

THE MYCOPHILE

Newsletter of the North American Mycological Association



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San Juan Island naturalist, photographer and mushroom artist Jill Bliss makes masterpieces inspired by Mother Nature

Howard Goltz

“Nature Medley” is Jill Bliss’ collection of photographic works created with found and arranged natural objects while she wanders among the islands of the Pacific Northwest, turning wild mushrooms into works of art.

I first came across Jill Bliss’ “Mushroom Medleys” a couple of years ago through Facebook postings by “My Modern Met” and was immediately struck by her photographs of colorful mushroom arrangements. I must not be alone, as she has currently has some 30,000 Instagram users following her nature adventures in the Salish Sea, a network of coastal waterways and islands that stretch from SW British Columbia to NW Washington State.

Bliss walks daily in this richly biodiverse ecosystem and turns her transient compositions of local plants and wild mushrooms into the photo art she calls “Mushroom Medleys.” *In situ*, she arranges wild fungi into colorful clusters of balanced colors, forms and textures, often incorporating coincidental flora and fauna, takes the photograph, and then leaves the composition behind, intact. Her message is always the same: “Color is everywhere, these beautiful forms and shapes are everywhere. You just have to look.”

She says, “You can always tell where I’ve been. This is kinda like my nature graffiti. I will leave them, I’ll leave them be. And people will find them or not.” The return of her compositions to the environment created one of her favorite “medley” experiences on San Juan Island. “I went back a few days later and a fox had pooped in the middle of it. That was like the funniest critique I’ve ever had.”

Bliss grew up on a plum and walnut farm in northern California, attended college, studied fashion design and worked in New York, San Francisco and Portland, Oregon. With a master’s degree in design

theory, Bliss lived in Portland while designing and selling her own products and teaching as an adjunct professor at Portland State University.

“In 2012 I sold most everything I owned and bought a van, embarking on a year-long self-imposed west-coast sabbatical to reconnect with the slower natural pace and living things I knew and adored as a child. That sabbatical year has stretched into a new life chapter – I’ve been living, working, traveling and exploring amongst the Salish Sea islands of SW British Columbia and NW Washington State ever since. I’m going to live by the sea, in a cabin in the forest,” Bliss says. “That was my dream as a little kid.”

Bliss currently resides on Lummi Island, where she sells her art prints through her online store, at summer art markets and at art trade shows on the mainland. “In the summer tourist season, I primarily work as a naturalist and deckhand aboard M/V Odyssey in Friday harbor on San Juan Island. Summer is my season for socializing, learning and sharing my knowledge about the natural world here in Cascadia and encouraging visitors to explore and learn about the natural world that surrounds them wherever they live.”

“I’m an accidental photographer. My first year making these images as blog posts, I used my iPhone and then upgraded to a cheap DSLR when asked to make prints and notecards. I now have a new fancy Nikon DSLR, but I am using the auto functions until I figure it out. I use a tripod from overhead if I’m able, or handheld overhead if unable to use or bring a tripod. Natural shade is ideal. I don’t know how to do digital postproduction, so none of that. I have a ways to go before these images will be high-end professional quality. It’s just me and sometimes the dogs out for a walk/hike, no assistant.”

Bliss was a member of Seattle-based Puget Sound Mycological Society in the past but living out in the islands, she was never able to attend the events on a regular basis. She hopes to join the Bellingham, WA Northwest Mushroomers Association this year.

Jill's website, <<https://www.jillbliss.com/>> includes her contact information, dozens more Mushroom Medley images, articles on her work, and sources to purchase Giclée prints and stationary of her photographs and other artwork. She shares at least 10% of her earnings each year with individuals and organizations doing important work in the world.

Fungal Art

A few months ago, NAMA President Barbara Ching invited me prepare periodic articles for the Mycophile on the subject of "Fungal Art." The intent is to tell the stories of contemporary artists and the wide range of their mushroom-centric work, be it photography, painting, illustration, writing, 3D creations, writings, or even the art of cooking! This is adjunct to NAMA's "Art Registry," which is a listing of historic-to-early-2000s mushroom artwork. As art is in the eye of the beholder, I invite our readership to go beyond what I consider art worthy and contact me with their ideas and references for future articles. Howard Goltz, Recording Secretary, NAMA. <Goltz.Howard@gmail.com>





Captions:

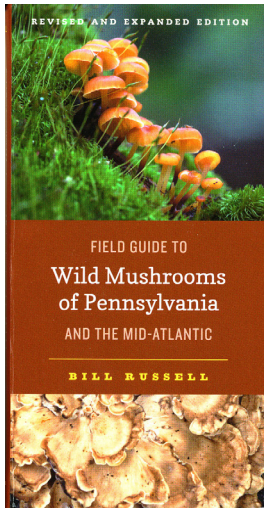
1. 2018 Deep Forest, Lummi Island
2. Jill Bliss
3. 2015 With-Stereum, Cortes Island BC
4. 2017 Red and Gold, Decatur Island
5. 2015 Sorrel, Cortes island, BC

6. 2018 Russula Stack, Lummi Island
7. 2016 Carbon-Antlers, Decatur Island
8. 2016 Russula-Center, Decatur Island
9. 2016 Discovery-Park, Seattle
10. 2016 Wood-Slab, Decatur Island

Field Guide to Wild Mushrooms of Pennsylvania and the Mid-Atlantic

(Revised and expanded edition)

Bill Russell



Golden Fairy Spindle
Claviceps fusiformis (Peziz) Corner
(also see the 2017 and 2018 editions)
Listed as *Clavaria fusiformis* in older guidebooks.
In their flights of fancy, mushroomers have described this bizarre and lovely mushroom as tongues of flame, slender golden fingers, yellow-colored coral, and more. When you examine this miniature species closely, you may feel that these poetic images are well chosen. Some of the smallest fungi are truly beautiful, but you won't be able to appreciate them unless you take the time to look them over carefully, close up. You may have to go down on your hands and knees to do it, though.
Anyone with their eyes to the ground in the woods in summer has seen this brightly colored fungus. Mushroomers who enjoy a place of fungi will think yes, it certainly is a beautiful mushroom and almost too small to collect for a meal, but I can't help wondering, can I eat it? The answer, according to many authorities, is YES, but it may taste bitter.
Golden Fairy Spindle is an old name for this mushroom. Long ago, everyone knew what "spindle" meant, but we don't hear the word used much anymore. It's a slender wooden rod that was used to twist fibers into thread when people spun wool by hand.
Dimes 3" to 4" high, only 1/2" to 1/4" thick; bright lemon yellow; slightly waxy or fringed edges; sometimes flattened, often branched, growing in dense tufts.

