LONG ISLAND MYCOLOGICAL CLUB

http://limyco.org

L.I. SPOREPRINT

1973-2016

Available in full color on our website

VOLUME 24, NUMBER 3, AUTUMN, 2016

MUSHROOM DAY
OCTOBER 16
PLANTING FIELDS ARBORETUM
1 PM —4 PM

2016 has been the driest in a series of drought years, but we have managed in the past to confront and surmount these conditions, and collect enough to hold a successful Mushroom Day. We are confident that with everyone pitching in to collect we will insure an adequate display. Once again we are calling on all our members to comb the forests, fields and lawns for specimens to display.

Additionally, volunteers are needed to set up the exhibition, so please try to arrive by 11:30 AM so that we can have all our specimens identified, labeled and arranged by 1 PM. Inform the booth attendant that you are here to help set up the exhibit, and the fee is usually waived.

If time allows, we will have a short business meeting to hear member's suggestions.

NEMF 2016 SAMUEL RISTICH FORAY
FITCHBURG, MA
July 28-31

We had hoped, after enduring another season of drought on Long Island that we were heading for greener pastures in Massachusetts. Alas, it was not to be! The rain there had been lacking as well, resulting in perhaps one of the lowest species counts – 227 – of any NEMF foray (This number includes lichens and slime molds.) for at least the last twenty years, as far back as the online database goes. Why these events continue to be held in July is a question that was bandied about. The heat in the dorms was so bad as to drive a number of attendees to nearby air-conditioned motels.

Top Row from left to right: Delmar Small, Roz Lowen, John Plischke III, Patricia Buchanan, Noah Siegel, Rod Tulloss Middle Row from left to right: Carol Govan, David Hibbett, Susan Goldhor, Renée Lebeuf, Walt Sturgeon, Karen Nakasone Front Row: Gary Lincoff, Dave Malloch, Dorothy Smullen, Rick Van de Poll, Bill Yule.

So now that I've gotten that off my chest, let me say that not for a minute do I regret attending. The hosting Boston Mycological Club had everything perfectly organized and smoothly running, the food at Fitchburg College was way above average of this kind, the mycophagy outstanding, and the final banquet superb, the best ever.

(Continued on page 3)

PRESIDENT'S MESSAGE

Fall is here at last, my favorite season of the year. The treasures of many kingdoms— migrating birds, butterflies, and flowering plants—to see along the woodsy paths and even highways. Look and see the fall colors starting to appear and perhaps you'll see something else popping up...fall mushrooms! Well, I hope we find quite a few to make up for the driest spring and summer that I can remember.

Our club has some new members and the ones we have met are most enthusiastic. It is great that we are getting younger people involved. Not all questions can be answered but there are no dumb ones. Identifying fungi can be difficult in the field and even at home. Just remember, even experts can't ID everything. And a little mystery reminds us that there is always more to learn.

Should you attend a foray soon, please remember to protect yourself against mosquitoes, ticks an chiggers. (Our website has some hints about what steps to take.)They are still abundant since we've had no frost as yet. (Quite a few of us have the itchies right now even with protection.)

It has just rained an inch here this week. The first day after the rain Amanitas and Russulas showed up. Today, there were even more. Although I water my "weeds", the rain does help. Will this be true in the woods? We'll see.

While the recent rain has raised everyone's spirits, we have to consider the possibility that dry weather will return. In which case we will need everyone to turn out and collect to have a successful Mushroom Day.

See you along the trails and I hope it will be soon.

EDITOR'S NOTE

Despite sophisticated experimentation, molecular analysis and wild guesswork, the humble mushroomer is still at a loss to know what exactly leads to mushroom fruiting and when exactly following a rainfall to seek the quarry. Some say a week;s wait is necessary, while the more impetuous rush out immediately. More sophisticated students of the fungi insist that a series of rain events, separated by such and such number of days, is the best approach to insure good harvests. And then there are the Morel mavens, who keep a close watch on the cumulative soil temperature in Spring. As far as I know, we have no members who prognosticate based on goat entrails or bone tosses, but I'm prepared to entertain any method that works…

There are probably scenarios when each of these theories are correct, depending upon preceding conditions. Even before the recent rain came to an end, little fungal entities were erupting all over the treed fringes of our lawn, as though yearning for the daylight.

