

# NJMA NEWS

THE OFFICIAL NEWSLETTER OF THE NEW JERSEY MYCOLOGICAL ASSOCIATION  
VOLUME 52-4 LATE FALL (OCTOBER-DECEMBER) 2022

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Payable for calendar year  
Individual: \$10.00 (online newsletter)  
\$35.00 (hardcopy newsletter)  
Family: \$15.00 (online newsletter)  
\$40.00 (hardcopy newsletter)  
Mail checks (payable to NJMA) to:  
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### Hard-copy printing:

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### Deadline for submissions:

See [page 11](#) of this issue.

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## NJMA EVENTS HOTLINE

908-227-0872 for information on  
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## PRESIDENT'S MESSAGE

With our foray season about to end in New Jersey, I can say the drought resulted in one of the worst seasons for fungi collecting that I have experienced with the club. Despite the dry conditions and the high cost of car fuel, traveling outside my home area still enabled me to see fungi that I had never seen before. Let us hope precipitation will be better next year.

With NJMA forays being members-only since 2020, there have been no invites to the general public. The club goal of "sharing information on fungi" needs to include more of the general public, by going outside our forays. Getting info in front of those who know nothing about fungi (or know little of nature) can be addressed more than we have been doing in recent COVID years. I am not suggesting doing Google ads, but increasing our presence at community events as more of them resume in 2023. At our fall outreach event in Maywood, not only were people fearful of touching fungi, but one woman's fear was so deep, she had never even eaten a white button mushroom from the supermarket. Luckily, we had a mushroom variety and nutrition handout to give to her.

Do we have enough knowledgeable volunteers for such goals? No. In 2023, the club will need to regroup and expand its fungi-aware volunteers back into a workforce needed to restart events and to expand our outreach efforts. Such is just part of the work that begins in January.

As we say goodbye to 2022, I would like to thank two new volunteers, Michael Cardona and Katie Crawford, who staffed our table at the October Maywood Green Fair in Bergen County. Thanks also go out to John Burghardt and new volunteer Brandon Roddy for doing the April ACUA Earth Day in Atlantic County. My thanks also go to those who handled the special in-person requests this year that I knew about: Nina and John Burghardt, Dorothy Smullen and Lyla Meader. Dorothy can also be thanked one more time for the Victor Gambino Weekend Foray and a northern spring Lichen Walk. Thanks to Ursula Pohl for her spring Dye Workshop, which we hope to repeat in 2023. And lastly, let me thank Jason Hafstad and Lizzy DeCicco, whose spring lichen walk got me interested in lichens. This is a good winter activity for those who want to stay fungi-connected over the winter and be outdoors, and not indoors reading books and watching lectures.

– Sue McClary

Join us this Tuesday!

### TAXONOMY TUESDAYS

Online every Tuesday evening at 7:00PM on ZOOM!

Download the ZOOM app to your phone, computer, or tablet and have digital photos of your mushrooms ready to present to the group.

Watch your email for details!



## EDITOR'S NOTES

Hey folks,

With this final newsletter of the year, we say goodbye to 2022 and hello to 2023. The past year has been filled with highs and lows, filled with fungi from Amanitas to Boletes, and as we transition into the new year, let's cross our fingers that the mushroom pickings in 2023 are plentiful and abundant. Wishing all of our readers a happy holiday, and a big old thanks for sticking with me through my first year as the editor for this wonderful association.

See you all in 2023!

– Sydney Hilton

Visit the NJMA  
Discussion Group



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<http://tinyurl.com/jjualgz>

Did you join NJMA before July 1, 2022?

**IT'S TIME TO  
RENEW YOUR MEMBERSHIP!**

[click this box]

### 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 **blue** 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 an instant email. Just look for the "click finger" when you hover your mouse over these items.

**NJMA News** is published quarterly by the New Jersey Mycological Association. Annual subscription price is included in NJMA membership dues.

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# RESEARCHERS GREW CORDYCEPS ON SIX DIFFERENT KINDS OF INSECTS

by Annie Lennon

Reprinted from *Spore Prints*, newsletter of The Puget Sound Mycological Society. (Originally published at <https://www.medicalnewstoday.com/>, October 20, 2022. Edited for length and clarity.)

Preliminary studies show that mushrooms in the genus *Cordyceps* may benefit health via anti-inflammatory, antibacterial, and antifatigue activity. *Cordyceps sinensis* are typically collected in the wild and are difficult to find in large quantities.

When grown in lab conditions, the closely related *Cordyceps militaris* are typically grown on grains. Methods to increase production and reduce production costs could enable the mushrooms to enter clinical trials for various conditions.



PHOTO BY STELLAR VISCERA via iNaturalist.org. ©2020 Some rights reserved.

*Cordyceps militaris*

In a study published October 19, 2022, in the journal *Frontiers in Microbiology*, researchers grew *Cordyceps* mushrooms on six different kinds of insects—crickets, mealworms, grasshoppers, white-spotted chafer larvae, and Japanese rhinoceros beetles.

While the *Cordyceps* grew on all six insects, the growth and shape of the resulting mushrooms differed.

“The cultivation method of *Cordyceps* suggested in this

study will enable the production of [the chemical compound] cordycepin more effectively and economically,” says coauthor Mi Kyeong Lee, of the College of Pharmacy at Chungbuk National University, South Korea.

