MEMBERS

from Jim Richards:

Why are morels so expensive? From *The Kitchn Blog*:  
<http://tinyurl.com/qf7ob2t>

from the Duggal blog:

Macro photography: How to make seasonal close-ups!  
<http://tinyurl.com/p22zyfj>

from Jan Keyes:

She recommends the following story from *Phys.org*:  
“Symbiosis: Enforced Surrender?”

<http://tinyurl.com/mwwgcyv>

from Jim Richards:

Truffles are back! And now with the new Truffle Salt!  
From the Eataly blog:

<http://www.eataly.com/fresh-truffles>

(continues on page 10)

## WELCOME TO ALL OF OUR NEW NJMA MEMBERS!

*We'd like to extend a warm welcome to the following members who joined us between April 24, 2014 and June 17, 2014. We look forward to seeing you at lectures, forays, and other NJMA events. Happy 'shrooming!*

Bryan S. Aroma	Lyndhurst, NJ
Patrick K. Boyd	Bedminster, NJ
Patricia W. Bruder	Califon, NJ
Joseph Cherry	Whitehouse Station, NJ
Susan Crawford	Easton, PA
Emiliano B. Guevara	Union, NJ
Beryl M. Man	Brooklyn, NY
Albert McHugh	Moorestown, NJ
Maria C. Niciporciukas	Long Valley, NJ
Richard W. Niemeyer	Edison, NJ
Scott Piscitelli	Brooklyn, NY
Maria Pohore	Brooklyn, NY
Tina T. Seres	Bradley Beach, NJ
Laura N. Shemanski	Neshanic Station, NJ
Michael Tumarinson	Ridgewood, NJ
Mark Vlouhos	Milford, PA
Charles Williams	Wall Township, NJ
Danielle M. Wong	Bristol, PA

# FUNGAL BIOGEOGRAPHY

## A SYNOPSIS OF DR. ROY HALLING'S LECTURE

by Igor Safonov

Dr. Roy Halling became interested in fungal biogeography, with a specific focus on boletes, in the early 1990's after trips to Australia and Costa Rica: "...it completely turned everything over in my mind about what grows where and why."

Biogeography is the study of distribution of organisms through four major extrinsic factors: geological events involving plate tectonics, climatic changes (be it the ice age or the "greenhouse" effect), an organism's reproduction and interactions with other local biota, and human influences on the environment. Let's take a closer look now at these factors, beginning with geology:

1. The breakup of the ancient supercontinents of Laurasia and Gondwana and the subsequent drifting and re-contouring of the resultant continents over hundreds of millennia had a most definitive impact on the evolution of all progenitor species. Evolution of life on terra firma thus proceeded through long periods of isolation (picture Australia floating around in solitude for some 50 million years with subsequent effects on its biota) intermixed with occasional opportunities for biotic exchanges as continents collided or became connected by land bridges.

2. Swings in the global climate have always been a major driving force behind the evolution and biogeography of terrestrial organisms. Recall that the mass extinction of dinosaurs along with 75% of contemporary species was, in part, caused by dramatic climate changes following Earth's collision with a cosmic intruder. As weather gets warmer or colder, drier or wetter, climate will continue to gradually alter and reshape Earth's biomes and influence migration and distribution of extant organisms: Species must either adapt and evolve in response to these changes or become extinct.

3. Boletes are obligately mycorrhizal with tree roots. Since neither partner can survive on its own or grow

optimally without the other, both must move together. Large-scale colonization of living space by such self-sustaining miniature ecosystems (without human involvement) is a rather slow event dictated primarily by the rate of tree seed dispersal by the fauna that depend on vascular plants for food and shelter, feasibility of long-range dissemination of fungal spores, as well as favorable climatic conditions capable of supporting forests together with the associated fungi and animals. Another major consideration related to the interaction with the local biota involves competition for energy and space with other fungi and plants.

4. Finally, anthropogenic changes involve biological or physical influences on ecosystems by humans. Examples of such activities include deforestation, pollution, as well as purposeful – and sometimes inadvertent – introduction of foreign species. A good example of an invasive fungus is *Amanita muscaria*. The Fly Agaric was introduced into Tasmania and New Zealand together with its host the Monterey Pine (a good source of timber) to make it grow better, but "escaped" and moved onto endemic tree hosts (like the Myrtle beech, *Nothofagus cunninghamii*), thus causing concern that it would successfully outcompete the native mycorrhizal mycota. Another such "great escape" that happened closer to home involves *Amanita phalloides*. This fungus was brought from Europe to California on the roots of ornamental trees (probably the Cork Oak) in the late 1930's. The Death Cap eventually found the endemic oaks and pines very much to its liking, "blitzing" through and "conquering" the Golden State in just a few decades. It grows in prodigious quantities in certain California habitats.

There exist several possibilities of how mushrooms get around naturally, i.e. without human intervention:

(a) The aforementioned long-range dispersion of spores by wind currents comes to mind first. Theoretically, it's possible for the "weightless" spores to travel great distances with some help from severe weather. However, several independent studies have proven that long-range spore dispersal (beyond one kilometer) as a means of establishing new colonies of mycelial mats or exchanging genetic material with other geographically isolated populations of the same species is a low probability event. The chance of finding spores of a matching mating type and suitable tree hosts or growing substrate is rather slim. There are, of course, exceptions: Notably, the airborne migration of *Pisolithus* spores and certain plant pathogens (rusts) from Australia to New Zealand across the vast expanse of the Tasman Sea. As far as mycorrhizal fungi are concerned, Dr. Halling cited *Austroboletus eburneus* and *Austroboletus lacunosus*, both endemic to Australia, and their closely related counterparts from New Zealand (*A. niveus* and *A. novaezelandiae*, respectively). Since the two land masses were never physically connected (even when



PHOTO BY PATRICIA McNAUGHT

Klaus Duch asks Dr. Halling a question

both were an integral part of Gondwana) and also knowing that New Zealand became submerged and then repopulated at least once following the continental breakup, the theory of wind dispersion of spores over open water has its merits.