138 Wild Mushrooms of Pennsylvania and the Mid-Atlantic

Spore print: White to yellowish.

Growth habit: In damp places and humus, usually in dense tufts. July to October.

Edibility: Edible.

Caution: A number of closely related species have a similar form, but they tend not to show the entirely bright yellow color of the Golden Fairy Spindle. *Claviceps fusiformis* is more delicate.

To Add Golden Fairy Spindles to jars of pickled vegetables for a spark of color.



Black Trumpets, Horn Of Plenty, Woods Truffle

Gasterocephalus bicolor

(see my 2017 and 2018 editions)

Knows locally as trumpets.

It's fun to take beginning mushroomers hunting for Black Trumpets. You can stand in a huge patch of beautiful fresh trumpets and your novice friends may not see them, even if you tell them that the mushrooms are practically underfoot. They look so much like last year's dark, wilted tree leaves that even some experienced mushroomers must focus their attention to spot them. I don't like to admit it, but at times, after many years of mushrooming, I have walked right by without noticing them when I was thinking about other things. When you have for Black Trumpets, you have to be on your toes.

139 Summer Mushrooms

2017; Penn State University Press (www.psupress.org)

ISBN 978-0-271-07780-2 (paper, 284 pages)

\$24.95

The March-April 2007 issue of *The Mycophile* contained a review by John Plischke III of the first edition of *Field Guide to Wild Mushrooms of Pennsylvania and the Mid-Atlantic*. In short, he stated that there are a lot of advantages to having a field guide cover few enough mushrooms so as not to overwhelm a beginner, that he liked the convenient size (about 4½ × 9 inches) and the “In A Nutshell” summaries. Overall, he concluded that it was an excellent book for the novice and occasional mushroom hunter. I think Plischke’s comments were spot-on, and they apply equally to this revised edition.

The content is typical for a field guide, although the organization and presentation of the species accounts differ from that of most others. After the Preface and Acknowledgments, the introductory Mushroom Basics covers Identifying Features, Mushroom Love, Collecting and Identifying Mushrooms, Gathering Mushrooms, and Identifying Your Mushrooms by Name. Russell’s writing is clear, unpretentious and entertaining and he hits most of the points essential for a beginner. Missing, however, is mention of the ectomycorrhizal association when discussing how fungi make their living, and the figure showing the parts of a mushroom fails to include the lower portion of the stipe; as a result, there is no instructive illustration of the important-to-notice *volva* that occurs among species of the genus *Amanita* and a few other mushrooms. Mycophiles love *fungi*, not just mushrooms; mycologists study *fungi*, not just mushrooms. Also, it would have been good to provide a source for the claim that corn smut “may be poisonous when it matures and turns black.” I had not heard that before and would find it surprising, if true.

The bulk of the book consists of descriptions of 125 species of mushrooms, organized by season: Spring Mushrooms (16 species); Summer Mushrooms (75); Fall Mushrooms (23); and Winter Mushrooms (11). Handily, the seasonal sections are indicated by colored page-edge tabs. Within each section, the accounts are divided into Gilled (further divided by spore color), Neither Gilled nor Pored, Pored (Boletes) and Pored (Polypores). Most of the species accounts cover a page and a half to two pages. Each account starts with a photo, followed by the common name in a large font and, below that in a much smaller font, appear the scientific name (with authority) and suggested pronunciation of

the Latin binomial. Unlike most guides, Russell first provides fairly lengthy commentary covering aspects of the particular mushroom he feels are most important or interesting and, often, some of his personal experiences with it. The commentary typically comprises more than half of the overall species account. It is followed by brief descriptions of the Cap, Hymenium (Gills, Pores, etc.), Spore Print, Stem, Growth Habit (including habitat and fruiting time), Edibility and a Tip. The 25-words-or-less In A Nutshell summaries appear in various locations as sidebars. The species included are nearly all common ones that appear in several other books.

The book is rather narrow (perhaps to fit in a pocket?) and so the photos are not very large, mostly 3 × 2¼ inches. Nearly all are of good quality and show the necessary features reasonably well. I enjoyed the commentary, as it provides a sense for the author and his personality that you can’t get from simple recitations of cap and stem dimensions and color descriptions. However, as in most guides, there are scattered errors and misstatements, among the more important of which are as follows: the main toxin in *Amanita muscaria* is ibotenic acid, not muscarine, which is present in very low concentrations (an important thing for medical personnel to know in the event of a poisoning); *Cortinarius gentilis* is not a deadly species (phylogenetic analyses show that it is a very close relative of *C. brunneus*, not of the orellanine-containing species such as *C. orellanus*); the discussion of lookalikes for the edible *Leucoagaricus americanus* (*Lepiota americana*) should include mention of amatoxin-containing *Lepiota* species such as *L. subincarnata*. Less critical issues include incorrect names: it’s *Morchella americana*, not *M. esculentoides*; *Omphalotus illudens*, not *O. olearius* (correct in some places, not in others); *Cantharellus cibarius* and *Lactarius deliciosus* appear not to occur in North America (we have several species that have been going under each of those names and gradually they are being recognized and given their own names); there’s no good evidence to suggest the fly agaric (*Amanita muscaria*) actually kills flies; the fertile tissue of boletes should be referred to as tubes, not “pores”; the “aborted entoloma” actually should be called the aborting entoloma, as the deformed blobs are primarily made of honey mushroom tissue; *Suillus granulatus* does not “grow almost anywhere evergreen trees grow in the United States” (it is primarily associated with pines and perhaps with a few other members of the *Pinaceae*, but certainly not with most evergreen conifer and broadleaved trees).

