

NJMA NEWS

THE OFFICIAL NEWSLETTER OF THE NEW JERSEY MYCOLOGICAL ASSOCIATION

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NJMA OFFICERS

President - Patricia McNaught
Vice-President - John Burghardt
Secretary - Richard Kelly
Treasurer - Igor Safonov

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Igor Safonov
115 E. Kings Hwy., Unit #348
Maple Shade, NJ 08052-3478

NJMA WEBSITE

www.njmyco.org
Jim Barg, Bob Hosh

NJMA NEWS

Editor:
Jim Richards
211 Washington Street
Hackettstown, NJ 07840-2145
njmaeditor@gmail.com

Art director:

Jim Barg
jimbarg@bssmedia.com

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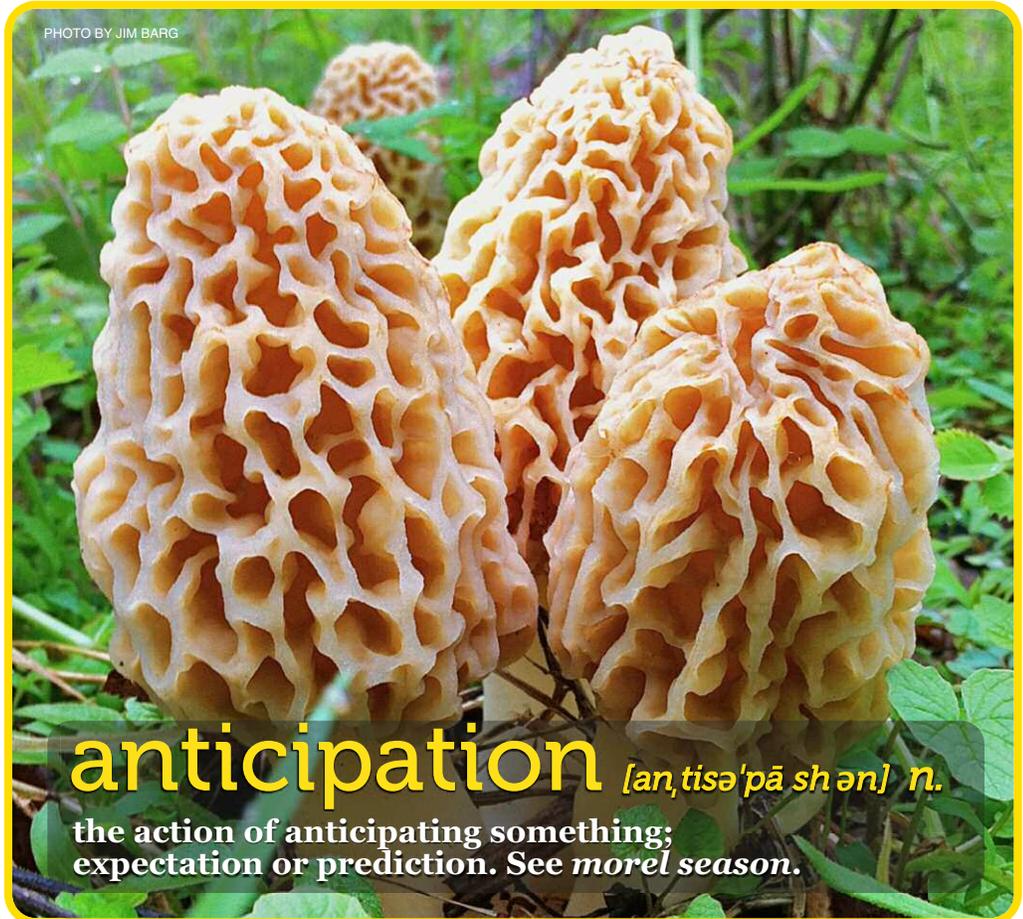
Send newsletter submissions ONLY
to the Editor.

All other correspondence should be
sent to the Secretary:
Richard Kelly
73 O'Neill Court
Lawrenceville, NJ 08648
RKelly1157@aol.com

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!

PHOTO BY JIM BARG



anticipation [an'tisə'pā shən] *n.*

the action of anticipating something;
expectation or prediction. See *morel season*.

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PRESIDENT'S MESSAGE

A lot of club business is conducted in the “off season”, so that’s what this President’s Message is about. Last October, the North American Mycological Association scheduled their national foray in North Carolina – on the same date we had reserved the Arboretum for Fungus Fest. Because so many of our key volunteers want to go to the NAMA foray, **we rescheduled Fungus Fest to November 1st**, the only other date available to us. (Yes, that’s really late!) We usually have the Beginner Workshops after Fungus Fest, but given how late Fungus Fest is, we scheduled them for October 31st. It will be a mushroom weekend.

In another scheduling decision, we will *not* have a Victor Gambino (club weekend) Foray in 2015. The Victor Gambino Foray at the Pocono Environmental Education Center in 2014 was very successful, but in 2015, many NJMA members are already planning to go to both the NAMA and NEMF (regional) forays, since they are within a one day drive. NJMA *will* be participating in the BioBlitz at PEEC at the end of August; contact Nina Burghardt (jnburghardt@verizon.net) if you are interested.

There has been a **significant change in the current bylaws**. The current bylaws empower the Board of Trustees to establish the qualifications for membership in NJMA, as a bylaws addendum. This was done at a board meeting on January 25th. According to the addendum, when someone joins NJMA, he/she is a Provisional Member. After one year (and if they are over 18), he/she becomes a Member. Members can hold office and vote at NJMA meetings; Provisional Members cannot. A very large percentage of people who join NJMA do not renew after their first year. This is not totally surprising – our low dues encourage people to join, but many of them subsequently discover that collecting and identifying mushrooms requires more time and effort than they can devote to it. It makes sense to say that holding office and voting should be reserved for those who have demonstrated some level of commitment to NJMA.

The **proposed bylaws** are moving forward. The Board has reviewed them, and the new bylaws were presented at the February 8 NJMA meeting to the members for comment. They are now in the nit-picking final stage, before a vote by the membership. If we can finalize them quickly, they will be presented for a vote at the April 12 meeting. In that case, members will be notified and receive a copy of the bylaws for review as well as a proxy form by March 11.

You will notice some personnel changes on the list of committee chairs in this issue. Sharon Sterling is the new chair of Outreach events, and Liz Broderick is the

new co-chair of Fungus Fest. Terri Layton, who formerly chaired both these committees will co-chair Fungus Fest, basically helping Liz learn the ropes of what is our major event for the public. Terri has made enormous contributions to NJMA. She was President for two years, during which time she shepherded the transition to the NJMA e-newsletter. Simultaneously, she planned for, and then chaired, NEMF in East Stroudsburg, which NJMA hosted. (Preparing for NEMF involves selecting a facility, walk locations and arranging workshops for over 200 visitors. The planning took nearly two years.) In 2014, Terri (a former CPA) conducted an exhaustive audit of NJMA’s financial records, and made recommendations for changes in our financial record keeping. Terri also agreed to house the NJMA library, which moved to her home a year ago. As Terri has cut back on NJMA involvement to make room for other interests, she has been nothing but gracious in easing the transition process. She’s a classy lady!

On a final note: Remember that winter can be a good time for mushrooming – if you are open-minded about crust fungi and polypores. And of course, it’s a good time to find promising new locations with that mushroom-y look: the right trees, undergrowth, and topography. As we tell beginners: To know where to find mushrooms, “You need to know the woods.”

– Patricia McNaught

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!**

Got a mushroom story to tell?
Share your experience with fellow mushroomers!

tell it here!
Send your articles and photos to njmaeditor@gmail.com



EDITOR'S NOTES

Before I get into my editor's message, I would like to congratulate Jim Barg for his tenacity in sticking with being Art Director of this newsletter. This issue marks his tenth year of pulling all the various bits and pieces that I forward to him into one cohesive publication. THANK YOU FOR ALL THE HOURS YOU DEVOTE TO NJMA NEWS. I do realize that "shouting" is rude, but, in this particular case, it is justified.

When I was going through some old NJMA papers, I came across a copy of the very first club newsletter—when we were still calling ourselves the Lakeland Mycology Club. It is reproduced on pages 22 and 23. While it is a much, much simpler document (long before there was Word, or Quark XPress, or Photoshop – much less any of the software that allows us so many more possibilities), it is interesting that many of Ed Bosman's comments are as valid today as they were forty-four years ago. He was asking for people to send him reports on mushroom finds, recipes, and questions about how the club should function. See Patricia's President's Message, or a new column "Ask Gus!" for beginning collectors, "Bytes, Bits, & Bites", or my repeated entreaties to get you to send in articles, photos, drawings, etc. It is interesting that this summer we will be, once again, foraying in July at The Tourne in Boonton, which is the location of the very first club get-together. And his advice on how beginners should approach learning mushrooms still works.

The abundance of articles in this issue about morels should get you all prepared for the start of the foray season. Hopefully, it will be a better year for collecting than 2014. Mother Nature owes us a little something after this winter (especially a record-cold February). And then I will expect to see your reports about all kinds of great finds, illustrated with your photos or sketches, and including your favorite recipes for your harvest. Good hunting, but, most of all, have fun in the woods!

– Jim Richards

The New Jersey Mycological Association is a 501(c)(3) 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.

Mushrooms

– Sylvia Plath 11/13/59

Overnight, very
Whitely, discreetly,
Very quietly

Our toes, our noses
Take hold on the loam,
Acquire the air.

Nobody sees us,
Stops us, betrays us;
The small grains make room,

Soft fists insist on
Heaving the needles
the leafy bedding,

Even the paving.
Our hammers, our rams,
Earless and eyeless,

Perfectly voiceless,
Widen the crannies,
Shoulder through holes. We

Diet on water,
On crumbs of shadow,
Bland-mannered, asking

Little or nothing.
So many of us!
So many of us!

We are shelves, we are
Tables, we are meek,
We are edible,

Nudgers and shovers
In spite of ourselves.
Our kind multiplies:

We shall by morning
Inherit the earth.
Our foot's in the door.