Researchers noted that after 35 days of growth, mushrooms grew largest on silkworm pupae and mealworms, followed by Japanese rhinoceros beetles and crickets.

However, they noted that mushroom’s size did not necessarily correlate with its cordycepin content. Cordycepin content was highest among *Cordyceps* grown on Japanese rhinoceros beetles.

Mushrooms grown on these beetles had 34 times more cordycepin than those from silkworm pupae.

Upon further study, the researchers found that different compositions of fat, protein, and carbohydrates correlated with different characteristics of growth. Specifically, higher fat contents correlated with the highest contents of cordycepin.

This finding, they wrote, matches previous research showing that vegetable oils increase cordycepin synthesis by activating genes linked to the cordycepin biosynthesis pathway.

They then investigated whether certain kinds of fats may influence growth. In doing so, they noted that a higher oleic acid content was linked to more cordycepin output.

While Japanese rhinoceros beetles had an oleic fatty acid content of 10.8 percent, silkworm pupae had an oleic acid content of just 0.4 percent.



Outreach volunteers Michael Cardona and Katie Crawford at the Maywood Green Fair on October 15 in Bergen County



## BRENDAN BYRNE STATE FOREST FORAY OCTOBER 2, 2022

by John Burghardt, NJMA Foray Recorder

The weather forecast for our foray at Pakim Pond in Brendan Byrne was a chance of rain in the morning with a steady rain in the early afternoon. As it began to drizzle in the parking lot around 10:00 AM, Maricel and I reminisced about a foray five or so years ago at Belleplain where everyone got drenched collecting and the park staff welcomed us indoors to do our sorting and ID. Conditions were not as severe this time; the real rain held off until we were under the cover of a picnic pavilion, but it was a day for mushroom collectors who don't mind the wet and a strong wind. Our hardy gang of collectors was smaller than usual, but we found a lot of interesting material.

The PDF file at <https://tinyurl.com/ttmuzy25> lists the fungi we identified at Brendan Byrne. The note at the top of [page 9](#) explains the layout of the table. Thanks again this week to Sue McClary for providing links to *Mushroom Observer* (MO) observations of collections from our foray.

The mycorrhizal fungi really liked the rain that had fallen in the days preceding our foray. We ended up with many *Amanita*, *Laccaria*, *Lactarius*, *Russula*, and a variety of *Boletaceae*. Most of the species we found in these groups are frequently collected this time of year in the Pine Barrens. The *Hydnellum* and *Clavulina* species, and all of the Earthballs/Puffballs we collected are typical of the Pine Barrens at this time of year. I was surprised not to see any *Cortinarius* or *Tricholoma*, but it's a bit early, especially for the *Tricholoma*.

Thanks to everyone for your careful collections, help sorting, completing foray tags, and assigning names. And thanks to Liz and Jason for identifying our Lichen collections.

## CATTUS ISLAND COUNTY PARK FORAY OCTOBER 16, 2022

by John Burghardt, NJMA Foray Recorder

A mild fall day following a week with some precipitation drew a large group of good collectors. This happy combination produced a nice mix of fall mushrooms at our Cattus Island Foray this year.

The PDF file at <https://tinyurl.com/2mwrh2wc> lists the fungi we identified at Cattus Island. The note at the top of [page 9](#) explains the layout of the table.

This was the first foray of 2022 that didn't feel like a

drought was in progress. One sign of that is that gilled fungi, and especially gilled mycorrhizal fungi, were out in force. This form group accounts for about half of all our collections. A second sign is that we collected relatively few polypores, and no crust fungi. I suspect this is because we were all busy collecting gilled fungi and didn't have time to devote as much attention to polypores and crusts.

## ESTELL MANOR FORAY OCTOBER 23, 2022

by John Burghardt, NJMA Foray Recorder

All summer, we have been wishing for rain at each forthcoming foray location a few days before the day of our foray. Early in the week before our Estell Manor foray, the weather forecast called for rain on Sunday. We considered switching the foray to Saturday, but our space was to be occupied on that day by Boy Scouts camping out. So we prepared for rain, and a small, hardy group of foray participants on Sunday. And so it turned out. The morning drizzle while we were collecting, and light rain while we were sorting and identifying were not disruptive. But the skies opened up as we prepared to leave. We were fortunate with the weather and the fungi. And our small band of forayers was great fun.

The PDF file at <https://tinyurl.com/bde5xvej> lists the fungi we identified at Estell Manor. The note at the top of [page 9](#) explains the layout of the table. Thanks to Sue McClary for the links to her *Mushroom Observer* observations of several fungi that she collected at the foray.

The collected samples present a nice mix of the fungi typical of the coastal plain in southern New Jersey at this time of year, especially among the gilled fungi. I was surprised not to see any "tooth fungi" or "chanterelles" on our species list, as many members of these groups fruit now in the pinelands.

## WELLS MILLS FORAY OCTOBER 30, 2022

by John Burghardt, NJMA Foray Recorder

Wells Mill Park is one of my favorite NJMA foray locations, with its mix of wetland areas inhabited by Atlantic white cedar and drier upland areas inhabited by pine and oak. Whether or not the fungi are plentiful, it always surprises. This year, again, we collected an interesting mix of late fall Pine Barrens fungi reflecting these two very different habitats.

