



Ohio Mushroom Society

The Mushroom Log

Dick Grimm Memorial Banquet, 2017

By Debra Shankland

This year's grand finale for the Ohio Mushroom Society's in-person activities, the annual banquet in honor of Dick Grimm, felt very special as 32 members gathered together on Saturday, November 4th. We met at a venue new to many of us, the historic Wolf Creek Tavern in Norton, Ohio. We took over one of the charming rooms in the upstairs of the former inn, which now specializes in fresh, locally grown food and live music on the weekends, as well as maintaining a historic "speakeasy" in the basement.

We caught up with each other while sampling delicious appetizers made

with loving care by Trish Sturgeon and also by Sharon Greenberg, along with cheeses and other accompaniments furnished by Wolf Creek Tavern. The Sturgeon's graciously treated us to Country Porcini Pate made with both fresh and dried *Boletus edulis*, and a Vegetarian Chopped "Liver" made with said *Boletus* plus a mix of Shiitake, Cremini, and store-bought *Agaricus*. Having secured the venue and coordinated the many arrangements needed for a large event like this, Sharon still made time to craft tasty mushroom/pastry pinwheels.

Dr. Cathie Aime of Purdue University made the drive from Indiana to share some of the highlights of her many years of research in the Guyana Highlands of South America. Having studied soil ecology in many places worldwide, her

esteem and wonderment for this special place was infectious. Her fascinating discussion described her "Search for Fungal Dinosaurs in Guyana's Lost World".

The study area is composed of over six hectares within the largest tract of primary tropical forest left on our fair planet. In 20 years of study and sampling by dozens of students and professionals, more than 1000 species have been vouchered! Of these, 68 percent are still awaiting official name recognition along with publication in a scientific journal.

What a wonderful world!

Dr. Aime's program gave us a great deal to talk about over a delicious meal served by two very attentive wait staff. Following this, she gamefully pulled raffle tickets to determine the winners of door prizes.

And what prizes! Dr. Nicholas P. Money of Miami University, who was in attendance, generously donated two of his books: *The Mycologist*, his latest work of historic fiction, and also *Mushrooms, A Natural and Cultural History*. Check them out on Amazon or other booksellers.

It was indeed a special evening, and so nice to connect with old friends, new members, and interesting individuals. I appreciate everyone's contributions to make this really lovely banquet happen, including Jerry Pepera for keeping track of reservations and paying the bills for us. Thank you, all!

The Ohio Mycoflora Project

By Django Grootmyers

When I go mushroom hunting, I often find things that I just can't identify, even with the best reference books available. I'm sure some of you reading this have experienced this as well. This is partially because there are many species that occur in our state that either haven't been documented from our area yet or don't have names

yet. Many named species that occur in Ohio also have not been covered in a thorough and modern treatment, which makes identifying them harder than it ought to be. As frustrating as this can be, this presents us as potential collectors with the opportunity to lay the groundwork for a modern understanding of these groups and all macrofungi –fungi visible to the naked eye, or mushrooms in the broad sense-- in Ohio. Even with groups that are relatively easy to identify, we still don't have a good picture of what species occur in Ohio, where they occur and what roles they play in their ecosystems. This "picture" we would be putting together would be a mycoflora, which is essentially a text or a collection of texts that would cover as many of our native fungi as possible based on vouchered specimens. For a good summary of what a mycoflora is and what the North American Mycoflora Project is, refer to Tom Bruns' "Working toward a North American Mycoflora for Macrofungi", available at http://www.namyco.org/working_toward_a_north_america.php.

The advent of the Internet, digital cameras

and DNA sequencing have made assembling a North American mycoflora more realistic, and have opened the doors to increased participation from non-specialists. A North American Mycoflora Project is currently being set up by the North American Mycological Association, with which our Ohio Mushroom Society is affiliated, and the Mycological Society of America. The framework for this project is in the development stage, but some affiliated clubs are already in the process of working on their own mycoflora projects, which will later be incorporated into this larger project. I am currently setting up one of these projects for Ohio and am looking for collectors from elsewhere in Ohio to join me in collecting specimens for this project. What we need are vouchered specimens of a wide variety of fungi from all over our state. A vouchered specimen is a specimen preserved for future reference. In this case, a dried specimens. For information on preserving specimens, refer to Michael Kuo's Mushroomexpert page on preserving specimens, available at <http://www.mushroomexpert.com/herbarium.html>.