The book concludes with general discussions of Edible and Nonedible Mushrooms and Mushrooms in the Kitchen (including a handful of recipes), an Appendix listing the species by morphotype (gilled, pored, or neither of those), a short list of References and an Index (to both common and scientific names). Throughout the book, I was struck by the number of species that Russell claims that he and his friends consider to be good edibles and that they eat frequently — species that I rarely, if ever, hear anyone else praising, such as *Agrocybe dura* and Russell’s favorite edible, *Clitocybe odora*; either these Pennsylvanians are onto something the rest of the country is missing or they have a rather different sense of taste.

From a production standpoint, the book appears well put together with a flexible and seemingly durable cover, but it is notably very difficult to open and definitely won’t lie flat.

While I think that most any mushroomer would enjoy this book, I echo the sentiment of John Plischke III that it is best suited for beginners and outdoors folks with a passing interest in mushrooms. The species are ones that are likely to be widely encountered and there is a small enough number of them that people shouldn’t get overwhelmed.

Steve Trudell

2018 NAMA BOARD OF TRUSTEES ANNUAL MEETING MINUTES SUMMARY

Prepared by NAMA Secretary Howard Goltz

The following is a summary of motions that were approved at the 11 October 2018 board meeting, chaired by President David Rust, in Salem, OR:

- NAMA has “passed through” a \$10,000 gift from Paul Stamets to the Mycoflora project. Additionally, the Board’s previously approved “\$10,000 NAMA contribution to the Mycoflora Project to be spread over 3 years,” was re-affirmed. NAMA has no proposed funding for the Project beyond the \$10,000 already committed. Stephen Russell is the Chair of the North American Mycoflora Project, Inc. committee. The project is a registered 501c3 non-profit, operating as NAMA Inc. (NAMINC). MSA has allocated \$20,000 in a matching fund for sequencing.
- Barbara Ching was unanimously approved as NAMA President starting 2019.
- Salma St. John was unanimously approved as NAMA First Vice-President starting 2019.
- Regional trustee positions are opening in 2019 for the Pacific North Region (being vacated by Milton Tam) and the Southwest Region (being vacated by Stephen Pencall). It is the responsibility of each Region to select their representative trustees.
- The position of Executive Secretary will be vacated by Barbara Ching (January 2019) as she assumes her new role as President.
- The following Committee Chair positions are opening in January 2019: Education (Kaplan retiring), Membership (Bichler retiring), Cultivation (Spinosa retiring), Toxicology (Beug retiring), and Marketing. It is the President’s responsibility to appoint committee chairs.
- The Inter-Society Liaison Committee is suspended until further notice.
- Gary Lincoff will be recognized as the next (2019) Memorial Fellowship honoree, followed by Judy Rogers in 2020.
- The Association of Food and Drug Officials (AFDO) has requested that NAMA provide a peer review of their “Regulatory Guidelines for Wild Harvested Mushrooms 2018.” The peer review was approved by the Board, and the NAMA President is to appoint a small committee to conduct the AFDO food safety peer reviews. NAMA’s review comments shall be prefaced with a statement that NAMA and its reviewers assume no liability in the review, its accuracy, nor its use.
- NAMA is to form an Ad Hoc committee to survey members and member clubs regarding inclusion and diversity.
- The 2019 NAMA Foray is to be held at Paul Smith’s College, Upstate New York Adirondacks August 8-11. The Board unanimously re-affirmed this location and time.
- NAMA Membership Summary for 2018 was submitted by Steve Bichler, Membership Secretary. As of 9/11/2018 we have 1,085 active members.

NAMA Voucher Collection Project

We are seeking students to assist with the NAMA Voucher Collection Project at this year’s NAMA foray.

<https://www.namyco.org/events.php>

NAMA’s 2019 Annual Foray will be August 8 to 11 at Paul Smith’s College, in the beautiful Adirondack Mountains of upstate New York. The NAMA Voucher Collection Project supports 4 graduate student assistants at the annual NAMA foray. The program is also open to highly recommended undergraduate students. Candidates chosen will be working alongside Andrew Wilson, Voucher Coordinator, as well as other distinguished mycologists and NAMA member volunteers.

http://www.namyco.org/voucher_collection_project.php

NAMA Voucher Collection Project student assistants have their foray registration fees, room and board/meals covered by NAMA (please note that travel expenses to and from the foray, as well as \$25 annual NAMA membership dues, are not covered). In exchange, the students work half days each day in the specimen vouchering process and display room; their help may also be requested late into the evening after dinner. Duties include supervising the foray drop-off and display tables and keeping them organized, moving specimens from drop-off tables to recording station, then to photography, then to display tables. Mushroom identification skills are not required but can be very helpful in sorting and determining what specimens merit special attention. Students help with display area set-up on Thursday afternoon/evening, then work in morning or afternoon shifts on Friday and Saturday; late nights are often requested in order to complete the vouchering process for the day’s specimens. They then assist with clean-up on Sunday morning. We do our best to spread out the schedule to allow students to attend some lectures and/or forays each day, if they so desire. The program is a lot of work and a lot of fun; the hands-on opportunity to see, study and learn a region’s seasonal mycoflora is unparalleled.

More information on the NAMA Voucher Program is also available here: <http://www.mycoguide.com/nama/>

To apply, please submit the following: 1) a one-page cover letter describing your research interests and how they would benefit from your involvement; 2) a brief endorsement from your academic advisor (note: a formal letter of recommendation is not necessary); email these items to Andrew Wilson at andrew.wilson@botanicgardens.org. Please use subject line “NAMA 2019 Voucher Collection Program Application” to help ensure that your application does not get overlooked.

We seek to select the NAMA 2019 Voucher Collection Program Assistants as soon as possible, with the intention of notifying the chosen applicants by early June. Students who are selected will be provided with further instruction on how to register for the event.

New Committee Announcement

It is with great pleasure that I announce the creation of the new ad hoc Mushroom Culinary Arts Committee, as approved by the NAMA Board of Directors at the board meeting on Sunday, March 17, 2019.

