A PUBLICATION OF THE NORTH AMERICAN MYCOLOGICAL ASSOCIATION

The Mycophile Quarterly

APRIL MAY JUNE 2025

NEW *McILVAINEA* TO DROP IN JULY

NAMA Oregon Dunes
REGISTRATION OPENS JULY 16

FORTAGING WITH
Manitoba Mushroom Society

A Personal Mycoperspective
ON THE JANUARY L.A. WILDFIRES

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Cover

Pancakes
Chris Ross

Archive Copies
of the newsletter are available in the Publications section of the NAMA website, www.namyco.org

Content
Please contact Mycophile@namyco.org with your article proposals and ideas. We'll get you published!

Submissions
Submissions must be received in editable-document format (do not send pdfs), with photos attached separately (not embedded) and photo credits provided.

NAMA Toadstool Picker's Review

"NAMA" is the acronym for the North American Mycological Association.

NAMA President Trent Blizzard and Web Admin Kristen Blizzard

It has been regularly noted, by all types of members and nonmembers, that NAMA membership is underrepresented in the North American countries of Canada and especially Mexico. We only have a few members in Mexico and a several dozen members from Canada. To put it bluntly, we aren't living up to our name.

In the last few years, our Executive Committee has started to take steps to bolster our activity across all of North America. The first big step we took three years ago was to plan a Regional Foray in Mexico. In August 2025, NAMA proudly embarks on its third foray to Mexico in three years. While these have been small events, they have had great impact in giving

NAMA a chance to develop relationships with many new people in Mexico and start becoming more relevant in that country. Of course, we have a long way to go.

This year we earmarked two of our foray scholarships for Mexican and Canadian individuals to utilize. We are excited to welcome our first two recipients to the New England NAMA 2025 Foray. NAMA foray planners are also trying to bring in presenters and staff from both Canada and Mexico, hopefully every year going forward. The Executive Committee has charged the *Mycophile Quarterly* Editor (our own Chief Operating Officer Bruch Reed) to include articles from Canadian and Mexican perspectives—and even French and Spanish languages—on a regular basis, so watch for that content in the near future.

NAMA's biggest move happened recently, when the Board of Trustees voted to offer new lower-cost membership levels for these two countries. This was a response to the fact that $30 is more prohibitive to the average Mexican or Canadian than the average U.S. American. While this move may happen to coincide with the increasing International political tension, the Board has been discussing and planning these new memberships since the fall of 2024. We voted to offer Canadian memberships for $20 USD and Mexican memberships for $10 USD.

What's next? I am not sure! We are working on a Regional Foray in Canada for 2026, but it is still a secret while we plan it:). Mexico doesn't really have "mycology clubs" per se and I hope we can find a way to affiliate and partner with the mycological groups they do have—and maybe even help them start new ones. The path forward there is unclear, since they don't have a history local clubs like the USA or Canada have. I personally would like to see *both* Mexicans and Canadians on our Executive Committee. Maybe a new committee to help us with outreach? I know you have many ideas and want to get involved, so please reach out to me! president@namyco.org.

Trent Blizzard

Trent Blizzard
President

MQ NAMA News

Instagratitude!

KATHY YERICH, MARKETING COMMITTEE CHAIR

You know how folks say, "It's always 5 o'clock somewhere?" Well, it's always mushroom season somewhere! Have you traveled to specifically collect or study mushrooms? If your schedule or resources haven't allowed for physical travel, drop in and "Explore the Mycoverse" from your phone, tablet or computer through the NAMA Instagram account @northamericanmyco.

Our talented Instagram Manager, @oliver.p.filialuna, reliably keeps you in the loop on NAMA events, including the monthly book club, webinars, scholarships, contests and upcoming forays while also inviting a noteworthy cast of mycocharacters from around the planet to contribute captivating content. From Alberta to Bhutan, the outstanding contributors listed below allowed us to travel virtually and view intriguing worlds of hunting, growing, cooking, studying and celebrating mushrooms! Thanks to their dedication, our account has *over 30,000 followers*!

Not an Instagram user? You can catch the same content on the NAMA Facebook page. We also encourage you to follow AND CONTRIBUTE to the NAMA Facebook GROUP. We look forward to seeing YOUR mushroom related content there!

INSTAGRAM TAKEOVER ARTISTS

Bhutan Mushroom Tours	@bhutanmushroomtours
Gomo Adventures	@gomoadventures
Max Mudie	@allthingsfungi
Fungalphabet	@fungalphabet
The Myco Zine	@mycozine
FungiFoundation	@fungifoundation
Freya Gereke	@oddfoxandfern
Rotglow Research Farm & Nursery	@rotglowfarm
Runner Hyphae	@runnerhyphae
Chris Baker	@chicorynaturalist
Julie Beeler	@mushroomcoloratlas
Alberta Mycological Society	@albertamycologicalsociety
Aaron Tupac	@symbiomyconaut
Exploring the Mycoverse	@mycoverse
Fungal Diversity	@fungaldiversitysurvey
Huntington Library & Botanical Gardens	@thehuntingtonlibrary
Children's Forest School	@childrensforestschool

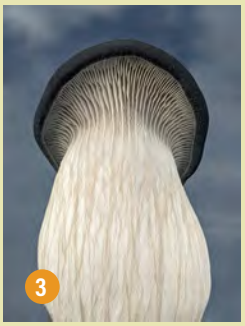
2025 NAMA Visual Arts Contest Kicks Off: Enter by August 1st!

GINGER MCKEY, VISUAL ARTS COMMITTEE CHAIR

NAMA's Visual Arts Contest kicks off with opportunities for artistically inclined fungal folks to submit their creations in the following 14 categories:

1. Traditional Drawing
2. Traditional Painting
3. Mixed Media
4. 3D Art—Sculpture
5. 3D Art—Sewing and Fiber Arts
6. 3D Art—Jewelry
7. 3D Art—Ceramics/Pottery
8. 3D Art—Woodworking
9. NonAI Digital Art
10. AI Digital Art
11. Photography—Pictorial
12. Photography—Abstract
13. Photography—Symbiosis
14. Photography—Documentary

The contest will be judged by members of NAMA's Visual Arts Committee, with awards announced at NAMA New England. One winner from each awarded category will receive a one-year membership NAMA membership or a one-year extension of their membership if they are already a NAMA member, as well as having their work announced and displayed in *Mycophile Quarterly*—and possibly on its cover!



1. *Time to Reflect* by Slortz Photography
2. *Connected* by Sundari Masters
3. *Abstract Blue Oyster* by Christin Swearingen
4. *Study: Shaggy Mane* by Tim Tobias
5. *Meta* by Kimberly Hunter
6. *Floriformis* by Erin LaRocque

For full NAMA Visual Arts Contest Rules and to Submit Your Entry!

CLICK HERE

Announcing New Visual Arts Committee Chair Ginger McKey

BRUCH REED, COO*MQ* ED.

Former Chair Rose Tursi

Longtime Visual Arts Committee Chair Rose Tursi decided to step down a year ago but, characteristically of Rose, she faithfully stayed on to keep innovating through Pacific Northwest NAMA Camp's wildly popular "Craft Cave" and to launch our 2025 Annual Foray Logo Contest, the finalist of which graces the cover of this *MQ*. Under Rose's passionate leadership, Visual Arts underwent notable invigoration as she expanded NAMA's venerable Photography Contest to an inclusive breadth of artistic media, as readers will see from the 2025 Visual Arts Contest launched in this *MQ*. NAMA is deeply grateful to Rose for her inspiration and hard work over her 6 years leading this dynamic committee and we can't wait to see what she does next!

Current Chair Ginger McKey

We are just as excited to announce that Ginger McKey has stepped up to take NAMA's Visual Arts reins! Ginger's passion for mushrooms developed in the midst of the coronavirus pandemic. She describes herself as a "seeker of treasures;" while living in the Midwest, she enjoyed searching the shores of Lake Michigan for sea glass, fossils and other objects she might incorporate into art or jewelry. Shortly after moving to Colorado in 2019, she was introduced to mushroom foraging by a fellow hiker. She was immediately enthralled (though rather disappointed to realize how many years of foraging she had missed out on while living in the Midwest). Like many of us, she soon found herself reluctant to schedule travel during foraging off-seasons.

AS AN ARTIST, GINGER PRIORITIZES THE USE OF SUSTAINABLE MATERIALS OVER NEW ONES IN THE INTEREST OF MINIMIZING HER IMPACT ON THE ENVIRONMENT.

Enchanted by the beauty of each mushroom she encounters, she enjoys trying to capture the unique traits and personalities of different species in her needle-felted sculptures.

The clothing and decor she creates depict an array of fungi, flora and fauna, made using deconstructed textiles, thrifted clothing, locally sourced wool, salvaged metals and hardware, reclaimed wood and natural mycopigments. She designed the fungariffic costume pictured here, which awed us all at Pacific Northwest NAMA Camp! Her interest does not rest solely in fungal aesthetics, however. She also appreciates fungi for their strength, determination and communication skills.

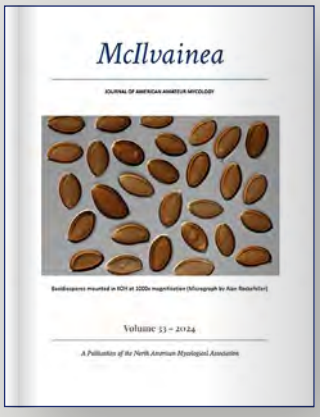
Ginger is a proud member of the Colorado Mycological Society and NAMA. Her photographs and writing are featured in *Foraging Mushrooms of the Rocky Mountains*, Falcon Guides, 2024.

Fungus meets fashion. Ginger's stunning costume, handcrafted from reclaimed textiles, natural mycopigments, and salvaged materials, wowed everyone at Pacific Northwest NAMA Camp.

McIlvainea Vol. 34 to Drop in July

BRUCH REED, COO*IMQ* ED., *MCILVAINEA* ACTING EDITOR

McIlvainea: The Journal of American Amateur Mycology is NAMA's peer-reviewed academic journal. Named in honor of Charles McIlvaine (1840–1909), one of the progenitive North American mycologists, penning the 700-page *One Thousand American Fungi: Toadstools, Mushrooms, Fungi: How to Select and Cook the Edible: How to Distinguish and Avoid the Poisonous.* He famously consumed 600 mushroom species and made detailed culinary notes on each; his nickname, "Old Iron-Guts," reminds us that the first mycologists were certainly mushroom-eaters, probably women, seeking to nourish their families safely and deliciously.



McIlvainea

THE JOURNAL OF AMERICAN AMATEUR MYCOLOGY

Charles McIlvaine (1840–1909)

Established in 1972, *McIlvainea* has been published regularly for over half a century under many distinguished editors including Dr. Britt A. Bunyard, Dr. Andrew Methven and, most recently, NAMA Past Second Vice President Laura Juszczak, whose rigor and quiet assiduousness has led to a resurgence of interest from scientific authors, researchers and readers. It is an honor to serve as editor for this latest edition as the NAMA Executive Committee seeks someone to step into Laura's formidable shoes.

Welcome to *McIlvainea*, Volume 34, 2025, comprised of five peer-reviewed papers by the estimable authorial likes of Joshua Birkebak, Logan Borosch, Kyle Canan, April Coulon, Sarah Culliton, Zach Geurin, Sigrid Jakob, Scott Ostuni, Mandie Quark, Alan Rockefeller, Matthew Rozanoff, Stephen Russell, Jessica Williams and the DNAMA Committee. Below are paper titles and abstracts for your perusal. Please note that you may be receiving this *MQ* teaser before the actual release of *McIlvainea* but you can expect to see it on the NAMA website (www.namyco.org) under the "Publications" tab.

Ohio Mushroom DNA Lab: Nanopore Strikes Back, One Year of Achievements and Challenges

KYLE CANAN, MANDIE QUARK, APRIL COULON, ZACH GEURIN, SCOTT OSTUNI, JESSICA WILLIAMS, ALAN ROCKEFELLER, SIGRID JAKOB, LOGAN BOROSCH, MATTHEW ROZANOFF, SARAH CULLITON, JOSHUA BIRKEBAK

"The Ohio Mushroom DNA Lab (OMDL) operates as a grassroots community-science initiative, providing DNA barcoding of macrofungi free of charge to the public. This study presents OMDL's second compendium, a large-scale effort resulting from the high-throughput sequencing of over 6,500 specimens conducted over a nine-month period. Our overall success rate was approximately 60% across sequencing runs OMDL6–OMDL15 and exactly 3,755 new reliable ITS sequences were generated and deposited in GenBank. We present our process, including challenges and methodological innovations that lead to breakthroughs in tracking, reagents, data recovery and bioinformatics; ultimately driving advancements in throughput and analytics. By leveraging the power of a community to create open-source data at scale, we are filling knowledge gaps and overcoming the traditional barriers of biodiversity research. Public accessibility of OMDL data contributes to our collective understanding of fungal diversity, conservation and biogeography."

Psathyrella albanyensis: a rare mushroom resurfaces after 45 years

SCOTT OSTUNI, JOSHUA BIRKEBAK

E, Bruce Welkovich; photo F, Jonathan Frank

"During July of 2022, a collection of an unknown species of *Psathyrella* was recorded on the Silverdale Trailhead in Georgetown, Colorado. After DNA barcoding the ITS region and subsequent microscopic examination, we conclude this species to be *Psathyrella albanyensis* A. H. Smith. This species was originally described from Albany County, Wyoming. The name has been used only one other time, 20 years later, in Pitkin County, Colorado. Three occurrences are presented, expanding the range of the species to include Alaska and Arizona. The first color photographs of this species are presented."

Sava Krstic

Notulae Clavariacearum I. *Ramariopsis bensoniae* sp. nov.: A lignicolous species from the Pacific Northwest

JOSHUA BIRKEBAK

"A new, lignicolous species of *Ramariopsis* with neatly dichotomous branching fruiting bodies and coarsely echinulate spores is described as new from the Pacific Northwest region of North America."