These specimens should be associated with photos and at least some field notes on habitat and morphological features that may be lost in drying. Posting your pictures and notes to mushroomobserver.org is a good way to do this, although inaturalist.org and other alternatives are fine as well. I will be sending my specimens to Miami University's herbarium, which is the only herbarium in Ohio currently digitizing its specimen records on mycoportal.org. Having our specimens posted to Mycoportal will allow researchers interested in our finds easy access to our specimen records and the ability to request specimens for research. In the future, I would like to incorporate DNA barcoding into the mycoflora project, but this is not currently something I have much experience with or access to. If you are interested in contributing specimens or for further information, you can contact me at dgrootmyers@gmail.org.

Django was our featured speaker at last year's Fall Foray in Hiram.

What is the health and nutritional value of mushrooms?

By Roni Caryn Rabin

Mushrooms may lack the deep green or brilliant red hues

Consumers have come to associate with nutrition-rich fruits and vegetables, but they are a “powerhouse of nutrition” and not a white food to be avoided said Angela Lemond, a registered dietician nutritionist and spokeswoman for the Academy of Nutrition and Dietetics.

Low in calories and fat and cholesterol-free, mushrooms contain a modest amount of fiber and over a dozen minerals and vitamins, including copper potassium, magnesium and zinc and a number of B vitamins such as folate.

Mushrooms are also high in antioxidants like selenium and glutathione, or GSH, substances believed to protect cells from damage and reduce chronic disease and inflammation.

Some studies suggest mushrooms are the richest dietary source of another antioxidant called ergothioneine or ERGO which is also present in large amounts in red beans, oat bran and liver.

ERGO and other antioxidants are primarily concentrated in the caps, not the stems.

But the nutrient profile of a mushroom varies depending on the type and method of cultivation, according to Robert Beelman, a professor emeritus of food science and director of the Center for Plant and Mushroom Foods for Health at Penn State College of Agricultural Sciences. His 2007 study which compared ERGO and GSH in different mushroom types, found levels varied more than 20-fold.

Dr. Beelman's study found specialty mushrooms like gray and yellow oyster, shitake, maitake and porcini have far higher concentrations of both ERGO and GSH.

Observational studies suggest that people who consume a lot of mushrooms have a lower risk of developing breast cancer and dementia, but these studies are not definitive and do not a causal relationship.

If you want to beef up your intake of antioxidants, though, you'll have to eat a lot of mushrooms. Dr. Beelman says you should aim for three milligrams of ERGO a day, “but the only way you can do that is to eat 100 grams—3.5 ounces—

of button mushrooms a day, or about 25 grams of oyster, shitake or maitake mushrooms, since they have four times as much.

Reprinted from the January 23, 2018 issue of the New York Times.

COMMON FUNGUS HELPS DENGUE VIRUS THRIVE IN MOSQUITOES

<https://www.sciencedaily.com/>, Dec. 7, 2017

A species of fungus that lives in the gut of some *Aedes aegypti* mosquitoes increases the ability of dengue virus to survive in the insects, according to a study from researchers at Johns Hopkins Bloomberg School of Public Health. The fungus exerts this effect by reducing the production and activity of digestive enzymes in the mosquitoes.

The discovery, reported this week in *eLife*, illuminates a biological mechanism that could turn out to be a general indicator and modifier of dengue transmission risk in the wild. “If this common fungus proves to have a significant impact on mosquitoes’ ability to transmit dengue virus to people in endemic areas, then we can start to think about ways to translate

this knowledge into specific anti-dengue strategies,” says George Dimopoulos, PhD, professor in the Bloomberg School’s Department of Molecular Microbiology and Immunology.

Scientists have estimated that hundreds of millions of people suffer dengue virus infections—known as “dengue fever”—in tropical regions each year.