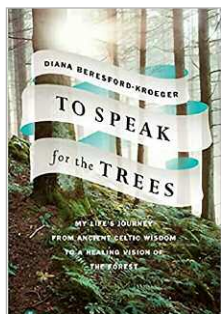
The PDF file at <https://tinyurl.com/4x45emxh> lists the fungi we identified at Wells Mills. The note at the top of [page 9](#) explains the layout of the table. Thanks to Sue McClary for the links to her *Mushroom Observer* observations and to Brandon Roddy for links to his iNaturalist observations of several fungi that we collected. Together their photos capture a nice cross-section of late fall Pine Barrens mushrooms.

(continues on [page 9](#))

## BOOK REVIEW

# TO SPEAK FOR THE TREES MY JOURNEY FROM ANCIENT CELTIC WISDOM TO A HEALING VISION OF THE FOREST

a review by Marja van Ouwerkerk



*To Speak for the Trees*  
*My Journey from Ancient Celtic Wisdom to a Healing Vision of the Forest*  
by Diana Beresford-Kroeger

Timber Press, October 2021  
280 pages

ISBN-10: 0735275076  
ISBN-13: 978-0735275072

This book by a Canadian botanist is written in two parts: A memoir of her life that led her to become a botanist, and an instructional guide to the Celtic alphabet.

In Part I, she describes her remarkable journey through life that eventually brought her to Canada and international acclaim for her advocacy for protection of trees. Her childhood was lonely as she was an only child of parents who came from disparate backgrounds. She was shuttled between her aristocratic English father's home in England and her Irish mother's family home in Cork. Her parents' marriage was not harmonious and her mother was frequently absent, leaving Diana home alone. The differences in backgrounds and religious beliefs of her parents caused discord between them and their families. Her parents separated when she was eight years old, and her mother moved back to Ireland, taking Diana with her to live in her family home. While she had some correspondence with her father, she never had a close relationship with him again, and he died when she was 12 years old. Her mother died a few months later.

Diana, now orphaned, became a ward of the Irish Court, considering her "a member of the wretched orphan class" (her description). Her maternal uncle, Patrick, took responsibility for her upbringing, but took little interest in her – and seemed to forget she needed to be clothed and fed in order to survive. She often went hungry and learned to make her own clothes with what little money he provided her. She was sent to a local Catholic school – St. Aloysius, to be educated. There she was taken under the wing of one of the teachers, who encouraged her love of learning and arranged for her to have math tutoring and instruction in drawing, that allowed her to excel in school.

Her salvation was being sent to stay with her Great Aunt Nellie in the country, in the area of Lisheens, during summer vacations. She was fed well and made to feel safe and secure while fitting into the fabric of the life on the land. She was instructed in the ways of the local customs, and this is where she was introduced to

humanity's connection to the land, local folklore and beliefs, and the medicinal properties of botanicals. During subsequent summers, the people in surrounding areas took it upon themselves to indoctrinate her in the "Wardship", teaching her about the ancient Celtic Triad, nurturing mind, body, and soul. One concept she was instructed in was the duty of care, meaning that humans have the responsibility to care for natural resources so that they will be there for the subsequent seventh generation. She learned about botanical medicine including the use of potato "juice" to treat warts. Later when she had studied medical biochemistry, she was able to prove scientifically that this contained substances that have therapeutic effects.

From an early age, ("perhaps at thirteen"), she developed a rule that guides her life: "Never waste a minute, the most precious thing you have is your time".

After graduating high school at the top of her class, she attended University College Cork with a double-first in medical biochemistry and botany. While a student, she became a teacher's assistant in botany, which allowed her to use her talents in drawing to instruct her fellow students and increased her skills in observing and identifying botanical specimens. During this time, her uncle Patrick became more involved in her life and his extensive library was a treasure for her curious mind.

During her life in Ireland, she was made aware of the impact of the eight hundred years of English occupation of Ireland and how that shaped the landscape. Most ancient forests had been cut down to eliminate hiding places for potential uprisings. Since her father was descended from English gentry that had participated in the occupation this made the impact personal for her.

In 1965, she moved to North America after completing her Irish university training because opportunities to perform research were limited for women in Ireland. She made the decision to leave and take a Fellowship at the University of Connecticut in Storrs. There she studied nuclear medicine and the effects of nuclear radiation on biological systems. When her Fellowship ended, she felt the US had become "militarized" which made her uncomfortable and so she settled at Carleton University in Ottawa for doctoral studies in medical biochemistry, specifically as it pertains to neural pathways. She felt a keen connection to the unspoiled land and became involved with Indigenous Peoples and their quest to protect their cultures and land in Boreal forests.

After completing her doctorate, Diana worked with the Canadian Experimental Farm in Ottawa. There she did groundbreaking research on bioluminescence, which later led to other scientists being awarded the Nobel Prize in Chemistry. However, further research was not funded by the committee overseeing the farm and she was advised to "go home and get married".