Notulae Clavariacearum II. *Clavulinopsis manus-buddhae* sp. nov.

JOSHUA BIRKEBAK, SCOTT OSTUNI, STEPHEN RUSSELL

"A large yellow species of *Clavulinopsis* is described from eastern North America. It resembles *Clavulinopsis fusiformis* macroscopically but is more closely related to *Clavulinopsis aurantiocinnabarina* in subgenus *Clavulinopsis*."

Left, Rene Lebeuf; Right, Stephen Russell

Results of DNAMA's 2024 Commercial MycoBlitz

DNAMA COMMITTEE, JOSHUA BIRKEBAK

A version of the following article appeared in the January-February-March 2025 edition of NAMA's Mycophile Quarterly.*—Ed.*

"DNAMA, NAMA's DNA-sequencing Committee, set out to enlist the help of the NAMA community at large to send in interesting commercially available mushrooms to help us gain a better idea of what can be purchased by consumers across North America. Ultimately, 16 people submitted a combined 235 discrete samples, ranging from locally sourced turkey tail (*Trametes versicolor*) tea from an apothecary to cellophane-wrapped *Ramaria* encountered in an open-air market in Mexico. While most samples consisted of dehydrated food products, many people sent in mushrooms purchased fresh, pickled, brined or canned, then dried at home. All we asked was that people mostly avoid sending in a few things button mushrooms (commercially-farmed *Agaricus* species), shiitake (*Lentinulus* (*Lentinus*) *edodes*) and *Psilocybe* species."

NAMA Forays

Embark on an Immersive Experience with NAMA Forays.

NAMA New England Annual Foray Logo Selected

KATHY YERICH, MARKETING COMMITTEE CHAIR

The NAMA Visual Arts Committee's Annual Foray Logo Contest has become a competitive tradition! This year's entries were no exception, with inspired artistic takes on the theme NAMA New England.

Gratitude and admiration go to all this year's contest entrants, including Holly Bazeley, Karen Beall, Charis Cochran, Kajsa Danielson, Jeff Dufresne, Anna Efanova, Marissa Kolarovsky, Sally Kong Daniel Luzniak, Francoise Ly, Audrey Rosencrans, Emma Smith and Buckley Terp! Your unique creations made the selection process very challenging.

MQ readers have already seen the selected NAMA New England logo, as it graces the cover of this *MQ* edition! Congratulations to Chris Ross. Yup, THAT Chris Ross, of Cross Creative, the creative design force behind the distinctive visual appeal of *MQ* for the past two years. The Executive Committee, which selects

the final design from among finalists submitted anonymously by the Visual Arts, Marketing and Foray Committee Chairs, was surprised and delighted to discover that their choice had been submitted by Chris, who also entered and was among contest finalists last year.

Chris Ross is a designer, proud dad and pancake connoisseur based in Camp Hill, Pennsylvania. He founded Cross Creative, a boutique design studio that partners with nonprofits, biotech startups, wellness brands, restaurants and small businesses to create thoughtful, strategic branding that connects with real people. With nearly two decades of experience, including leading creative teams in D.C., St. Louis and San Diego, Chris brings skillful range and heart to every project.

He now runs Cross Creative full time from Central Pennsylvania with the support of his wife Raven and their three energetic boys. Whether he's sketching ideas at the kitchen table, coaching T-ball or brewing a strong second pot of coffee, Chris is always creating something.

His winning design for the NAMA New England Foray logo features a syrup-drenched stack of pancakes, inspired both by the relentless requests for pancakes at home and the maple syrup-rich history of Vermont. It's a sweet tribute to family, fungi and the multilayered joy of foraging.

Chris has long admired the creativity of the mycocommunity and is honored to have his work featured on this year's teeshirts and swag. Just don't ask him to pick between morels and maple syrup!

OCT. 30TH-NOV. 2ND

NAMA Oregon Dunes Registration Opens July 16

KRISTEN AND TRENT BLIZZARD, EVENT ORGANIZERS

The shroom is the spice.

Lush coastal Oregon forest.

NAMA Oregon Dunes: Regional Foray of Coastal Oregon will take place in the Oregon Dunes National Recreation Area near Florence, Oregon during peak matsutake (*Tricholoma murrillianum*) season! You will be hunting in the dunes/coastal pines as well as in the coastal rainforest. These 60 miles of coastal dunes are well known to Oregonians as "matsutake country." You will be located just minutes from tranquil, storied Pacific coast beaches with miles to stroll amid gorgeous sunsets.

A host of choice edible mushrooms are abundant in the area. Porcini *(Boletus*

Craterellus come to party.

edulis) and matsutake grow readily in the dunes among Oregon's coastal pines. In the adjacent rainforest you will find lobsters (*Hypomyces lactifluorum*), chanterelles (*Cantharellus*), the biggest yellowfoot (*Craterellus tubaeformis*) you have ever seen, hedgehogs (*Hydnum*), granny's nightcap (*Cortinarius caperatus*), cauliflower (*Sparassis*), porcini and more! All foray sites will be located within 30 minutes' drive from our hotel base—most within just 15.

Featured Chefs, Presenters and Voucher Team

We'll be leaning into the culinary aspect of fungi, especially matsutake, with chefs Chad Hyatt, Mayumi Fujio and Luke Smithson. We will also endeavor to offer mushroom tastings in the field after your forays! Dr. Amy Honan, who served as Chief Mycologist for CO-NAMA 2021 will be your Chief Mycologist, with Oliver Filialuna heading up the Voucher Collection Project Team.

Keynote presentations will be delivered by noted PNW author Langdon Cook (*The Mushroom Hunters*, Ballantine 2023) and renowned ethnomycologist Elinoar Shavit.

Other activities may include mushroom education talks (MED talks), workshops, a scavenger hunt, beach fireside storytime (weather permitting), movie night and more!

Matsutake madness!

Registration is slated to open on July 16, 2025

Details will go out to NAMA Membership soon via email. There will simply be two ticket options: single- or double-occupancy rooms at the Best Western Pier Point Inn. Your tickets will include lodging as well as meals on Friday and Saturday and breakfast on Sunday. Evenings will delight with gourmet meals crafted by our exceptional chefs and featuring local mushrooms. Thursday evening will offer a special dinner option for those who choose to enjoy some local fare before we launch into mushrooming. Please note that all attendees must be NAMA members; you can join NAMA by clicking here.

Matsutake rise to greet you.

This area is a highly sought-after tourist destination, as hotel rates reflect. We have negotiated a special rate with the clean and comfortable Best Western to offer 4 days/3 nights double-occupancy event tickets at $765 USD per person, with single-occupancy tickets at $950 USD; these prices are preliminary and are subject to change before we open registration.

Please note that there will be no offsite ticket options or day passes for this event, as we have limited space for dining, presentations and forays. Attendance is capped at 100, which will foster a cozy weekend idyll where you can get to know the experts and your fellow forayers.

Join us for this extraordinary NAMA Regional Foray event. We can't wait to show you around!

Pacific Northwest NAMA Camp Scholarship Recipients Share Favorite Moments

KATHY YERICH, MARKETING COMMITTEE CHAIR

Emma Dombkowski

I first became interested in fungi in 2020, after spending time in the woods of Vermont and reading *Entangled Life* by Merlin Sheldrake. After attending my first foray with my local club, the Gulf South Mycological Society, I was hooked! My relationship with fungi has changed my life. It has allowed me to consider new ways of thinking and being and given me a renewed appreciation for the world around me. I have a particular interest in the ascomycetes and other small species; I love the idea of a tiny, magical world all around us. I am so grateful to be a scholarship recipient and look forward to more NAMA events in the future! My favorite part of Pacific Northwest NAMA Camp was meeting so many open-minded, curious people. Sharing ideas and a mutual love of fungi with others inspires me to continue studying and connecting with these incredible, mysterious organisms. I also enjoyed spending time in the mossy, misty woods of the PNW. It was a mushroom paradise!

Jonathan Mitschelle

I am a member of the Maine Mycological Association and retired college professor. I taught courses in chemistry, physics, statistics and computer science at Saint Joseph's College of Maine. I enjoy good food, much of which I grow in my 3 very large gardens and enjoy the fruits thereof year-round. As you might guess, my interest in mushrooms is largely about those I can eat but I do enjoy the club's forays when they are in my part of the state. Maine is a big place, and some places are hours

away. My favorite part Pacific Northwest NAMA Camp was enjoying several of the talks given by amazing folks with a passion for fungi. I also met many interesting, intelligent and kind folks who had interesting stories to tell and made me feel welcome. I hope to come to this year's NAMA Annual, NAMA New England, in Vermont; this time I will be a veteran who knows the ropes!

Aquilla Lee

WRITTEN BY VERONICA ROSENBERGER

Aquilla's love for fungi comes from their gentle reminder of how we are all

connected. She says, "I hope one day, we can get back to this shared view of interconnectedness and be more kind to one another and our planet." One form of symbology sticks out to her: the visual similarity of hyphal, mycelial strings and our very own neurons. "Fungi-related environmental education is important in order for us to understand ourselves and could help us change the outlook of our changing climate," she explains. "The world of fungi is so diverse, so intricate and so colorful; it was so cool to see mushrooms I had never seen before, except in pictures and books." Aquilla also shares, "Representation ABSOLUTELY matters. As a young Black and Filipino woman of color, I want to help make sure that more diverse groups of people are exposed to the great world of mycology."

Sarah Hunt

I'm a member of the New Jersey Mycological Association. I started studying and foraging fungi in 2019, which led me into an overall love of woodland ecology. I now work as a native plant landscaper, where I try to do my part to increase biodiversity of our

backyards where I first learned to forage. My favorite part of Pacific Northwest NAMA Camp was meeting the other scholarship recipients from all over the country, with diverse paths to their interests in mycology. The final night, I wanted to get into the woods one last time, so I ran out with one other scholarship recipient and we found some amazing little fungi and insects under the UV light. (See photos below of a dung fungus under UV light). It felt so great to be around other people who were so interested in looking through leaf litter for mycelium and tiny fungi and insects!

Ashley Laman

I'm a naturalist and forager based in south-central Pennsylvania and the founder of The Rural Mushroom, a small business focused on mushroom education, sustainable and invasive-species-conscious foraging, and deepening public connection to the fungal world by demystifying mushrooms. I lead identification walks, teach community classes, and contribute to citizen-science projects. I am a member of quite a few mushroom clubs but the one I'm most active in is Eastern Penn Mushroomers. I am also a member of Mycological Association of Washington D.C., Blue Ridge Mycological Society, and West Virginia Mushroom Club. My favorite part of Pacific Northwest NAMA Camp...Hmm. It's hard to choose just one but I'd say the sense of community and shared curiosity really stood out. Being surrounded by such a knowledgeable and generous group of people was deeply inspiring. I especially enjoyed the forays in those incredible temperate rainforests and the chance to learn directly from experts I've admired for years. It was such an amazing opportunity and an experience that I'll always cherish!

Elizabeth Wytychak: DNAMA Scholarship

My name is Ellie. I am a member of Mycological Society of San Francisco and Bay Area Applied Mycology, where I serve as treasurer. I became interested in mushrooms when I was living in Seattle and went foraging for morels in the incredibly abundant forests of the Pacific Northwest. I now live in the East Bay in California and enjoy hunting for edibles, foraying for biodiversity, cultivating mushrooms, thinking about mycoremediation and creating mushroom arts and crafts. I have an Etsy store with mushroom clothes called MycoFriends and I enjoy painting watercolors of mushrooms. Outside of mycology, I enjoy acroyoga, meditation, hiking and plants. My favorite part of Pacific Northwest NAMA Camp was joining the nighttime hunt for UV-fluorescing fungi. We didn't have to go far! It turns out the forest is full of nighttime color, a whole landscape I didn't know existed. Walking through the woods with our UV lights felt like snorkeling for the first time. It makes you realize the world is full of more wonders than you'll ever be able to comprehend, and what a gift it is to experience a little bit of it.

Maria Marlin: DNAMA Scholarship

I was first introduced to mycology by my favorite undergraduate professor and it wasn't long until hyphae had grown in every corner of my heart. I did my senior honors project on *Chlorosplenium chlora* and then completed a Masters Degree in Natural Resources, with a focus in plant pathology (white pine and poplar rusts). After that, I moved to the enchanted forests of the Pacific Northwest, where I absolutely love experiencing and capturing the vast biodiversity that exists here! I became involved with the South Sound Mushroom Club last year and served as the volunteer coordinator for their annual spring mushroom festival. I am currently the club's newsletter editor. As an identification and taxonomy nerd, it was exciting to learn with the NAMA DNA team! I would say that my favorite part about receiving the DNAMA scholarship was having a front-and-center seat to every single incredible specimen people brought in! I loved seeing the biodiversity present in my backyard. I also learned so much from Harte Singer about DNA amplification and sequencing and met so many knowledgeable and friendly mycologists.

Ink drawing from "Mushroom Marker."

NAMA-affiliated Club Annual Foray 2025 Scholarship Essay

PRESLEY MARTIN, MINNESOTA MYCOLOGICAL SOCIETY, TEXT AND PHOTOS

I never knew I loved *Grifola frondosa*.

We arrived at a mostly deserted Japanese ski resort town, in the middle of summer, just in time for dinner. Only a handful of restaurants were open and we just happened to choose the one with maitake tempura. We ordered it, having never had it before. I was blown away by the taste; my prior mushroom-eating experience having been limited to American grocery-store mushrooms.

That was seven years ago and I still think about it today. Little did I know at the time but that delicious mushroom planted the seed (spore) for my mushroom journey. I joined the Minnesota Mycological Society (MMS) two years later, in 2020, and my mushroom knowledge has increased exponentially since. It now seems fitting that on my first MMS foray the first edible mushroom we found was a beautiful *Grifola frondosa*.

Since joining MMS. what has really stood out are the connections that have appeared in many facets of my life.