This new ad hoc committee will not significantly overlap with the Mycophagy Committee, which will continue the tremendous work it has been doing for many years. The purpose of the Mushroom Culinary Arts Committee will be to promote, advance and share information, art and stories related to the human consumption of mushrooms, including:

- Artistic and skillful ways of preparing, storing, cleaning, preserving and creatively presenting mushroom foods.
- Techniques and healthful methods of cooking mushrooms.
- Relevant research and data related to the specific health benefits of different kinds of mushrooms, including how to test-taste, the safe amounts to consume, potential adverse effects of overconsumption, etc.
- The history of human culinary mushroom consumption (mythology, traditions, cultural significance, etc.).
- Developing joint projects with the Cultivation Committee and partnerships with experts in relevant fields, including commercial enterprises that focus on cultivating exotic mushrooms for consumption, innovations in home mushroom growing, etc.
- Reporting on the latest relevant nutritional research, including global advancements in culinary mushroom use and related issues such as mushrooms as meat replacement, etc.
- Planning cooking demonstrations and contests.
- Photographing culinary events during forays and club meetings to be uploaded on the the NAMA website as a resource for members.

There will be a page for the Mushroom Culinary Arts Committee on NAMA's website and articles in *The Mycophile* that will include selections from foray events, recipes, cooking demos and articles about the health benefits of and history surrounding the consumption of mushrooms.

As the inaugural Mushroom Culinary Arts Committee chair appointed by NAMA president Barbara Ching, I invite all NAMA members who have interest and/or expertise in any of the aspects of the mushroom culinary arts set forth within this announcement to become committee members. It is my hope that the breadth of vital information encompassed by this new committee will attract a wide range of perspectives to contribute valuably to the enrichment both of NAMA's membership and the larger global mycophile community.

Feeling enticed and excited to be a part of this new committee? Please contact me, Salma St. John, Vice President of NAMA at the following email address: vicepresident1@namyco.org







Mushrooms of New York

Tom Bigelow with Bruch Reed

Tom Bigelow has been a member of the New York Mycological Society (NYMS) for 12 years and is currently honored to serve as that venerable club's President. He is also as active as time and space allow with New Jersey Mycological Association (NJMS), The Long Island Mycological Club, Boston Mycological Club, Maine Mycological Association and, of course, with NAMA. Through NYMS, Tom seeks to raise public awareness of mushrooms and the vital role they play in the environment. He is an avid mushroom photographer, often and ably assisted by his sharp-eyed and equally notable mycologist wife, Juniper Perlis, who finds many of his finest photographic subjects. In 2013, Tom won the New Jersey Mycological Society photo contest, an achievement he remembers all the more fondly because the judge that year was Gary Lincoff. Tom uses a SONY NEX 5 camera with a 30mm F/3.5 lens.

Captions

1. *Amanita flavoconia* so bright you gotta wear shades! (photo by Tom Bigelow)
2. Peter Piper picked a peck of...*Pycnoporus cinnabarinus*? Well, maybe not but come on -- who can resist picking this velvety vermilion polypore? (also seen on page 11) (photo by Tom Bigelow)
3. The underside *Daedaleopsis confragrosa* is usually what fascinates mycophiles but it's this specimen's thrilling pileus that somehow soothes. (also seen on back cover) (photo by Tom Bigelow).
4. Stately and sensual *Chromosera cyanophylla* (also cover photo) (photo by Tom Bigelow)
5. Luscious black trumpets (*Craterellus fallax*) lend low and lurid music to the composition of the forest floor. (photo by Tom Bigelow)
6. Nice fresh young old man of the woods (*Strobilomyces floccopus*). (page 10) (photo by Tom Bigelow)





Photo by Tom Bigelow

Do the Beautiful Photos in this Issue inspire you?

It's time to think about entering the photography contest. Winning photos will be shown at the Paul Smiths foray. See the rules below.

Annual Photo Contest Rules

Eligibility

The Photo contest is open to all mushroomers. NAMA membership is not required to enter. Images that have previously won (including honorable mention) are not eligible. Up to 15 images may be entered per person, with a maximum of 6 in the Pictorial, 6 in the Documentary and 3 in the Judges Option to make a total of up to 15 images. Closing date: All entries must be received by the Contest Director on or before June 8, 2019. Allow at least one week for mailing.

Subject Material

For Pictorial and Documentary, organisms from the Myxomycota (slime molds) and the classes Basidiomycetes and Ascomycetes of the Eumycota ("true fungi") are eligible. For Judge's Option, nearly anything goes, so long as the theme relates to fungi, and fungi are a key element of the photograph.

Entry Divisions

Limited or Advanced. If you won first, 2nd, or 3rd place 2 or more times before then you must enter in the Advanced division, If you won less than twice before you can enter the Limited Division.

Pictorial

This division is for single photos that illustrate the beauty and variety of fungi in form and color. Mushrooms should not be cut or turned over and look natural. Judging criteria include consideration of both technical (focus, depth of field, exposure, lighting, color, absence of distracting elements) and artistic (composition, color, background, lighting) aspects.

Documentary

For single photographs especially suited as illustrations in a field guide or monograph, or for use in a lecture. Emphasis is placed on portrayal of key morphological characteristics such that the usefulness of the image as an identification aid is maximized. Subjects may be shot in the field, laboratory or studio and the photographer has complete freedom to cut, process, manipulate, or orient the specimen in any desired manner to achieve the goal. Close-ups of single features and photomicrographs are acceptable. Judging criteria will be the same as in the Pictorial category but they will be of secondary importance to the overall mycological utility of the photo. Accurate identification of the subject will be a consideration.

Judge's Option

For single photos or series which do not fit into the Pictorial and Documentary divisions. Examples include time-lapse series, ecological relationships of fungi (e.g. fairy rings), fungi with animals, people enjoying fungi, humor, etc.

Awards

Awards- First 2nd and 3rd place will be awarded in Pictorial, Documentary and Judges Option. Honorable Mentions will also be noted for some Pictorial and Documentary photos. This year award certificates will be emailed or given to first through 3rd place winners. Next years contest will have prizes.