Dengue infections can involve severe joint and muscle pain and have also been termed “breakbone fever.” Although most cases are mild enough that they are never clinically reported, some take a severe hemorrhagic form that requires hospitalization and is often fatal.

Dimopoulos and colleagues have discovered certain bacterial species that can live in mosquitoes and affect the insects’ ability to transmit dengue and other diseases. In a recent field project in Puerto Rico, as they reported last year, they also discovered a fungus that lives in the gut of *Anopheles* mosquitoes and affects the insects’ susceptibility to malaria parasites. In the new study, which stemmed from the same field project, Dimopoulos’s

team isolated a different type of fungus, from a genus called *Talaromyces*, from the gut of dengue-carrying *Aedes aegypti* mosquitoes.

The scientists fed spores of the fungus to *Aedes* mosquitoes via a sugar solution prior to a blood meal laced with dengue virus, and found that mosquitoes harboring the fungus were more likely to become infected by the virus. The dengue-infected mosquitoes that harbored the fungus also tended to have more dengue virus particles in their gut—meaning that the virus could survive and make copies of itself more easily when the fungus was present.

The researchers then showed that this dengue-enabling effect was due to molecules that are secreted by fungal cells and reduce the activity of mosquitoes’ digestive enzymes. The process blocks the activity of genes that encode these enzymes, and also directly inhibits the protein-breaking biochemical activity of some of the enzymes.

“This finding tells us that the protein-digesting activity of the mosquito gut can influence the success of dengue virus in estab-

lishing infection in the mosquito,” Dimopoulos says. “The virus has a protective envelope called a capsid that is protein-based, so it is possible that this capsid is susceptible to some of these mosquito-gut enzymes.”

He notes that although many mosquito species feed on human blood, most are not infected by or don’t transmit dengue virus—for reasons that researchers have never fully understood. “It is possible that some of these incompatibilities between mosquitoes and dengue virus relate to this enzyme activity in the mosquito gut that can be modulated by fungi and other microbes,” Dimopoulos says.

Talaromyces fungi are common, he adds, and are likely to be found in *Aedes* mosquitoes not just in Puerto Rico but globally, although further field studies are needed to demonstrate their influence over dengue transmission to human populations.

If the fungus does have a significant real-world impact, then in principle the presence or absence of the fungus in mosquitoes could be used as a simple marker of

local transmission risk. “One also can imagine, for example, anti-fungal solutions being added to the breeding water or to artificial feeding stations to reduce local dengue transmissibility,” Dimopoulos says.

“An *Aedes aegypti*-associated fungus increases susceptibility to dengue virus by modulating gut trypsin activity” was written by Yessenia Angleró-Rodríguez, Octavio Talyuli, Benjamin Blumberg, Seokyoung Kang, Celia Demby, Alicia Shields, Jenny Carlson, Natapong Jupatanakul, and George Dimopoulos.

Reprinted from the Dec, 2017 issue of *Spore Prints*.

Book Review by Steve Rudell

Mushrooms of the Northeastern United States and Eastern Canada

Timber Press Field Guide \$27.95 Timothy J. Baroni
Timber Press
(<http://www.Timberpress.com/>)

ISBN-13: 978-1-60469-634-9 (Flexibind; 600 pp, 562 color photos)
In 2006, Timber Press initiated a series of field guides for the Pacific Northwest with the

publication of *Wildflowers of the Pacific Northwest*. *Mushrooms of the Northeastern United States and Eastern Canada* is the tenth book in the series and, as the title indicates, the Press has expanded its range beyond the Pacific Northwest, with this being the third volume from another region of North America. Two of the previous guides dealt with mushrooms—*Mushrooms of the Pacific Northwest* and *Mushrooms of the Rocky Mountain Region: Colorado, New Mexico, Utah, Wyoming*. The former covers 465 species in 352 pages and reviewers noted that the too small size of the photos reduces their effectiveness for identification purposes. The latter features much larger photos than the earlier volume, but covers only about 200 species in 298 pages. In this third mushroom guide, Timber Press has found a winning combination—offering a high species count with detailed-enough descriptions and nice large photos, while keeping the thickness in line with being a “field” guide and the list price at \$27.95.