(b) As mentioned above, symbiotic partners can slowly move together and colonize previously inaccessible land through newly-created land bridges. The linking of two American continents by the Panamanian isthmus less than 10 million years ago is particularly noteworthy. It allowed the Great American Interchange of diverse flora and fauna to gradually take place.

Generic comparisons within the Boletaceae (some 40 genera containing the greater bulk of classic-looking boletes) for North and Central America reveal that there is a 90% overlap. However, the species overlap is much lower, with many endemic entities unique to places like Costa Rica. For example, *Boletus frostii*, *Boletellus ananas*, *Aureoboletus auriporus* and *Leccinum rugociceps*, all originally described from the eastern seaboard of the US, moved with the oak forests from the north into the Neotropics of Central America and northern South America. On the other hand, there are endemic fungi that have evolved there and are not found in North America, such as *Chalciporus chontae*, *Tylophilus oradivensis* (a relative of *T. balloui*), and *Leccinum monticola*. The latter one, looking like a doppelganger of our beloved cryptic *Leccinum* species found in the New Jersey Pine Barrens, is mycorrhizal with a bush in the blueberry family and growing well above the timberline in the bamboo páramo on Cerro del la Muerte. To quote Dr. Halling: “Molecular data suggest that *T. oradivensis* and *T. balloui* share a relatively recent common ancestor and lend support to the hypothesis of a biogeographic connection between oak forests of the eastern United States and Central America.”

(c) When the original tree host is no longer tolerant of climatic or local environmental conditions, some fungi can establish mycorrhizal associations with other suitable hosts (e.g., a shift from oak to pine) as means of conquering new land and ensuring their survival. Looking at the above endemic boletes and noting an appreciable degree of morphological and genetic similarity between them and their northern counterparts, one could reasonably conclude that many Neotropical species actually arose from North America, with a subsequent mycorrhizal shift from oaks to local vegetation and further speciation.

Through the course of his lecture, Dr. Halling also shared with us other fascinating stories related to his research endeavors, such as those of the brightly colored truffle-like entities *Royoungia boletoides* and *Soliococcus polychromus*, both endemic to New Guinea and/or Australia. Their taxonomic placement in Boletaceae has been recently ascertained with DNA

sequencing. These and other hypogeous (subterranean) forms have probably evolved from traditional-looking boletes going through a secotioid stage first, and now represent evolutionary dead ends by virtue of their fully enclosed hymenial morphology. Unlike traditional cap-and-stalk mushrooms dropping their spores from gills and tubes, sequestrate fungi must rely on animals that eat them for reproduction. Surprisingly, *Royoungia boletoides* is closely related to the yellow-footed bolete *Harrya chromapes* that we find here in New Jersey. Equally surprising is the fact that *Soliococcus polychromus* shares its genealogy with *Bothia castanella*, another Northeastern bolete that for a while was a resident of the genus *Suillus*. Such examples demonstrate that interpretation of fungal macro-morphology (phenotype) can at times be misleading in determining the true nature of complex taxonomic relationships between geographically disparate species, whereas the molecular blueprint of life (genotype) may in fact have all the right answers to the question of evolution, ancestry, biogeography... and more.

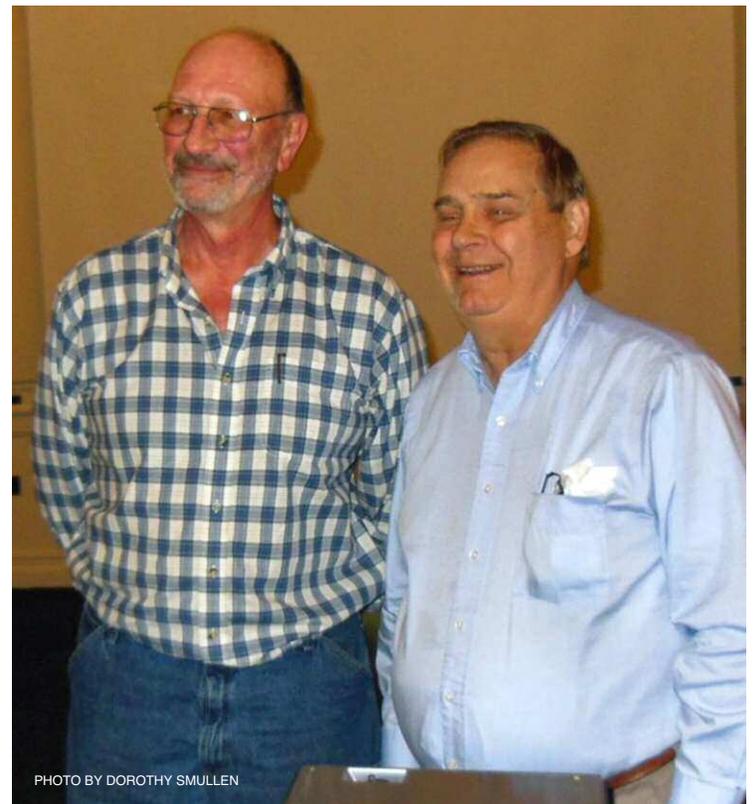


PHOTO BY DOROTHY SMULLEN

Dr. Halling and Bob Peabody together for a photo op.