Community: connecting with the kind, generous community of MMS. The sharing of knowledge and the encouragement of lifelong learning have been such a welcome addition to my life.

Family: learning about and searching for mushrooms has brought my family closer together. Both my wife and daughter enjoy

Ink drawing from "Mushroom Marker."

mushrooms and we have been able to spend more time together on forays around the region.

Trees: one thing I didn't anticipate when first learning about fungi was the connections I'd form with trees. The gentle curves of elm buttresses. Red oak vs. white oak. Are they dead or dying? What does an oak leaf the size of a squirrel ear look like?

Weather: I'm much more connected to precipitation. How much rain has fallen in the past week? What region has received the most rainfall? How many mushrooms are we going to find during this summer of drought?

Mushrooms have even managed to connect themselves to my art practice. For the last several years I have been using birch polypore dipped in ink as a drawing tool.

Attending the NAMA Annual Foray will help me form more connections with mycophiles from around North America. I'm especially interested in connecting with people that are using mushrooms in creative ways. I'm excited to meet people using mushrooms for dye, for building material and in ways that haven't even occurred to me. Sharing my own "Mushroom Marker" drawing tools and the art I've created with them will be a highlight of my year.

Presley Martin is an artist who lives and works in Minneapolis. His work questions commonly held assumptions about the environment. Based on countless hours of direct field observations, his works take many forms including sculptures, installations, photographs and performances. Presley has an MFA in sculpture from San José State University and a BA in art history from the University of Pittsburgh. He is the recipient of an Artists Initiative grant and a Creative Support for Individuals grant from the Minnesota State Arts Board. Check out his work at https://presleymartin.com

The world's first "Mushroom Markers." Made from birch polypore mushrooms (*Fomitopsis betulina*), these drawing tools can be used like a marker, brush or stamp. They work best with ink and can be rinsed and used again just like a brush.

Photos courtesy of Donna R. Kurt and MMS members

NAMA

Affiliated Club Spotlight

Fortaging with Manitoba Mushroom Society

SANDRA PATTON, CLUB RELATIONS COMMITTEE

MMS members sharing Manitoban mycofellowship (and MORELS!).

Most mycophiles understand there is a connection between mushrooms and plants—but what in the heck is "fortaging?" And what does it have to do with the Manitoba Mushroom Society (MMS)? First, we must congratulate the MMS for being the sixth Canadian mushroom club and the first club in the Province of Manitoba to become a NAMA-affiliated club!

Now, back to the beginning of this somewhat unusual story. It all begins with a very enthusiastic person who loves the outdoors, plants, mushrooms and pretty much everything in nature. Donna R. Kurt ventured into wilderness canoe camping in the mid mid-80s. By the mid-90s she was a canoe instructor and

eventually an instructor trainer as well as a camping instructor. Each time Donna had to portage her canoe, she would forage for plants and mushrooms. Portage + Forage = Fortage: a new word for Webster's Dictionary! To be fair, she often just looked and learned; foraging while carrying a canoe is not easy. As she began to understand more about mushrooms and plants, she started to incorporate these subjects into classes that she was already teaching for Nature Manitoba.

MMS pioneers the practice of "fortaging!"

So when did this ecosystem of plants, fungi and paddling converge into a mushroom club? It did take a little while. As Donna started teaching more fungicentric classes and workshops, she would always ask for a show of hands to gauge interest in having a mushroom club in the area. At the time, the nearest mushroom club was in Edmonton, a mere 13-hour drive; yes, Canada is very big! The concept started coming to fruition in 2024 when two friends, Pat Desautels and Hollie Pacheco, gave Donna the extra encouragement and help she needed. Both Pat and Hollie had raised their hands in one of those workshops and now they were raising their hands to help. They all hit the ground running, incorporating as a nonprofit in the Province of Manitoba in July 2024. By September they had spawned the Manitoba Mushroom Society website, held their first member meeting, led their first foray and given a Mushroom Discovery Workshop at a local public library.

The foray report from their inaugural foray notes that they were welcomed by a double rainbow at Birds Hill Park (Treaty 1 Territory). Their mushroom finds ranged from colorful fungi like green wood cup (*Chlorociboria aeruginascens*) to gooey pink surprises to classic gilled beauties. After a good wander in the woods, they gathered to share and identify their discoveries.

MMS documents and displays their first official specimens

A rainbow to greet them on their first foray was very fitting, given the club's staunchly inclusive ethos. Their mission statement includes the following:

> "THE MANITOBA MUSHROOM SOCIETY RESPECTS AND HONORS THE LANDS, TERRITORIES AND TREATIES OF NATIVE PEOPLE, AND ALSO RESPECTS BIPOC AND 2SLGBTQIA+ AND UNDERPRIVILEGED PEOPLE. OUR FOCUS IS TO CREATE A WELCOMING, INCLUSIVE COMMUNITY FOR EVERYONE, ESPECIALLY THOSE FROM DIVERSE BACKGROUNDS, WHILE FOSTERING A SHARED LOVE FOR FUNGI AND PLANTS. WE'RE A GROUP WITH A PASSION FOR BOTH MYCOLOGY AND COMMUNITY-BUILDING, SO ALONGSIDE FORAGING, CONSERVATION, AND STUDY, WE EMPHASIZE INCLUSIVITY AND CONNECTION WITHIN THE GROUP."

They certainly know how to cast a very wide mycelial net to attract a diverse group of new members. A question on their membership form asks "How did you learn about the Society?" and includes 19 options from which to choose! This long list is necessitated because you will find club leaders giving presentations at libraries, local outdoor equipment stores and for other outdoor- and nature-related organizations.

They also table at events and post notices in public locations around Winnipeg and, of course, have a public presence on Bluesky and Instagram. Their website is packed full of information about the club and has an extensive page of resources specific to their area. For those who choose to join, they offer a quarterly newsletter and a private members-only Facebook group. The MMS Board uses the private WhatsApp messaging service to communicate among themselves and to notify members of upcoming events. An added incentive to join is the discounts that membership brings. In addition to receiving a discount on NAMA memberships, MMS members receive in-store discounts at two local outdoor equipment supply companies: Wilderness Supply Company and Mountain Equipment Company.

In addition to individual outreach, MMS excels at reaching out to organizations and businesses. They already have connections to 14 orgs, including NAMA! The MMS appreciates the support they receive from these organizations and businesses to provide meeting and workshop spaces, promotional spaces or materials, honoraria, organizational information and discounts for members.

MMS leaders Donna R. Kurt and Pat Desautels tabling at the 2024 Banf Mountain Festival.

So, what comes next for MMS? Their goals for the next few years include expanding their membership, which is now at 46 (72 individuals) and training additional volunteers to lead forays. They will also continue to create partnerships with other local nature and environmentally focused organizations, starting with their new partnership with Manitoba Conservation to collect and share data about fungi found in

CLASSES AND WORKSHOPS

For such a young club, they already offer a wide array of classes/workshops:

Mushrooms and Paddling

What do mushrooms and paddling have in common? Coexistence between paddlers and mushrooms, plus "fortaging" safety.

Mushroom Discovery

Common edible mushrooms of Manitoba, their lookalikes and safety.

How to Forage and Cook Mushrooms

How to forage safely and successfully, then whip up a delicious mushroom dish.

Chaga Gathering

All about chaga (Inonotus obliquus), a medicinal mushroom common to Manitoba. Sharing chaga, chaga tea and chaga information. Yes, you can snowshoe while gathering chaga!

Figuring Out your Fungi

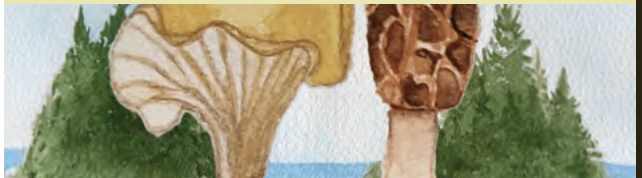
How to use mushroom reference books, online references and other tools to identify mushrooms.

Growing Mushrooms

How to grow mushrooms in your garden and home; options and pitfalls.

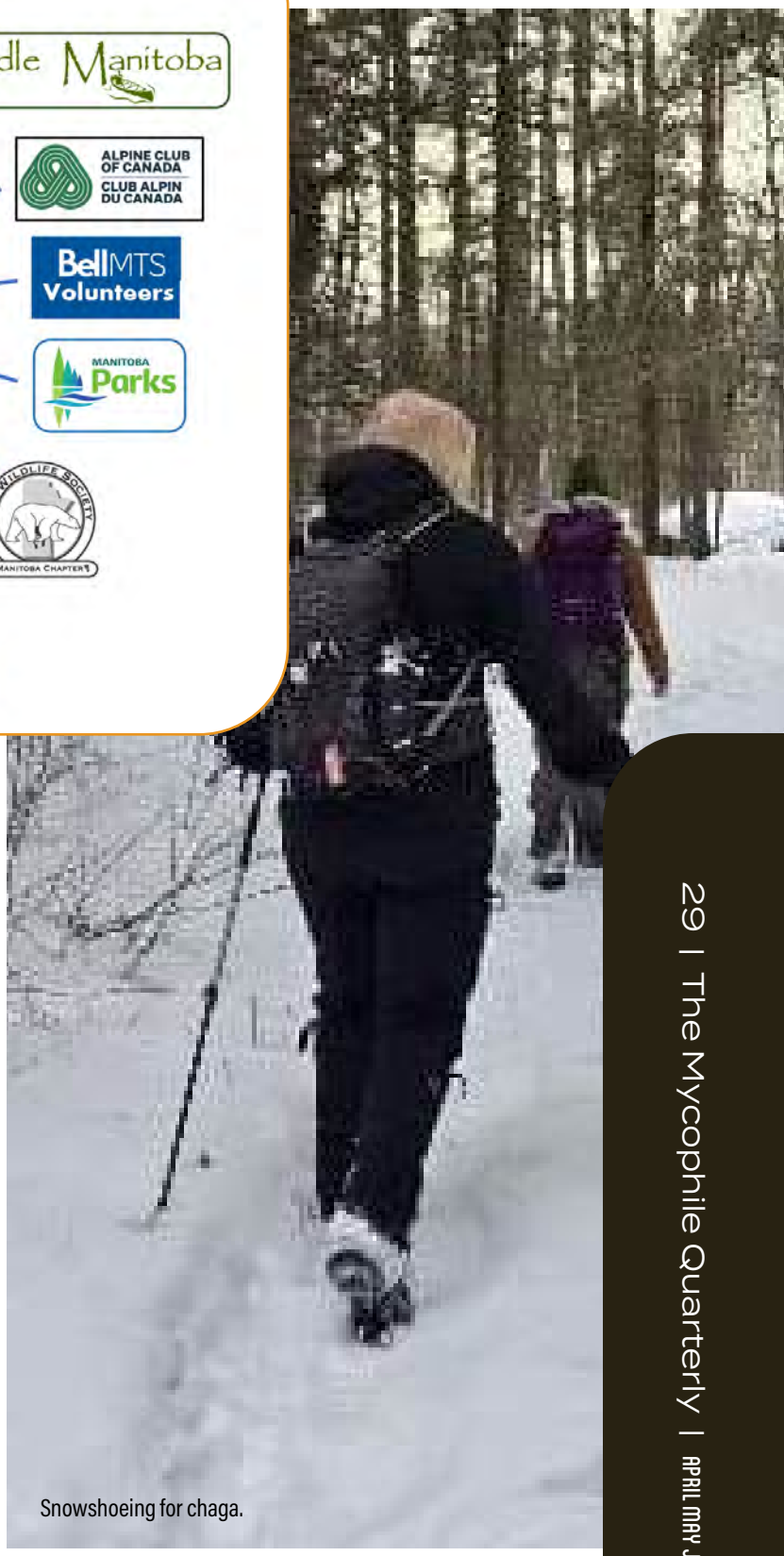
Medicinal Mushrooms

Common medicinal mushrooms and how to use them.

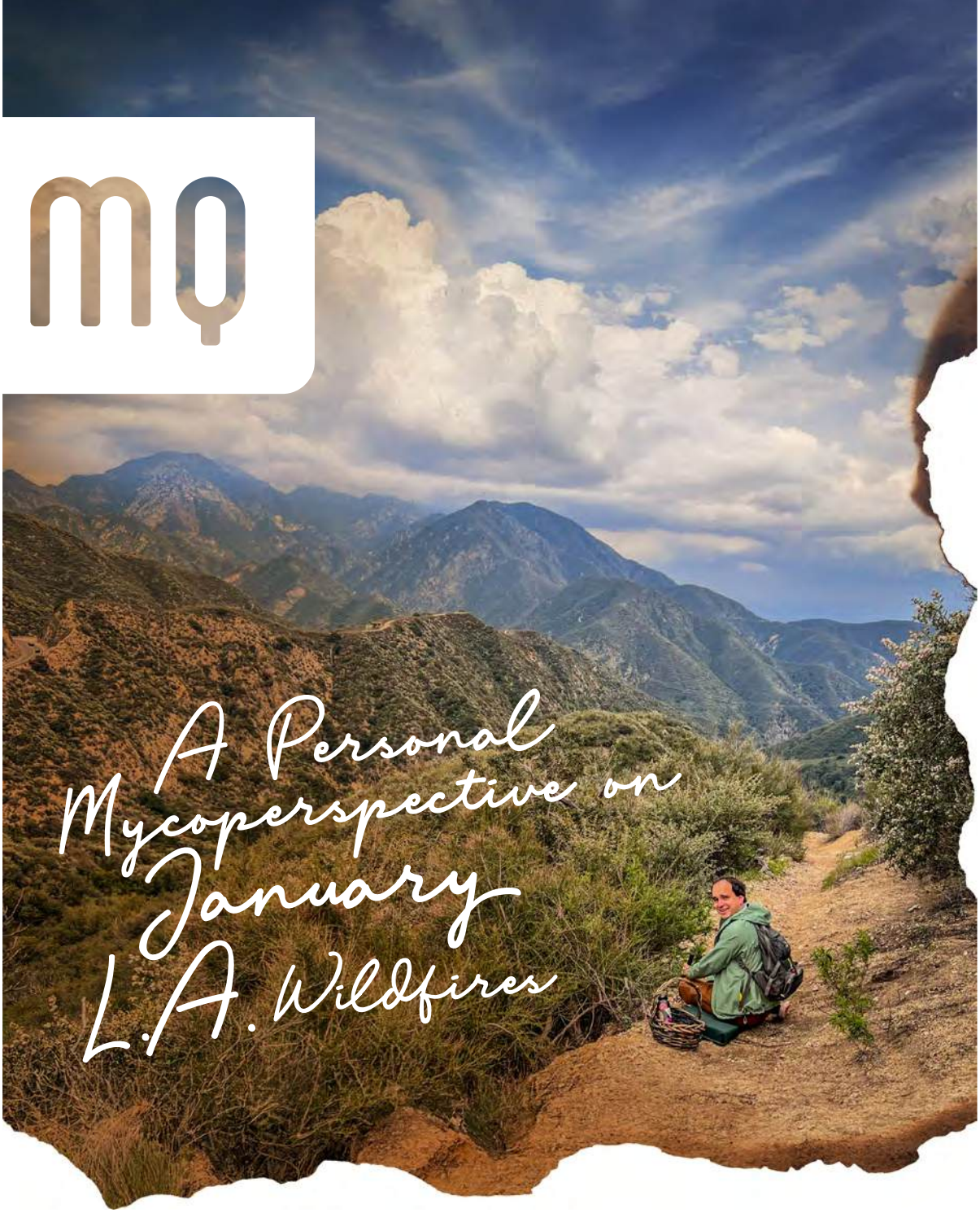


Provincial Parks, which has given MMS permission to organize field studies in parks. To assist with this last endeavor, they have recently created a Fungi of Manitoba project on iNaturalist. They have also received the generous donation of one dissecting microscope and two compound microscopes from the Manitoba Electrical Museum and Education Centre.