Perhaps the best policy is, to mirror the nickname of the poor Latin American town, "Sal si puedes". Go if you can!

MATERIAL FOR THE WINTER, 2016 EDITION SHOULD REACH THE EDITOR BY DEC 1ST.

(Submissions may be forwarded by email in any format or typed.)

(All unsigned articles authored by editor.)

President: Peggy Horman
Vice-president: Jacques Brochard
Treasurer & Membership Secretary: Peggy Horman Tel: (631) 744-4965
owls2@optonline.net
Recording Secretary: Carol Capaldo
Foray Chairman: Jacques Brochard
Webmaster: Dale Robins
Science Adviser: Benjamin Wolfe, Asst. Prof., Dept. of Biology,Tufts University
Sporeprint Editor: Joel Horman (631)744-4965
e-mail: jlhorman@optonline.net
Editorial Ass't: Peggy Horman
Yahoo Group Coordinator: Maria Saffioti
msotolongo@optonline.net
Board Members: Tony Mish, Roger Eklund, Richard Capaldo

NEMF 2016 ***(Cont'd from page 1)***

As always, the multifaceted faculty presentations broaden and deepen our knowledge of the Kingdom Fungi, as does the opportunity to interact with them in an informal setting.

Since these lectures and presentations are the core of NEMF forays, I will do my best to give the reader a sense of what they address and delve into:

Dorothy Smullen, the official recorder, lectured on the topic of "Fungal Connections to Photosynthetic Organisms". While many of us are aware of mycorrhizal mushrooms, not all of us know that there are different types: Ectomychorrhizal (ECM), the fungus not penetrating the host cells; Vesicular-arbuscular (VAM), which are invasive, forming a network; and two more specializing in orchids and ericoid plants. Over 80% of vascular plants are mycorrhizal, mostly with VAM's, and over 90% of flowering plants (angiosperms). Most of our favorite edible mushrooms are ectomycorrhizal. Some achlorophyllous plant such as the Indian Pipe (Monotropa uniflora) are dependent upon ectomychorrhizal fungi such as Russula and are called "mycoheterotrophs". Plants in the heath family (Ericaceae) do photosynthesize but receive some of their nutrients from a specialized ECM called Arbutoid and are labeled "mixotrophs". The complexity of this entire system is overwhelming, with fungal connections not only between a fungus and its host plant, but also between different individuals of the same species of plants connected by the mycorrhizae, which can also connect different species of trees, shuttling nutrients back and forth, seemingly according to need.

Chief Foray Mycologist David Hibbett offered a lecture (which quickly became standing room only) based upon his extensive research into the development and phylogenetic history of brown rot and white rot genes throughout the fungal kingdom, particularly in the polypores. White rot, which decays all the cellular components of plants, evolved around 200 million years ago (plus or minus 70 mya). Coal deposits developed during the Carboniferous era, about 360 to 290 million years ago (MYA), following the development of large terrestrial plants. So it appears that the appearance of wood rotting fungi contributed to the closing of the Carboniferous and the end of coal deposition. So if this development had happened earlier there would have been much less coal on earth.

Tim Baroni is a cigar chomping mycologist of the old school, with an easy, informal manner, who is well known for delving into the difficult phylogeny of the Entolomataceae, pink spored mushrooms with gills attached to the stipe. Presently, there are a total of 22 genera in this family, 17 in the Entoloma sensu lato clade, and 5 in the Rhodocybe-Clitopilus clade. He has been responsible for the erection of several new genera in this group: Entocybe, Clitocella, and Rhodocybella. He explained how these may be distinguished microscopically by the number of angles in the polar view of the spores, as well as the spore shape, useful tidbits for the budding microscopists among us. E.g., Entocybe is characterized by 6-10 facets in polar view and pustular (bumpy) surface. As an example of our incomplete knowledge of the geographic range of many species, the pleurotoid South American *Clitopilus argentinus* has been found near Ithaca, NY. In conclusion, he invited anyone with interesting finds in this family to contact him directly at SUNY Cortland. His new macrofungal field guide is expected to be published next year.