### MUSHROOM ILLUSTRATORS WANTED

Thank you to all who have submitted mushroom illustrations which have allowed us to enhance *NJMA News* for our members.

We are always interested in receiving accurate hand drawings, sketches, or artwork in any variety of media to grace our pages. While we cannot guarantee that your work will be published, we do file each submission and consider it for use either in conjunction with specific articles or for use as backgrounds or supplemental art when needed. You retain your copyrights and you'll be credited in all cases.

Contact our Art Director Jim Barg at [jimbarg@bssmedia.com](mailto:jimbarg@bssmedia.com) for more information or to submit your work.

# DNA ANALYSIS OF FUNGI – NOT QUITE “KITCHEN CHEMISTRY”

by Patricia McNaught

DNA sequencing has led to a revolution in many fields – including the taxonomy of macrofungi. Participants in the NJMA workshop on DNA analysis held at Rutgers in June received some first-hand experience by extracting DNA from four fungal samples. The workshop was led by Ivelisse Irizarry, a fourth year Ph.D. student in the Plant Pathology department at Rutgers.

Ivelisse began with a brief outline of the steps leading up to DNA sequencing, and a discussion of how the results can be used. The individual organism can be identified or the members of a community of fungi can be identified (for example, by analyzing for the fungal mycelium or spores in a soil sample.)

The first two steps required are extraction of the DNA from the original specimen (which can be as small as a single spore) and amplification of the DNA, which means duplicating the tiny amount of DNA extracted thousands of times. In groups of 4, we all worked on the first step, which requires a number of procedures: breaking up the sample, lysing (or breaking apart) the fungal cells, precipitating any cell components which would inhibit the amplification step, removing the solution of DNA and binding the DNA onto tiny filters, washing off any unwanted chemicals from the filters and finally using a solution to release the DNA from the filters. No wonder we didn't have time for the second step!

The second step, amplification, uses the polymerase chain reaction (PCR). You add “primers” to the purified DNA to select the part of the chromosome you are interested. You then run the sample through a number of cycles to duplicate that part of the chromosome. The temperature of the samples has to be raised and lowered for each cycle. This used to be a tricky and tedious step, but now you can purchase a thermal cycler that will regulate the temperature cycles.

The third step is to determine if the amplification was successful by using agarose gel electrophoresis. Gel electrophoresis separates DNA fragments by size and allows the technician to determine which samples were successfully amplified by the polymerase chain reaction.

The final sequencing step is usually done by sending your purified, amplified, and selected sample to a commercial laboratory. You get back the sequence of “bases” in the section of the DNA molecule you submitted – in other words, a long list made up of A, G, C, and T. (These letters stand for four different molecules that are the alphabet of the genetic information carried by the chromosome.) This step is now amazingly inexpensive, as low \$5 per sample. You can submit the sequence to the National Center for Biotechnology Information, to see what submissions your sample matches or is close to. (One potential problem is that



there is no guarantee that the specimens your submission matches were themselves correctly identified!)

Ivelisse discussed the first decision that must be made when analyzing fungal DNA: Which region of the chromosome to select. The region should be one that is consistent within a species, but be different between species. The standard for fungi is the ITS (internal transcribed spacer) region obtained by using ITS-1 and ITS-4 primers in the amplification step. But if the purpose of the testing is not just identification, but establishing species relationships, the analysis has to be based on three or more regions. And on the horizon are “super trees”: phylogenetic trees based on analyzing the entire genome of the specimens.

NJMA member Linas Kudzma added valuable insights based on his experiences with DNA sequencing. In his work on *Inocybe* (a notoriously difficult genus), he started out submitting specimens to a European researcher, but was dissatisfied with the results he received. Ultimately, Linas set up a “clean room” in his basement, purchased a thermocycler and other equipment, and has progressed to where he now collaborates with university mycologists in his research. As Linas said, to do DNA analysis, you have to have the space and the initial investment of about \$5000, as well as be a little crazy and willing to spend a lot of time learning the procedures.

The final point discussed was that DNA sequencing can complement morphology (study of form and structural characteristics, including microscopic characteristics), but cannot replace it. These days, both are needed for phylogenetic studies. Clearly, DNA sequencing is not a quick and easy replacement for learning how to identify fungi through microscopic characteristics. The workshop was a cold dash of reality for those who hoped DNA sequencing was easy to do at home.

Workshop participants left with an understanding of what's involved in preparing specimens for DNA sequencing, and some of the issues involved in selecting the DNA region to be sequenced and interpreting results. Being involved in preparing the specimens was definitely more engaging than listening to a lecture. Special thanks to Ivelisse, who did an amazing job in preparing materials so that those of us without lab experience could participate.



## WHO'S IN A NAME? *Macowanites zellerianus*

by John Dawson (forty-third of a series)

Like *Bondarzewia berkeleyi*, the gastroid agaric *Macowanites zellerianus* is an example of a fungus bearing a double eponym: the genus *Macowanites* is named after the South African botanist and mycologist Peter MacOwan (1830–1909), while the epithet *zellerianus* commemorates the American mycologist and plant pathologist Sanford Myron Zeller (1885–1948). The latter is the focus of the present article; MacOwan will be the subject of a future installment.