MMS began in Winnipeg but intends to spread its passion for fungi throughout Manitoba. Canadian provinces are huge and whether you are in the MMS area or wish to establish a group in your part of Manitoba, you should definitely reach out!



Snowshoeing for chaga.



A Personal Mycoperspective on January L.A. Wildfires

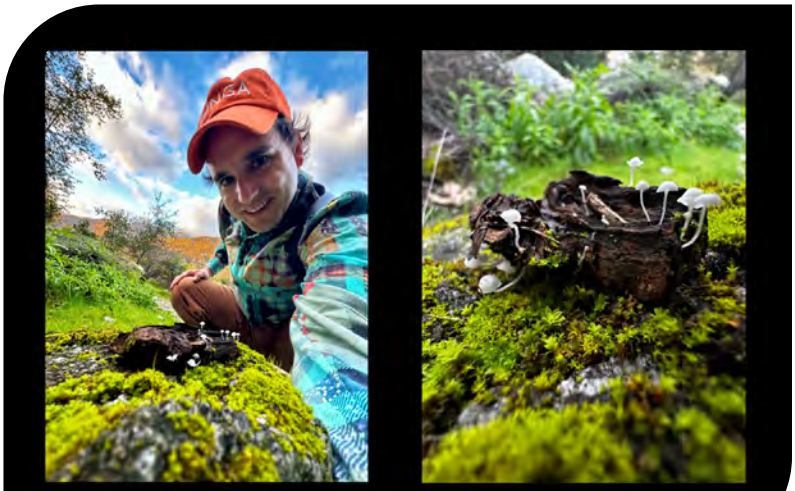
The writer overlooking the hills that burned, Althadena.

AARON TUPAC,
CONSERVATION
AND STEWARDSHIP
COMMITTEE CHAIR
WORDS AND PHOTOS

In January 2025, a devastating outbreak of 14 separate fires in communities and wildlands ravaged both the Los Angeles metropolitan area and San Diego County in California. Aaron Tupac serves as Chair of NAMA's Conservation and Stewardship and provides the following personal account of how the disaster has affected his community, his work and his soul. —Ed.

Recent conservation presentation for Eaton Canyon staff as they work toward starting their own fungarium.

My livelihood has been based in these forests and urban areas that have burned. It's where I've fallen in love with fungi and found my community. These areas are where I do my fungal conservation research and lead fungi education classes. The burned areas are places I love and go to rest and recreate in this big city. For instance, Eaton Canyon is where I met my wonderful partner Vanessa, on one of the many mushroom walks I have held there. Vanessa grew up a few blocks away from the canyon. We've spent our special occasions and holidays in these woodlands, finding joy and wonder.



Taking joy in tiny beauty.

The Pacific Palisades (Topanga State Park) and the Angeles National Monument are where I've spent the past two years surveying, in great detail, the fungi who live here as part of the first California-state-wide government-funded project to document fungi and their ecological associations (CA FUNDIS). I have also been DNA sequencing these 12,000

Recent community mycology class.

collections, at least a third of which have no matching sequence in any global database. We know native plants but not native fungi; hopefully, after this project we have a baseline of what macrofungi live here.

I organize a fungi-inspired community called Exploring the Mycoverse at Arlington Garden, which is Pasadena's only dedicated public garden. We've had over a hundred free events open to the public, reaching over 1,000 people since 2021 when I founded this community during another challenging time: the COVID-19 pandemic. Exploring the Mycoverse has mushroomed into a vibrant, diverse community, helping me find a home away from home (I grew up in Minnesota).

California has historically burned but not with this kind of intensity and frequency. Plus we're not sure yet how the burning of urban areas will affect the surrounding areas. For instance, in Altadena most homes were historically painted with lead, which has now been spread into the surrounding environment. I have been involved with previous studies with local environmental toxicologists to assess how many fungi are hyper-accumulators of heavy metals and we've worked with these scientists to clean up industrial sites like old railroad stations near the L.A. River. I have a chapter dedicated to this work of Danielle Stevenson from UC Riverside in my upcoming book.

Below is one of my favorite fungal encounters and collection from Eaton Canyon where the fires started, an undescribed species of *Xylaria* I collected for the CA FUNDIS project. The UV fluorescence of the guttation is a cool green. My Exploring the Mycoverse group has nicknamed them "phantom fingers."

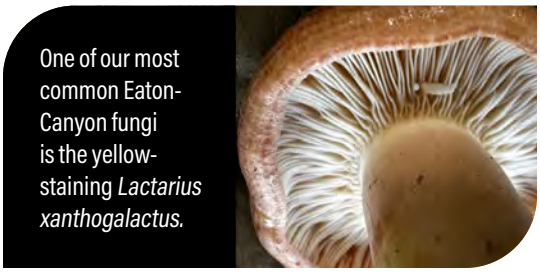
Undescribed UV-fluorescing Xylaria from now-burned Eaton Canyon.

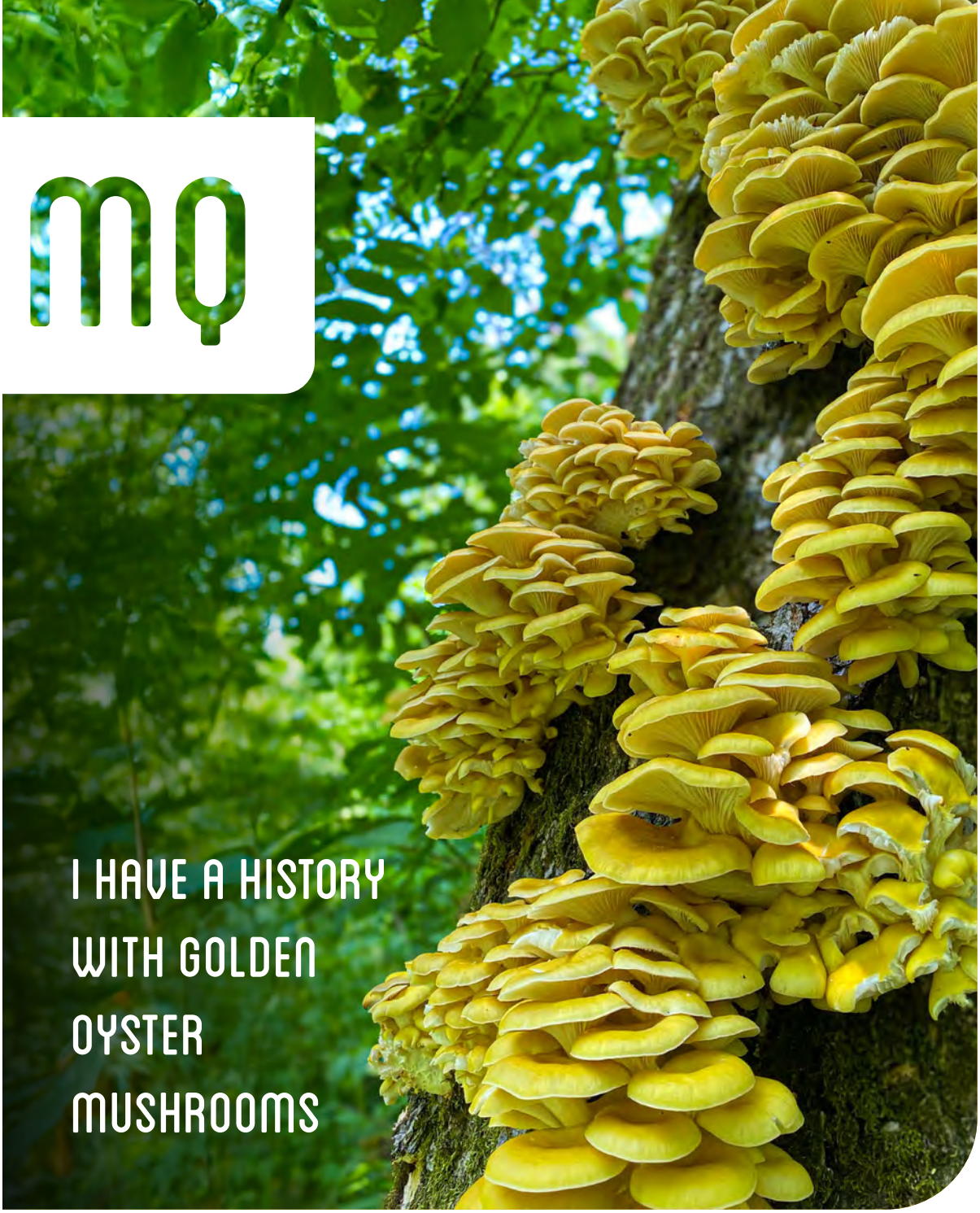
I have spent the past two years collecting fungi in Eaton Canyon, many of whom are undescribed. Another example is of stalked puffballs like *Tulostoma*. Dr. Amy Honan just delivered a NAMA Webinar dedicated to this fascinating genus. (Click here to view Dr. Honan's February 11, 2025 NAMA Webinar, Stalked Puffballs and Other Desert Fungi.)

Undescribed *Tulostoma* species, Eaton Canyon.

I've also spent countless hours in Topanga State Park too, both of these areas are sanctuaries of oak trees that used to fill the Los Angeles basin (oaks foster the largest fungal diversity of any known plant in SoCal).

Fungi can teach us how to gather, adapt, and be resilient in the face of a climate-changing world. Now is a time for mourning and letting us process the grief of the fires that have devastated the L.A. region. I am grateful for the fungi-loving community locally and abroad that has supported me during this time. I look forward to witnessing how fungi and the natural world respond to the fires, teaching us what to do and how to recover. Perhaps we can let our grief for the damage done to the places we love teach us how to love them back together again.


One of our most common Eaton-Canyon fungi is the yellow-staining *Lactarius xanthogalactus*.



Pleurotus citrinopileatus. (photo: Aishwarya Veerabahu)

I HAVE A HISTORY WITH GOLDEN OYSTER MUSHROOMS

DAVE LAYTON, FIRST VICE PRESIDENT, WORDS AND PHOTOS (UNLESS OTHERWISE NOTED)

My first experience with golden oyster mushrooms (*Pleurotus citrinopileatus* or "goldens," as I call them) was at a foray with Prairie States Mushroom Club (PSMC) in 2010 at Eden Valley, an Iowa county park on the border between Jackson and Clinton counties.

It was growing on a downed elm (*Ulmus*) log. I live in Clinton, about forty miles east. Dean Abel correctly identified this amazing-looking fungus but scratched his head, saying it was a commercial fungus that he'd never seen in the wild. We documented the find.

The next spring, while hunting morels, I found goldens again at a friend's farm near Charlotte, 20 miles east/southeast of Eden Valley. I didn't recognize them because what I saw was a tiny emergent mass of yellow. I took the tuft to Dean and he correctly identified goldens again. He had researched them since the first find, mentioning a rumor that they had escaped into the wild after mushroom farm in eastern Iowa but he had no further information. The tiny clump was growing on top of a stump along with dryad's saddle (*Cerioporus squamosus.*) The stump had been dead for several years and betrayed no hint of my future troubles and concerns with goldens.

In 2012, my troubles began while driving with my wife Sally north on Highway 52 near Green Island, about 35 miles east/northeast of Eden Valley. We spotted goldens on a log on the other side of a steep ditch. We were both excited because this would be our first time harvesting enough to eat—assuming I safely made it across the ditch and back without being injured or inundated by poison ivy (*Rhus radicans*). I returned to the car only slightly bloodied and itchy. Sally was excited because she loves oyster mushrooms. That evening we substituted these for regular oyster fungus in one of our traditional recipes and it didn't go well. They didn't taste like oyster mushrooms to her and she didn't like them. I said, maybe we just need to find the right recipe and cooking method? Her answer was guttural.

In early 2013, I found goldens on a trail at Clinton's Eagle Point Park on the broken-off branches and trunk of a large elm that had apparently been hit by wind. The standing portion of the trunk had no golden oysters, which pointed to the tree being alive before it was broken. This time I harvested only the youngest clumps and cooked them lightly with soy sauce and white wine like an internet recipe suggested. I liked them fine but Sally pronounced them barely edible. An older log next to the tree also had goldens along with tree ear (*Auricularia* sp.), which I believe had become established earlier. Later that year I first noted goldens across the river in Fulton. I also first saw them high up in dead elm trees.