(continues on [next page](#))



She faced obstacles in her professional development because women were still facing discrimination and harassment. She eventually married in the 1970s to Christian Kroeger, an active caver and climber, whose father was an engineer at NASA. In Christian she found a supportive partner with whom she bought property in Ottawa to cultivate and protect vanishing species of plants and trees. Their property has since been expanded and they have a thriving collection of tree species that they collected from all over the world. She has been doing independent research on her property ever since. Her findings and curiosity have been a driving force in her speaking out for the importance of humanity's recognition that life on earth is not possible without protecting trees and their habitats; that we live in a symbiotic relationship with them. We need them for producing oxygen, nutrients and vital biochemicals.

She speaks at international symposia and has testified before the United Nations about the necessity for action to prevent climate change and the catastrophic effects that will have on the environment and life on Earth.

She states, "I grew up to look at the world as a single unit, to see the entirety of the global garden and the connections between all living species and...the potentially disastrous consequences of climate change".

She grew up to appreciate "the bridge between ancient oral tradition and scientific (written) knowledge".

In Part II, Diana describes the Celtic Alphabet of trees. This arose from the *Book of Kells*, which gave birth to literacy of Ireland. Each letter is derived from a specific tree and a symbol that is associated with that tree. A short description of the uses of that tree is given and some historical information or a story to describe why this tree has importance. While interesting, this part of the book seemed disjointed and lacking cohesion. Scholars of symbols and language development will find this part of interest.

This book describes the process of her personal and vocational development, of her outlook on life and personal philosophy based on her life experiences and the influence of her upbringing. It highlights the impact her native intelligence and drive had on her ability to overcome obstacles and to absorb the knowledge that was imparted to her by the residents of the Lisheens area. Their nurturing had an abiding influence on her love of the trees and her drive to excel in her chosen areas of expertise.

Diana Beresford-Kroeger is an important scientist and activist. She has done much to bring awareness of the importance of trees in the biosphere and warn of the consequences of indiscriminate destruction of forests – and the role humans must play in forestalling climate change. Anyone with an interest in the natural environment and of understanding how a person evolves in

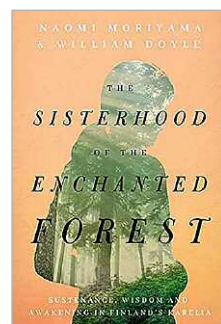
their place in the world will be inspired by reading this book. She is a force to be reckoned with. We can all appreciate that one person can make a difference by taking action and speaking up "for the trees". If you are intrigued by trees and plants and how they impact our lives, you will enjoy this book. Happy reading.



## BOOK REVIEW

# THE SISTERHOOD OF THE ENCHANTED FOREST

a review by Cheyenne DiEnno



## *The Sisterhood of the Enchanted Forest*

by Naomi Moriyama and William Doyle

Pegasus Books, 2021  
304 pages

ISBN-10: 1643136461  
ISBN-13: 978-1643136462


*The Sisterhood of the Enchanted Forest* is a multifaceted book. Written by Japanese born Naomi Moriyama, she takes us on her own enlightening journey, gaining insight not only within herself, but to an unfamiliar culture that she has only read about – which opens an entire new way of life for her. In the past, Naomi has only written Japanese cookbooks, and has been a judge on the Food Network's *Iron Chef America*, and was also a guest on *The Today Show*, *The View* and *Dr. Oz*. Her trip so transformed her that she felt compelled to write about discovering the power that laid within her all along.

Naomi finds herself moving to "another world" from her crowded, bustling New York City home of over 25 years when her husband, William, is offered a six-month Fulbright Scholar program in Finland, the most sparsely populated country in the European Union. After reading as much as she could about the country before leaving New York City, she is not only skeptical, but downright nervous about the move with their seven-year-old son. With that in mind, and the long, dark nights of winter, she only agrees if she has a plan of escape if the new surroundings proved to be too much for her or their son. With that deal being struck with her husband, they take off for this very foreign, very intriguing place. What she encountered was not only completely unexpected, but a place that found its way into not only her heart, but her entire being.

While this book is not exactly a "mushroom" book *per se*, throughout its pages are numerous references to several species of mushrooms and how they relate to the Finnish people; particularly the women of Finland, who Naomi realizes are kindred spirits. These strong, powerful, and independent women teach her so much

more than how to cook and eat mushrooms, and, while learning about these women, she discovers more about herself than she ever thought possible. Yes, Naomi learns about various mushrooms, how to forage for not only mushrooms, but how it is possible to prepare a meal completely from the land and sea. The attachment the Finnish people have to their forests and nature is in the fabric of their culture and their beings, and Naomi becomes one with that spirit.

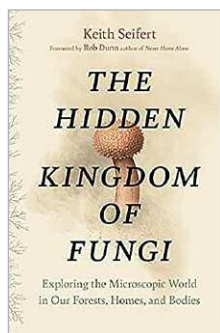
The book is an interesting journey through not only the history of Finland, but on the perception of the people, especially the women, as Naomi delves deeper and deeper into the Enchanted Forest with her newfound sisters. The author takes us through short “history lessons” about the country, the women, and the Democracy of Finland, giving the reader a front row seat in the classroom on the resiliency of these Nordic people. She is truly caught off guard on what and how she feels as the months go on.