Sanford Zeller, son of the minister Peter Zeller and his wife Della (Plumb) Zeller, was born in Coldwater, Michigan on 19 October 1884. According to the obituary memoir of him by Helen Gilkey published in *Mycologia*<sup>1</sup>, he grew up in “a home in which culture and education were accepted as a matter of course.” He became interested in science during his high school years, and upon graduation enrolled at Lawrence University in Appleton, Wisconsin, later transferring to Greenville College in Greenville, Illinois (both Methodist institutions). He received his Bachelor of Science degree from Greenville in 1909, and subsequently earned both Bachelor of Arts and Master of Arts degrees from the University of Washington in Seattle. He was then offered a research fellowship in botany at Washington University, St. Louis, where he was awarded his doctorate in 1917.

Zeller remained at Washington University as a special investigator in dendro-pathology for a further two years, until he was offered the position of assistant pathologist at the Oregon Agricultural Experiment Station in Corvallis. He remained there the rest of his career, rising through the ranks to the position of Plant Pathologist and Professor of Plant Pathology, until his sudden death from heart disease on 4 November 1948.

The 155 scientific papers that Zeller published, independently or with colleagues,<sup>2</sup> fall into two major groups: those on diseases of orchard crops in the Pacific Northwest, in accord with his professional responsibili-

ties; and those on gastromycetes, especially hypogeous ones,<sup>3</sup> on which he became a world authority. Reportedly, his interest in such subterranean fungi was sparked during his years at the University of Washington, especially by his discovery of a previously unknown species of *Rhizopogon* that he found while collecting maidenhair ferns on an excursion with his wife along the shore of Puget Sound. It became his habit to carry a short-handled rake with him in his car and to stop frequently to grub at spots in the woods – and according to Gilkey’s memoir, “he was one of th[e] rare collectors of th[o]se elusive fungi who never came away empty-handed.” Shortly before his death, he spent a

sabbatical at the New York Botanical Garden, preparing a comprehensive manuscript on the Gasteromycetes that was intended for inclusion in their publication *North American Flora*. Though never quite completed, the keys from it to the orders, families and genera of the Gasteromycetes, regarded as one of Zeller’s most important contributions to science, were published posthumously in *Mycologia*.

In addition to his publications, Zeller’s service to his profession included his serving for two years as president of the Pacific Division of the Phytopathological Society, for three years as a member of its advisory board, and for six as associate editor of that society’s journal, *Phytopathology*. A few months before his death, he was also elected vice-president of the Mycological Society of America.

Outside his profession, Zeller was active in church and civic affairs: He served on the board of his local Methodist congregation, chaired the advisory committee of the Wesley Foundation for twenty-two years, and together with his wife, was honored by the Camp Fire Girls for extraordinary volunteer service to that organization, to which their four daughters belonged.

That Zeller accomplished so much is particularly remarkable given that from his childhood onward he suffered from chronic bronchial asthma<sup>4</sup> (the same affliction that caused Peter MacOwan, also the son of a Wesleyan minister, to leave his native Scotland and spend the rest of his life in South Africa<sup>5</sup>).



Sanford N. Zeller

<sup>1</sup> Vol. 41, no. 4 (July-August 1949), 357–368, the principal source of information for this article, from which the portrait of Zeller is also taken.

<sup>2</sup> A list of which is appended to Gilkey’s obituary tribute.

<sup>3</sup> Such as the false truffles in the genus *Zelleromyces*, also named after him.

<sup>4</sup> As noted on his death certificate, reproduced online at <http://www.findagrave.com/cgi-bin/fg.cgi?page=pv&GRid=100749623&Plpi=70947410>.

<sup>5</sup> As reported in the *Wikipedia* entry for MacOwan.

# MAY 6 PRINCETON "MOREL" FORAY

by Luke Smithson

The Princeton Water Works morel foray summed up the morel season as I experienced it this year: scant! I have been pretty fortunate over the past several years, having better and better finds every year. A cold, snow-packed winter made many of us hopeful for a bountiful morel season, but a cold, late spring did not bring on the mother lodes that I was dreaming of.

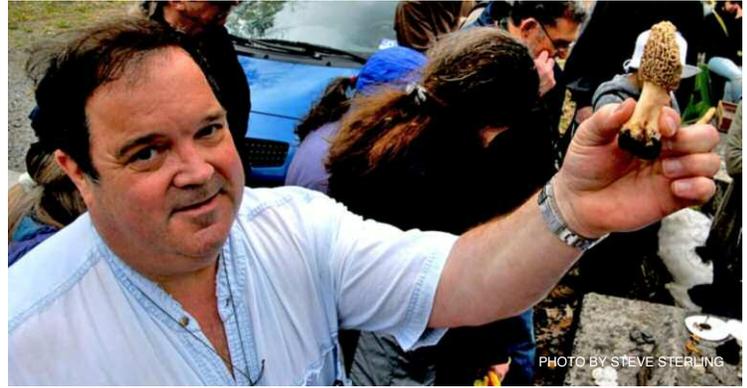


*L'objet de notre affection!*

Nonetheless, I was still excited to come out to the first foray of the year. It is always exciting to see the mushroom folks gathering, exchanging news and foraging gossip. People telling stories of what they are finding, what they are not finding, what they wish they were finding. I find the different groups of mushrooming folk to be pretty interesting: Those solely interested in edibles, others more interested in taxonomy and still others just looking to get out in the woods, socialize and maybe learn something. And there is always something to learn at these forays, whether we find what we started out looking for or not.

There were a few morels found in Princeton. Interestingly to me, there were a number of half-free morels collected, which are generally found earlier in the season. Usually by early May, we are finding the bigger yellow morels (which were in short supply this year). A few people found a few here and there; I saw one person with a nice find of about 8 or 10 nice sized yellow morels. I found exactly one, even as I searched in the same sites where I've found dozens in the past. Either somebody beat me to them or they just were not growing – at least not yet. I suspect the latter, as I have kept pretty detailed records of when and where I have found morels over the past five years, and I could see that the season was about two weeks behind what I perceived as the “regular” schedule (hah!). I am told that morels are very sensitive to soil temperatures, and the cool nights of this spring presumably did keep the soil temperatures down.