Pleurotus citrinopileatus. (photo: Sarah Delong-Duhon)

I watched a large, elm dying in a friend's yard for a couple years. It was finally dead in fall of 2014. When I went to look around it for morels the next spring, I saw goldens high up in the tree (and no morels). Within a year, the tree was covered with goldens. By 2016 I was seeing similar scenarios play out wherever I was morel hunting. Of all the trees I found morels around in the next few years, only two were sprouting goldens and there were other elms nearby. My morel hunting wasn't the greatest for a few years.

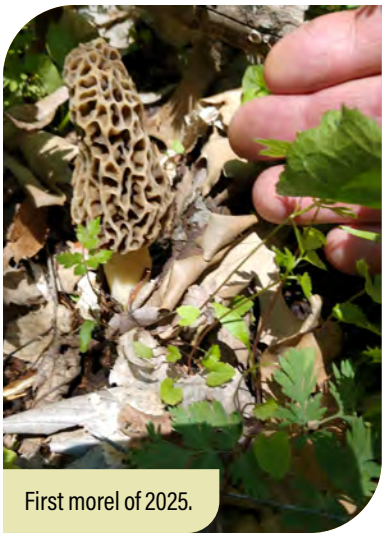
So, goldens possibly inhibited morel growth and Sally didn't like to eat them. I decided to call them "yellows" because golden seemed too favorable a word—but then over the next several years I decided to call them goldens again for a different reason: their Midas touch. It seemed that they grew in every elm tree that their spores touched and they were spreading to cherry (*Prunus*), mulberry (*Morus*), cottonwood (*Populus*) and, most recently, ash (*Fraxinus*). They were present in the tops of towering American elm skeletons, spreading spores possibly for miles. Goldens are the most aggressive white rot fungus I have ever seen.

Perfect-to-eat-sized "hog-and-piglet" *Cerioporus squamosus* (dryad's saddle).

American red elm (*Ulmus rubra*) is a dense, fibrous wood that's slow to rot. Trees that had been dead for decades still yielded excellent firewood. Goldens change that, turning hard elm into mush within a few years before moving on. Standing trees become dangerously weak. A major limb on a large elm loaded with goldens crashed down in a calm woods while I walked nearby one day—spooky! I also saw at least one tree that once housed a wood duck nest had fallen apart because of goldens. Tree ear seemed to be pushed out of the log I mentioned earlier that had formerly featured both species. Fortunately, tree ear can be found on boxelder (*Acer negundo*) in abundance more than ever. I've also witnessed goldens apparently outcompete native oysters on both a log and a stump. I've kept that tidbit from Sally, however, since I didn't want her to get depressed. We still get plenty of oysters from ancient river willow, which goldens haven't yet infested; native oysters have a much more varied habitat—so far.

I have plenty of questions about the possible environmental effects that goldens could wreak. I plan to reach out to Todd Osmundson at UW—La Crosse, a leading expert on goldens. I participated in a 2017 research study by one of his graduate students, Andrea Bruce. She reached some fascinating conclusions about their introduction, including the unlikeliness of a singular event like a mushroom-farm fire being responsible for their concurrent introduction in different parts of the country. Actually, what's unlikely is "a singular event." However, a mushroom-farm fire in eastern Iowa contributing to their introduction and amazingly rapid spread around here is very possible. After all, wherever they originally came from had to be some sort of mushroom farms. My son is a volunteer firefighter in the area neighboring where our club first found these in 2010. His department's training officer (a twenty-year department veteran) might have access to records that could either prove or disprove the rumor.

It's also exciting that Aishwarya Veerabahu, University of Wisconsin-Madison PhD candidate (and former NAMA Voucher Collection Project Student Assistant), is conducting a population genomics study to understand whether cultivation and/or invasion have affected the evolutionary trajectory of golden



First morel of 2025.

oysters. She is reaching out to NAMA members to send her their goldens samples from across America. Her project excites me because I can well imagine that things she learns may help me understand how goldens affect our local environment. Whatever I learn from Aishwarya and Todd in the future about goldens will continue to fuel interesting articles and discussions.

That brings me to some positive notes: An elm trunk that I watched goldens devour for three years later produced some beautiful silky rosegills (*Volvariella bombycina*). "Silkies" like softer, more decayed wood—as does *Hericium coralloides*. That said, I have no personal evidence of goldens "conditioning" wood for *Hericium* but I have seen evidence of regular oysters doing that. Another positive note is that most of the prime real estate (towering dead elms) for spreading golden oysters in my area has already been taken up and destroyed by them. Goldens are still abundant but not as abundant on standing recently dead elms as in previous years. I'm also starting better to understand the ability of different fungi to migrate and adapt to their changing environment. For example, this was a great year for morels for me personally. Some I found around traditional dead elms—but I found many more in places where obvious dead trees didn't exist. It's possible that they may be responding resiliently to changes sparked by goldens. One more positive note: I've found a way to cook together fresh morels, dryad's saddles and goldens along with any other good dried or fresh mushrooms that enhances the flavor of all. Even Sally approves—as long as I don't overdo it with too many of those darned goldens.

Last 2025 morels, found on Mother's Day.

Recipe: Mixed Spring Mushrooms

It's very common, especially early in the spring mushroom-hunting season, to find

My first morel, dryad's saddle and golden-oyster 2025 spring mushroom mix. Shaggymanes (*Coprinus comatus*) were cooked separately on the griddle and added to the mix at the end. For the past 2 years, shaggymanes fruited before morels; never seen that before.

a good handful of little morels, a nice young clump of "hog-nosed" emergent dryad's saddle and a lovely mound of young golden oysters on the same foray. All together they make one fine meal—but they must be cooked separately or their respective strong flavors turn into a mishmash of mush, with the morel flavor completely lost. The solution? Cook separately-together; here's how:

In my last 2025 spring mushroom mix, I included frozen maitake and fresh bonnet caps (*Marasmius oreades*). Maitake started cooking with thyme before pushing to pan rim and adding chives and marinated dryad's saddle. Then bonnet caps were added, cooked 1 minute and pushed to the rim before adding goldens and precooked morels to finish.

Chop dryad's saddle into little pieces and marinate briefly in a bowl with a little Worcestershire sauce and Heinz chili sauce (if you don't have Heinz chili sauce, use regular catsup, a ½ tsp. of wine vinegar and a few drops of hot sauce). While dryad's saddle is marinating, take a wide sauté pan with a little of your favorite mushroom cooking oil (I like light olive oil); slice and sauté the morels until their liquid release and then remove morels and liquid to a separate holding dish. Add some more oil in the pan; maybe add butter if you're worried about being too skinny and wasting away. When hot, add some chives and/or emerging green onions from your garden and/or ramps that you were lucky enough to find while mushroom hunting or, as a last resort, any leftover onion from the bottom of your vegetable keeper; you need 1 to 2 tablespoons of oniony stuff. Add marinated dryad's saddle when onions become fragrant; sauté for 5 minutes; push dryad's saddle to the rim of the pan. Add a pinch more oil or maybe bacon grease if you're worried about your cholesterol levels being too low. Add golden oysters (larger caps over 1" sliced and smaller caps whole) to the center of the pan and stir in a teaspoon each of white wine and soy sauce. Cook for one minute until wine starts to boil off and soy sauce thickens. Add morels and their liquid back to the pan. Stir everything together and cook for a few more minutes, then enjoy! The morels keep their flavor. The goldens take on a morel-like flavor and the dryad's saddle add tangy flavor splashes, especially good with wild asparagus, on pizza or in a quiche.

LAWRENCE MILLMAN,
WORDS AND PHOTOS

On August 17, 1896, an American prospector named George Carmack and two Indigenous companions discovered a rich deposit of gold in the Yukon Territory.

The result? The so-called "Klondike Gold Rush," an event during which several hundred thousand men and women stampeded to this remote part of northern Canada to search for gold.

A Yukon morel buyer hefts his bounty.

Flash forward to 2006, when I visited Dawson City in the Yukon the year after thousands of miles of local forest had been subjected to wildfires. These fires created a different type of rush, one that might be called a "mush rush," as a remarkably large number of people stampeded to the Yukon to search for burnsite morels (*Morchella atrotomentosa* and *M. angusticeps*, among other species). Their speech was peppered with phrases like "a real motherload" and "a bonanza," the same words old-time prospectors used to describe their precious-metal hauls. Such phrases conveyed the truth, for a picker could make hundreds of dollars a day selling morels to a buyer who, in turn, sold the dried morels to European restaurants.

Here I should mention that wildfires provide a stimulus for morels. Fire creates a wealth of bioavailable nutrients for *Morchella* mycelium, which until the fire had been mycorrhizal. Thus one's former symbiotic partner becomes one's cuisine (or so recent research has suggested).

During the Klondike Gold Rush, authors like Jack London and Robert Service visited the Yukon and found the folks searching for gold more interesting than the gold itself. I found this to be true during the mush rush. For example, I met a woman who told me she lost her glasses, after which, she said, "I did my picking by Braille." Her Braille method didn't seem to impress a buyer who went by the sobriquet of "Psycho Pete;" he found a number of "blow-outs" (worthless specimens) in the woman's basket and flung them against the wall of his drying shed, telling me, "We call these 'ammo.'"

Two full "Dutch" baskets.

At another buyer's depot, I met a charcoal-covered man with a ponytail who informed me that he'd just pocketed $535 after a mere eight hours of picking. When I asked him where he'd found the morels, he coyly pointed me toward "Notellum Creek;" when I used the abbreviated term "asco" (morels are, after all, ascomycetes) in conversation with him, he thought I was calling him an asshole for refusing to tell me where he'd found his motherload!

The fellow's reticence wasn't surprising. No miner would reveal the location of their claim during the Gold Rush and the same goes for morel pickers. Just as in the Gold-Rush days, nobody used their actual name. If you hung around the buying depots, you'd meet pickers with names like" Ivan the Terrible," "Nancy the Pig," "Sourdough Sam," "Captain Ahab" and "Crazy Cat." One quite disheveled picker, who called himself "Grizzly Spasms," gave me this explanation:

"We're outlaws and outlaws never give away their real name. Let's say you're on the run or wanted for child support. This is the best job you can get. You don't need an identity card. It's cash up front, no questions asked. And you don't pay taxes, 'cause nobody knows your real name."

One picker I met was a lanky, fiftysomething fella named "Dutch" who didn't seem to mind my company at all—quite the contrary. He pulled out a map and pointed to a burn site on the nearby Stewart Plateau. Rumor had it that there was a bonanza of morels there. So we drove to the locale and began hiking. It was 11:00 PM, an excellent time to search for morels in the Yukon, as there aren't any mosquitoes and the midnight sun provides all the necessary light.

Pleased picker.

At the edge of the burn was an almost impenetrable jumble of downed trees, brambles and thick underbrush. Dutch hacked through the most difficult sections with an axe. In the easier sections, the only morels were what he referred to as "cheerios:" hollow stipe-butts indicating that a fellow forager had been there first.

Suddenly Dutch exclaimed, "Look! There's a nice blonde!" I was expecting to see an attractive female picker but he pointed to a light-colored morel rising from the blackened earth. A few feet away there was another. Then another. And another. There seemed to be nice blondes everywhere! Dutch cut off each of them at the base of the stipe and put it in his basket. An hour later we were a hundred or so feet away, gazing down at a batch of darker morels, which Dutch called "greens." Soon he had almost two baskets full.

"Could this be a proverbial motherload," I asked him? "I'll let you know after I visit Psycho Pete," he replied, then added: "I'm so pleased to be out in nature, I wouldn't have cared even if we didn't find a single mushroom!"

I made a mental note to gift his declaration to those fungal enthusiasts back home who get quite upset when they return from a foray empty-handed.

Fungal Chitin:

THE "INDIGESTIBLE" FIBER THAT IS, IN FACT, DIGESTIBLE (BY MOST PEOPLE)

ANNA SITKOFF, ND,
MEDICINAL
MUSHROOMS
COMMITTEE

In this article, I deacetylate what we know so far about chitin digestion and metabolism, the medicinal benefits of chitin and its derivative chitosan, and how—and if—this knowledge applies to consuming and processing medicinal and edible fungi.

FUNGAL CHITIN AND THE HUMAN BODY

Chitin is Structural

Chitin is the main structural component of fungal cell walls, exoskeletons of arthropods and crustacean shells. In fungi, chitin is covalently linked with glucans and gives shape and structure to the mushrooms we know and love. It is a very hard substance and that is why (most) mushrooms don't turn to mush when they are cooked. Some fungi have more chitin than others and different parts of the mushroom have different amounts of chitin; in many mushroom species, the pileus (cap) has more chitin than the stipe (stem) (1,2,3).

Chitinous critters.

Chitin-degrading Enzymes

The understanding of chitin digestion in humans has evolved significantly in the last 20 years. While it was once assumed that we could not digest chitin, around 20 years ago research revealed the presence of acidic mammalian chitinase (AMCase), an enzyme capable of chitin digestion in the human stomach. Shortly prior to this discovery, chitotriosidase (CHIT1), an enzyme produced by activated macrophages, was also identified. Note that AMCase is not exclusive to gastric juices; other immune cells also produce this enzyme.

Due to variations in enzyme production among individuals, the ability to digest and degrade chitin is not consistent across the human population; for example, a study of 25 Italian men found that 20% lacked AMCase in their gastric juices (4). It is hypothesized that cultures with higher chitin consumption and exposure may produce more AMCase but this hypothesis lacks direct supporting evidence. However, mouse studies indicate that chitin consumption increases AMCase production, suggesting a response to dietary chitin. Given that mice generally produce significantly more AMCase than humans, the direct applicability of these findings to humans is uncertain (5).