Every year Rod Tulloss always has something new to impart regarding the genus Amanita and this year was no exception. There has been much juggling of *Amanita muscaria* in its many perturbataions over the years, but it is now thought that all its varieties (formosa, quessowii, etc.) are genetically identical, the one exception being *A. persicina,* which has been documented in our region. The Amanitaceae are one of the oldest families of gilled mushrooms, dating back 100 MYA; only the Russulaceae are older. Much of their species distribution is attributed to plate techtonics and ancient land bridges (e.g., Beringia), with sister taxa occurring between east Asia and eastern N.A., e.g., *A. caesariodes* and *A. jacksonii.* Others occur between Europe/North America, Africa/Brazil, and southern hemisphere continents that comprise Gondwana's separated components (Chile, Australia, Africa, etc.) Regarding the ecology of Amanita, Rod raised many interesting questions which remain to be settled, including whether the ancestral Amanita was entirely saprophytic, as was recently demonstrated, and lost these genes when an ectomycorrhizal mode of nutrition developed, or whether the picture is more complicated. A forthcoming paper by Tulloss et al will address this.

There were other worthy lectures and workshops which scheduling conflicts prevented me from attending, always the problem at NEMF when presented with an abundance of riches. Among them: Roz Lowen's microscopy workshop on Ascomycetes; Walt Sturgeon's talk on habitat specialists; a Shiitake cultivation demonstration, and many others. Gary Lincoff's postprandial evening lectures were, as always, enlightening and amusing in equal measure.

(Continued on page 4)

FORAY RESULTS SUMMARY

BETHPAGE S.P., JULY 16: Similar to last year, dry conditions prevailed, cancelling all forays since May 28. This day we collected over 50 species, with Amanita predominating, followed by a dozen species of Boletes, including good amounts of Boletus reticulatus. One small Chicken and a few Russulas and Cantharellus rounded out the edibles. There wss one new species for our list: *Amanita ravenelii,* which is usually described as having a southeastern distribution, from New Jersey to Alabama.

Amanita ravenelii

WEST HILLS NORTH, AUG 7: This area, which we had not visited for some years, was targeted by Foray Chief Jacques and produced about 50 species, including several new ones: *Camarops petersii,* an odd ascomycete on wood; and *Pleurotus pulmonarius,* an Oyster Mushroom species also known as the Summer Oyster. Other edibles included several Bolete species, Russulas, and the Miller, *Clilto-pilus prunulus.*

Camarops petersii

BROOKHAVEN SP, SEPT 3: After another dry month, we finally were able to hold a foray, which resulted in an unexpected total of 54 species, with 16 species of Boletes, including large amounts of edible varieties. Unusual was a specimen of *B. floridanus,* making only its second appearance here. A few *Boletellus russellii,* not often collected, also showed up. A large growth of *Laetiporus sulphureus* also helped to fill collecting bags.

Pleurotus pulmonarius

Boletellus russellii

BROOKHAVEN SP, SEPT 10: We returned here, as no other area was productive, and although Boletes were now scarce, a total of 53 species were collected, the predominant genus being Amanita, with multiple examples of 8 species. There were 8 species of Russula but most had only one fruitbody. We came across several interesting taxa, e.g., *Hohenbuehelia petaloides,* the hairy little *Gymnopus spongiosus,* and a young cauliflower mushroom, now properly called *Sparassis americana. Lactarius fumosus var. fumosus*

Gymnopus spongiosus

NEMF 2016 ***(Continued from page 3)***

One of the tidbits he dropped was the news that the commercially cultivated Asiatic *Pleurotus citrinopileatus* has gone wild in New York City, where it has been found in four boroughs.