Marking, Listing and Submitting Digitals

Let us know if you are entering the limited or advanced division. The digital photos file name should include 3 things, D (for Documentary) JO (for Judges Option) or P (for Pictorial), and you the photographer initials, followed by the Genus and species of the fungi or the title for the Judges Option photo. Digital images may be emailed or mailed on a CD or DVD and will not be returned. Mail images to John Plischke III, 411 Center Avenue, Greensburg, PA 15601 724-832-0271 Fungi01@aol.com

If emailing in images please include your name, address and phone number. Images can also be submitted using free file mailing programs such as <http://www.mailbigfile.com/> or Dropbox etc.

Photo of You

If possible please include a photo of yourself, so we can use it to introduce the photographers. This is not a requirement and the photo of yourself is not counted as an entry. It has also been requested that we start to collect data on where the mushroom photo was taken. We don't need gps coordinates, but it would be helpful to have a city/county/park/state name -- something basic to post on the site for future reference.

Celebrating Women “Amateur” Mycologists Around the World

By: Salma St. John, Ph.D., Vice President, NAMA

The following piece was intended for publication in the March Mycophile, in honor of Women’s History Month; we interim editors regret and apologize to Dr. St. John for the delay but the spirit of and information within this piece will be equally relevant in any season.

Since March is the month in which women are celebrated for their achievements, it is appropriate to provide a brief synopsis of the first pioneering women *amateur* mycologists and their contributions to mycology.

Because mycology started out as a division of botany (because fungi were perceived as being a part of the Plant Kingdom at the time), many of the early female mycologists either were botanists or else branched out into mycology from the field of natural science (Maroske and May 2018). Like many other disciplines, natural science during the 17th and 18th centuries was dominated by, if not exclusive to, male scientists. Many women were faced with gender prejudice then and were denied access to education. After the Women’s Rights Movement (1848-1920), some women managed to gain that education access. However, female students were still struggling to get enrolled in educational institutions, especially the most reputable universities, which were reluctant to welcome them and grant them degrees. For example, after receiving her B.A. from Antioch College (1865) and an M.A. from Wesleyan College (1883), Flora W. Patterson (1847-1928) set her sights on Yale to continue her studies but was rejected because she was a woman. Nevertheless, she persisted unwaveringly and continued to study botany at other institutions; at the age of 47, she became the first female plant pathologist to be appointed by the USDA.

Similarly, other women were determined to continue their mycological endeavors with no formal education or degrees. The era was an opportune time for those women to explore their creative artistry and intellectual capabilities as it coincided with an intellectual awakening sparked by the Age of Enlightenment (Debakcsy 2018), which started in Europe and spread all over the world by the end of the 18th century. It was the spread of noble ideas such as liberty, equality, reason, individualism and self-determination that helped to awaken women who were determined to challenge the idea -- propagated by the male scientific establishment -- that women did not have the intellect to tackle scientific pursuits.

Mapping the geography of female amateur mycologists’ emergence, as early as the 18th century one could imagine a “silent” or “muted” symphony orchestrated in many parts of the world, including the UK, Germany, Belgium, the Netherlands, France, the U.S., Australia and other countries. Who are these women? Two researchers, Tom W. May and Sara Maroske (2018), produced a very intriguing, long-awaited study on this very subject. According to this study, which traced forty-three women mycologists/taxonomists and their mycological contributions through different time periods, six women who did not receive any formal educational degrees (and are, therefore, classified as “amateur”) described new fungal taxa and published articles about fungi prior to 1900. These pioneering “amateur” female mycologists did indeed contribute to the early development of modern mycology. Here is a brief review of those six women based on the Maroske-May study.



Catharina/Katharina Helena Dorrien (1717-1795). Public domain photo

She was born in Hildesheim, Germany and was the first woman ever to name two new fungal taxa: *Lichen centrifugus* var. *major* Doerr and *Lichen centrifugus* var. *minor*. She also authored 5 fungal publications. She was an accomplished teacher, governess, author of children’s books, translator, editor, taxonomist and plant illustrator. Dorrien successfully produced a 496-page catalogue covering 1,400 of the plant species in her area using the Linnean classification and nomenclature system. She was outspoken with regard to the role of

women in society, advocating that although women needed to learn the household skills necessary for self-preservation and to be independent, they needed to be fulfilled intellectually through readings in history and science, particularly in botany. Dorrien’s work, which disappeared in the years after her death, was revived and brought to light by the end of the 20th century after her biography, work, illustrations, and accomplishments were published. Dorrien is considered a celebrated artist and mycologist in Germany today.

Libert was born in Malmedy, Belgium. She was one of the first women plant pathologists and the second woman to name new fungal taxa (200 to be exact) including the genera *Ascochyta* Lib., which contains 34 species. The plant taxa *Libertia* (a genus of the Iridaceae family) and *Libertiella* (an ascomycete) were named after her. The species that ends with her name “Libert” is recognized as a plant pathogen.



Marie-Anne (also Anne-Marie) Libert (1782 – 1865) Photo Source: DocPlayer.net

Libert received her first informal education from nuns. She was then sent to a boarding school in Germany to learn German and the violin, and later she taught herself Latin. Interested in natural science, she observed, gathered, classified and catalogued minerals and plants in Malmedy. Her thorough work in botany earned her recognition and respect. She made contacts with scientists in Belgium and elsewhere and was mentored and encouraged by many such as Alexander Louis Lejeune (1779–1850) and Augustine Pyramis de Candolle (1778-1841). She was one of the first scientists to identify and describe the organism causing the “late blight” disease in potato (*Botrytis vastatrix*) in 1845; her work was later used, developed and renamed (*oomycete*, *Phytophthora infestans*) as being the cause of the disease by the German mycologist Anton de Bary in 1876. “The Cercle Naturaliste de la Région de Malmedy,” founded in 1951, was later renamed “Cercle Royal Marie-Anne Libert” in Libert’s honor.