Let us assume that at least 80% of people make AMCase. What happens, then, after chitin is ingested— is it more than just an insoluble dietary fiber?

Mushrooms in the stomach.

CHITIN DIGESTION

What we know so far is that after chitin consumption there is an interplay between the immune system and digestive juices.

Once chitin is consumed, for example in the form of sautéed shiitake (Lentinula edodes) mushrooms, it enters the stomach and the stomach distends. This distention triggers an innate immune response and the release of digestive juices. Keep in mind that stomach acid and digestive juices are not just meant for digesting food but pathogens as well, so this is actually a primary defense against chitin-containing pathogens: parasites, dust mites and fungi. AMCase, an enzyme released by chief cells in response to chitin consumption, breaks down chitin into chitosan, a polymer of N-acetyl-D-glucosamine and D-glucosamine. For context, in regular feeding conditions chief cells also secrete the digestive enzymes pepsinogen and gastric lipase (5).

Similar to other dietary fibers, chitin is fermented by intestinal bacteria in the colon, but unlike other fibers it is not dependent on this process for degradation; AMCase is not microbe-made, but human-made—if you believe your self is separate from your microbiome (5).

VARIATIONS IN ACIDIC MAMMALIAN CHITINASE ACTIVITY

There are a few factors that may impact the amount of AMCase present and the ability to digest chitin and chitin-containing pathogens. In addition to genetic variations that cause more or less AMCase production, long-term use of proton-pump inhibitors (PPIs) has been shown to decrease the number of chief cells in the stomach and is likely implicated in lower AMCase production. Consequently, people taking PPIs are likely to face challenges in digesting dietary chitin and

may have weakened defenses against parasites and other chitin-containing pathogens. Similar difficulties may be experienced by individuals with atrophic gastritis and *Helicobacter pylori* infection (5,6).

IMPLICATIONS OF UNDIGESTED CHITIN

As previously noted, not all digestive systems are created equal. Some people do not have significant amounts of AMCase, and about 10% of the U.S.-American population is on some flavor of acid blocker, which may impact digestion of chitin (7). Even for those who do make AMCase, production is limited and there will inevitably be significant amounts of chitin that pass through the stomach undigested.

Nutrient Absorption

There is a small risk that large amounts of undigested chitin could inhibit the absorption of other nutrients. However, this risk is less concerning as chitin is an insoluble fiber and studies show that high fiber diets primarily impact the absorption of minerals, like calcium, when the fiber is soluble (8). Research on rainbow trout further illustrates this phenomenon, finding that 3% chitin supplementation had no effect on nutrient absorption, while 4.5% did (9). Consequently, it is improbable that the chitin intake from typical mushroom consumption would hinder nutrient absorption, though it remains a theoretical possibility in an extremely mushroom-heavy diet.

Gastrointestinal Discomfort

Gastrointestinal discomfort would be a more appropriate concern from undigested chitin, with typical symptoms including bloating, gas and other digestive discomfort. It is likely that people with SIBAFO (small intestinal

bacterial/archaea/fungal overgrowth) would be most sensitive here but it may affect other populations, including those individuals with low stomach acid as mentioned previously.

Intestinal Blockages

There are a few (rare) cases of mushroom-induced bezoar, a type of small-bowel obstruction caused by indigestible materials. This is more of a concern in people who are just swallowing whole mushrooms and not chewing well and the few cases that have been reported involved shiitake mushrooms that were swallowed whole or not chewed well due to the consumer having poor dentition (10,11).

Asthma

Genetic mutations in the CHIA gene that encodes AMCase have been linked with asthma, suggesting that humans who do not make AMCase or who make less of it may be more likely to develop asthma from chitin exposure (12).

Benefits of Undigested Chitin

Undigested chitin is a significant source of prebiotic material. Once it reaches the colon, it is fermented by gut bacteria and can increase proliferation of beneficial bacteria and the production of short-chain fatty acids. Additionally, mice fed chitin but lacking AMCase exhibited a stronger immune response, gained the least weight and had the least body fat compared to mice capable of chitin degradation, suggesting there may be certain metabolic benefits to a lack of chitin degradation (5).

Chitin Degradation Beyond the Stomach

The defense against chitin-containing pathogens and the immune response to dietary chitin extends beyond the stomach. Even if chief cells don't produce AMCase in the stomach, it is likely that other innate immune cells in the body such as monocytes, "natural killer" (NK) cells and lung epithelial cells do. However, if low gastric AMCase is caused by a genetic mutation, then other cells may also lack this enzyme, whereas if it is caused by PPIs or gastritis, other immune cells will likely still produce AMCase. Additionally, CHIT1, another chitin-degrading enzyme produced by activated macrophages and various epithelial cells, is present in most individuals (13).

CHITOTRIOSIDASE: THE OTHER ACTIVE CHITINASE ENZYME

Pathogen Defense

Chitotriosidase (CHIT1), another active chitin-degrading enzyme, is primarily produced by activated macrophages, which are key components of the innate immune system (13). CHIT1 plays a significant role in both innate and adaptive immune responses against chitin-containing pathogens, including fungi, insects and parasites.

Similar to AMCase, CHIT1's primary function is to degrade chitin into smaller fragments of N-acetyl-D-glucosamine. These fragments are then sensed by immune receptors and trigger an immune response (14). As with AMCase, not everyone makes CHIT1 and approximately 6% of the population has a CHIT1 deficiency (15).

CHIT1 as a Biomarker in Inflammatory Disease

In the context of fungal infections CHIT1 activity is upregulated, contributing to the host's defense against fungal pathogens. However, CHIT1's role in the immune system is not limited to antifungal defense. It has also been implicated in various other immune-related processes, including inflammation, neurodegenerative disease, atherosclerosis and tissue damage.

Liver, Brain and Vascular Disease

For example, CHIT1 expression in fibrotic liver tissues was significantly correlated with the extent of liver fibrosis. CHIT1 may be used as an early biomarker for disease progression in multiple sclerosis. CHIT1 is also elevated in the cerebrospinal fluid of Alzheimer's disease patients and CHIT1 levels may be a marker for Alzheimer's disease progression and disability.

Microglial cells (the macrophages of the brain) increase production of CHIT1 in response to inflammation or injury. In addition to increased presence in neurodegenerative disease, CHIT1 levels are elevated (up to 55-fold) in patients with atherosclerosis (hardened arteries) and there is an association between CHIT1 expression and lipid-laden macrophages inside atherosclerotic vessel walls (16).

Gaucher Disease

The most significant disease for which CHIT1 is a diagnostic and therapeutic biomarker is Gaucher disease, a rare genetic disorder caused by a deficiency in the enzyme glucocerebrosidase, which leads to the accumulation of lipids in various organs, particularly the spleen, liver and bone marrow(17). Not only is there an association between tissue damage and elevated CHIT1, but CHIT1 could actually be contributing to tissue damage via increased production of fibroblasts, leading to increased scar tissue (18).

CHIT1 expressed in these disease processes may have little to do with the immune response elicited after consuming chitin-rich mushrooms, but its significance as a current and future biomarker in disease cannot be ignored.

HEALTH BENEFITS OF CHITIN AND CHITOSAN

Consuming chitin-rich foods may lead to immune-modulation and desensitization, potentially preventing or modulating certain diseases through these pathways. While direct evidence regarding CHIT1's response to mushroom consumption is lacking, understanding chitin-degrading enzymes is crucial for illuminating the role of mushrooms in immune modulation.

The medicinal benefits of chitin and chitosan span many organ systems and disease processes. We have explored the mechanisms at play in chitin digestion and metabolism and it is finally time to discuss the physiological impacts in immune modulation, lipid metabolism, gut health, wound healing and cancer.

IMMUNE MODULATION

Impact on Cytokine Production

Chitin and chitosan are recognised by the immune system as pattern-associated molecular patterns (PAMPs) by pattern-recognition receptors (PRRs) (primarily dectin-1 and TLR-2 on innate immune cells), and stimulate production

of the cytokines IL-17 and TNF-a. IL-17 plays an important role in tissue repair, immune surveillance, microbial protection and in the development of autoimmune disease, cancer and asthma. TNF-a is involved in inflammation, tissue repair and apoptosis (cell death). In one study exploring the impact of chitosan on inflammation in mice subjected to heat stress, there was significant reduction in proinflammatory cytokines like IL-10, TNF-a and IL-6 compared to the placebo group, indicating an immune-modulating effect (19).

Impact on Allergic Responses

Chitin also promotes recruitment of eosinophils, white blood cells that increase in response to allergy or parasitic infection. While there is some concern that chitin can contribute to allergic inflammation, some studies have revealed that it may actually help to desensitize allergic individuals and modulate the allergic response. Studies in mice with peanut allergies showed that adding chitin and chitosan to their food pellets significantly reduced anaphylaxis and peanut IgE levels upon exposure to peanuts (20). The size of the chitin particle seems to be of great importance: medium-sized chitin particles may cause allergic responses while smaller particles may reduce it (21). Chitin particle size is largely dependent on the activity of chitin-degrading enzymes and the variability of enzyme activity in the population can explain why people who have more or less gastric AMCase and CHIT1 may respond differently to ingested mushrooms.

These findings are in line with the hygiene hypothesis, which suggests that reduced exposure to microbes and parasites in early childhood may increase the risk of allergy later in life. This hypothesis would suggest that exposure to chitin in the environment from dust mites and fungi may help to "train" the immune system and prevent allergic sensitization (22).

Certain medicinal mushrooms, notably reishi and chaga, are known to modulate allergic responses. This effect appears to be largely mediated by lanostane triterpene glycosides, which support mast-cell stabilization and balance TH1/TH2 immune responses (23). Because these mushrooms are too

woody to eat, their chitin is usually not consumed unless they are processed into a 1:1 powdered extract or a nonextracted powder. It is intriguing to consider whether people with allergies might derive more benefits from a 1:1 powdered extract than a liquid extract of these mushrooms, potentially due to the presence of chitin.

Contrasting Chitin to Fungal Beta-glucans

Similar to fungal beta-glucans, chitin and chitosan are PAMPs that bind to PRRs on macrophages and active immune cells, engage with those immune cells, influence cytokine production and modulate immune responses (24).

For comparison, fungal beta-glucans activate an innate immune response via natural killer cells, but also activate an adaptive immune response that enhances the activity of T cells, increases systemic resistance to infections and improves immune surveillance against cancer cells (25).

Considering these mechanisms of action, it is possible that the long-term immune benefits from consuming mushrooms are due to the hormetic effect of low-grade immune stress via chitin and glucan exposure, leading to desensitization and a more robust immune system over time.

Metabolic Benefits

Chitosan binds to dietary fats and cholesterol in the digestive tract, reducing cholesterol absorption and promoting its excretion. The ability of chitin to bind fats and promote satiety also suggests that it may support weight loss. While chitosan will not be as effective as a GLP-1 agonist like Ozempic (semaglutide), if weight loss is the objective then increasing consumption of protein and chitin-rich mushrooms would likely be beneficial.

Chitosan can also regulate lipid metabolism by increasing low-density lipoprotein (LDL) receptors on the liver and, similarly to other fibers, binds bile acids and increases excretion in the feces (26,27). Animal studies have consistently shown lipid-lowering effects and human clinical trials have also yielded promising results. However, it is important to note that these studies used pure chitosan at doses up to 3,200 mg, which may have different effects on the stomach compared to consuming chitin-rich mushrooms (19).

Gut Health

Like fungal beta-glucans, chitin and chitosan function as prebiotics, promoting the growth of beneficial intestinal bacteria such as *Bifidobacterium* and *Lactobacilli* and, consequently, short-chain fatty-acid production. Chitosan also supports intestinal barrier integrity and modulates mucous production, suggesting potential for treating intestinal permeability (28). A 2022 randomized clinical trial found that 4.5 g per day of chitin-glucan supplementation improved postprandial metabolism and altered microbiota in individuals with cardiometabolic risk (29). Given these combined benefits of glucan and chitin, consuming a food that contains both glucan and chitin, like mushrooms, would also likely be beneficial.

Wound Healing

Chitin and chitosan are utilized in wound-healing technologies to accelerate healing and reduce scarring. These biocompatible, biodegradable, hemostatic, antimicrobial and adsorbent compounds possess key properties for effective wound care (30). Numerous *in vivo* animal studies have demonstrated the benefits of chitin and chitosan, including stable collagen synthesis, faster wound-healing rates, reduced wound size and inflammation modulation. Furthermore, chitin and chitosan can remove excess exudate from a wound while maintaining a moist environment conducive to healing (19).

Cancer Treatment and Drug Delivery

There is potential for chitin and chitosan to be used in cancer treatment as both a vehicle for delivering cancer drugs to a specific site and via an antiproliferative

effect by reducing the viability of cancer cells (31, 32). *In vivo* animal studies and *in vitro* studies have demonstrated that chitosan has an antitumor effect through the enhancement of cytotoxic T-cells, in addition to direct antitumor activity through the induction of apoptosis (19).

Effect of Cooking Mushrooms on the Bioavailability of Chitin and Other Medicinal Compounds

Bioavailability refers to the extent to which a substance is absorbed into the bloodstream. Generally, chitin is not bioavailable and chitosan has minimal bioavailability. Instead, the benefits of chitin stem from its interaction with immune cells, lipids and bacteria within the intestinal tract. The question remains, then: is it important to cook mushrooms and, if so, why?

Chitin remains intact during typical home-cooking methods. To break down chitin using heat, mushrooms would need to be cooked at 400 degrees Celsius, which would also destroy most of the nutrients and medicinal compounds, making this approach unadvisable (33). Furthermore, chitin is not extracted in water or alcohol and therefore will not be present in liquid mushroom extracts.

While chitin's structure is unaffected by cooking, different cooking methods influence the bioavailability of other nutrients and therapeutic constituents in mushrooms. Heating enhances the bioavailability of beneficial compounds such as beta-glucans, triterpenes and ergothioneine, though frying is generally harmful to these therapeutic compounds and should be avoided. A gentle sauté with butter or other fats appears to be the best approach for maximizing nutritional benefits, minimizing digestive discomfort and achieving optimal flavor (34, 35, 36).