Tim Baroni is Distinguished Professor of

Biology in the State University at New York. He teaches at SUNY–College at Cortland and works on the systematics of macrofungi. He has a particular fondness for the angular-pink spored mushrooms of the Entolomataceae (*Entoloma*, *Nolanea*, *Leptonia*, *et al.*) and has conducted much field research in the Caribbean and Latin America. The content and organization of the book are typical for a field guide. The front matter is rather short, consisting of a single 17-page Introduction, addressing the Geographical Scope of the book (defined as the region encompassed by Connecticut, Delaware, Illinois, Indiana, Maine, Massachusetts, [no Michigan?], Minnesota, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Vermont, Wisconsin, New Brunswick, Newfoundland, Ontario, and most of Québec [no Nova Scotia and PEI?], a brief overview of the Toxins in Fungi, basics of the Biology of Fungi, review of the basic Mushroom Structures, and finishing with advice on Collecting and Identifying Fleshy Fungi. Given

the title of the book, one might assume that all of the species described in it are “mushrooms.” However, the introduction states that “botanically” (not “mycologically”?) a mushroom is a fleshy fungus fruit body that has gills, while allowing that sometimes boletes also are considered mushrooms. Although I agree with the suggestion that the user learn the names of the various groups of fleshy macrofungi (the usual morphologic groups such as polypores, corals, puffballs, and jelly fungi), I see no harm in considering them all to be mushrooms. Later references to “true mushrooms” further complicate things. The back sections include a brief how-to on Basic Microscopy, Glossary, Further Reading, Mycological Resources (lists of websites and organizations), Photo and Illustration Credits, and Index to both scientific and common names. The main part of the book occupies nearly 550 pages, on which are described and illustrated approximately 540 species. Each entry includes a large bold-face heading with

the species name and authority (with the authors’ names spelled out for those of us who don’t recognize all of the author abbreviations). This is followed by the common name(s) for those that have them, a list of principal synonyms, and a capsule description. The more detailed description includes macroscopic features such as cap, gills, stem, ring, flesh, spore print, odor, and taste, plus habit and habitat, range, and microscopic features, the latter usually labeled as “Spores.” Technical jargon is kept to a minimum. The treatments conclude with comments that address key features (often repeating them from the capsule description), similar species, misapplied names, and edibility. Most of the ranges are given as “widespread,” which is not very helpful without an indication of the area being referred to—the northeast, as defined for this book? North America? The world?—and the specific sort(s) of habitat in which the species occurs. Each description includes a photo, most of which occupy the full width (or nearly so) of the page. They range from

borderline adequate (such as singletons and pictorial shots that fail to show key diagnostic features) to excellent in quality, and the generous size greatly enhances their utility for identification.

As has been done in the earlier Timber Press mushroom field guides, the identification process involves selecting the appropriate morphological group for the specimen, turning to the section of the book where that group is presented, using the keys to narrow the possibilities, and then carefully comparing the mushrooms in hand with the photos and text descriptions. Icons for the different groups appear in the front endpapers, accompanied by page references for each of them. Finding the section for the group you're after is further facilitated by the use of different colored bars across the tops of the pages. The endpaper icons are the same ones used in the Rocky Mountain guide and so there are a few minor differences between their categories and the ones Baroni uses in the text. However this shouldn't be much of a bother if it is noticed at all. The group sections each open with a short general introduction, followed by a poly-

chotomous key intended to reduce the universe of photos that need to be examined in search of a match. These keys employ a few key features, such as substrate or gill attachment, to divide the included genera into subgroups. A short list of key features is then presented for each genus. There are no comprehensive genus descriptions. Seeing as how this is not the first mushroom book for northeastern North America, it's a fair question whether someone who already owns books such as *Mushrooms of Northeastern North America* (Bessette et al.), *Mushrooms of Northeast North America* (Barron), and *Mushrooms of the Northeast* (Marrone and Sturgeon) should add this one to his/her collection. By my count, together, these four volumes describe (in some detail) and illustrate 1070 species. The Bessette, Barron, and Baroni books cover 631, 554, and 542 species, respectively. In each of these books, about one-third of those species are in only that one of the four books (215, 162, and 215 "unique" species, respectively). The Maroni