Mary Elizabeth Banning (1822–1903)
Public domain photo

Banning was born in the State of Maryland. She did not receive tertiary education, although it was available to women at that time. During her scientific career, she named 21 new taxa (16 of them were produced in collaboration with Charles Horton Peck (1833-1917), the curator at the New York State History Museum at the time. Those taxa included such genera as *Agaricus*, *Collybia*, *Inocybe*, *Polyporus*, *Russula* and *Tricholoma*, including *Polyporus beatiei* (Banning), *Russula variata* (Banning) and *Tricholoma magnum* (Banning & Peck).

For many years, Banning was mentored by Peck, who helped her with her publications and with naming some species she identified (including *Hypomyces banningiae* in 1879). Banning was very interested in natural history and advocated teaching it to children. She produced a book on the fungi of Maryland; although the book was completed in 1888, it was not published and parts of it were made public only when a group of the illustrations with her notes were exhibited at the New York State Museum. In 1994, she was recognized for her pioneering work in mycology when she was elected to the Maryland Women's Hall of Fame.



Annie Lorrain Smith (1854–1937)
Public domain photo

Smith was a lichenologist born in Scotland who named 200 new fungal taxa. She studied French and German and worked as a governess in her early life. Although at age 15 Smith was one of a few female students that attended school in Edinburgh, she was unable to graduate because of the movement against women's rights to higher education. She attended some botany classes but only as an occasional student. Her first new taxon was *Cycloclerma apiculatum* A.L. Sm. She also named other new taxa from overseas and the

UK. She finished and revised the second edition of James Crombie's *Monograph of the British Lichen* (1911). In 1921, she published an illustrated *Handbook of the British Lichens*. Shortly after that, she published a book entitled *Lichens*, which was widely used as a textbook for many decades. She was one of the founders and twice served as President of the British Mycological Society. She was also one of the Linnean Society female fellows.

Due to her outstanding abilities, she was hired to curate Anton de Bary's microscopic collection of fungi. Smith spent the rest of her life working at the Cryptogamic Herbarium but her position was unofficial (paid from a special fund) because of her gender. Later, she was awarded a Civil List Pension in recognition of her contributions to mycology.

To all those incredible female mycologists who came before us, we tip our hats.

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Mariette Hannon Rousseau (1850 -- 1926)
Public domain photos

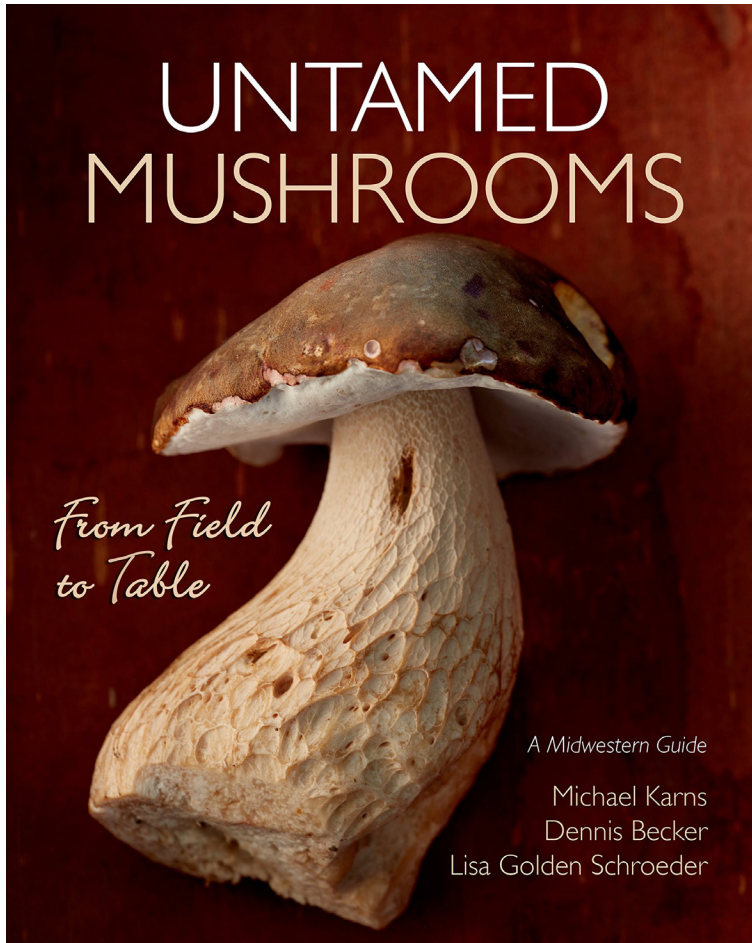


Elis (Elisa) Caroline Bommer (1832 -- 1910)
Public domain photos

Bommer described more than 200 new fungal taxa and achieved 35 scientific publications, 14 of which were published before 1900. She had a keen interest in botany and fungi. She and another amateur Belgian friend, Mariette Rousseau, were exposed to great sources of mycological work at that time such as the *Systema Mycologicum* by Elias Magnus Fries, and were given access to the botanical garden in Belgium. The two women had several of their articles published in the *Bulletin de la Societe Royale de Botanique de Belgique*, including one of their papers on Costa Rican fungi. They also produced a *Catalogue des Champignons* (1879) and a report in which they presented the fungi gathered by a Belgian expedition to Antarctica during 1897-99.

Bommer's work also included fungi of the Netherlands. The genus *Bommerella* was created in recognition of Bommer's work.

Book Review: *Untamed Mushrooms: From Field to Table* by Michael Karns, Dennis Becker, and Lisa Golden Schroeder. Minnesota Historical Society Press, 2018.



I have yet to tire of picking up, reading, and re-reading favorite sections in this collaborative project by NAMA member Michael Karns, an extraordinary mushroom hunter and excellent writer, skilled photographer Dennis Becker, and food stylist and writer Lisa Golden Schroeder whose cozy prose complements Karns's style nicely. The beauty of this volume is also enhanced by designer Dennis Spohn's drawings.