CALENDAR OF UPCOMING EVENTS

Sunday, March 1
1:30 pm

MEETING & LECTURE

FRELINGHUYSEN ARBORETUM, Morristown, NJ

Speaker: Dr. Lawrence Millman, topic: "How to Get Rid of Evil Spirits"

Saturday, March 14
6:00 pm

NJMA CULINARY GROUP DINNER – "THE OTHER CHINA"

UNITARIAN SOCIETY, Tices Lane, East Brunswick

This is a members-only event. Pre-registration is required; Space is limited!

Contact Jim Richards at jimrich17@me.com if you wish to attend.

Sunday, April 12
1:30 pm

MEETING & VOTE ON NEW BYLAWS

FRELINGHUYSEN ARBORETUM, Morristown, NJ

Provided that the new by-laws are ready, we will vote on them at this meeting.

If they are not ready, we will have a program instead.

Sunday, May 3
10:00 am

FIRST FORAY OF THE SEASON

PRINCETON INSTITUTE WOODS (a.k.a. Princeton Water Works), Princeton, NJ

Leader: Virginia Tomat

July 30 - August 2

2015 NEMF FORAY

NEW LONDON, CT

Details will be in a future issue of *NJMA News*.

September 24-27

NAMA FORAY 2015

BLACK MOUNTAIN, NC

Sunday, November 1
10:00 am - 4:00 pm

FUNGUS FEST 2015

CHAGA: THE ELUSIVE FRUITING BODY OF *INONOTUS OBLIQUUS* (FOUND ON MMA FORAY)

by Greg Marley, *Mushrooms for Health*

(reprinted from *Mainely Mushrooms*, newsletter of the Maine Mycological Association, vol. 20 no.1, January – March 2015)

Chaga is an easily recognized black and charred-appearing fungal mass found primarily on the trunks of mature birch. The irregular black growth of Chaga is the most visible sign of *Inonotus obliquus*, also called the Birch Clinker. *I. obliquus* attacks live birch through wounds or broken branches. The spores germinate, allowing the mycelium to establish itself, growing through the sapwood and into the heartwood. The black mass is composed of the fungal hyphal tissue and grows during the warmer months through a poorly understood interaction between the fungus and the tree's protective efforts. The fungus is most often described as a parasite, with the growth derived from the mycelium feeding on the sap of the tree as well as the heartwood. It is variously called a "sterile conk" or a sclerotium. I struggle with the label "sterile conk" as I would expect it to have all the features of a fruiting body, lacking only spore production. In this case, the mass of hyphae has no level of organization of tissues that characterize most sporocarps. I can find no other use of the term sterile conk with other fungi. Some experts have argued

that it is not a sclerotium either; claiming that while it is a mass of hyphal tissue, there is little evidence that it fuels the later development of a fruiting body, the classic purpose of a sclerotial body. I question this conclusion; *I. obliquus* reportedly fruits only after a tree dies and after tree death the Chaga mass also dies back. Could the hyphal energy packed into the sclerotial mass help fuel the growth of the fruiting body? The timing alone suggests this is probable.

By most reports, the actual spore-producing body of *I. obliquus* is very rarely seen. Not only foragers and amateur mycologists, but mycologists who have studied the species, report that the fungus fruits only once in its life cycle, generally 2-4 years after the tree dies, weakened by the parasite, from cutting or other damage. Fruiting has also been observed when a portion of a birch infected with the fungus dies, leaving the rest of the tree alive. I have been actively observing, collecting and using Chaga for more than a decade and have seen evidence of its fruiting body only once before this past month. The first time was when I came upon an old desiccated layer of tubes surrounding a Chaga wound on a dead paper birch. Never having seen even a good photo, I was unsure that my find really was the fruiting body of Chaga.

(continues on [page 18](#))



RECIPE FILE

Morel and Fiddlehead Fern Ragout

from the NYC Greenmarket Recipe Series*

Recipe courtesy of Emeril Lagasse

Ingredients:

- 1½ pounds fiddlehead ferns*
- 1 shallot, minced*
- 4 tablespoons unsalted butter*
- 2 sprigs fresh thyme*
- ½ pound fresh morels, trimmed and rinsed well*
- 2 cloves garlic, minced*
- ¾ cup chicken stock*
- ½ cup heavy cream*
- 1 tablespoon chopped chives*
- 1 tablespoon chopped parsley*
- Salt and pepper*
- Parmesan curls, for garnish*

Method:

- 1) In a saucepan, bring 1½ quarts of salted water to a boil. Add fiddleheads and return to a boil.
- 2) Using a slotted spoon, transfer fiddleheads to an ice bath and chill. Drain and pat dry, removing as much of the outer brown, tissuelike membrane as possible.
- 3) In a skillet, sauté shallots in butter until softened, about 2 minutes. Add thyme, morels, and garlic and continue to cook until morels have softened and given up their liquid, about 3 minutes.
- 4) Continue to cook until almost all liquid is evaporated, about 2 more minutes.
- 5) Add chicken stock and cook until reduced by half.
- 6) Add fiddleheads and cook 2 minutes.
- 7) Add cream, chives, and parsley, and season with salt and freshly ground black pepper, to taste.

Serve immediately, garnished with Parmesan curls.

** The Greenmarket is a program of the Council on the Environment of NYC.*



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 for more information or to submit your work.



PHOTO BY JIM RICHARDS

An early May NJMA foray at Princeton's Institute Woods

FORAY CALENDAR FOR 2015

by Nina Burghardt, Foray Chairperson

For many years, Bob Hosh had been foray chairman. He has put in countless hours organizing the forays and we thank him for all his hard work.

The job of foray chairman entails locating sites with lots of fungi, accessibility to the public, bathrooms, and a large parking lot. After a site has been selected, the town, county or state that manages the site needs to be notified – and often we need research permits to pick.

A leader needs to be selected for each foray. That person should be familiar with the location. He/she should be at the site on the day of the foray to greet people, describe what we do as a club, tell people where the trails are, and where to meet to identify the collections.

When the club was started in 1971, there were very few people who picked mushrooms, so we were not required to have permits. But now the number of people who enjoy foraging has increased, so we are often required to have them.

A research permit allows us to collect, identify and keep fungi for scientific purposes. After each foray, we compile a list of what we have found. Unusual fungi are dried and put into our herbarium. This list is given to the foray leader, the permitting authority, is published in the January/February newsletter and is also posted on our website at www.njmyco.org/ofinterest.html.

At our forays, participants will get an understanding of the role fungi play in the forest – and everyone should have a lovely walk in the woods.

On the next page are the forays selected for the 2015 season.

2015 NJMA FORAY SCHEDULE

(Driving directions to forays are on our website, www.njmyco.org/directions.html)

Forays begin at 10:00 AM and identification activities usually last for several hours after the foray walk ends. Don't forget to bring lunch!

DATE	LOCATION	LEADER
May 3 (Sunday)	Princeton Institute Woods (a.k.a. Princeton Water Works)	Virginia Tomat
June 14 (Sunday)	Deer Path Park: Bob Peabody Wild Foods Foray & Potluck <i>Guest leader/speaker: Rachel Mackow, Wild Ridge Plant Nursery</i> <i>Bring food to share and your own picnic gear.</i>	Sharon Sterling
June 21 (Sunday)	Lake Ocquittunk Family Camping Area, Stokes State Forest	Jim Barg
June 28 (Sunday)	Holmdel County Park, Hill Top section	Randy Hemminghaus
July 12 (Sunday)	* Horseshoe Bend Park, Kingwood	Nina Burghardt
July 18 (Saturday)	Meadowood Park	Dorothy Smullen
July 26 (Sunday)	Tourne County Park, Boonton	Mike Rubin
August 8 (Saturday)	Hoffman County Park	Igor Safonov
August 16 (Sunday)	Cheesequake State Park	Bob Hosh
August 22 (Saturday)	* Manasquan Reservoir Environmental Education Center	TBA
August 30 (Sunday)	Stephens State Park	Jim Richards
September 13 (Sunday)	Wawayanda State Park	TBA
September 20 (Sunday)	Stokes State Forest: Grete Turchick Foray & Picnic <i>Bring food to share and your own picnic gear.</i>	Jim Barg
October 4 (Sunday)	Jake's Branch County Park	TBA
October 18 (Sunday)	* Wells Mills County Park	Luke Smithson
October 25 (Sunday)	Brendan Byrne State Forest	Igor Safonov
November 1 (Sunday)	Fungus Fest – Frelinghuysen Arboretum	Liz Broderick
November 8 (Sunday)	Belleplain State Forest	TBA

* These forays will be followed up by in-depth identification with microscopes and chemicals.

OTHER EVENTS OF INTEREST

June 13	UNION COUNTY BIOBLITZ (see Dorothy Smullen)
July 30 - August 2	NEMF 2015 Samuel Ristich Foray (in CT)
August 28 & 29	PEEC BIOBLITZ
September 24 - 27	NAMA 2015 Foray (in NC)
October 11	MICHAEL KUO LECTURE

Before attending any NJMA foray, READ and UNDERSTAND our foray guidelines!
(Foray guidelines are available on our website, www.njmyco.org/guidelines.html)



ask gus!

WHAT IS IT LIKE TO GO ON A FORAY?

Forays are scheduled by NJMA in state, county and town parks, on Saturdays or Sundays, from May to November. Often research permits are required to allow NJMA members to legally collect fungi in protected natural areas. The permits detail what can be collected, how a specimen is collected, data to be gathered, and the final disposition of the specimen.

When you decide to go on a foray, start by becoming familiar with the NJMA foray guidelines (these can be found at www.njmyco.org/guidelines.html) Although there is no special script for the leaders, you can expect that they will follow the guidelines for the most part. While on the foray, you will be out in nature sharing the experience with varmints such as ticks, chiggers, mosquitoes, yellow jackets, black flies, etc., so take precautions by dressing appropriately and using repellent. Plan on checking yourself, for ticks especially, when you return home. Something else to be aware of: Although most of the foray sites have restrooms or port-a-johns, not all of them do.