guide covers far fewer species (117 described and illustrated, with additional species briefly mentioned and/or pictured) and only 11 of them are unique to this book. Thus even someone who owns all three of the earlier books would benefit from the additional coverage offered by Baroni's new guide. In addition, its nomenclature is, with a few exceptions, up-to-date, and it offers the best combination of sufficiently comprehensive descriptions and large, clear, close-at-hand photos of the four, in an attractive package, at a reasonable price. Buying it should be an easy decision for mushroomers on the eastern side of the continent, both those with bulging bookshelves and those who are just getting started building their library of mushroom books.

Reprinted from the Jan./Feb., 2018 issue of the Mycophile, newsletter of the North American Mycological Society.

Articles for the next Log due

April 20, 2018

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Calendar of Events

Check your most recent issue of the *Mushroom Log* or our website for more detailed information. Please plan to join us. All mini-forays are subject to cancellation. Call first to confirm. Please bring a whistle and compass and an **RSVP to the host is mandatory so they have cancellation flexibility.**

Morel and other mini-forays, are subject to change, especially the former. Leaders will be checking the woods to assess their progress, so you should contact them at least a week prior to the announced mini-foray for any updates.

Miniforays: (RSVP required)

Beside those listed below, other mini-forays are likely during the summer/fall..

See later issues of the Log or the OMS website for later postings of these miniforays.

Mini Forays

Advance registration is required for all mini-forays. These are subject to cancellation due to weather and other conditions. Be sure to call

the host in advance.



Additional forays may be announced if conditions are good.

The OMS Board is meeting soon to firm up the Calendar for 2018. In the meantime, all we can do is look over our mushroom books and dream about the upcoming season.

Name:(printed) _____ Address: _____

City: _____ State: _____ Zip: _____ Telephone: _____

Fax: _____ Email Address: _____

Enclosed please find check or money order (check one):

____ \$15.00 annual family membership (newsletter via email and website only)

____ \$20.00 annual family membership (newsletter via paper, email, and website)

____ \$150.00 life family membership (newsletter via paper, email, and website)

My interests are: Mushroom Eating/Cookery _____ Photography _____ Nature Study _____ Mushroom
ID _____ Cultivation _____ Other (specify) _____

Would you like to be an OMS volunteer? In what way? _____

How did you hear about our group? _____

May OMS provide your name to other mushroom related businesses? Yes _____ No _____

LIABILITY RELEASE AND PROMISE NOT TO SUE:

I understand that participating in the activities of a mushroom club involves a moderate amount of risk. This includes all of the risks of being away from home, risks associated with moving about in fields and woods, risks of encountering inclement weather, risks involved in eating wild mushrooms, risks of losing personal property by theft or misplacement, and all other expected and unexpected risks, including illness or injury. While a member of the Ohio Mushroom Society; or as a non-member attending any event hosted by the Ohio Mushroom Society, I agree to assume total responsibility for my own safety and well-being; and that of any minor children under my care, and for the protection of my and their personal property. I release the Ohio Mushroom Society, its board members, club members, contractors, and any and all entities such as parks or preserves, or any private property owner who may host an Ohio Mushroom Society event, and all other persons assisting in the planning and presentation of any Ohio Mushroom Society event, from liability for any sickness, injury, or loss I or any minor children under my care may suffer during any event or as a result of attending or participating. I further promise not to file a lawsuit or make a claim against any of the persons or entities set forth above, even if they negligently cause me or my minor children injury or loss. I agree to hold the Ohio Mushroom Society harmless from any liability they may incur as a result of any damages to any property I may cause. This release and promise is part of the consideration I give in order to be a member of the Ohio Mushroom Society, or to attend any event which they host or attend, whether a member or a non-member. I understand this affects my legal rights. I intend it to apply not only to me but to anyone who may have the right to make a claim on my behalf.

Signature: _____ **Date:** _____

Return form and check or money order to: Ohio Mushroom Society, c/o Jerry Pepera, 8915 Knotty Pine Lane, Chardon, OH 44024

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