As a long time forager, myself, I still came away with many great tips. Even though this book is what I'd consider a more “female oriented tale”, anyone who loves being in nature, eating off the land and (of course) finding that perfect 'shroom will find this a worthwhile read. Without giving away any more of the story, I can tell you Naomi invites you into *The Sisterhood of the Enchanted Forest*, and asks that you too, be enchanted! 

## BOOK REVIEW

# THE HIDDEN KINGDOM OF FUNGI

a review by Sue McClary



## *The Hidden Kingdom Of Fungi*

by Keith Seifert

Greystone Books (2022)  
296 pages

ISBN-10: 1771646624  
ISBN-13: 978-1771646628

Understanding the importance of microscopic fungi has to begin with knowing that they are all around us. The book is quite extraordinary in the amount of material it covers. A ten page appendix of the fungal classes down to species name and their relevance, with a few helpful illustrations, gives this book added shelf value. The book is divided into three main parts, the hidden kingdom, the fungal planet, and the mycelial revolution.

The reader is first asked to see fungi from their viewpoint, from their evolutionary beginnings to their socially aware 'search for love'. Lichens and Leaf-cutter ants are fungi friends. Trees destroyed by dutch elm disease, chestnut blight, ash dieback, may not have so much love. Many of us will know most of this fungal

history and background, but the book gets more interesting as it diverges into the various directions on how fungi impact our lives and food supply.


There is plenty of bad press for fungi in this book. On one end of the spectrum, there is the potential of using good endophytes (fungi internal to the plant) to combat Spruce budworm, and on the other, there is the need to raise endophyte-free forage to prevent livestock poisonings such as rye grass staggers. After the 1917 wheat rust epidemic (*Puccinia* sp.), efforts were made to even wipe out its alternative fungal hosts, the Barberry shrubs, to prevent future outbreaks. Readers are also warned to watch out for hidden long term effects from aflatoxin on peanuts and maize, which will accumulate in the liver leading to cirrhosis and liver cancer.

When a fungal good guy does emerge, like the white muscardine fungus (*Beauveria bassiana*), it is first considered a villain. Named after Agostino Bassi, who helped save the Italian silk industry from it, the fungus is now a potential bio-hero, as DNA has shown it is actually 30 species that are quite specific about what insects they each attack.

Fermentation with yeasts is happy news for products like cheeses, soy sauce, koji, kombucha, molds to artificially dry aged beef, microbeers, and chocolate. We are reminded there are always a few downers, like Coffee rust (*Hemileia vastatrix*).

The chapter devoted to indoor fungi made me glad this book does not have photos. From soft rots and dry rots in your house frame, molds in your air, fungi in your dust, and in your bathroom, the author graphically describes it all. You can have your house dust tested with Next Gen DNA 2008, but it cannot distinguish between dead fungi and live fungi. Advice: Remove dead leaves from house plants. Even conifers shed their needles, perhaps to help reduce their fungal load that could turn against them.

The impact of fungi on the field of medicine is also balanced. Human health has benefited from cyclosporine produced from fungi, which has helped reduce transplant rejections. However, hospitals now combat over 500 fungal types compared to 100 in the 1970s that infect immunocompromised individuals.

Overall, this book is a wonderful collection of the good and bad impacts of fungi. The author's agricultural experiences provide a more atypical viewpoint than other books. It is full of information that can inspire us to use mycotechnology to create a more sustainable planet. 

Happy Holidays  
To All!



## WHO'S IN A NAME?

### The genus *Jackrogersella*

by John Dawson (eighty-eighth in a series)

Few fungal eponyms incorporate both the first and last names of an individual. One that does is the rather awkward generic name *Jackrogersella*, created in 2017 for a newly erected genus in the family Xylariaceae. It honors the life and work of the distinguished American mycologist Jack David Rogers, who made major contributions to the taxonomy and ecology of that family.

Rogers was born on 3 September 1937 in Point Pleasant, West Virginia, the son of two schoolteachers, Youkobis Uzskuriatis (who later changed his name to Jack Rogers) and his wife Thelma (née Coon). Following his graduation in 1955 from Point Pleasant High School, Rogers traveled across the state to Davis and Elkins College, where he enrolled in a five-year cooperative program with Duke University. At the start of his junior year there, in 1957, he met fellow student Belle Clay Spencer, the daughter of a University of Virginia chemistry professor. They were married the following June, and two years later, Rogers received both a Bachelor of Science degree from Davis and Elkins and a Master of Forest Management from Duke. He then continued his education at the University of Wisconsin, Madison, where he earned a Ph.D. in plant pathology in 1963.

Upon receipt of his doctorate, Rogers was offered a faculty appointment in the College of Agriculture at Washington State University in Pullman, where for the next sixty (!) years he taught courses on forest tree pathology and advanced mycology in the Departments of Forestry and Plant Pathology. During his long academic career, he traveled widely collecting specimens, published two books and more than 230 scientific papers, served as a curator of WSU's Charles Gardner Shaw Mycological Herbarium, and became renowned both for his research, supported by National Science Foundation grants for more than 30 years, and for his passionate devotion to teaching. Four years after arriving at WSU, Rogers won his college's R.M. Wade Award for Instruction. In 1986, he received the Sahlin Faculty Excellence Award for Research, Scholarship and the Arts. In 2006, the university granted him its highest honor, the Eminent Faculty Award, and in 2007, named him a Regents Professor.