The foray guidelines describe the meeting time (just about always at 10:00 am), equipment to bring with you and why: A collection basket, knife, hand lens, paper or wax bags, etc.. Some members bring small containers with holes (for needed air circulation) to keep specimens from getting crushed. Directions to the foray site are on our website (www.njmyco.org/directions.html). When you arrive at the foray site, you will likely see a group of other NJMA members milling about; some of whom you may recognize from previous events. Introduce yourself. Your first identification task of the day is not a fungus, but rather the foray leader. Luckily, none of the leaders look much like fungi. The leader is familiar with the site and will explain how to pick mushrooms, where any



trails start, and where to meet later in the day to identify the specimens collected. Some members go off in smaller groups. New members would do best to stay with the leader and/or more experienced members to learn what to look for and how best to harvest specimens. The guidelines explain how to do this, but for a novice, there are advantages to seeing it done by someone who is familiar with the process and who can answer questions. While collecting, keep in mind the guidelines' warnings about good conservation practices and against eating *any* fungus, as this can be fatal.

After a period of collecting, the group will reassemble for lunch and the identification part of the foray. As the guidelines point out, new members do best by collecting and studying only a few specimens at a time. When tables are available, a sorting table and a display table are set up. At the sorting table, you will learn about the process of identification. The leader will have forms to be filled out with information about any specimens

“When you decide to go on a foray, start by becoming familiar with the NJMA foray guidelines...”

you have collected: the date, where it was found, who found it, genus, species, etc.. Fill out as much as you can about each specimen. The leader (or someone in the

group) will usually have books to consult. To begin to gain experience in the identification process, watch what other members do when a specimen is being evaluated; they will be happy to explain the what and the why – for example, cutting a mushroom in half and looking for color changes, or smelling a mushroom. All this and more is used to correctly identify what you have collected. When a specimen is identified, a more experienced NJMA member will initial the ID form and it is then moved to the display table. Any specimen that can't be identified may be taken home by one of the more experienced members for further study to complete the identification.

Plan on spending some time at the display table to increase your familiarity with the different fungi in New Jersey. There is a large range of characteristics that are used to classify specimens, and this is a good place to begin learning about them. The goal is for you to be more competent the next time you foray, even if just in your own backyard, when you see a new mushroom pop up, seemingly overnight. Some of the newly-collected specimens may be dried to become a permanent part of NJMA's herbarium. It could be one that you found on your first foray.

Have fun!

- Gus

Editor's note: This is the first of an ongoing series for members to ask questions about any aspect of NJMA. The target audience is new members, but anyone with a question is welcome to send it in to us at: njmaeditor@gmail.com. Use "Ask Gus" as the subject line of your email.

TAKING AMATEUR MYCOLOGY TO THE HIGHEST LEVEL: LINAS KUDZMA'S STUDIES OF INOCYBE

by I. G. Safonov

If you have attended NJMA forays and mingled with our expert identifiers and other seasoned members of the club, or perused our excellent newsletter, you probably have heard the cryptic term “LBM”. For those readers who are still unfamiliar with this acronym, it stands for Little Brown Mushroom. It is an apt, if not a readily understood, and accurate term for ... yes, you guessed right... any fleshy terrestrial fungus that has somehow escaped the attention and generosity of Mother Nature as to be “endowed” with small size, utterly drab colors and a hopeless lack of morphological oomph to catch the eye of amateur field mycologists, (much less to be collected and studied, especially if more appealing macro-fungi are present). As a group, they are notoriously difficult to identify, thanks to their nondescript appearance and insipid nature.

Yet, despite their unattractiveness, the perceived lack of respect paid to them by amateur mycologists, and the virtually non-existent commitment to study these uninspiring critters even in a perfunctory fashion – evidently owing to the dearth of readily procurable and comprehensive literature on the subject and the much-dreaded microscopic analysis that is inevitably required when the initial “eyeball-and-loupe” examination of an LBM quite predictably comes to a dead end – they invariably continue to appear on display tables in staggering numbers. They are presumably being brought in by overzealous new members who are encouraged to collect anything fungal they see as per the exacting instructions of our experienced foray leaders. A few flashier ones certainly get appropriated by the undaunted Burghardts to be worked on quietly in the comfort of their home (how else do you think a few esoteric LBMs wind up on our foray lists?!). However, the vast majority of these becomes immediately segregated from other fleshy mushrooms and gets indiscriminately piled up in some remote area of the sorting table without even being looked at (not even for the purpose of identification to genus), marked in that conspicuous way for the eventual disposal at clean-up time. Some foragers may find that catapulting fistfuls of LBMs into the nearby bushes at day’s end has a certain entertainment value, or is the next best thing to smashing brittle *Russulas* against tree trunks. Linguistically, a vouchered LBM is perhaps as close as one can get to the oxymoron analogue of “jumbo shrimp”.

Unfortunately, it is difficult to visually avoid LBMs, as there are probably thousands of species housed in *Agrocybe*, *Conocybe*, *Inocybe*, *Hebeloma*, *Psilocybe*, and

a good chunk of *Cortinarius* (section *Dermocybe* in particular), and their sheer numbers and ubiquitous distribution, particularly in the temperate zone, amply make up for their disadvantaged morphology to successfully compete with other macro-fungi for the modest space they need in our baskets. Furthermore, because of their small stature, LBMs fare much better in dry and hot weather than other fleshy mushrooms, as they don’t seem to need plentiful moisture to emerge from the ground and maintain their structure for sporulation, and are typically ignored by insect larvae and slugs alike, thus inevitably being collected by inexperienced foragers who perhaps naively believe that anything and everything can be identified as easy as pie.

Of the aforementioned genera, *Inocybe* can conveniently serve as the epitome to all Little Brown Mushrooms. There are hundreds of *Inocybe* species that fit the prototypical LBM profile, easily making it the most populous and least understood LBM genus. On the other hand, the gestalt appearance of *Inocybe* can generally be ascertained in the field by noting their

conical or umbonate caps, scaly or fibrillose surface texture and a funky odor. With just a handful of remarkable *Inocybe* taxa that can unambiguously be identified through routine visual examination, the rest will definitely

require a rigorous microscopic workup of spores and other cellular structures that would not necessarily translate into a positive match in the literature. The obvious upside of such a frustratingly steadfast journey is that you can unwittingly become the original discoverer of a new species or two that might one day get a proper binomial name followed by the coveted *sp. nov.*, and that way your name will be immortalized in the annals of mycology.

From the standpoint of edibility, most *Inocybe* that luckily bear a scientific moniker are known or presumed to be poisonous, a few have hallucinogenic properties, and fewer yet are used for food elsewhere in the world. Finally, as far as the North American *Inocybe* literature is concerned, the excellent Roger Phillips’ *Mushrooms and Other Fungi of North America* really stands out from the familiar stack of contemporary mushroom field guides in that it illustrates and describes roughly two dozen *Inocybe* species, thus serving as a convenient entry point to those who wish to step into the formidable realm of LBMs.

Notwithstanding the undeniably tough challenges involving LBM identification and sorting out their inter- and intra-taxonomic relationships in the laboratory, there has emerged, over time, a succession of academic scientists who have been pursuing them in earnest and with some success. Amongst these, research Professor Brandon Matheny, who heads up one of the few

academic labs in the country devoted to mushroom-forming fungi at the University of Tennessee, Knoxville, readily comes to mind. In 2005, he published a seminal research article on the systematics of *Inocybe* based on a multi-gene analysis to reveal several well-supported lineages within this monophyletic genus;¹ it was followed up by another notable publication on this subject in 2009.² The concept of using several genes to unravel evolutionary and taxonomic relationships between species within a single genus, or between many genera within a family, by now has become the gold standard in the field of molecular phylogeny of higher fungi.

What about amateur mycologists and their contributions to the study of LBMs, you might ask? Well, thanks to the January NJMA lecture, now we know that there exists at least one such individual who cares about *Inocybe* and passionately studies them (and who also happens to be a member of our own club): Dr. Linas Kudzma. “Linas is a consummate citizen-scientist in a tradition of many avocational mycologists at NJMA”, said Patricia McNaught in her introduction to our speaker. Linas joined NJMA in 1990, but his active interest in mycology likely precedes that date. His name is obviously of a European (Lithuanian?) origin, which could suggest an early fascination with fungi that perhaps naturally emerged in childhood from casually collecting edible mushrooms with family members. In his research pursuits, Linas collaborates with Brendan Matheny and the *Amanita* expert Dr. Rodham Tulloss.

Linas began with several important advantages in his taxonomic studies of *Inocybe*. The first is his outstanding ability to use a microscope. In fact, when he got drawn into the world of mycology, he chose to study Inocybaceae because they require a lot of the microscopic work that he enjoys doing so much. It’s hardly surprising that his home basement research laboratory is outfitted with a pair of 1970’s Zeiss microscopes in “pristine museum condition” that he procured through some good fortune many years ago. He proudly stated that “the ’scopes are my most prized possession”, and one can easily see why – the breathtaking pictures of *Inocybe* spores, cystidia and basidia presented at the lecture had been captured through the magnificent optics meticulously designed and manufactured by German craftsmen and dating back to the apogee of the golden age of microscopy. “They don’t make them like that anymore” is a germane epithet for these precious optical instruments constructed in the best tradition of a glorious era. One last thing that needs to be mentioned about Linas’ microscopes is that at least one of them is equipped with a Differential Interference Contrast (DIC) condenser that allows for crisp three-dimensional visualization of otherwise unseen cellular structures in unstained, transparent samples due to changes in optical polarization of light passing through different components of the tissue. The DIC illumina-

tion technique obviates the use of messy dyes that change the delicate mushroom tissue and frequently result in unsatisfactory mounts that are difficult to visualize and interpret, especially if too much stain is applied. The combination of first-rate equipment and enviable microscopy skills perfected over a lifetime allows Linas to study samples and interpret data with the efficiency and precision that would have surely earned him high praise from both Rolf Singer and Alexander H. Smith.