As I indicated earlier, there was an extremely low count of species, so the traditional mycologist's prizes were awarded for common mushrooms, such as *Cryptoporus volvatus,* or for tiny, usually overlooked asco's such as *Cryphonectria parasitica,* aka Chestnut Blight. I am pleased to report that Peggy was awarded a never-before bestowed prize: for Latin, after noticing (fresh from Delmar Small's class on Latin names) an error in one of the fungal labels on the display tables: *Entoloma strictius var isabellinum* (not is*abellinus*).

We are informed that the next NEMF, hosted by several NY clubs, will, in a break from tradition, take place in Vermont--rather than the host's home state—from July 27-30 at the Stratton Mountain Resort, South Londonderry.

WELCOME NEW MEMBERS

VALERIE & VINCENT ABBATE **MATTHEW FILLEKES** **SHAUN JOHNSON**
CLAIRE KENNEDY **MARTIN & JENNIFER PELTZ**
MARTA SIKULOVA & CARL VAN NOORD **SUSAN MONAHAN**
PETER & JULIA PRIOLO **LAUREN RÉ & PHILIP GLADKOV** **JEAN RIOS & ANATOL ZAYTSEV**

GLEANINGS.. from the research literature

- **PLANTS ARE THE DECIDER:** Mycorrhizal fungi seem to be descended from a pathogenic or saprobic ancestor, and this evolution has been delineated in a recent study of the model plant Arabidopsis and its fungal associates. The genomes of *Colletotrichium tofieldiae,* its beneficial root endophyte, and *C. incanum,* its pathogenic invader, were compared and were shown to differ by only about 10% of their genes, particularly effector genes, which act to suppress the immune system of plants. Moreover, even those that remain are mostly switched off in the beneficial fungus. The plant itself is not a passive recipient of these attentions: it was determined that if there are sufficient nutrients (phosphate) in the soil the plant activates its immune system to bar the beneficial fungus, since it doesn't need it. Its immune system is suppressed if phosphate is lacking, permitting *C. tofieldiae* access. The pathogenic fungus is subject to a full barrage of the immune system. (*Survival trade-offs in plant roots during colonization by closely related beneficial and pathogenic fungi. Stéphan Hacquard, et al. Nature Communications 7, 06 May 2016.* Available online at:www.nature.com/ncomms/2016/160506/ncomms11362/full/ncomms11362.html

- **MENAGE A TROIS?** Traditionally, the description of a lichen has been a symbiosis of a fungus, usually an ascomycete, and an algae or cyabobacteria, and this has been accepted for the last 150 years. It has now been revealed that there is another silent partner, a basidiomycetous yeast, which makes this a triumvirate rather than a duo, but where the command lies is still undecided. This study began in an effort to explain why two liohens, one yellow and the other brown, considered two separate species (*Bryoria tortuosa & B. fremontii)* had identical genomes. It took an analysis of the full array of genetic material iaolated from these lichens before the yeast (a previously unknown *Cystobasidium* species) was discovered. And to detect it microscopically, fluorescent tagging was needed, at which point it was found in the lichen cortex. Subsequently, a wide-ranging roundup of 52 lichen genera from 6 continents established the presence of these yeasts, making this a global phenomenon. This has been called " a game-changer not only for lichen research but also for the field of symbiosis more generally." (*Basidiomycete yeasts in the cortex of ascomycete macrolichens. Toby Spribille, et al Science 10.1126/science.aaf8287 (2016).*

- **OLDEST LAND LIFE FUNGAL:** A fossil from the Paleozoic (around 440 mya) known for some decades, has been reclassified as *Tortotubus protuberans,* considered one of the "higher" fungi, represents the oldest terrestrial life form found to date. Microscopically examined specimens from NY, Scotland and Sweden reveal filamentous forms 10 microns in diameter, with simple septal perforations and a bilayered cell wall, as well as punctuate spores, much as in modern fungi (ascomycetes and basidiomycetes). The main filament developed secondary branches which doubled back, eventually enveloping it. This is reflective of hyphal structures associated with the decomposition of matter, allowing the fungus to move nutrients to where they are needed. This the author believes "kick-started the process of rotting on land...contributing to soil formation.." and "provides a hint that mushroom-forming fungi may have colonized the land before the first animals left the ocean". (*"Cord-forming Palaeozoic fungi in terrestrial assemblages." MR Smith, Botanical Journal of the Linnaean Society, Vol. 180, Issue 4, April 2016)*