Outside WSU, Rogers served as President of the Mycological Society of America in 1978, and he later received two of that Society's most prestigious awards: the Weston Award for Teaching Excellence in 1992 and the Distinguished Mycologist Award in 2004. He was recognized worldwide as an authority on the Xylariaceae, and was held in the highest regard both by his colleagues and students, several of whom contributed to a



Jack D. Rogers

Festschrift published in his honor in 2008 by his faculty colleague and former student Dean Glowe.

Apart from his teaching and research, Rogers was devoted to his wife and to his twin daughters, Rebecca and Barbara (born the year after he took his position at WSU). He was also an avid hunter and fly fisherman, was active in the Pullman Presbyterian Church, and according to all accounts of his life I have seen,<sup>1</sup> was a "legendary humorist" with an inexhaustible store of jokes.

Rogers retired from WSU in 2013, but continued to visit the department regularly until prevented from doing so by the COVID pandemic. In 2019, he also appeared in the widely screened documentary film *Fantastic Fungi*. He died at age 83 on 14 June 2021, survived by his daughters and his wife of 63 years. 🍄

<sup>1</sup> This profile is based on the obituary tributes to Rogers published in the *Point Pleasant Register* (<https://tinyurl.com/4akefufw>), on the Mycological Society of America site (<https://tinyurl.com/ykw27kuy>), and in the newsletter of the College of Agricultural, Human and Natural Resource Sciences at Washington State University (<https://tinyurl.com/3jm5x497>), as well as the personal tribute posted to the British Mycological Society on 23 June 2021 by Tony and Margaret Whalley (<https://tinyurl.com/yjtjwautv>). The portrait of Rogers reproduced here was taken from the third of those sources.



## BELLEPLAIN STATE FOREST FORAY NOVEMBER 7, 2022

by John Burghardt, NJMA Foray Recorder

After a long season of mostly dry foray sites, conditions at our Belleplain foray felt more normal. The soil and decaying trees on the ground held some moisture. Typical wet spots were, well, wet. And the weather was mild. Our identified collections included a mix of familiar and unusual collections, and a mix of species we find throughout the year and ones we find only in late fall.

The PDF file at <https://tinyurl.com/2nwurc77> lists the fungi we identified at Belleplain. The note at the top right of this page explains the layout of the table.

By my count, the late season fungi comprise approximately 30 of the species we identified, or just over 40 percent of our non-lichen species. This includes those regularly appearing in late fall such as the following mycorrhizal species: All of the *Amanita*, *Cortinarius* and *Tricholoma* (including *Melaleuca*), *Russula perlactea*, all of the *Suillus* species, several *Rhizopogon* collections not identified to species, *Scleroderma polyrhizum*, and *Hydnum subolympticum*. We also identified several gilled fungi that are saprobic and usually collected toward the end of our season: *Hypholoma fasciculare*, *Hypholoma lateritium*, *Lepista nuda*, *Lyophyllum descastes*, and *Rhodocollybia maculata* – as well as three wax caps species whose ecological role is uncertain: *Cuphophyllus virgineus*, *Gliophorus laetus*, and *Hygrocybe coccinea*.

While our forays take a break for the winter, we hope you will keep looking for fungi – they don't take the winter off. Over the years, Nina and I have found many interesting, unusual fungi on our winter outings. One way of keeping in touch is to participate in our weekly Tuesday ZOOM sessions in which members share their finds.



### Send in your articles and photos!

### SUBMISSION DEADLINES for NJMA NEWS

NJMA News is a quarterly publication timed roughly to correspond with the middle of each season. The new issue dates and deadlines for 2023 are as follow:

**WINTER** (February) issue: Deadline is 1/15/2023

**SPRING** (May) issue: Deadline is 4/15/2023

**SUMMER** (August) issue: Deadline is 7/15/2023

**FALL** (November) issue: Deadline is 10/15/2023

### Explanation of the online foray species lists

The lists are arranged alphabetically within “form groups”, which are defined by similarities in the structure of the spore bearing surface of the fungi. While this provides a straightforward way to group similar fungi, membership in the same group is not indicative of genetic relationships among the fungi. (See Timothy J. Baroni, *Mushrooms of the Northeastern United States and Eastern Canada*, Timber Field Press, 2017). The table shows the frequency of collections at forays this year and over the 41 years NJMA has kept records of its finds. This helps recognize common and uncommon species.



### BYTES, BITS, & BITES

#### TASTY LITTLE TIDBITS FROM OUR MEMBERS

Have you read something interesting concerning mushrooms or foraging? Send it to [njmaeditor@njmyco.org](mailto:njmaeditor@njmyco.org) and share with the rest of our members!

from Sue McClary:

Are Trees Talking Underground? For Scientists, It's in Dispute:

<https://tinyurl.com/2p924323>

from Sue McClary:

Get Ready for the Magic Mushroom Pill:

<https://tinyurl.com/5zpwHHhw>

from Sue McClary:

Mushrooms serve as ‘main character’ in most ecosystems:

<https://tinyurl.com/3fpdzHbr>

from the Editor:

Fungi That Cause Lung Infections May Be Spreading Across the US:

<https://tinyurl.com/mw5k9zs>

from the Editor:

Finessing fungi: A mushroom-based meat alternative makes its debut:

<https://tinyurl.com/yckdxwnu>

from the Editor:

From football to fungi: Denver Broncos Quarterback's new life as a mushroom farmer:

<https://tinyurl.com/38e8furp>

from the Editor:

With so many undiscovered mushrooms, citizen scientists find new species all the time:

<https://tinyurl.com/yc3jxs96>





## RECIPE FILES

These are two recipes from NJMA member Warren Marchioni. Warren says that he has enjoyed these two recipes which include mushrooms for years. His Northern Italian heritage gives him incentive to explore that cuisine which features two versatile mainstays – risotto and polenta. These meals are relatively easy to prepare, but do keep the cook active at the range during most of their preparation. He advises, “I don’t get too specific about the mushrooms to use as the fun is in the experimentation and everyone has their favorites.”

### Mushroom Risotto

#### INGREDIENTS (for 2 servings)

**1 cup Arborio rice** (don't ever use any other kind of rice)  
**4 tablespoons of extra virgin olive oil**  
 (+1 teaspoon truffle-infused olive oil – optional)  
**1 teaspoon dry basil** (fresh basil is better, if available)  
**1 tablespoon minced garlic**  
**½ teaspoon oregano**  
**½ teaspoon salt**  
**black pepper (to taste)**  
**1 cup of dry white wine**  
**6 ounces of mixed gourmet mushrooms**  
 (shiitake, Portobello, oyster, trumpet)  
**3 cups of fat-free chicken broth**  
**Parmesan cheese, grated**

#### PREPARATION

- 1) In one pot, keep chicken broth on a low burner. (Don't boil – you might want to start this after step 5).
- 2) In a larger pot, add the olive oil and garlic. Under a low burner, cook until the garlic is golden in color.
- 3) Cut mushrooms into smaller pieces and add to oil and garlic.
- 4) Stir mushrooms while adding salt, basil and oregano. Add a dash of pepper.
- 5) Cook mushrooms, occasionally stirring, until tender (about 20 minutes). Add additional oil if mushrooms absorb the original amount.
- 6) Add rice.
- 7) Immediately after, add wine and stir occasionally. Alcohol will partially evaporate, but the taste remains.
- 8) When the alcohol is just about gone, begin ladling in the chicken broth about a 1/4 cup at a time.
- 9) From here on in, stir the rice on a regular basis (about every 30 seconds) and add chicken broth as the previous addition is absorbed – don't let the rice dry out – keeps you near the stove, but it will be worth it.
- 10) After about 25 minutes, begin tasting the rice. You'll know when it is done by its texture – tender and the rice grains will stick to each other.
- 11) Serve and sprinkle parmesan cheese on the risotto.

To make the dish vegan, use grated vegan cheese and vegetable broth.

#### Pairing:

Italian white wine such as Orvieto or Pinot Grigio

### Polenta with mushrooms and cheese

#### INGREDIENTS (serves four as an appetizer, or two if it is the main dish)

**125 g of polenta** (here is where a food scale comes in handy) - Don't use instant polenta. My favorite brand is Alpina Savoie (product of Italy) from <https://www.gourmetfoodworld.com>  
**¼ teaspoon of salt**  
**3 tablespoons of extra virgin olive oil**  
 (usually need a little extra – keep the bottle standing by)  
**6 ounces of sliced mushrooms (your call)**  
**1 teaspoon of basil**  
**1 tablespoon of minced garlic**  
**8 Two-inch square (¼ in thick) cuts of Italian fontina or mozzarella cheese**

#### PREPARATION

- 1) In a large pot, add the polenta to 750 ml of salted water that has been brought to a boil. Reduce to a low heat and cook for about 25 minutes or whenever the polenta is the proper consistency, stirring frequently.
- 2) In a medium-sized skillet, add the olive oil and garlic. Cook, stirring, under a medium flame until the garlic is golden.
- 3) Add the mushrooms and basil to the oil, lowering the flame. Stir occasionally – remember you are also stirring the polenta at the same time. Polenta requires your presence and attention.
- 4) After a while, if the mushrooms have absorbed most of the oil, add 2 more tablespoons.
- 5) About when the polenta is near ready to be served, add the cheese to the mushroom skillet and leave only as long as it takes to warm it but not melt it.
- 6) Ladle out the polenta onto separate dishes and cover with mushrooms and cheese in olive oil. Serve hot.

#### Pairing:

Italian white wine such as Orvieto or Pinot Grigio





# AS GLOBE WARMS, INFECTED PINES STARVE AND DISEASE-CAUSING FUNGI THRIVE

## STUDY IS FIRST TO ANALYZE HOST, PATHOGEN GENES IN CLIMATE CHANGE CONDITIONS

by Emily Caldwell. Reprinted from *The Spore Print*, the monthly newsletter of the Los Angeles Mycological Society. Sourcing information at the end of the article.

The high heat and low water conditions produced by global warming weaken pine trees' resistance to disease by hindering their ability to mount an effective defense at the same time that pathogenic fungi in their tissues become more aggressive, new research suggests.

The study is the first to simultaneously examine metabolic gene expression in both host trees and the pathogens attacking them under normal and climate-change conditions. The findings help explain the mechanisms behind what has become a well-known fact: The warming world makes trees more susceptible to disease.