In addition to improving bioavailability of certain compounds, cooking mushrooms can also destroy certain heat-sensitive toxins present in some raw mushrooms. For example, consuming raw shiitake mushrooms has been linked to shiitake dermatitis. Morel mushrooms contain a heat-labile toxin that causes severe

digestive symptoms and even death (37,38). Just because most humans produce enzymes that digest chitin does not mean mushrooms should be consumed raw.

CONCLUSION

Understanding the processes of chitin digestion and degradation in the human body is imperative to understanding how medicinal and edible mushrooms benefit human health. Chitin digestion and metabolism are intricate processes involving the enzymes AMCase and CHIT1. The presence of these enzymes varies among individuals due to genetic mutations and differing levels of dietary chitin exposure, leading to diverse responses to chitin. While the enzymes predominantly serve as a primary defense mechanism against chitin-containing pathogens, the implications of CHIT1 involvement in inflammatory diseases are substantial and warrant further investigation as a potential biomarker in those diseases.

Chitin and chitosan demonstrate significant therapeutic potential in immune modulation, wound care, digestive health, metabolic health and cancer therapy. To obtain the benefits of chitin, consuming mushrooms as food, powder, or a 1:1 powdered extract is recommended because chitin is not present in mushroom teas or tinctures. For the optimal benefits from woody medicinal mushrooms, the recommendation points to opting for 1:1 powdered extracts in most cases. While cooking does not break down chitin, it does seem to enhance the bioavailability of other medicinal compounds and is, therefore, generally recommended.

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NAMA

Eats

Unlock the Culinary Secrets of Mushrooms and Elevate Your Gastronomic Experience

2025 *Chopped*-style Culinary Challenge Results!

JULIE SCHREIBER, CULINARY ARTS COMMITTEE CHAIR, PHOTOS BY CONTESTANTS

Three years ago, NAMA's Executive Committee called for each committee to propose a unique strategy to award a scholarship to the Annual Foray, this year to be called NAMA New England and held at Potash Hill, Vermont. Due to the popular response, the Culinary Arts Committee has made the *Chopped*-style Challenge a tradition!

Ingredients for the challenge are selected during a raucous committee meeting. The aim is to choose items that participants probably have on hand, or at least readily available, but which will also present a challenge when used together. Contest rules are based on those of the popular *Chopped* TV show.

Submissions may be sent directly via email to the committee or posted on Instagram or Facebook using a specific hashtag for easy identification by judges. As actual tasting by judges is not possible, the contest focuses on creativity and presentation.

The contest requires all specified ingredients to appear in the final dish, along with any other ingredients chosen by the contestants. The mandatory ingredients this year were mushrooms (any safe, edible species, fresh or dried, wild or cultivated), Vegemite, molasses, bananas, and pistachios.

To use the Annual Foray Scholarship, recipients must be first-time attendees of a NAMA Annual Foray event. If a previous attendee wins, they can either pass the scholarship to a qualifying individual of their choice or decline it in favor of the next eligible finalist. The objective of the contest is to promote mycofellowship and enjoyment.

All contest submissions and recipes can be viewed by searching Facebook or Instagram using the hashtag #NAMAChopped2025. Each Culinary Arts Committee member selected their favorite submissions, which were then ranked in a subsequent group vote to determine the finalists.

Thank you to *Chopped*-style Challenge contestants! As you know, many must be Chopped—but that doesn't mean your entries were less than inspired and delightful! Use hashtag #NAMAChopped2025 to view their submissions.

- Anne-Marie Bilella ("The Sloppy Elvis")
- Brian Kavanaugh ("Spicy Smothered Oyster Mushrooms with Boiled Green Bananas")
- Shaun Thompson ("Pistachio and Porcini-stuffed Chicken")
- Stephen Sprague ("Filipino Spaghetti")
- Cassandra Ablola ("Candycap Cupcakes with Jam and Frosting")
- Kelly Hutzel ("Baklava")
- Christine Gagnon ("Sweet and Savory Banana-Vegemite-Molasses Crepes")
- Amelia Nora ("Ice Cream Sandwich")
- Julie Leonard ("Pan-seared, Marinated Bananas & Roasted Portabello over sautéed Spinach")
- Isabelle Herring ("COW 4x4")
- Komal Hanna ("Cake")
- Sally Kong ("Sticky Coconut Banana Rice with Shiitake Pistachio Laab")
- Jackie Proctor ("Plantain Cups Filled with Mushrooms, Topped with Marmite-Molasses-Glazed Pistachio Sprinkle and Cilantro Sauce")
- Hope Mahon ("Noodles")
- Marisol Perez ("Green Banana Blinis with Marinated Black Trumpets")

CONGRATULATIONS TO OUR THREE FANTASTIC FINALISTS:
MAX REINHARDT, CRYSTAL KATANCHAROEN AND BRENDA OUTSEN!
JUST TRY TO READ THESE RECIPES WITHOUT DROOLING!

THIRD-PLACE FINALIST: MAX REINHARDT

Smoked and Candied Hen-of-the-Woods (Grifola frondosa)

Notably plated.
Closeup of deliciousness.
Max Reinhardt with humongous hen.

Brine:

- 1/2c molasses
- 1/2c soy sauce
- 1/2c maple syrup
- T Vegemite
- 1c water
- 2c *Grifola frondosa*, soaked overnight and smoked for 1 hour with applewood.

Candied:

- 1/2c maple syrup
- Reduce syrup for 20 minutes and then candy the mushrooms in pan for 15 minutes.

Molasses Sugar Glass:

- 1 cup molasses
- 1 cup corn syrup
- 1 tbsp. cream of tartar
- 1 cup water
- I boiled this mixture, stirring constantly until it reached a temperature of 300°F, or "hard crack," then poured it into a pan to cool before breaking into pieces and heating their edges with a lighter in order to stick pieces together and form a vessel.

Sweet Banana Fry:

- 1 banana
- ¼ cup potato starch
- ¼ cup rice flour
- 2 tbsp. sugar
- 2 cups oil for frying
- Fry in pan for 8 minutes or so.
- ¼ cup pistachios for sprinkling on top. (The ice cream was supposed to be pistachio, but it was mint chocolate chip, which was actually way better!).
- ½ cup mint chocolate chip ice cream, in small scoops (purchased ingredient)
- 1 tbsp. balsamic vinegar reduction drizzle (purchased ingredient).

I soaked the mushrooms overnight in brine consisting of Vegemite, molasses and soy sauce, then smoked them for an hour with applewood and local lilac-wood chunks. After the maple syrup had been reduced down for about 20 minutes, the mushroom was then candied with maple syrup for about 10 minutes.

Molasses sugar glass was created by combining molasses with corn syrup and cream of tartar. I was unsure if this would work out but simmered the combo and poured onto a pan, where it hardened overnight. I had many other plans for this ingredient, like some kind of colorful lamp; alas, it was fairly opaque. The sheet of molasses sugar glass was broken up and chunks attached by heating with a lighter to adhere them together, which I had never tried but worked very well. It took some time to figure out the "vessel" as the breaking of the glass was not easy, so it wound up being abstract rather than geometrical.

Bananas were fried with potato starch, sugar and rice four. The tender banana inside with crispy breading outside was deliciously indulgent to dip into mint chocolate chip ice cream.

I had wanted to use purchased pistachio ice cream, as that is inarguably the best ice cream in the world (a tip from Donald Duck as I'm sure everyone is aware), but I screwed up and got mint chocolate chip instead; the containers look the same if you're rushing around a supermarket. That said, dipping the candied hen-of-the-woods into the mint chocolate chip ice cream was out of this world! Honestly, like nothing I've ever tasted. Finally, the dish was sprinkled with crushed pistachios and drizzled with my favorite sweet balsamic glaze.

Judges' Comments:

Ashley Laman, last year's *Chopped*-style Challenge first-place finalist, extolls Max's dish: "For such a simple recipe, the flavor profile sounds surprisingly complex. The molasses glass is super creative; even if it didn't turn out exactly as planned, it's a fun idea. I'm definitely going to give a try to frying bananas in potato starch."

CAC Chair Julie Shreiber says, "This sounds delicious. I liked the creativity of smoking and candying the mushrooms. I love friend bananas, so this looks like something I would try to make."

NAMA Second VP and stalwart CAC member Robert Courteau notes, "I LOVE smoking foods; it's a technique that's too-seldom used. The fact that Max brined, smoked and then candied the mushrooms is phenomenal. I am particularly happy that he spent a lot of time on the mushrooms component of his recipe."

SECOND-PLACE FINALIST: CRYSTAL KATANCHAROEN

Banoffee Pie with Pistachio Graham-cracker Crust, Dulce de Leche/Vegemite/ Porcini Sauce, Candycap Whipped Cream & Molasses-covered Pistachios

Ingredients

- 1 tbsp. Vegemite
- 3 bananas
- 1 cup pistachios
- 2 tbsp. molasses
- 1 pint heavy cream
- 10 grams dried candycaps (*Lactarius rubidus*)
- 15 graham crackers
- 8 tablespoons butter
- 7 grams dried porcini (*Boletus edulis* grp.)
- 1 can dulce de leche

1. Into a small bowl, pour 1 pint of heavy cream then add 10 grams of dried candycaps to infuse the cream. Refrigerate for 48 hours before removing the mushrooms.
2. Next day, prepare graham-cracker-pistachio crust by placing 15 graham crackers and ½ cup of pistachios into a sealable plastic freezer bag. Crush until desired texture. Melt 8 tablespoons of butter in a pan. Pour graham-cracker-pistachio mixture into a bowl. Pour in melted butter and mix.
3. Pour the entire buttered graham-cracker-pistachio mix into a 9" tart pan, cover with plastic wrap and refrigerate overnight.
4. After refrigerating for 48 hours, strain the candycap cream into a mixing bowl and whip until mixture reaches whipped-cream consistency.

The Challenge-ing ingredients.

5. Place 10 grams dried porcini (I used a mixture of *B. edulis* and *B. barrowsii*) into mortar and grind with pestle to fine powder.
6. Open dulce de leche and warm up in saucepan; once warm, add one tbsp. Vegemite and pour porcini powder into sauce. Stir to smooth consistency.
7. Remove crust from refrigerator and pop out of the pan gently to ensure that it remains intact.
8. Let dulce de leche/porcini/vegemite sauce cool for just 5 minutes, then pour into crust and spread evenly.
9. Rough-chop pistachios and toss into pan. Add 2 tbsp. molasses. Quickly toss and then pour onto parchment paper to cool.
10. Slice bananas and place them onto pie, atop sauce.
11. Spoon generous amounts of candycap-infused whipped cream over bananas. Top with more bananas. As a final touch, sprinkle with molasses-covered pistachios and garnish with edible flowers.

Judges' Comments:

Zachary Williams-Hunter of The Fungivore, who also organizes our thrilling NAMA_MX Regional Forays, says "I'd eat that, though I'm curious about the mushroom bits in the pie."

Noted author and CAC member Dr. Gordon Walker opines that this recipe "sounds delectable; the sweet/savory thing is off the charts with this recipe. I like that she is using multiple different mushrooms."

Ashley Laman: "The combination of sweet, salty and a touch of savory sounds perfectly balanced and is really appealing."

Robert Courteau: "This recipe set the bar quite high in my mind. This dish sounds and looks delicious and I want some."

Julie Shreiber: "This dish looks tasty. I like the mix of mushrooms, too. I always thought you had to bake the graham-cracker crust after adding the melted butter; this is a new technique for me!"

FIRST-PLACE FINALIST: BRENDA OUTSEN

Molasses Banana Bread with Candycap Ice Cream, Topped with Vegemite-salted Caramel Sauce and Cinnamon-roasted-candied Pistachios

This dish turned out so good! The molasses banana bread had a lightly sweet banana flavor with deep molasses undertones. The candycap (*Lactarius rubidus*) ice cream was outstanding. It smacks you in the face with caramelized-maple-syrup flavor. I was really surprised by the Vegemite-salted caramel sauce; it was difficult to keep from drinking it all! Think of buttery salted caramel with abundant umami. Lastly, the cinnamon-roasted pistachios came out exactly as I hoped! Pistachios are fairly soft and roasting them created the crunch I needed to top it all off.

All together, this dish really played back and forth with sweet and savory for a unique and crave worthy dessert. I had a lot of fun doing the challenge as *Chopped* is one of my favorite shows and I've always wanted to do something like this. I wish you could taste the result!

Molasses Banana Bread

- ½ cup unsalted butter
- 2 cups mashed banana
- 1 cup molasses
- 1 egg
- 1 tsp. vanilla extract
- 1 cup whole-wheat flour
- 1 cup all-purpose flour
- ½ tsp. baking soda
- ½ tsp. salt
- ½ tsp. cinnamon
- ½ tsp. nutmeg

1. Preheat oven to 350°F. Grease loaf pan with butter
2. Blend butter
3. Add banana, molasses, egg and vanilla
4. Add flour, baking soda, salt and spices
5. Mix until blended; do not overmix
6. Pour mixture into loaf pan and bake for 1 hour

Candycap Ice Cream

- 2 cups heavy cream
- 2 cups half-and-half
- ¾ cup sugar
- ¼ oz dried candycap mushrooms

1. Combine heavy cream, half and half, sugar and dried candycap mushrooms into a saucepan over medium-low heat for 5 to 10 minutes to infuse the candycap flavor.
2. Cool mixture.
3. Use ice cream maker to make ice cream.