As part of the NJMA's effort to update the herbarium, a



*"I got mine!"*

sampling of the morels found were dried to go into the herbarium. Morel taxonomy has recently been significantly updated, but NJMA's collection contains no morels. Apparently, all morels found on previous forays were eaten!!! (*Editor's note: I have been told that the Herbarium does contain morels from previous years, in contrast to this misconception.*) Well, not this year... we saved some! I took half of the samplings home, wrote detailed descriptions of them and took photos, then dried them. I believe Nina took the other sampled halves with her to actually go into the herbarium. As time permits, I am trying to sort out what we found in Princeton this year.



*Strolling amidst the marsh marigolds*

Even with the small amount of morels found this year, it was still a good foray and a fun start to the mushroom season. To paraphrase a popular fisherman's saying, “The worst day mushrooming is still better than the best day working!”



# ANNOUNCING COMA'S 2014 CLARK ROGERSON FORAY SEPTEMBER 4-7, 2014

**BERKSHIRE HILLS EMANUEL CAMPS,  
COPAKE, NY**

COMA – the Connecticut-Westchester Mycological Association – is pleased to announce our 36<sup>th</sup> annual Clark Rogerson Foray from Thursday, September 4 through Sunday, September 7, 2014. Invited mycologists are Gary Lincoff, Roz Lowen, Leon Shernoff, Larry Millman, Bill Yule, and John Plischke III – it should be a great time. The venue is new – Camp Eisenberg in the Berkshires, Copake, NY – and seems very promising.

There is a Metro-North train station (Wassaic) 30 minutes from the venue – we can work out car pool arrangements from the station for those interested (there may be a small fee for the driver's expenses). More details on this will be available as the event draws closer. Please feel free to contact me or direct others to [COMApresident@comafungi.org](mailto:COMApresident@comafungi.org).

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[facebook.com/njmyco](https://www.facebook.com/njmyco)

## BYTES, BITS, & BITES (continued from page 4)

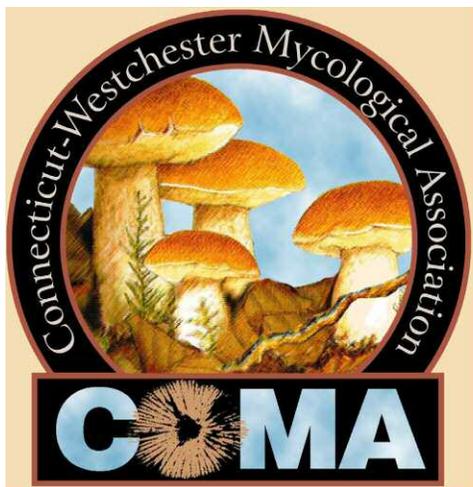
from Luke Smithson:

I didn't mention it in my Foray Report, but a couple of weeks after Princeton, a co-worker (Beverly Woodruff)... she is the cheese monger at Jamie Holllanders) brought in one of the biggest yellow morels I have ever seen. She found it in her front yard in Doylestown, PA! She donated it to our staff meal and I made the Morel and Goat Cheese Crostinis that were a Readers' Pick on *Food52* a couple of years ago. They were good, except I thought the *chevre* I had was a little too tangy and competed with the morel. Whipped ricotta would have been really good – a little more neutral. Maybe she will bring another monster in next year and I can try it that way!



That is NOT a tiny lemon and a tiny knife!

(continues on page 13)



Easy access to scenic and bountiful parks  
Savor the flavors at our famous mycophagy sessions  
Enjoy swimming pools, rooms with individual bathrooms and showers  
Experience our unique Tchotchka Auction!

To obtain forms or register, go to

[www.comafungi.org/special-events/clarkrogerson-foray](http://www.comafungi.org/special-events/clarkrogerson-foray)  
4-days: \$315/adult. Shorter stays and child pricing are available.

For more info, contact Don Shernoff: (914) 761-0332, [donshernoff@yahoo.com](mailto:donshernoff@yahoo.com)

The Connecticut-Westchester Mycological Association

## 36th Clark Rogerson Foray

Thursday to Sunday, September 4 - 7

Berkshire Hills Emanuel Camps, Copake, NY

Walk with our experts as we gather over 300 species of mushrooms:

- Gary Lincoff: author of *Audubon Guide to North American Mushrooms*
- Dr. Roz Lowen: professor of mycology and ascomycete expert
- Bill Yule: naturalist and Bolete expert
- Leon Shernoff: editor of *Mushroom the Journal*
- John Plischke III: author of *Good Mushroom, Bad Mushroom*
- Larry Millman: author of *Giant Polypores and Stoned Reindeer*



# BOB PEABODY WILD FOODS WALK AND PICNIC 2014

by Ellen Hess

If you had come on June 8<sup>th</sup> to NJMA's Wild Foods Walk, you would have heard Bob Hosh discussing the history of strawberry cultivation after showing us a patch of tiny, but delicious, wild North American strawberries (*Fragaria virginiana*). He contrasted them with the edible (but pretty tasteless) false strawberries (*Potentilla indica*) brought to North America from India. You would have seen the difference between broadleaf and narrow-leaf plantains, and learned how they can be eaten or used to relieve wasp and bee stings. You would have seen the differences between milkweed (edible) and dogbane (poisonous). And, after a two-hour walk through fields and streams (really), you would have enjoyed a delicious array of dishes made by NJMA members.