“Linas is a consummate citizen-scientist in a tradition of many avocational mycologists at NJMA”

– Patricia McNaught

Under the Zeiss microscope, *Inocybe* look absolutely fabulous and fascinating. For instance, their spores range from the highly symmetrical “spindles” (typical of boletes and simple elliptic shapes with rounded-off edges and smooth surfaces) to globose and lumpy (nodulose) spores that look like miniature sea mines, or nodulose spores of highly irregular shapes that are difficult to measure. The same can be said about other microscopic structures also found in the gills. The vast majority of *Inocybe* have abundant sterile cells on the gill face called *metuloid pleurocystidia*. They have a very characteristic overall shape and are often embellished with crystals of calcium oxalate that looks like a little crown attached to the apex. Some *Inocybe* species also have *cheilocystidia* in addition to *pleurocystidia*. The former are located only on the gill edge, and a few *Inocybe* species sport only *cheilocystidia*. In addition, some *Inocybe* have *necro-pigmented basidia* that unlike normal basidia shrivel up and turn brown after their function is served. It is important to document the overall shape and carefully measure the dimensions of these structures, as they vary from one species to another. “No two *Inocybe* species look the same under the ’scope”, said Linas and immediately gave us an example of two essentially identical mushrooms featuring noticeably different microscopic profiles. While microscopy can be useful in determining “who is who” in the world of *Inocybe*, drawing any conclusion on “what is related to what” in the largest LBM genus is a tricky business. Indeed, this is where microscopy-based taxonomy ends and DNA-based phylogeny begins. The latter has repeatedly demonstrated that certain morphological and microscopic traits can evolve independently on many occasions and at different points in time in totally unrelated organisms.

The second advantage to Linas’ taxonomic pursuits of *Inocybe* is his extensive scientific background. His professional *curriculum vitae* begins with an undergraduate degree in biology, continues with a doctorate in organic chemistry, and culminates in a 30-some year career in the pharmaceutical industry. It is no surprise that when Linas decided to embark on a DNA

sequencing campaign, he had no doubt that his training would enable him to meet the challenges of acquiring the necessary skills and knowledge to succeed in doing the work and getting results. “I am a scientist, I have a Ph.D. in Chemistry... You don’t get a Ph.D. in any particular field. Ph.D. is a way of thinking, a way of learning. You can switch directions and wade into another field,” said Linas, and then added, “DNA work is chemistry, too... What are chemistry, biology and physics? They are pretty much different ways of looking at the same problem.”

In a nutshell, the DNA sequencing process consists of several discrete, yet contiguous, steps that begin with a small tissue sample taken from a mushroom cap and end in a piece of paper with a long alphabetic string written on it – a code consisting of hundreds of alternating letters A, C, G, and T that correspond to the four nucleotide bases that make up the DNA polymer molecule. The first step involves extraction and isolation of pure genomic DNA from the mushroom tissue. The next step is DNA amplification through a chemical process called the Polymerase Chain Reaction (PCR). It is an enzymatically catalyzed reaction that allows one to

“We may not aspire to Linas’ level of work in taxonomy, but we can all be inspired by his consummate dedication to his mycological passion.”

– Patricia McNaught

make innumerable copies of a particular segment of DNA to be used for sequencing. The third step involves isolation and purification of the amplified DNA, either using gel electrophoresis or a more expensive, but less complicated, enzymatic procedure. Linas performs the above three steps in his home laboratory, then he sends the pure DNA sample for sequencing to a local company called Genewiz. What he gets back from Genewiz is the piece of paper I referred to above. After annotating the sequence, Linas can compare his data against millions of sequences published in the [GenBank database](#) by other researchers to find a match. Another thing he can do with the data is to create a DNA phylogenetic tree from his own research. This requires being able to use an advanced computer program capable of running meaningful statistical analyses. The tree derived from processed DNA sequences belonging to a dozen or so personally-collected *Inocybe* species that Linas presented at the lecture was entirely his own work. He referred to that scheme several times throughout the presentation to support or disprove the original taxonomic assumption derived from macroscopic and microscopic examination of his mushrooms. Prior to the 1983 invention of PCR, which totally revolutionized molecular biology and other biological sciences and laid the foundation for many scientific breakthroughs, discoveries, and ancillary technologies to develop over the next 30 years, taxonomic classifica-

tion of fungi used to rely entirely on a thorough examination of their macro-morphology and pertinent microscopic structures. It had been known for a long time, however, that the phenotypic (read *observable*) traits of an organism are the direct product of its genetic makeup (genotype), so taxonomy based on the logical grouping of fruiting bodies with similar macroscopic and microscopic features made perfect sense. We now know that systematic inferences derived from classic taxonomy and DNA-based phylogeny do not always agree. Moreover, only the latter concept is capable of completely and unambiguously resolving immensely complicated taxonomic relationships at any level simply because the genetic code is the ultimate molecular blueprint of life as we know it. In other words, the genetic code can serve as the proverbial time machine to take us back to the evolutionary past of any chosen organism. This is not, however, to say that field mycology and microscopy have long lost their significance – indeed, nothing can be further from the truth. Without the fastidiously collected vouchered specimens housed in herbaria and proper identification of mushrooms by classically-trained mycologists, phylogenetic trees would be rendered utterly meaningless!

Finally, the last, but not the least, advantage Linas enjoys is a patient and understanding wife. This has been absolutely essential because he spends a good chunk of his recreational time in his “underground” laboratory, sometimes disappearing there for days on end while studying new and cryptic species of mushrooms he collects, mostly in New Jersey or around his summer retreat in Maine. Without a proper level of cooperation from his spouse, none of Linas’s scientific output would have been possible!

To those who might have walked away somewhat disappointed from Linas’ presentation because it had little to do with the latest and greatest in *Inocybe* research, or instead felt that they have inadvertently been exposed to way too much science that was beyond their comprehension, I say that, to me, it was a well-structured, well-balanced, thought-provoking, and very engaging presentation, delivered by an eloquent speaker and intended for a wide audience. I also think that it carried an important message of a different kind that readers of this article hopefully can infer with little trouble and perhaps learn from. I would like to conclude this rather lengthy opus with yet another quote from Patricia McNaught: “*We may not aspire to Linas’ level of work in taxonomy, but we can all be inspired by his consummate dedication to his mycological passion.*”



¹ <http://tinyurl.com/pzx66m9>

² http://www.namyco.org/images/publications/3_Matheny.pdf

WHO'S IN A NAME?

Amanita thiersii

by John Dawson (forty-seventh of a series)

Amanita thiersii Bas (recently renamed *Aspidella thiersii*), is a conspicuously shaggy Midwestern member of the Amanitaceae, images of which can be viewed on the [Mushroom Observer site](#). According to *Index Fungorum*, it is one of seventeen fungi bearing the epithet *thiersii*, in honor of the American mycologist Harry Delbert Thiers (1919–2000).¹

Thiers was born in the small ranching community of Ft. McKavett, Texas, about fifty miles southwest of San Angelo. During his childhood, his father, also named Harry, moved his family from place to place as he worked on various different ranches in the area, so his son's primary education took place in a succession of rural, often one-room schools. Many rural youth at that time never continued their education beyond grade school, but Harry's aptitude for academic work prompted his parents to move to the nearby town of Junction, Texas, in order for him to be able to attend high school there.

After high school, Thiers went to Kerrville, Texas, where he earned an A.B. degree at Schreiner Institute, a two-year military college founded in 1923.² Following his graduation from Schreiner, he then enrolled at the University of Texas in Austin, where he was introduced to the study of mycology. He received his B.A. from Texas in 1941, but his studies were interrupted by World War II, during which he served for three years in a hospital unit aboard a U.S. Navy troop transport.

Upon completion of his military service, Thiers returned to the University of Texas, and in 1947, earned a master's degree in mycology with a thesis on airborne plant pathogenic fungi. He did not stay there to work toward a Ph.D., however, but accepted a teaching position at Texas A&M University that involved some extension work in eastern Texas, where the fungal flora was much more abundant and diverse than in west Texas. Little work had been done up to that time on agarics of the southeastern United States, so, sensing an important opportunity for research, in 1950 Thiers



Harry Delbert Thiers

contacted Alexander H. Smith about the possibility of pursuing doctoral work with him at the University of Michigan while retaining his teaching position at Texas A&M. Encouraged by Smith, he managed to obtain a single year's leave of absence, which he spent in Ann Arbor completing all the course work and examinations required for his doctorate. He then resumed teaching at College Station while working on his dissertation,³ returning to Michigan at the end of each academic year to spend the summer with Smith at the University of Michigan Biological Station; and there, in 1952, he met Ellen Birkett, whom he married the next year.

Thiers received his Ph.D. in 1956, but remained at Texas A&M until 1959, when he moved to San Francisco State College. He spent the remainder of his career there, actively pursuing both research and teaching. Like eastern Texas, the fungal flora of California were then little studied, which allowed Thiers and his 36 masters-degree students⁴ (including Joseph Ammirati, Dennis Desjardin, Roy Halling⁵, Richard Kerrigan, David Largent, Andrew Methven, and Walter Sundberg) to discover and describe many species new to science.

At San Francisco State, Thiers established a fungal herbarium, now named after him, to which he contributed half of its more than 100,000 specimens (reportedly "the largest collection of fleshy fungi west of the Mississippi"⁶). His research focused primarily on boletes, to which he devoted three of the eight books he authored: *California Mushrooms: A Field Guide to the Boletes*; and (with A.H. Smith) *A Contribution to the North American Species of Suillus and The Boletes of Michigan*. He published some 50 scientific papers and was a beloved mentor to his students, many of whom had had little interest in botany before taking his courses (for which they enrolled initially only to satisfy degree requirements⁷).

In recognition of his exemplary teaching, the Mycological Society of America bestowed its Willam H. Weston award on him in 1982, and seven years later, he was the recipient of their Distinguished Mycologist Award.

In 1994, Thiers and his wife moved to Peoria, Illinois to be nearer to her family. Six years later, he died suddenly while visiting his daughter and son-in-law in Ohio. 🍄

¹ The genus *Chaetothiersia* is also named after him.

² In 1981, the school became a four-year independent coeducational institution, Schreiner College (renamed Schreiner University in 2001).

³ "The Agaricaceae of the Pine Belt and adjacent areas in eastern Texas"

⁴ San Francisco State did not confer doctoral degrees.