Vegemite-salted Caramel Sauce

- 1 cup brown sugar
- 1 tbsp. + 2 tbsp. water
- 1 ½ tsp Vegemite
- ⅔ cup heavy cream
- 3 tbsp. butter

1. In a bowl, mix Vegemite and 1 tbsp. water until Vegemite dissolves
2. Mix brown sugar and 2 tbsp. water in a saucepan set on medium heat. Cook for 10 minutes, stirring occasionally.
3. Remove from heat. Add the heavy cream and dissolved Vegemite. Whisk together and then add the 3 tbsp. butter. Once butter is melted, return saucepan to burner and lower the heat to simmer for 5 minutes

Roasted-cinnamon-candied Pistachios

- ¼ cup brown sugar
- 2 tbsp. water
- ½ tsp. vanilla extract
- 1 tsp. cinnamon
- 1 tsp. unsalted pistachios
- Cinnamon sugar (1 cup sugar and ¼ cup cinnamon)
- Baking sheet with buttered silicone mat

1. Preheat oven to 350°F.
2. Heat sugar, water, vanilla and cinnamon over medium heat, bringing to a boil.
3. Add pistachios and cook until sticky and liquid has diminished.
4. Pour onto baking sheet, spread thinly and bake for 15 minutes.
5. Once cooled, chop into small pieces.

Judges' Comments:

Dr. Gordon Walker: "I loved the recipe organization and concept. I think the Vegemite-salted caramel sauce is brilliant."

Manitoba Mushroom Society President Donna R. Kurt "would cut the sugar in half for my sugar-reduced diet but this recipe is high on the list for me."

Zachary Williams-Hunter: "After a mouthwatering review of her components, the idea of Vegemite-salted caramel, I am smitten with this entry. I appreciate that she featured each of the ingredients rather than bury any of them. Her recipe organization is well planned. Her enthusiasm for the project, her pride in what she made and her breakdown of how it all played out is a winning attitude for me."

Robert Courteau: "It sounds delicious and I like the number of items made. Bread/cake, sauce, ice cream, crumble—I would buy it at a restaurant."

Julie Schreiber: "I like the sound of this dish. I agree the caramel sounds great."

Ashley Laman: "This recipe feels the most approachable, something people might actually try out at home rather than a novelty dish with crazy ingredients. I really liked the generous use of molasses and bananas. The description of the Vegemite-salted caramel sauce is mouthwatering; I've already saved this recipe to try later!"

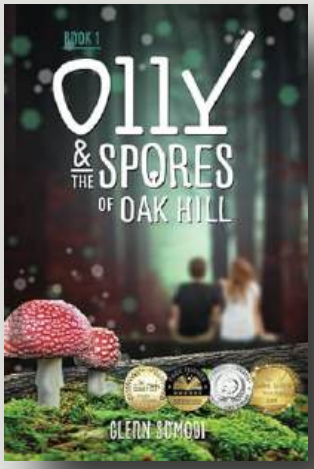
NAMA

Reads

Explore Captivating Literature Dedicated to Mushrooms and Mycology.

Olly and the Spores of Oak Hill, by Glenn Sumodi

CHILDREN'S BOOK REVIEW BY EVA GORDON, EDUCATION COMMITTEE CHAIR



Recommended for ages 8 to 14 (adults too)
Fantasy/environmental
Three Bobcats Publishing, LLC (2022)
paperback, 273 pages
$12.95 anywhere books are sold
$20.00 to purchase a limited-edition signed/stamped copy, click here
ISBN: 979-8-9872909-1-0

In Glen Sumodi's enchanting tale, *Olly and the Spores of Oak Hill*, a hidden world of fungi comes alive, populated by Spores with names like Cremini and Truffle. This whimsical tale blends magical realism and environmentalism. For young adults, this book offers a uniquely engaging entry point into the world of mycology, subtly weaving the wonders of fungi through its imaginative characters and plot.

Olly and Ember, two relatable heroes, journey through the challenges of adolescence, protecting their mushroom-named companions and a vulnerable

short-eared owl (*Asio flammeus*). It's a coming-of-age story deeply rooted in environmental awareness, with a subtle undercurrent of mystery and a generous fruiting of heartfelt moments. By personifying fungi in such a charming way, Sumodi sparks curiosity and makes the often-overlooked world of mushrooms relatable and exciting for young readers.

Sumodi's vivid descriptions cultivate an immersive experience within Oak Hill and its concealed society, making the reader feel as though they themselves have unearthed a secret fungal network. Ember's biologist mother and Olly's forager grandfather, Poppy, share their deep knowledge of nature, highlighting the intricacies of the ecosystem and the wisdom of Indigenous cultures like the Nipmuc. These characters act as positive role models, subtly demonstrating the importance of scientific understanding and traditional ecological knowledge, both crucial aspects of appreciating mycology and the natural world.

The book's rapidly expanding plot, with its intricate twists and turns, and the well-developed characters, each with their own unique quirks and complexities, kept me eagerly turning the pages. The narrative also addresses vital real-world issues like bullying and environmental conservation, demonstrating how even the smallest Spores can contribute to significant change. This blend of fantasy and reality makes complex topics like biodiversity and ecosystem health accessible and thought-provoking.

Olly and the Spores of Oak Hill proves to be a heartwarming tale of friendship, nature and magic. Further good news is that the author has created a series, with *Olly and the Spores of Sapphire Creek* as the next installment. These books could inspire a new generation of environmentalists with an interest in mycology.

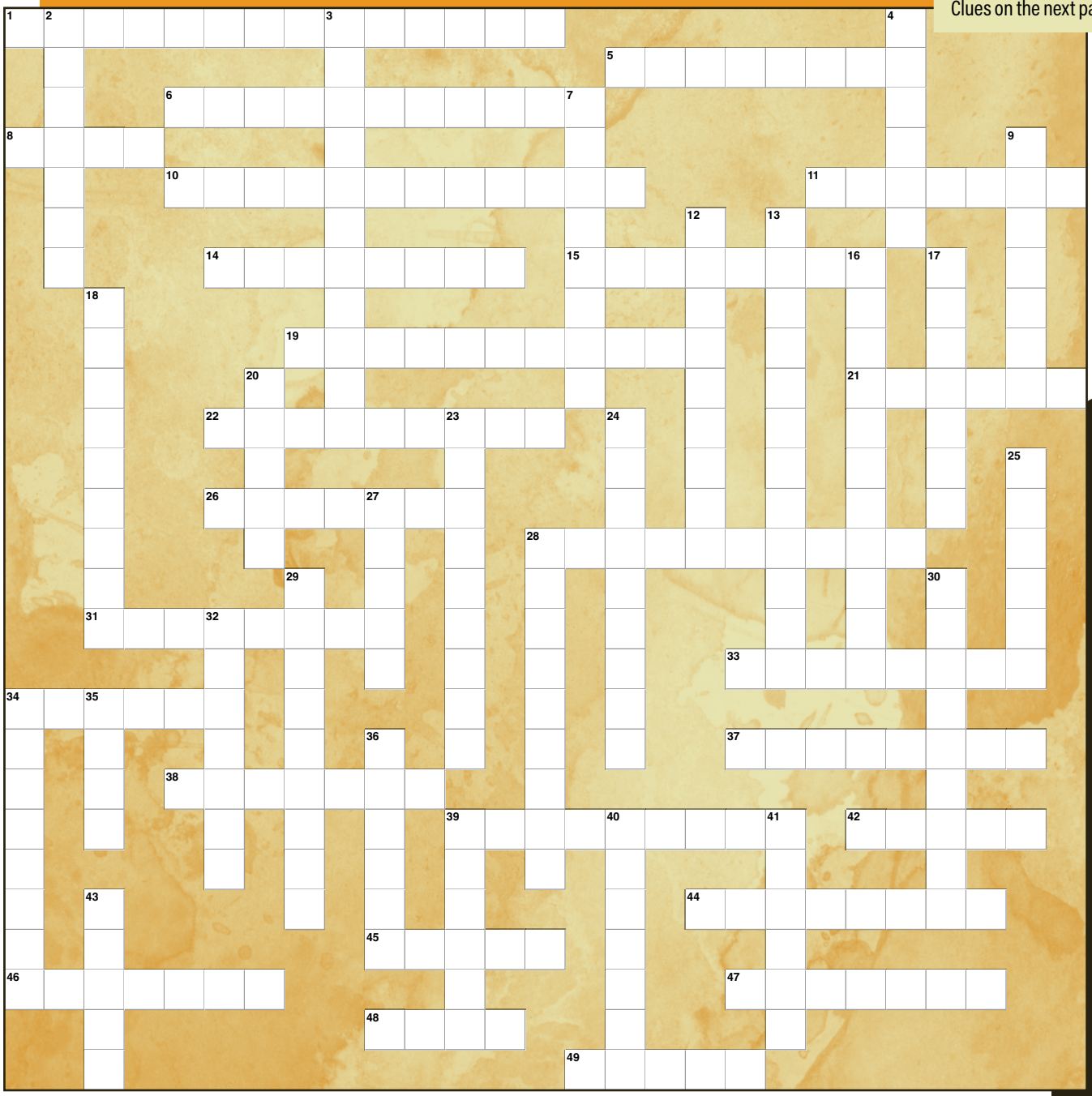
- Book of the Year Finalist - The Golden Wizard Book Prize - 2024
- First Place - 2024 BookFest Award for Book Series–Childrens
- Best Middle Grade Fiction - 2023 Page Turner Awards
- Silver Medal - 2023 Readers' Favorite Book Awards
- Winner - 2023 BookFest Award for the audiobook

NAMA Crossword

BRUCH REED, COO/*MQ* ED., WITH LAYOUT ARTIST CHRIS ROSS

All the answers can be found in this *MQ* edition!

Clues on the next page



April–May–June 2025 NAMA Crossword

BRUCH REED, COO/*MQ* ED., WITH LAYOUT ARTIST CHRIS ROSS

Across

1 yellow-staining *Lactarius* epithet
5 Sally's response to "goldens"
6 Layton recently saw them fruit before morels
8 of *The Mushroom Hunters*
10 Kurt's classes are more
11 Olly's hill-tree genus
14 it strikes back
15 number of American fungi in seminal 1902 tome
19 is brown rot this 3D artform?
21 2026 secret Regional Foray location
22 NAMA Oregon Dunes quarry
26 Slortz inspires Time to
28 trailhead of a new *Psathyrella*
31 Sumodi's Spores' Creek
33 salty salties-continent condiment
34 Martin's Mushroom
37 Gold Rush locus or creamy bar
38 marrow, spleen and liver-affecting disorder
39 in Manitoba, a mycophile goes
42 *Inonotus obliquus*
44 like mushroom knowledge, they stack up
45 an image of it graced the last 2025 *MQ* cover
46 Ozempic is a GLP-1
47 Florence's Best
48 NJMA UV enthusiast
49 Biblically surnamed *McIlvainea* author, sans -ite

Down

2 "NAMA" is one
3 growing or living on wood
4 they "want some more" [Instagram followers]
7 unwanted MycoBlitz mushroom
9 from *McIlvainea* to *FUNGI Mag*
12 Zachary Hunter, or one who eats mushrooms
13 "sacred hand" epithet
16 usually, "to remove an acetyl group"
17 welcomed Manitoba club's first foray
18 shared state of mutual benefit
20 storied avian noir and/or wonderwife
23 Tupac's beloved hills
24 "Old Iron-Guts"
25 gold-haired gal or morel
27 Relatable hero, with Olly
28 it's always 5 o'clock or mushroom season
29 *Chopped*-style nut
30 mushroom-digesting enzyme
32 carry your canoe
34 Winnipeg is capital
35 Friends friend, or NAMA New England logoer
36 soft mushroom sculptures
39 Rock Mountains field-guide publisher
40 eagle-monikered scholarships
41 beer, spice or new Chair
43 this Creative makes ya jump! jump!

Answer Key to January February March 2025 NAMA Crossword

BRUCH REED, COO/*MQ* ED., WITH LAYOUT ARTIST CHRIS ROSS

ACROSS

1 delicious mushroom or MMS' highest honor – **Golden Chanterelle**
5 count of clubs so far receiving travel funds – **sixteen**
6 mushroom eaters – **mycophagists**
10 AMA's only Federation – **Santa Cruz Fungus**
12 2021 logo designers' 1st moniker – **Kristen and Chris**
13 *Mushroom Color Atlas* creator – **Beeler**
14 Hunters are The – **Fungivore**
17 spicy dish and generous benefactor – **Curry**
18 Lincoff was a proud – **amateur**
20 false porcini unmasked as – ***Suillus***
21 another Roman emperor – ***augustus***
24 screen-printing-optimized art – **vector**
27 Pevec will never do this with CO's mushrooms – **waste**
30 a francophone Clara Peller might ask where's – **Lebeuf**
32 official Vermont fungal genus – ***Hericium***
34 an unique MycoBlitz – **Commercial**
35 *Friends* brother or scholarship recipient – **Ross**
37 list we all have before we kick it – **bucket**
38 FDA calls it "fungus" – ***Auricularia***
39 genus Rye hunts – ***Tuber***
40 Claudette Lamprecht honor – **Knighton**
41 where matsutake, not the worm, is spice – **dunes**
42 museum-bound specimen – **voucher**

DOWN

2 California *Omphalotus* – ***olivascens***
3 official 2025 name – **NAMA New England**
4 no borealis named for him – **Arora**
5 Coastal Shores & Spores Chair – **Srsen**
7 was epithet of all – ***Agaricus***
8 where NAMA has a group and a page – **Facebook**
9 "curved gills" genus – ***Cuphophyllus***
10 *Hydnellum suaveloens* smells like – **sweetgrass**
11 *... Dyes and* – ***Pigments***
15 NAMA_MX25 destination – **Ixtlan**
16 *Stropharia ambigua*, aka – **questionable**
19 pioneering 70s and 80s dyer – **Rice**
22 discouraged by the MycoBlitz – ***Psilocybe***
23 Australian ingredient – **Vegemite**
25 not a problem for *Amanita muscaria* – **charisma**
26 Nightingale or Regional Foray locus – **Florence**
28 "...a throne of white" – **stipe**
29 MMS scholarship honors – **Turowski**
31 of the woods, say – **neck**
33 MX mycologist surname, rhymes with contraire – **Montrer**
36 citrus drink vendor or CO state fungus hopeful – ***julius***