PHOTO BY STEVE STERLING

Members of the group take careful notes during Bob Hosh's walk

In case you'd like to join us next year, the Bob Peabody Wild Foods Foray and Picnic is held every June and offers members and non-members a chance to discover new local edible plants and learn harvesting and cooking methods for the choicer selections. Then NJMA members set out a feast of wild and wonderful dishes made from foraged plants and fungi.

On this beautiful June day, participants were treated to



PHOTO BY STEVE STERLING

Unopened Milkweed blossoms



PHOTO BY STEVE STERLING

Try it, maybe you'll like it?

two fact-filled hours walking along the pond and forest edge with Bob Hosh, who is, pretty much, a walking encyclopedia of plant and tree information. In addition to Osage Orange, White and Red Mulberry, Black Locust, Sassafras, White Walnut and Black Cherry trees, Bob showed us an Aspen he found – quite rare in this area. We also viewed wild pineapple weed, riverbank wild grapes, sheep sorrel and yellow wood sorrel, greenbriar vines, cattails, blackberries, dewberries and wineberries.

Back at the covered pavilion after the walk, members dined on Ursula's savory and scrumptious chanterelle soup, pickled allium bulbs, and stuffed mushrooms. They also sampled Ethiopian Smoked Herring Lentils *Sag Paneer* made with garlic mustard leaves, young amaranth plants and homemade cheese, Japanese Milk Bread, Potato Salad with Chia seed curry, peas and onions, and a Kale Salad with black truffle, pecorino and almonds. And if those and other delicious dishes (that this observer was too busy eating to write down) weren't enough, Luke prepared delicate and gorgeous fresh fruit tarts with a knotweed glaze for dessert.

So next winter, when your gaze falls on the big snow drifts outside your window, reach for your dog-eared copy of Euell Gibbons' *Stalking the Wild Asparagus*, and start planning your wild food recipe for next year's picnic. 🍄



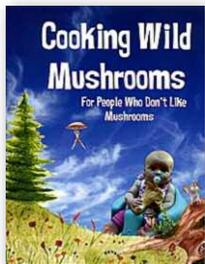
PHOTO BY STEVE STERLING

Just some of the amazing food from the picnic

## BOOK REVIEW

# COOKING WITH WILD MUSHROOMS (FOR PEOPLE WHO DON'T LIKE MUSHROOMS)

a book review by Bob Saunders



*Cooking with Wild Mushrooms*  
(For People Who Don't Like Mushrooms)  
by Tim Leavitt, Brandon Binger, and Joseph Moorman

CreateSpace Independent Publishing Platform (2014)  
Soft cover, 120 pages.  
ISBN-10: 1497326680  
ISBN-13: 978-1497326682

The primary purpose of this book is to seduce non-mycophagists, and the recipes could well accomplish this. They range from the simple to the more difficult and intriguing. Some recipes, such as Compound Butter (mushroom/herb), and Pickled Mushrooms, become components in other recipes. There are several recipes for fillings for stuffed mushrooms that sound very tasty, such as "The Classic": cream cheese, bacon, dried morels, and honey. More sophisticated is the Duxelle and Apricot Pork Roulade in Mushroom Jus: complex flavors, but the process is clearly explained. Prepared properly, the recipes have a good chance to convert the most hardcore mushroom-phobe (except maybe the college roommate I had who was afraid they would grow in his stomach – really!). They would also be good for expanding the repertoire of experienced mycophagists.

BUT! Yes, there is a but! As a mushroom book, it is unreliable. It is based on collecting in the Northwest US, where it is possible to get generous quantities of tasty wild mushrooms (like Matsutake). It certainly is not designed for mushroom IDs. Some statements are questionable: Because mushrooms are usually not eaten raw as they call for, because "there are no poisonous polypores" or because they tell you to "never trust an expert". Much of this book needs to be read skeptically.

The overall tone of the books strives for folksy, but ends up cutesy. Bad humor, baby pictures, and a font that mimics handwriting become overwhelming when drawings of fairies grace every other page. The book is profusely illustrated with photographs, more than half the page space. But, they are terrible. Closeups are really close, often out of focus, or have no depth of field. A really fuzzy picture adds nothing to the book, or to the recipe.

Although incurable romantics may enjoy this book, people who want good information will only look at the recipes, carefully.



## BOOK REVIEW

# FLOWERS AND MUSHROOMS

a book review by Patricia McNaught



*Flowers and Mushrooms*  
edited by Toni Stooss

Hirmer Publishers (2014)  
Hardcover, 256 pages.  
ISBN-10: 377742154  
ISBN-13: 978-3777421544  
\$49.95

In 2013, the Museum der Moderne in Salzburg, Austria presented the exhibit "Flowers and Mushrooms". This book is the exhibition catalog, and was edited by Swiss art historian Toni Stooss, who also curated the exhibit. The book includes reproductions of many of the works of art (photographs, paintings and "installations") as well as seven critical essays by various art historians and curators. The artists who were in the exhibition each have several pieces in the catalog, as well as a brief discussion of their body of work and philosophy. In addition, works by many other artists are included to provide context.

There is a long history of botanical motifs being used by artists. But for a period of time, flowers and mushrooms were virtually banished from "serious" art. Flowers were dismissed as being sentimental and more appropriate for decorative than serious art. Mushrooms were regarded as clichéd symbols of either decay and death or the psychedelic "experience".

But according to Stooss, there has been a "renaissance of sorts in contemporary art for some time," as far as the use of flowers and mushrooms as subjects. Their use in art since the 1800s is briefly recapped in the book, and works from about 50 artists of the modern and post-modern eras are presented.