⁵ Halling later married Thiers's daughter Barbara and thereby became his son-in-law. Information in this profile, as well as the portrait of Thiers, is taken primarily from the obituary memoir written by them (both mycologists at the New York Botanical Garden), published in *Mycologia* 95:6 (2000), 1271–1275 and also (with different photos) in *McIlvainea* 14:2 (2000), 46–50.

⁶ According to the posthumous tribute "MSSF mourns Harry Thiers", published September 2000 in *Mycena News*, the newsletter of the Mycological Society of San Francisco, and available online at http://www.mykoweb.com/articles/MSSF_Mourns.html.

⁷ Twenty-one of those students testified to their respect for him and his impact on their lives in "Harry D. Thiers: reminiscences of a teacher and friend", pp. 3–16 in a *Festschrift* issue of *Mycotaxon* (vol. 34 (1), 1989) dedicated to Thiers on the occasion of his retirement from San Francisco State.

NJMA 2015 COMMITTEE CHAIRS AND ACTIVITY/INTEREST GROUP LEADERS

<i>Archives/Historian</i>	Phil Layton
<i>Book Sales</i>	Herb Pohl
<i>Culinary Group</i>	Jim Richards
<i>Cultivation</i>	Ray Pesceovich
<i>Dyeing</i>	Ursula Pohl
<i>Education</i>	Patricia McNaught
<i>Forays</i>	Nina Burghardt
<i>Herbarium/Slide Library</i>	Dorothy Smullen
<i>Library</i>	<i>Chair - Nina Burghardt</i> <i>Circulation Manager - Igor Safonov</i>
<i>Membership</i>	Igor Safonov
<i>Microscopy</i>	Mike Rubin
<i>NAMA representative</i>	Ursula Pohl
<i>NEMF representative</i>	Mike Rubin
<i>Newsletter</i>	<i>Editor - Jim Richards</i> <i>Art Director - Jim Barg</i>
<i>Nomination</i>	Nina Burghardt
<i>Public Outreach</i>	Sharon Sterling
<i>Fungus Fest</i>	<i>Chair - Liz Broderick</i> <i>Co-chair - Terri Layton</i>
<i>Publicity</i>	Randy Hemminghaus
<i>Ray Fatto Scholarship</i>	Richard Kelly
<i>Social Media</i>	Randy Hemminghaus and Pete Bohan
<i>Special Events</i>	
<i>Mycophagy</i>	Jim Richards
<i>Holiday Party</i>	Bob Hosh
<i>Photo Contest</i>	Jim Barg
<i>Species Recorder</i>	John Burghardt
<i>Taxonomy</i>	Nina Burghardt
<i>Toxicology</i>	Mike Rubin
<i>Website</i>	Jim Barg



2014 HOLIDAY PARTY REPORT

by Richard Kelly and Virginia Tomat

The 2014 Holiday Party planners, with the contributions of the attendees, successfully created an event that satisfied the palate and demonstrated a palette of color and refined taste in both decor and photography. Virginia decorated the room in her traditional colors and decorative pieces: boughs of holly in green and red, white-painted pine cones accompanied by lengths of pine branches, and her much appreciated *Amanita muscaria* tea-candle centerpieces. Containers of chocolate mushroom crackers and 2015 calendars adorned with mushrooms cut from polypore mushroom paper completed the decorations.

Through more than one lens, the event reflected many characteristics of the year of NJMA's activities that the dinner commemorated. Allen Simpson, one of the club's most award-winning photographers, classified 2014 as marked by a paucity of fungi. Similarly, the count of attendees at the party was less than in recent years.

Excitement, however, can be experienced even during times of slim pickings. Expectations informed by the knowledge of what has come before can be shattered by the surprise of discovery. That pleasure was enjoyed during all aspects of the dinner. At the dining table, it was experienced via *Amanita muscaria*-shaped Deviled Quail Eggs, Chanterelle Soup, Black Trumpet Pate, and other delectable dishes.

Photographically, the surprise of discovery took the form of the contributions to the Novice Category by new member Judy Gorab. Judy, who Al Simpson took great pride in discovering, and who he encouraged to enter the competition, won not only first, second and honorable mention in the Novice Pictorial category, but, as a first time competitor, surprisingly one of her many pictures also won "Best In Show".

Congratulations, Judy, and welcome to the club. We look forward to being delighted in future years by your artistic renderings of your fungal discoveries!

As previously mentioned, everyone's palates had a wide range of culinary colors applied to them through the contributions of the attendees. Some of the dishes that contributed to that culinary palette that the artists created with mushrooms are: Betty Wise's Mushroom Lasagna, Jim Barg's Chicken Marsala with Porcini, Ursula Pohl's Chanterelle Soup, Igor Safonov's Russian Vegetable Stew with Porcini, and Luke Smithson's Black Trumpet Pate. If we missed anyone else's mushroom dish, we apologize.

From Virginia:

This year, while looking for a dish representing mushrooms, I found a recipe online for deviled eggs in the shape of *Amanita muscaria* – using tomatoes. The recipe, however, called for whole chicken eggs, as it was intended as the main dish for a luncheon. When I came across quail eggs in an Asian grocery, it occurred to me that the recipe could be modified to prepare the amanita-shaped deviled eggs as an appetizer, as quail eggs are often served as *hors d'oeuvres* in Venezuela.

Several members asked me for directions, so here they are:

1. Boil the eggs.
2. Peel.
3. Cut them in half.
4. Carefully remove the yolk to preserve the integrity of the whites.
5. Mix the yolk with mascarpone or cream cheese and mayonnaise. Add garlic and other spices according to taste. (Note: I used mascarpone cheese, but, if people want to use cream cheese instead of mascarpone, it is OK. Mascarpone doesn't have much flavor, as it is mainly cream, and its final flavor depends on what it is mixed with. Cream cheese, on the other hand, does have more cheese flavor.)
6. Fill each egg white half with the yolk filling.
7. Orient the filled portion toward the dish.
8. Cut the cherry or grape tomatoes in half.
9. Remove the seeds and fill with spiced cream cheese so it will bind to the egg top.
10. Join the egg white "stem" with the tomato "cap" to form the "mushrooms."
11. Decorate each cap with little dots of cream cheese mixed with mayo to complete the creation of the *Amanita muscaria*-shaped *hors d'oeuvres*.



FROM A PHOTO BY BOB HOSH



BYTES, BITS, & BITES

TASTY LITTLE TIDBITS FROM OUR MEMBERS

from Jim Richards:

Oregon Truffle Oil –
<http://tinyurl.com/ldew7b4>

from the *Tasting Table* blog

Zen and the Art of Mushroom maintenance – to wash
o not to wash:

<http://tinyurl.com/m7onxo2>

from Jim Richards:

Meet New York's youngest truffle (and other fungi)
dealer:

<http://tinyurl.com/mcxzwld>

from Luke Smithson:

Free ebook on fungi by Eugenia Bone:

<http://eepurl.com/9Efiz>

Editor's note: You might want to sign up for the Fantastic Fungi blog
when you are checking this out. It has been consistently interesting.

from Jim Barg:

Here's an article about fungi digesting plastics from
Salon.com:

<http://tinyurl.com/qe7ff36>

from Dr. Alan Bessette (via Igor Safonov):

I am most grateful for the *NJMA News*. It is a wonderful
publication and I always look forward to reading it. For
the record, the photos taken by Stephanie Ritson and
shown on page 13 (*NJMA News* 45-1) are *Holwaya*
mucida and *Crinula calciformis*. There is a description
on page 493 and a photo of them on page 499 of
Mushrooms of Northeastern North America.

All the best,
Alan

More from *Fantastic Fungi*:

Truffle trade: <http://tinyurl.com/l4lpfam>

Matsutake: <http://tinyurl.com/ofnxzu8>

from Lorna Wooldridge:

Hi Jim,

I thought the following author, workshop and book
might be of interest to NJMA folks. It looks as if he
gives some interesting talks too, so you may wish to
consider him for a future meeting:

<http://tinyurl.com/ld45m2j>

and this might be of interest too:

<http://tinyurl.com/qbbl386>

from Stephen Sterling:

A two hour intro class that you might put in the
newsletter. Very thorough.

<http://youtu.be/IKhBX-cmhs>

from Jim Richards:

An NPR report on Phillips Mushroom Farm:

<http://tinyurl.com/p6thunk>

from Dorothy Smullen:

I found this on *ScienceDaily*:

“Retracing the roots of fungal symbioses”

<http://tinyurl.com/qdxwuhw>

In the roots of host plants, mycorrhizal fungi exchange
the sugars plants produce for nutrients they absorb
from the soil. To understand the basis for fungal symbi-
otic relationships with plants, researchers and longtime
collaborators reported the first broad, comparative
phylogenomic analysis of mycorrhizal fungi. The results
help researchers understand how the mutualistic asso-
ciation provides host plants with beneficial traits for
environmental adaptation.

From Chelo Keys:

Hi, I am a very new member, but I stumbled across an
artist that replicates fungi with knitting and I thought it
was very beautiful.

She photographs her creations out in nature; not sure if
this has been mentioned already.

<http://tinyurl.com/qxkn5gs>

There is also an artist named Mr. Finch that replicates
fungi with textiles and they are stunning.

Not sure if this is newsletter-worthy, but wanted
to share.

from Judy Glattstein:

Find and thoroughly dry some King Alfred's Cake
fungus, some loose silver birch bark and birch twigs.
Light the fungus, which will glow. Put it under the silver
birch bark and twigs.

reply from Jim Richards:

If you could find out what that mushroom is, it would
be useful. Thanks.

followup from Judy Glattstein

Wikipedia says: <http://tinyurl.com/lzrbjvn>

YouTube: <http://tinyurl.com/kuqnare>

Nice blog entry with good images:

<http://tinyurl.com/p4dkxz6>



ALONE IN PARADISE

by Alexander (Sasha) Viezvenski

(reprinted from *Spore Prints*, newsletter of the Los Angeles Mycological Society, December 2001)

Why Russians don't pick morels is not an easy question to answer. Perhaps it is just a tradition. We also don't eat many of the other edible mushrooms, such as "Horn of Plenty" (*Craterellus cornocopioides*) or "Shaggy Mane" (*Coprinus comatus*). On the other hand, Americans don't eat lots of Lactarias that we love – for example, the "Woolly Milk Cap." (That's the Russian version of *Lactarius torminosus*; the American species is not considered edible.)