The study was conducted on Austrian pines, which are native to southern Europe and used ornamentally in the United States. Researchers tested climate change conditions' effects on the trees after infection by two related fungi that have killed large swaths of these pines over time.

"We decided to study the effects of the combined stresses of higher temperatures and lower water availability because that's what trees will experience in the future," said senior author Enrico Bonello, professor of molecular and chemical ecology of trees in The Ohio State University Department of Plant Pathology.

"Within three days of infection under climate-change conditions, the tree was pulled in two different directions: It was deprived of carbon by both reduced photosynthesis and enhanced acquisition of the carbon by the fungi. When we're talking about carbon, we're talking about sugars, food and reserves for all other metabolic processes in the trees, including growth and defense."

The research was published recently in the journal *Frontiers in Forests and Global Change*.

Carbon sequestration by the world's forests is a major mitigator of climate change's effects, and could be accelerated if improvements are made to their protection, management and restoration, experts say. In a 2021 study of U.S. Forest plots, scientists estimated recent disease and insect disturbances had lowered carbon sequestration rates by 28% and 69%, respectively, from 2001-2019, compared to undisturbed forests.

"This is another reason to combat global warming induced by human activities – another piece of evidence that what we are doing to the planet has so many implications," Bonello said.

He and colleagues exposed 3-year-old Austrian pines to two sets of conditions: daily temperatures ranging from 59 to 82.4 degrees Fahrenheit for the control or, to mimic climate change conditions, daily temperatures of 68 to 91.4 degrees Fahrenheit, which reduced the amount of water in the atmosphere compared to available water in the cooler temperatures.

After trees got accustomed to their conditions, they were inoculated with one of two strains of the pathogenic fungus. *Diplodia sapinea*, an aggressive fungus, and its less-aggressive relative *Diplodia scrobiculata* are found in both the Northern and Southern hemispheres.

They remain dormant much of the time, waiting for the best opportunity to kill host cells and feed on the dead plant material – usually when their host is weakened. In addition to killing Austrian pines, the fungi have also begun damaging Scots pines in Scandinavia.

"The hypothesis is that the warming and lower water availability in those areas is making trees more susceptible to a pathogen that would normally sit in the background," Bonello said.

Three days after infection, the team collected plant and pathogen tissue that was used for an RNA sequencing analysis to identify gene activation, or expression, pattern changes in the trees and both strains of the fungi.

The analysis showed a fundamental change in the trees exposed to the climate-change conditions: Their capacity to carry out photosynthesis decreased, meaning they had fewer resources to invest in their own food supply, growth and defense against disease. At the same time, both strains of the fungus ramped up their carbon utilization machinery, and the usual difference between their aggressiveness disappeared – they became significantly more pathogenic, and to the same extent, than under normal conditions.

"Essentially, climate change conditions led the host to starvation, which is compounded by the fact that the fungi became more aggressive, grew faster and killed more host tissue faster," Bonello said. "These were early responses, but it gives us an idea of what's happening in the system."

While these results are one example of one tree species and one type of pathogen, the research offers insights into how much damage global warming may do to one of the planet's main carbon sinks.

"Pathogen and pest invasions are already having an effect on carbon sequestration," Bonello said. "If you make it even worse with climate change, carbon sequestration will be affected negatively because trees will die in ever larger numbers. Trees that might otherwise survive adverse environmental conditions for a while,

(continues on [next page](#))



and recover if conditions become better or intermittent, may be killed by pathogens in the meantime.”

This work was supported by the Ohio Agricultural Research and Development Center, Ohio State’s College of Food, Agricultural and Environmental Sciences, the U.S. Department of Agriculture Forest Service and the National Science Foundation.

Bonello and Ohio State co-authors Soumya Ghosh, Jason Slot, Michael Sovic, Anna Conrad, Bethany Kyre and Vinod Vijayakumar collaborated on the study with Erik Visser and Sanushka Naidoo of the University of Pretoria in South Africa.

**STORY SOURCE:**

Materials provided by Ohio State University. Original written by Emily Caldwell.

Note: Content may be edited for style and length.

**JOURNAL REFERENCE:**

Soumya K. Ghosh, Jason C. Slot, Erik A. Visser, Sanushka Naidoo, Michael G. Sovic, Anna O. Conrad, Bethany Kyre, Vinod Vijayakumar, Pierluigi Bonello. Mechanisms of Pine Disease Susceptibility Under Experimental Climate Change. *Frontiers in Forests and Global Change*, 2022; 5 DOI: 10.3389/ffgc.2022.872584

## A FEW PHOTOS FROM OUR MEMBERS

If we have extra space, we occasionally publish some of the more interesting fungus photos submitted to us by our members. If you have a special photo, feel free to submit it to us. (Please don’t send dozens of photos; this is **not** a photo contest and we don’t have time or resources to go through dozens and dozens of photos!)



*Blushing Rosette (Abortiporus biennis)* by Maricel Patino



*Radulomyces confluens* by Maricel Patino



*Woolly Oyster (Hohenbuehelia mastrucata)* by Maricel Patino



*Stinking Orange Oyster (Phyllotopsis nidulans)* by Maricel Patino



*Calycina citrina* (was genus *Bisporella*) by Sue McClary