The works are variously sensuous, playful, thought-provoking, puzzling or vaguely distressing – but they definitely engage the viewer. Sylvie Fleury's giant shimmering mushrooms appear right at home in an elegant parquet-floored room. Zeger Reyers' installation is a turntable inoculated with what appear to be Jack O' Lantern mushrooms. The turntable continuously plays a piece of music by Lee Ranaldo...until slowed and finally stopped by the growth of the mushrooms.

Works by many well-known photographers such as Ernst Haas, Imogene Cunningham and Robert Mapplethorpe are included in this book. The reader who is looking for an art book will not be disappointed, but the purchaser who is looking for pictures of mushrooms may well be: Works using flowers vastly outnumber works using mushrooms.





## RECIPE FILE

### Stuffed Mushrooms

Prepared for NJMA Wild Foods, June 8, 2014, by Susan Crawford

#### Ingredients:

- 1 lb. Baby Bella mushrooms
- 4 Tbsp butter
- ½ yellow onion, chopped finely
- 3 cloves garlic, minced
- 1 cup dry breadcrumbs
- ½ cup combined pine nuts & walnuts, roasted and chopped
- ¼ cup nutritional yeast
- 2 Tbsp white miso
- 3 Tbsp fresh parsley, chopped medium fine
- ¼ cup olive oil (approximate)
- Salt and pepper

#### Method:

- 1) Preheat 375° degree oven, use middle rack.
- 2) Generously oil a 9" x 12" baking pan.
- 3) Prepare the mushrooms by wiping off the dirt, and separate the stems from the cap. With a melon baller or grapefruit spoon, scoop out mushrooms to create more space for stuffing. Don't break the cap. Chop the scooped-out mushroom flesh and the stems.
- 4) Using a large sauté pan over medium heat, sauté the onions and garlic in butter, 5 minutes 'til onion is soft but not browned. Add the mushroom stems and scooped-out bits. Sauté for another 5 minutes. Turn off heat.
- 5) Add the rest of the ingredients except the olive oil. Mix well. Mixture should be moist and still crumbly. If it is dry add more melted butter, a tablespoon at a time.
- 6) Stuff the mushroom caps with this mixture, pressing the stuffing into the caps.
- 7) Arrange in the oiled baking pan.
- 8) Using a teaspoon or the cap from the olive oil, pour ¼ to ½ teaspoon olive oil over each mushroom (depending on size) to moisten.
- 9) Bake for 25 minutes or until the mushrooms look brown on top.

Let cool a few minutes before serving.



## BYTES, BITS, & BITES (continued from page 10)

forwarded by Luke Smithson:

From: "debbie viess"

To: "na\_mycological\_association@yahoogroups.com"

Subject: [NAMA Members] Acute Toxicity of Phalloidins: Amatoxin's Silent Partner

Most of us know about amatoxins and deadly amanita poisonings: a terrible way to die and not much fun even if you survive, but you have to actually EAT phalloides to be poisoned by amatoxins.

What most people don't know is that the deadly amanitas also contain an even more potent and deadly toxin: phalloidin. But this terrible toxin is made harmless as soon as it hits our gut: The acid and perhaps agitation in our bellies converts the phalloidin molecule to its harmless isomer: flipping it over to its mirror image.

This switch to a harmless molecule doesn't happen if you somehow absorb it through your skin rather than ingest it.

I had a close encounter with phalloidins several years ago, while doing a Meixner test on *A. phalloides* spores, a fairly simple lab method of determining the presence of amatoxin. Although I was super cautious around the concentrated hydrochloric acid that is also required of a Meixner test, I was a bit more casual with my old, familiar, can't-hurt-ya-if-ya-don't-eat-it phalloides, and actually squeezed the juice out of my water-logged specimen bare-handed, thereby bathing my hands briefly in phalloides juice.

Long before an hour had passed, I felt really awful. Not the typical delayed reaction vomit-y and cholera-like diarrhea awful (after all, my gut wasn't involved in this poisoning), but terrible flu awful, aching all over, weak, etc. and took to my bed for the rest of the day and into that evening.

I never had a fever, and it wasn't the flu.

I don't believe that I had any breaks in my skin, either, but who knows? I was just hoping that I wasn't about to die an ironic death. I could just see the headlines: "Amanita Expert Dies of Amanita Poisoning!!!"

How embarrassing would that be?! Well, maybe not so much to me, if I was dead.

(continues on next page)

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## BYTES, BITS, & BITES (continued from previous page)

I recovered without any obvious permanent damage, but I have no desire to repeat the experiment, nor would I encourage others to do so. It was painful!

Next time, I'll be using gloves.

The ability of phalloidins to pass through the skin barrier is known, and is warned about in this online industrial toxins site from Canada:

<http://datasheets.scbt.com/sc-202763.pdf>

By the way, I have handled plenty of phalloides in a more fleeting manner (but without bathing my hands in its juice), and have never had any sort of adverse effect.

However, since the poisoning, I have become super sensitive to the smell of drying phalloides. I have sent a number of specimens from CA to the Pringle lab at Harvard, so they do sometimes get onto my drier. Smelling phalloides now makes my gorge rise, which I attribute to my own body wisdom telling me to "run for the hills!"

Or at least take this deadly mushroom a bit more seriously.