It is probably like a language: If one generation passes its knowledge only to its own next generation, the result can be different peoples speaking different languages.

Another reason might be that in Russia, we have very few morels, at least in my part of Russia. I spend most of my time in the woods, yet until this year I found morels only once or twice, and each time it was just a single mushroom. So maybe, though a few people do find morels, this is not enough to start a "chain reaction" toward widespread knowledge and interest in them.

My friend gave me one more important possible reason. For most Russians, a mushroom is something that has a stem and a cap, with either gills or tubes, and the cap is more or less round and smooth. So for most people, morels don't even look like mushrooms. Perhaps for the same reason, we don't pick puffballs or any coral mushrooms; these things look dangerous to us.

But this year, I was ever so happy that Russians don't pick morels! In the beginnings of June, I went to the country market in St. Petersburg to see if commercial pickers were selling any mushrooms. This is usually the signal for me to start my season of painting them.

I was thrilled when I saw the whole basket of great black morels. Nobody was buying them. Some people were wondering if they were



edible, and if so, how to cook them. The slightly drunken salesman, a professional mushroom hunter, tried to encourage people, but had no success.

I asked the man how much they cost, trying not to show that I was ready to pay any price he would ask. "How many do you want?" he asked. I picked out about five of the best looking ones for my painting. "Fifteen rubles," he said, thinking that he was taking great advantage of me. And before I could answer, he said, "Well, take them for ten." This was about forty cents! I tried not to express my feelings on my face, took the mushrooms, and ran home to paint.

I was tempted to ask him to show me his picking spot, but I knew he would never do it, not even for good money. I decided to find the spot myself. The only thing I knew from my mycologist friend was that morels like the burned forest. The previous summer was very dry, and we had a lot of forest fires. These fires were especially concentrated along the railroads because people throw their still-burning cigarettes from the train windows.

A few days later, I took a train to a spot I had noticed last year. There was a burned pine forest by the railroad between two stations, about a mile long.

I was surprised to meet people with baskets on my way to the burned forest. They were proudly carrying their first *Boletus edulis* of the year. (We call them "whites" because they stay white when you cut them.) I decided to look for them, too, but first to check out the burned forest.

The fire had been only on one side of the railroad. I was coming from the other side, so I crossed the rails, and...

It took me several seconds to realize what I was seeing on the ground in front of me. They looked like burned stumps of little trees. First I saw one, then ten. They were everywhere! Big and small, single and in clusters. It was a very strange feeling; I did not have to look for the mushrooms – I had to decide which ones to pick.

I started with the freshest looking ones, then the biggest, then the strangest-looking ones. Finally, I decide to find some very small ones to finish my future paintings. It took me a while to find the first cluster of tiny ones; they were gray and almost invisible on the gray burned ground. But after I found the first ones, all of a sudden, I discovered thousands of them all around me. It was difficult to avoid stepping on them.

Soon my basket was full, though it seemed there were not any less morels around than when I began!

Then I saw my first competitor. He was walking pretty fast towards me, definitely wanting to check out my basket. "Have you found any?" he asked.

(continues on [next page](#))

EIGHT REASONS WHY YOU DIDN'T FIND MANY MORELS TODAY

HINTS FOR BEGINNERS

by Wren Hudgins

reprinted from *Spore Prints*, newsletter of the Puget Sound Mycological Society, April 2014 (edited and adapted for the New Jersey area by Jim Barg)

1. *You didn't study the preferences of your quarry.* You need to know that it fruits in spring, likes certain trees or dead trees, fruits mostly on south-facing or east-facing slopes, and starts low and moves higher in elevation and latitude as the season progresses.

2. *You didn't really study the physical characteristics of your quarry ahead of time* to make sure you can recognize it at different stages of development. Hold a real morel, examine it, read the descriptions in field guides, and actually look at the characteristics described. Make sure you understand what the field guides are saying.

3. *Your timing was off.* New Jersey morels seem to need night air temperatures above 40°F and soil temperatures above 55°F to start fruiting. The timing of the fruiting varies from year to year, sometimes starting as early as late March and, in other years, as late as early May.

4. *You were at the wrong elevation.* Until you know where they are, you need to vary your hunting elevations and then, upon finding a morel, take note of your elevation and focus your search +/- a few hundred feet of that until you find a few more and can zero in on the sweet spot of elevation. (This is more true on the west coast; here in New Jersey, your latitude is more important.)

5. *You needed to look more carefully at exposure.* Sun exposure is critical, especially early in the season. Shadier and cooler spots tend to produce morels later. Warm, south-facing areas or slopes are far more likely to have earlier or more abundant fruitings, but this is also based on availability of moisture. If you can't seem to orient yourself, look at how the sun is tracking or use a compass or GPS.

6. *You found your first one and moved on.* Moving quickly is based on the assumption that you can recognize morels at a distance, but this takes practice. When you find your first morel, stop in your tracks, proceed slowly, and meditate on it. Look around carefully and take note of everything: habitat, slope aspect, elevation (#4 above), vegetation, proximity of water, degree of shade, etc.

- *You moved your eyes too quickly.* Your feet can be in one place and you can still miss morels because you are scanning too quickly.

- *You found only one.* Well, it's possible, but morels are often social, fruiting in groupings.

- *You still think there was only one.* Stand your hiking pole up at the site of the first one and walk increasingly large circles around it. Look at the same terrain from different angles. Kneel or sit down. Look in ground depressions, tree stump cavities, and underground humps. If the weather has been dry, look in shaded spots or depressions which may have held moisture longer than the surrounding slopes.

7. *Mistaken identity.* Morels look amazingly like pine cones, especially erect ones, which can be near the correct habitat.

8. *They knew you were coming.* If you mention the word "morel" or worse yet, the phrase "morel hunting," or if you approach with an open knife in your hand, the morels in the area go into immediate hiding. They can disappear into the soil or transform themselves into conifer cones or less desirable mushrooms. You have to learn to sneak up on them from behind without betraying your intent.



ALONE IN PARADISE (continued from previous page)

"Of course I have," I responded. "They are everywhere!" He looked into my basket and made a strange face: "Do you eat this stuff?"

"Yes," I said.

"No, I take only the whites," he said proudly.

"Good for you," I thought, "and very good for me."

I spent the whole month painting them, going to that forest about twice a week. Nobody picked the morels, and I could watch the changes in their population. After days, there were not fewer mushrooms, but fewer and fewer of the tiny ones.

Then the mushrooms started looking more dry, and did not grow as big. The biggest ones disappeared. The big clusters and groups disappeared too; most of the remaining mushrooms were single.

Finally it was difficult to find good ones to paint. Besides, a lot of the other mushrooms started fruiting, and I stopped hunting for morels.

Morels are the most difficult mushrooms to paint. In the beginning it seems just impossible to track all those veins and cavities. But eventually the effort – and patience – overcame, as always.

While painting, I could trace through all their stages and admire the changes. In the beginning, when the size is less than an inch, they are dark blue-gray and you cannot see the cracks between the veins. Then they turn dark. Yellow-green, with thick veins and narrow cracks. The cracks open more and more, becoming almost-square or almost-round holes. The color of the mushroom turns brown. Then the veins get thinner and dryer, eventually looking like a web, through which you can see the light color of the main body.

After painting them, I cooked and ate them solemnly. They were great! I even encouraged some of my friends to try them. They were pleasantly surprised, and the next time I had more people at my table.

Perhaps, in a few years, I will not be a happy, lonely morel hunter anymore. That would be too bad. But our people will have one more mushroom to enjoy, and that would be good.



MOREL CULTIVATION

by Ken Litchfield (reprinted from *Duff*, May 2003)

Ken Litchfield of the Mycological Society of San Francisco wrote the following article on morel cultivation. Ken spoke to us earlier this season about the ongoing cultivation project he coordinates at the Randall Museum's Mushroom Garden. He thought this would give you something to think about as you're slogging through the muck and looking for morels this spring. Good luck!

I have heard some interesting techniques from cultivators of morels that are not generally known. I share them here so that like-minded and interested folks can put more brains to work at figuring out the best morel cultivation techniques. Hopefully, if you try these out you will share the fruits of your experiments, both the knowledge and the morels.

The first is a technique that you could use in a garden situation. Dig a pit in a sandy area or an area with crappy soil low in any organic matter. The size of the pit can be from 2 to 4 or more feet long and/or wide and about a foot deep. Into the pit, toss any kind of organic matter: compost, wood chips, raw kitchen garbage, sawdust, wood ashes – preferably a diverse buffet, mixed together. Snagging the contents of one of those green recycle bins full of grocery or restaurant compostables would be good. A morel spawn kit, or the paper towels with which you wipe out the morel spores from your dryer, or the basal portions that you normally cut off your collected morels, can be scattered over the surface of the mounded mix and the whole thing covered with a few inches of soil or sand. Surrounding the pit, dig a trench 1 - 2 feet larger than the pit and bury cinderblocks in the trench to make a continuous cinderblock wall underground in the sandy area.

Wait a few months for the morels to eat up all the food in the pit. After they have eaten everything, they will send out rhizomorphs from the pit through the sand in search of more food. When they run up the wall of cinderblocks, they will stop and form a sclerotium. When moisture conditions in the sand are right, the sclerotium will sprout and send up a morel, so that all your picking will take place around the inside perimeter of the wall. Alternatively, you can pull out the wall of blocks and pick off the sclerotial nuts or sift them out from the sand in the inner wall of the trench. Then put them in a tray of sand and water them to keep the sand moist, but not soggy. They will sprout and you can pick them like button mushrooms.