Published by the Minnesota Historical Society Press, this multi-genre mushroom book works as a field guide to thirteen edible mushrooms of the upper Midwest*, a forager's journal, and a mushroom cooking manual. The first chapter pulled me in by using the term "ethnomycology" in the second sentence; Karns goes on to develop a historical perspective on how we use the mushrooms that surround us. He maintains that "Indigenous peoples in the Midwest are the source of the first truly local cuisine with wild foods at its heart" (1). He then describes the mycophagical (I made up that word) contributions of central and eastern European migrants in the 19th century and concludes the chapter with the amazing culinary vitality the Hmong community. While I am not completely convinced by Karns's claim that Minnesota chanterelles taste better than northwestern varieties (17), my own experience convinces me that our morels are better! Chauvinistic boasting aside, belief in terroir and tradition is this book's organizing theme and rightly so since none of us finds all of the world's edible mushrooms: our daily mushroom hunting is local and seasonal.

Karns's journal entries contain both the most enjoyable and most troubling passages of the book. With a mushroom hunter's furtiveness, he redacts the precise locations of his finds, but records the

date, temperature, precipitation, and trees growing in the area as an acknowledgement of the many natural factors involved in mushroom fruiting. (Iowans like to note the soil temperature, too). As Karns writes, identifying your hunting "spots requires a commitment to really understanding a place" (7). At the same time, there is an implicit assumption of stasis, a troubling sense that human intrusion and full baskets won't change anything. Karns makes a blanket statement against harvesting mushrooms that you aren't going to eat or identify (21), but it is hard to square that advice against the large quantities he records from his outings: "In five hours, four of us picked thirty-six pounds of [black] trumpets" (81); "Today . . . one hundred pounds of king boletes. . . I have to buy a second dehydrator" (93); "a monumental haul of thirty-eight pounds of lobsters earlier today" (113). Still, the most sparkling prose pops up in these sections, too. A hillside bursting with puffballs "looks like it's scattered with skulls" (103).

The cooking section, organized by seasons, is rich with ideas and information—and Becker's droolily full-page photographs of most of the finished dishes. Best of all, you won't be just following recipes—you'll be learning new techniques in the "kitchen notes" section that follows each recipe. Many mushroom-themed cookbooks either add mushrooms to already familiar dishes, offering recipes for tuna noodle mushroom casserole, Caesar salad with mushroom croutons, chocolate cake with mushroom frosting, and so on, and there are a few of those here. But many of Schroeder's recipes start with the mushrooms at hand. For example, the very first recipe, rye berry risotto with tender peas and mushrooms, features morels; Schroeder's note explains that rye pairs especially well with morels (126), an observation I am eager to test for myself as soon as I find some morels.

The recipes I did make have been good enough to stay in the repertoire. After this summer's great lobster season, I made Schroeder's lobster mushroom bacon. Going forward, I will make this after every good find. It's a delicious snack, keeps well, and enhances lots of familiar dishes. I added some to baked beans; Schroeder includes a recipe for brussels sprouts and winter squash that includes them; I'll try to control myself around next year's batch of bacon so I can make this dish, too. The mushroom walnut and lentil burgers were good, too, especially the second day, when they seemed better able to hold their burgerly shape. Schroeder says nearly any type of mushroom will do here; I used maitake and would consider using shiitake another time.

While this book will obviously lure Midwesterners, the photography will appeal to any mycophile, and the cooking section, since it is generally flexible about what mushrooms can be used, would be interesting to any mushroom loving cook.

*In seasonal order

Morels

Pheasant Backs. According to Karns, "they are quite good once one overcomes the expectation that they will taste like other mushrooms" (47). My advice: if you really want to eat these mushrooms, set your expectations by gnawing on watermelon rinds.

Golden Chanterelles

Chicken of the Woods

Oysters

Hedgehogs

Black Trumpets

Lobster

King Boletes

Shaggy Manes

Lion's Manes

Giant Puffballs

Hen of the Woods

Barbara Ching

Oxalates in Chaga – A Potential Health Threat

Executive Summary

(see *McIlvainea* Volume 28 for full article)

By: Michael W. Beug, Chair NAMA Toxicology Committee

In January of 2019, Velma Sterenberg from Yellowknife, Northwest Territories, Canada, inquired about oxalates in Chaga. She collects her own Chaga and makes both tincture and teas. However, she had read Susan Goldhor's 2017 article in *Mushroom the Journal*, in which Goldhor had cited a 2014 Japanese case of Chaga-mushroom-induced oxalate nephropathy.^{1,2} In that case, a 72-year-old woman who had been diagnosed with cancer a year earlier had been taking 4-5 teaspoons of powdered Chaga daily for six months. She suffered liver damage and complete, irreversible kidney failure. In Velma Sterenberg's case, she had discovered that consuming both Chaga and high-oxalate foods including spinach, beet greens, and almonds results in zinc deficiency symptoms and makes her worry about osteoporosis.

Before approaching this question, I had no knowledge of oxalates in mushrooms nor did I know how oxalates work as a toxin. Internet sources report either that Chaga has high oxalate levels or extremely high levels, but give no numerical values. I found a paper by Savage, *et al.* in which they examined the soluble and insoluble oxalate content of six different commercially grown mushrooms in Uppsala, Sweden as well as three forest-harvested species (*Cantharellus cibarius*, *Boletus edulis* and *Hydnum repandum*).³ All of the species that they looked at were low in oxalates. I had initially been concerned with total oxalate levels, figuring that in the highly acidic stomach, both the insoluble oxalates and the soluble oxalates would be mobilized and thus become toxic. However, the insoluble oxalates (calcium oxalate, magnesium oxalate and iron oxalate) are not absorbed from the digestive system and largely pass harmlessly in the feces. However, soluble oxalates (potassium oxalate and sodium oxalate), release free oxalate anions, which pass into the blood stream. Free oxalates will bind with any free calcium to produce calcium oxalate crystals, potentially resulting in gout, kidney stones and physical damage to the kidneys while depleting calcium needed for strong bones, etc. Free oxalates will also deplete zinc and iron from the bloodstream.