- **FUNGI AROSE WITH VIRUS' HELP:** A new study published in the open access journal eLife examined the question of why cell cycle control proteins (essential for growth, cell division, etc) are the same in plants and animals,(E2F factor) but differ in fungi, which is unexpected, since theyare more closely related to animals. A genetic search for these proteins, called SBF in fungi, failed to find any counterparts in any other organisms, amoebas, plants, or algae. But similar proteins were found in many viruses and this suggests, the authors conclude, that a fungal ancestor acquired it because of a viral infection. This was supported by demonstrating that many E2F binding sites in modern genes are also SBF binding sites. The researchers, from Duke and Stanford universities, speculate that this "event could have triggered or facilitated the emergence of the entire fungal kingdom." Further research is planned with Chytrids, primitive fungi that use both SBF and E2F factors. ("*Punctuated evolution and transitional hybrid network in an ancestral cell cycle of fungi." eLife, May 10, 2016;* http://dx.doi.org/10.7554/eLife.09492

(Compiled by editor from above-cited sources.)

FINDINGS AFIELD

Leucoagaricus meleagris

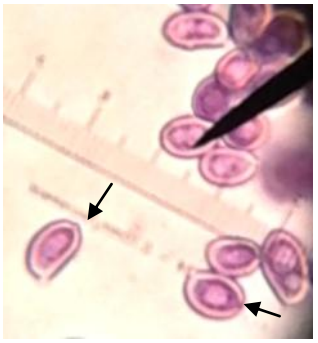
It was only last October when we came across *Leucoagaricus jubilaei* in the wood chips of our garden, and just a little over a month ago, on Aug. 2, another unknown *Leucoagaricus* presented itself, again on wood chips, this time in Veterans Memorial Park, Calverton. We were now better prepared, having learned the steps necessary for a proper identification. The first test was to expose the mushroom, in its entirety, to ammonia fumes, for which only a few drops in a closed chamber is needed. *Leucoagaricus*, according to the key provided by Else Vellinga in the Agaric section of the Flora Agaricina Neerlandica series (online in great part in Google books) will turn green or red when subjected to this test. Sure enough, our sample turned green. Definitely a *Leucoagaricu*s then, but which species?

L. meleagris en situ

As can be seen in the photos, this is a strikingly patterned species, with a dark radially patterned disc that appears black but is actually a very dark brown at maturity, younger caps being somewhat orange brown, and with a truncate cap. It might, at first glance, be confused with its close relative *Leucoagaricus (*formerly *Lepiota) americana* which also stains yellow and then red, upon rubbing or cutting, but that species is larger, and the scales do not become as dark. There are microscopic differences as well, in the pileal elements as well as the spore, the latter slightly larger in *L. americana* and with a conspicuous germ pore. The germ pore in *L. meleagris* is indistinct, clearly visible only in Cresyl Blue.

***L. meleagris* studio portrait**

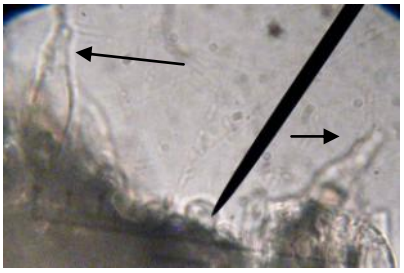
There is only one American mushroom guide that includes this species, (as *Lepiota*) Bessette, Roody et al's "Mushrooms of the Southeastern US" but no genus key is provided. To access a specialized key, one must go to Vellinga's Key One in the above cited publication, which provides a choice between only two species characterized by these color changes, plus a spore measuring over 10 µm in length and having a germ pore: *L. americanus* and *L. meleagris*. Choosing between them is relatively painless, the former being larger, with a distinct germ pore, and tapered pileal hyphae, and *L. meleagris* the converse.



spores showing germ pore

In addition to the microscopic features touched on above, cheilocystidea are present, varied in shape but many clavate with a small "neck" and "head". Spores are broadly ellipsoid, 7-12 X 5-7.5 µm, dextrinoid, cyanophilous, with small plugged germ pore visible in Cresyl Blue.