It is important to make sure that the pit is completely surrounded by foodless sand and a continuous wall of cinderblocks so that the rhizomorphs running out in search of more food don't find any. Instead, they encounter a wall that is too difficult in energy expenditure to breach, and there they will make a dormant sclerotium until conditions are better for spreading to new food. If there is a gap in the wall so that a rhizomorph can run out and find another stash of food, the whole colony of mycelium will suck its life energy out of the used-up pit and move into the new area. Something like an octopus squeezing itself through a crack to get to a crab. In that case, probably no sclerotia will be produced in the old area.

The other technique uses the same principle in a more commercial warehouse-type setting. Spread the organic matter on trays, inoculate, and cover with a layer of sand. When the morels have eaten all the food, they have no place to go but up into the layer of sand, where they make their sclerotia. Then the sand can be poured off into other trays where they are covered with crushed ice and kept refrigerated for three weeks, after which

the temperature is raised to melt the ice. The morels then sprout in the simulated spring and can be harvested like button mushrooms.

If you don't want to try these techniques yourself, then when you are out foraging or cleaning out your dryer of morel spores, bring the stuff to me and we'll try some experi-

ments in our mushroom gardens. Incidentally, besides the Deer Mushroom (*Pluteus cervinus*) and the Shaggy Parasol, (*Macrolepiota rachodes*), we now have growing wild on the grounds of the Randall Museum the "ikea" morel, first discovered in the landscaping of the IKEA store in Emeryville. They aren't the rich, smoky-flavored Sierra type but hey, a morel is a morel.

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PHOTO BY JIM BARG
A group of the "NJ version" of black morels, *Morchella angusticeps*

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CHAGA (*INONOTUS OBLIQUUS*) (continued from page 4)

During the final foray of the 2014 season, held at the Viles Arboretum in Augusta on November 1, I was fortunate enough to investigate a dead birch that didn't look quite normal, and discovered a massive fruiting of *I. obliquus*. What caught my eye was the fracturing of the bark on this 10-inch diameter trunk of a tree that appeared to have been dead for 2-3 years. In three places along the trunk, I could see the classic Chaga



Ridge of thick tubes serve to force the bark layer apart

sclerotium growth, clearly dead and crumbling. The bark had split and broken away from the sapwood in very irregular splits and chunks. This was entirely different from what we usually see. Commonly, as the outer, impervious layer of birch bark comes off a dead tree, it peels around the trunk, along lines of tear that are perpendicular to the line of the trunk. When I looked more closely, I saw a layer of polypore tissue attached to the sapwood, and resupinate between the

(continues on page 21)



Close-up of silvery gray tube layer



Sclerotium with tube layer exposed after bark is removed

NJMA EDUCATION WORKSHOPS for the 2015 SEASON

Below are descriptions of two NJMA workshops for spring 2015; five more workshops will be offered later in the year. Our two beginner workshops, **Introduction to Mushrooms** and **Collection and Field Identification of Mushrooms** will be held on October 31st at Frelinghuysen Arboretum. Because we are planning some changes to those workshops, a full description will be in a later *NJMA News*. Three other workshops are still in the planning stage. We are planning to offer a Microscopy Workshop with two workshop leaders, including a working mycologist, so that both beginners and more experienced microscopists will find it useful. We are exploring the possibility of having a joint **Dyeing with Mushrooms** Workshop with Eastern Penn Mushroomers. And finally, we are working out the arrangements to have a tour of the Phillips Mushroom Farm in Kennett Square, PA. Two of our 2015 workshops were suggested by Jim Richards. If you have suggestions for the NJMA Education Workshop program, please contact me, Patricia McNaught, Education Coordinator (pjmcnaught@gmail.com).

Pre-registration is required for all workshops! You can [register online using PayPal or a major credit card](#). If you prefer to register by mail, [a printable registration form is at the bottom of page 21](#). You can also click on the workshop title to be taken to the registration section of our website.

Thursday, April 23

12:30 pm to 4:30 pm – **WHAT'S ON THAT TWIG?**

Sherman Hoffman Wildlife Sanctuary, 11 Hardscrabble Road, Bernardsville, NJ

Instructor: Dorothy Smullen

Is it a lichen, a poroid crust, an asco, a parchment fungus, or other? We don't usually use these for food but knowing some of these twig and branch species will greatly improve our species lists...especially in dry weather. Come and share your expertise with others. After an inside exploration led by Dorothy Smullen and some microscope work, we can walk the trails to check what we have learned.

\$10 fee. Limit 12 participants.

Sunday, June 7

2:00pm to 4:30pm – **SEEING MUSHROOMS BY DRAWING THEM**

Somerset County Environmental Education Center

190 Lord Sterling Road, Basking Ridge, NJ

Instructor: Katy Lyness

Express your creative side, and learn to be a better mushroom identifier. Our brains conserve processing power by seeing what we expect to be there. Learning to draw mushrooms is a way of learning to see what is really there, without preconceptions. It is a way to document crucial features that may not photograph well. And it is a way to experience and 'learn' a mushroom on a deeper level.

\$15 fee (includes materials). Limit 8 participants.

OUR INSTRUCTORS

Dorothy Smullen In addition to being an expert mushroom identifier, is well-versed about most denizens of the fields and forests. She has led lichen workshops for NJMA as well as for the New Jersey Audubon Society.

Katy Lyness has been a working artist for over 12 years, with experience in botanical illustration. Her illustrations of mushrooms were featured in this and the last two issues of *NJMA News*.

A printable version of the Education Workshops Registration Form is on page 21.

MUSHROOMS TAKE A BATH

by Robert L. Wolke

Reprinted from *Prairie States Mushroom Club Newsletter*, March 2000, which found it in the January 26, 2000 issue of *The Washington Post*, p. F06. Robert L. Wolke is professor emeritus of chemistry at the University of Pittsburgh and the author of *What Einstein Didn't Know – Scientific Answers to Everyday Questions*, copyright 2000, The Washington Post Company.)

Q: Many cookbooks say that one should never wash mushrooms because they soak up water like a sponge and that we should give them only a quick rinse or simply wipe them off. But aren't they grown in manure?

A: Soak up water? Not true. Those books are wrong. Grown in manure? I'm afraid so.

First, the manure.

The common white or brown button mushrooms in the supermarkets (*Agaricus bisporus*) are cultivated in beds, or so-called substrate mixtures, that can include anything from hay and crushed corn cobs to chicken manure and used straw bedding from horses' stables.

That knowledge bothered me for many years. Repeatedly warned against waterlogging my mushrooms by giving them a bath, however, I resorted to a soft-bristled mushroom brush that presumably whisked away the nasties from dry mushrooms without bruising them. It didn't do much. I sometimes even peeled my mushrooms, a time-consuming pain in the neck.

But as the hymn "Amazing Grace" would have it, "I once was lost, but now am found, was blind, but now I see." I know now that the mushroom growers compost their substrate material for 15 to 20 days, which raises its temperature to a sterilizing level. The compost, regardless of its origin, is germ-free before it is "planted" with the mushroom spores.

Nevertheless, I can't help thinking that there is more to manure than germs. So I still clean my mushrooms. And yes, I wash them in water, because they don't absorb more than a tiny bit, as I'll show below. Moreover, I seriously doubt that a water wash removes flavor, as some books claim. After all, even if the mushrooms did soak up water, it would come out in cooking, along with any flavor components it had dissolved.

I was always suspicious of the sponge model of mushroom flesh, because it never appeared to me to be the least bit porous, even under a microscope. When I read Harold McGee's book, *The Curious Cook* (North Point Press, 1990), I was vindicated. An equally suspicious type, McGee weighed a batch of mushrooms, soaked them in water for five minutes – about 10 times longer than any washing would take – wiped them off and weighed them again. He found that their weight had increased very little.

I have repeated McGee's experiment with two 12-ounce packages of white *Agaricus* mushrooms (a total of 40 mushrooms) and a 10-ounce package of brown ones (16 mushrooms). I weighed each batch carefully on a laboratory scale, soaked them in cold water with occasional stirring for McGee's five minutes, threw off most of the water in a salad spinner, rolled them around in a towel and weighed them again.

The white mushrooms, which were all tightly closed buttons, had absorbed only 2.7 percent of their weight in water. That's less than three teaspoons of water per pound of mushrooms, in agreement with McGee's result. The brown mushrooms retained more water: 4.9 percent of their weight or five teaspoons per pound. That's probably because their caps were slightly separated from the stems and water was trapped in the gill spaces, not because their flesh is any more absorbent. Many other irregularly-shaped vegetables would mechanically trap small amounts of water. And the timid "quick rinse" recommended for mushrooms by many cookbooks would trap just as much as my five-minute soak did.

So go ahead and wash your mushrooms to your heart's content – at least the common supermarket kind; I haven't tested any of the more exotic varieties. But bear in mind that any brown dirt you see isn't manure; it's probably sterilized peat moss, with which the growers cover the composted substrate and through which the mushrooms actually poke their little heads.

And by the way, if you find your mushrooms giving off a lot of water in the sauté pan and steaming instead of browning, it's not because you've washed them. It's because the mushrooms themselves are almost entirely water and you've crowded them so much in the pan that the expelled steam can't escape. Sauté them in smaller batches or use a bigger pan.



WELCOME TO ALL OF OUR NEW NJMA MEMBERS!

We'd like to extend a warm welcome to the following members who joined us between December 18, 2014 and February 25, 2015. We look forward to seeing you at lectures, forays, and other NJMA events. Happy 'shrooming!

Diana Friedland	West Orange, NJ
W. Thomas Fulton	Allenwood, NJ
Chelo A. Keys	Glen Ridge, NJ
Michael J. Portera	Belleville, NJ
John Russell	Spring Lake Heights, NJ
Marilyn Sanderson	Flemington, NJ
Camille Zenobia	Hillsborough, NJ
Charlie & Emma Zielinski	Lawrenceville, NJ

CHAGA (*INONOTUS OBLIQUUS*) (continued from page 18)

sapwood and bark cambium. In certain areas, the fruiting body tissue was quite thick, over an inch in depth and, clearly, it was the pressure of this expanding tissue that forced the bark to fracture with almost explosive force. As the bark loosened, it exposed the pore openings of the hymenial tubes to the air, thereby allowing air currents to disperse the spores. Unlike my first find of Chaga fruiting, which was limited to the opening of a wound on the trunk of a dead birch, this sporocarp was expansive, growing around the circumference of the trunk and stretching from almost ground level to at least 8-10 feet above the ground. I could see that it looked like an undulating surface of grayish tube openings. The fruiting body ranges from just a few millimeters, to ridges over 3 cm thick. Think of these thick ridges and "pillars" as buttresses growing outward, pushing against the inner surface of the cambium or bark, creating space for additional spore-bearing tissue to form. When, as with this tree, the bark fractures and loosens, it allows air currents to reach the pore openings and allow for better spore dispersal.