Word to the wise,  
Debbie Viess

*follow-up sent by Jack Barnett:*

On Monday, June 9, 2014 4:58 PM, "Bill Petty" wrote:

Hello Debbie:

*A. phalloides* has not (to my knowledge) been reported in Florida but *A. bisporigera* is very common. I've squeezed the juice out of many Amanitas and even *Galerina marginata* with my bare hands (for Meixner test) on many occasions with no apparent harm. My question is: Do you know of species other than *A. phalloides* that might contain phalloidin? I'm thinking that maybe I should wear gloves before I do another Meixner test!

*reply from Debbie Viess:*

Hi folks,

Glad to be stimulating all of this thoughtful discussion! All of the amatoxin-containing amanitas that have been tested (*phalloides*, *virosa*, *verna* and *bisporigera*) have been shown to contain the cyclic peptides phallotoxins, amatoxins and even something called virotoxins! *Galerina* "only" contains amatoxins.

Therefore Bill, yes, your Florida *bisporigera* has phallotoxins, and we can probably safely assume that is true for other, rarer, amatoxin-containing species here in NA, like the northern *Amanita magnivelaris*, that have not yet been tested.

All of these cyclic peptides are discussed at length in the excellent reference book: *Handbook of Mushroom*

*Poisoning, Diagnosis and Treatment* by David Spoerke and Barry Rumack. It is the best toxic reference available, but it ain't cheap!

This book discusses the fact that phalloidins are not toxic orally, as does Denis Benjamin's fine book: *Mushrooms, Poisons and Panaceas*. I am not sure why the Canadian site claimed that they were. Perhaps a bit of "overkill?"

Just to be clear, limited handling of deadly amanitas has never been problem for me or to my knowledge, others. It was ONLY when my hands were bathing in juice, and I did not immediately rush to wash them, that I felt the effects.

You can still touch a deadly amanita without any danger. Just don't get over-confident, like I did.

By the way, I just heard from a NAMA member that his Dad, a veterinarian in the 1930s, also experienced transient illness after handling lots of deadly amanitas without the ability to wash up afterwards. This occurred during days-long demonstrations to dairy farmers and the public at a series of county fairs and the like, following some deadly amanita poisonings in Nova Scotia.

Again, merely anecdotal evident, but rather compelling. Gloves are cheap; your health is precious.

Debbie

---

*from Bob Hosh:*

Fungal clothing...

<http://tinyurl.com/opemuq5>

---

*from Martha Stewart Living:*

A followup on *Eating Wildly* by Ava Chin (reviewed in *NJMA News* 44-3 by Nathaniel Whitmore):

<http://tinyurl.com/kcj64lx>

---

*from Luke Smithson:*

Ever see this many stinkhorns? There were dozens of them in a mulched bed today.



(continues on next page)

from Dorothy Smullen:

The 10<sup>th</sup> Union County Bioblitz team had a record collection of fungi and lichens for the Oak Ridge and Ash Brook parks on June 13 and 14. They tallied 65 species. Melanie Spock collected the specimen of *Xylaria persicaria* seen on the decayed Sweet Gum ball (fruit).



*Fungus, bunch of leaves, or bull horns? You decide!*



*The NJMA crew at the 2014 Union County BioBlitz:  
Dorothy Smullen, Bob Hosh, Rhoda Roper,  
Marc Grobman, Mike Rubin, and Melanie Spock.*



## *Chanterelle Rillettes*

*Reprinted from Mycena News, newsletter of the Mycological Society of San Francisco, January 2014*

The culinary mushroom that seems to be predominant in forays and in local greengrocers this (time of) year is the chanterelle. Though I realize that I have featured chanterelle preparations often in this column, I'm going to do it again. Here is a recipe for chanterelle *rillettes*. *Rillettes* are made most often with pork, but also with poultry or rabbit. They are used as a spread on bread and served at room temperature. Chanterelles make a nice vegetarian version. I made this and took it to a Thanksgiving feast. It was a hit.

### **Ingredients:**

- 2 sticks of butter at room temperature*
- 2 tablespoons of extra virgin olive oil*
- 12 ounces of fresh chanterelles, cleaned and coarsely chopped*
- 1 minced garlic clove*
- ¼ cup dry Marsala*
- 1 tablespoon (or more) of fresh lemon juice*
- 1 tablespoon tomato paste*
- 1 teaspoon packed finely grated lemon peel*
- 3 tablespoons chopped fresh parsley*
- Toasted baguette slices*

### **Method:**

Melt 6 tablespoons butter in a heavy large skillet over high heat. Add mushrooms, sprinkle with salt and pepper.

Sauté until the mushrooms are tender and getting a bit of color, about 5 minutes.

Stir in garlic, then Marsala, lemon juice, tomato paste and lemon peel.

Simmer until Marsala has evaporated. Cool until no longer hot to the touch.

Transfer mushroom mixture into a food processor.

Add the parsley and 10 tablespoons of butter. Process until the mushrooms are finely chopped. Season to taste with salt, pepper and more lemon juice, if desired.

Transfer to a small bowl. Cover and refrigerate overnight so the flavors develop.

You can make this a week ahead if you keep it in the fridge. Serve it with the baguette slices. Crackers are good with it also.



## **NJMA NEWS**

c/o Jim Richards  
211 Washington Street  
Hackettstown, New Jersey 07840

### **FIRST CLASS MAIL**

*NJMA is a non-profit organization whose aims are to provide a means for sharing ideas, experiences, knowledge, and common interests regarding fungi, and to furnish mycological information and educational materials to those who wish to increase their knowledge about mushrooms.*

**One of the first fungi to appear after a rain**

## ***Marasmius rotula***

**Dainty, yet wirey, they grow on twigs on the forest floor from late spring onward. Worth a close look!**



PHOTO BY R. ALLEN SIMPSON