Field Description: Growing in cespitose clusters on wood chips or compost heaps, resembling *L. americanus* but smaller and darker, almost black on the disc, but younger caps orange to brown, margin striate. Staining yellow and then reddish orange. The stipe is enlarged downward, somewhat spindle shaped, with white mycelial strands at the base, coated with small dark scales below a persistent ring which is darkly pigmented beneath. The gills are white, crowded and easily stain yellow.



Cheilocystidea

Leucoagaricus meleagris seems to have a very wide distribution, with Herbaria reporting specimens throughout the USA and Europe, as well as scattered reports in South America, Asia and Australia. But the number of specimens is sparse, suggesting that it is not of common occurrence. It may also tend to be more southerly in distribution, as it has been described as thermophilic and encountered in greenhouses and during heat spells, as was the case here on Long Island, when it occurred during an August heat spell. It will be added to our checklist and the collection deposited at the NYBG.

A SIMPLE METHOD OF IDENTIFYING GANODERMA CURTISII

Ganoderma curtissii is missing from our species list, as there was some doubt in my mind regarding its identification, which hinged on its yellow coloration, which is a variable aspect. Moreover, some authors considered it to be a synonym of *Ganoderma "lucidum"* and the "bible" of polypores, Gilbertson & Ryvarden's "North American Polypores" failed to include it. Several recent papers on Ganoderma morphology, phylogeny and taxonomy have clarified the question and established the validity of the species. Moreover, a simple and fool-proof method of verification was revealed, not requiring molecular analysis, microscopic characteristics, or chemical reagents.

No specialized equipment is needed, only a stout, sharp knife with which to sever the specimen lengthwise. When you do, you should see something resembling this photo of a young specimen on the right. The thin dark lines which the arrow points to are called "melanoid bands"which are always present in *G. curtisii,* but easier to see in younger specimens. Another feature is the absence of concentric growth zones in the context, but which are present in *G. sessile* which, I must reluctantly inform you, is now the correct name for what we call *G. lucidum,* now applied only to the European and to some Asiatic species.

Skidegate Scalloped Potatoes with Baby Chanterelles and Big Boletes**

by Patrick Hamilton, Mycochef

Preheat oven to 350

Cook in salted boiling water: (you want the water boiling first to gelatinize the carbohydrates on the exterior of the slices)

- 4 medium peeled and thinly sliced potatoes

Cook them just enough to be almost cooked through--about 8 minutes. Be careful not to allow them to become close to mushy-not even mushrooms should be mushy. Drain well.

. Chop coarsely, sauté for 10 minutes in olive oil and butter, set aside:

- 4 oz Chanterelles (non wet)
- 4 oz. Boletes

Chop coarsely:

- 1 large onion and begin to sauté it with:
- 2 tbl. of butter
- 1/4 tsp. dried thyme

Make a roux in the same pan as the onions with:

- 2 tbl. of flour and 2 more tbl. of butter and a little salt.

Cook 'til golden brown and the onion is softened then "break the roux" (this means add the liquid) to make a sort of Bechamel sauce with a mixture of:

- 1/2 cup vegetable or chicken stock
- 3/4 cup whole milk

Continue to cook until the whole thing is beginning to thicken--about 5 minutes. set aside.

Grate and set aside:

- 1/3 cup white cheese (Jack, Teleme, Fontina, etc.)

Assemble the dish by layering the potatoes in a buttered casserole dish. After one layer toss in some of the cheese, a little sauce and some of the mushrooms. Continue until all the stuff is gone but save some sauce and cheese for the top. Bake 'til bubbly. Six servings.

**From the Mykoweb.com website. Hen-of-the-woods is a good substitute, as is any firm-fleshed mushroom such as Tricholoma.

IN THIS ISSUE

"A very little key will open a very heavy door."

Charles Dickens

LONG ISLAND MYCOLOGICAL CLUB
11 RAMBLEWOOD RD.
RIDGE, NY 11961