Mycologists and ecologists studying *I. obliquus* in Europe complain of the difficulty in studying the fruiting body because they report that it is very quickly attacked and consumed by several species of beetles that gorge on the fresh tissue for the quality of food it represents. They hypothesize that the beetles may play a role in spreading the spores out into the world, aiding the wind dispersal. They also report that fruiting bodies are generally greatly degraded within a couple of days.

The tree at Viles showed no signs of predation and when I returned for another look 2 weeks and 4 weeks later, the tissue showed no signs of damage or of decay. There was no indication that this would be a quickly degraded growth as reported in the literature. Could this be due to the cold weather this late in the season causing die-off of insect predators, or does this region of North America lack the beetles that devour it in Scandinavia? Another alternative explanation is that this rarely-found sexual growth is not well understood and may be more persistent than that seen in Europe.

Having found one example of fresh fruiting of this shy sporocarp, I have great hope that I can use the experience to locate other examples in the state over the coming years.

From a place of relative obscurity, up to the past decade, Chaga has become among the most talked about of the medicinal mushrooms. It has become popular as a tea and makes the base of a good chai. When I first began offering medicinal mushroom talks and workshops more than a decade ago, Chaga was almost unknown, relegated to a few people well-versed in herbal medicine. Widely used as a staple in traditional medicine in Siberia and Russia for the past 3-4 centuries, its virtues were unknown in the US. Chaga is now in demand as a dietary supplement and alternative medicine across much of Asia, Europe and now, North America. In Maine, Chaga is sought out by many people and its popularity has led to concern over the sustainability of the supply. A Chaga sclerotium grows slowly, taking at least 4-6 years to attain harvestable size. I urge people to harvest carefully and to take only what they know they can use.



REGISTRATION FORM for NJMA EDUCATION WORKSHOPS 2015

You can also register fast and easy ONLINE at www.njmyco.org/education.html using PayPal®



NAME _____
ADDRESS _____
TOWN/ZIP _____
PHONE _____
EMAIL _____

Please mail your check, along with this completed form, **at least 10 days before the first workshop** for which you're registering. Remember – workshops are limited in size.

Send check, payable to "NJMA", to:

Igor Safonov, 115 East King's Highway, Unit #348, Maple Shade, NJ 08052-3478

APRIL 23 WHAT'S ON THAT TWIG? \$10.00 x _____ persons = total _____
JUNE 7 SEEING/DRAWING MUSHROOMS \$15.00 x _____ persons = total _____

Questions? Call Igor Safonov at 215-716-1989
or Patricia McNaught at 908-766-9565

TOTAL AMOUNT ENCLOSED \$ _____

JULY 1971

LAKELAND MYCOLOGY CLUB

NEWSLETTER

THIRD MEETING JULY 10th
LAKELAND MYCOLOGY CLUB

The third monthly meeting of the Lakeland Mycology Club will be held on July 10th at 10:00 AM at the Silas Condict Park in Kinnelon, N.J. Those members who made the first meeting at the 'Tourne Park' in Boonton Township can continue from there another 15



minutes on Powerville Rd. and then on Kinnelon Rd. The Park entrance is about one quarter mile past the Kinnelon High School — on the left. Ricker Rd. leads into the Park. Continue to the Parking Lot. We will meet under the sheltered picnic area near the lake — rain or shine.



Perhaps, we should spend our first half hour discussing the formalizing of our Club, as far as organization, dues, general activities, etc. Also it would be interesting to



hear from various members about any mushroom finds since our last meeting, or any articles on Mycology they may have come across or read — special recipes included.

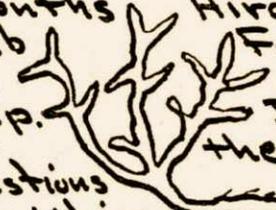
One of the main objectives of our club should be to increase our general knowledge concerning mushrooms along with having Fun — and this can only be accomplished by asking questions and sharing mutual experiences. Everyone can contribute, novice, amateur, and expert alike. If there are any questions you'd like to ask, let's hear them at our next meeting — maybe one of our members will have the answer.



By the way — anyone who needs more detailed directions for finding Silas Condict Park can refer to the map on Page 2.



For the next couple of months Hiram Korn, our club Founder, will be on an extended trip. In the interim, if there are any questions concerning our activities or meeting place, call:



EDWARD BOSMAN
584-8606
34 PLAZA RD.
FLANDERS, N.J.

RECAP OF SECOND MEETING

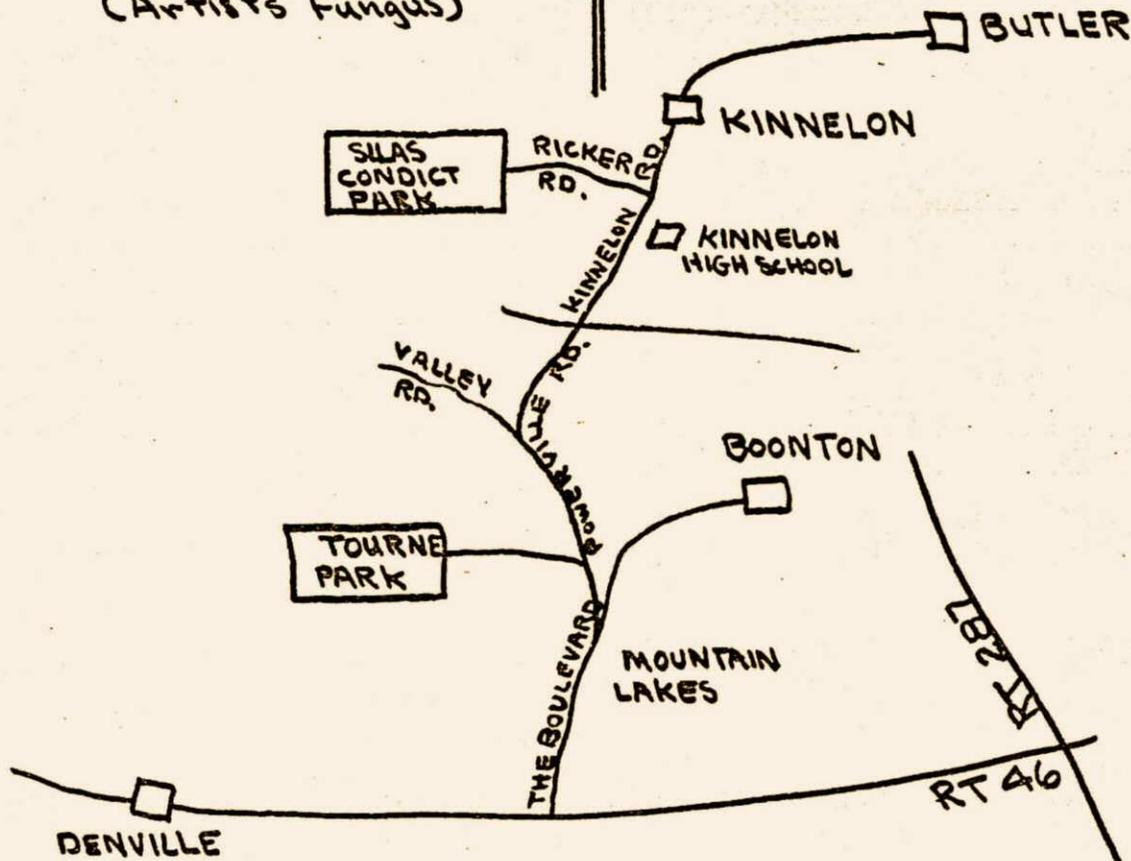
There was an exceptionally

(CONTINUED PAGE 2.)

good turn out at the last meeting at Jockey Hollow. On this "hunt," variety made up for lack of quantity of mushrooms. Some of the mushrooms that were found and identified are listed below:

1. PLUTEUS CERVINUS
(Fawn Colored mushroom)
2. HYGROPHOUS MINIATUS
(Vermilion Hygrophous)
3. POLYPORUS SQUAMOSUS
(Scaly Polypore)
4. PEZIZIA BARDIA
(Brown Peziza)
5. GANODERMA APPLANATUM
(Artist's Fungus)

We'll be seeing these types again. Those members who are not familiar with them, look them up in your field book. Will you recognize these mushrooms when you see them again? Try to pronounce their names. Are they edible or poisonous? Which feature quickly identifies each type.



MAP TO SILAS CONDUCT PARK
IN KINNELON, N.J.

BRING YOUR FIELD BOOKS, BASKETS & LUNCH — RAIN OR SHINE. JULY 10th AT 10:00 AM SATURDAY.

When you see these, it's **morel time!**

Photos and names of common spring plants and wildflowers that will alert you to the presence of **morel season!**



Mayapple
(*Podophyllum peltatum*)



Bloodroot
(*Sanguinaria canadensis*)



Liverwort (*Hepatica*)
(*Hepatica nobilis* var. *obtusata*)



Eastern Columbine
(*Aquilegia canadensis*)



Jack-in-the-Pulpit
(*Arisaema triphyllum*)



Marsh Marigold (*Kingcup*)
(*Caltha palustris*)



Squawroot
(*Conopholis americana*)
This is not a morel, nor a fungus!



Dutchman's Breeches
(*Dicentra cucullaria*)

Even if you don't find any morels, New Jersey's spring wildflower display is certainly well worth the walk! Bring your camera, and bring your basket...you never know what you'll find.

PHOTOS BY JIM BARG

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