Considering only soluble oxalates, we learn from the Savage paper that in cultivated *Agaricus* species, not only are total oxalates low, but 90% are insoluble. Cultivated *Lentinula edodes* has moderately high total oxalates (just over 1,000 mg/kg DM) but 99% of the oxalates are insoluble and thus harmless to ingest. Cultivated *Pleurotus ostreatus*, in contrast, had moderate oxalate levels but 90% were in the soluble form, making it a moderate overall oxalate risk: a risk level of concern to people with serious gout or serious kidney stone problems but no worse than foods like chocolate, almonds and cereal grains. Nile and Park examined oxalate levels in twenty species of popular wild edible mushrooms.⁴ All had very low to moderate oxalate levels. They found no soluble oxalates in *Herichium erinaceus*, *Sparassis crispa*, *Boletus edulis* and *Ganoderma lucidum*. The highest levels of soluble oxalate were found in *Phellinus floridana* (65 mg/kg DM) and in *Morchella conica* (60 mg/kg DM) where the oxalate risk would be rated as moderate.

Finding data on oxalate levels in *Inonotus obliquus*, Chaga, proved very difficult; I failed. Fortunately Tim Geho, a NAMA toxicology identifier, succeeded. Glamočlija *et al.* reported on the oxalate levels in Chaga in a sample from Russia (over 3,900 mg/kg soluble oxalates), a sample from Finland (over 5,300 mg/kg soluble oxalates) and a sample from Thailand (over 1,700 mg/kg soluble oxalates).⁵ For the Russian material, 97% of the organic acids extracted were soluble and insoluble oxalates. In the Finnish material, 84% of the organic acids were oxalates and 16% was para-hydroxybenzoic acid. In the material from Thailand, a

region well outside of the known circumboreal range of Chaga, oxalates comprised only 25% of the organic acids. The main organic acid in the material from Thailand was para-hydroxybenzoic acid (73.6%), with 0.3% gallic acid and 1.1% protocatechuic acid. In all three of these samples, oxalate levels were far higher than those found in other edible mushrooms. However, the Chaga oxalate levels are much lower than oxalate levels found in foods with extremely high oxalate levels like spinach, rhubarb and beet greens.

When I checked the NAMA database (which goes back to the early 1970s), there were no reported cases of poisoning by *Inonotus obliquus*. So was the one Japanese death from oxalate induced kidney failure a unique case or do we have a cause for concern? Are there cases out there that are not reported? It turns out there are. I had drafted a paper for *Fungi* magazine and circulated a draft to all of the NAMA toxicology identifiers. Paul Kroeger responded that he and Raymond Li with the B.C. poison center had worked on nine cases in British Columbia since 2010 and two of those cases involved successfully treated liver and kidney damage, suggesting the involvement of soluble oxalates.

Chaga has become popular and its use is expanding. A search of the internet yields countless entries extolling the virtues of Chaga as a medicinal mushroom and a superfood. Studies of Chaga *in vitro* (lab studies of cultures) and in animals yield some intriguing results that point to the potential for the ability of Chaga extracts to kill cancer cells, stimulate the immune system, and reduce inflammation. One small human study has suggested a reduction in markers for inflammation. None of the other claims for Chaga have been investigated in human clinical trials.

The Memorial Sloan Kettering Cancer Center has a web entry with a well-referenced section on Chaga (<https://www.mskcc.org/cancer-care/integrative-medicine/herbs/chaga-mushroom>) warning individuals interested in Chaga not to use it if they are taking either blood-thinning medications or diabetic medications.

WebMD (<https://www.webmd.com/vitamins/ai/ingredientmono-1474/chaga>) warns against taking Chaga if you have an autoimmune disease (e.g. multiple sclerosis, lupus, rheumatoid arthritis). This warning due to immune-stimulating β D-glucans. Medicinal mushroom users with an autoimmune disease need to be wary of all of the medicinal mushrooms that are high in β D-glucans.

While there are many interesting anecdotes about positive effects of using Chaga as well as intriguing *in vitro* and animal studies, human clinical trials are lacking; some cautions are clearly in order. For those who do take Chaga teas and/or tinctures and are rightly concerned about oxalates, I discovered that if you take your Chaga (or spinach or any other high oxalate food) with dairy products or with highly soluble calcium citrate, the soluble calcium from the dairy products will combine with any soluble oxalate in the stomach and the resultant calcium oxalate will pass harmlessly in the feces.

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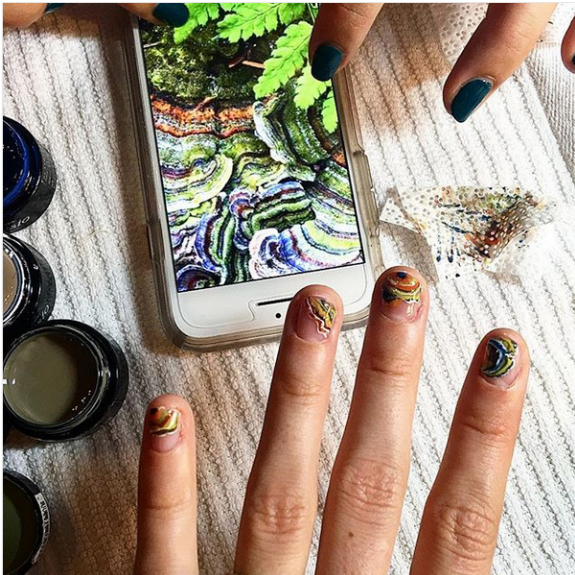
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Brie Larson Marvels at Mushrooms As she makes the rounds promoting Captain Marvel, Avengers: Endgame and her earlier movies, megastar Brie Larson talks about the superpowers of mushrooms. She describes herself in her Twitter profile as an “Actor / Mushroom Forager / SCUBA Certified Diver / Scientific American Subscriber / Dog Mom / Captain Marvel.” In Men’s Journal, she explained to interviewer Sarah Z. Wexler that she fell in love with mushroom hunting after going on walks led by a mycologist. She told The Sydney Morning Herald that she belongs to a “mycological society in Los Angeles.” Check out the turkey tail mushroom manicure she flashed on Instagram in 2017: https://www.instagram.com/p/BVVJl-jjkNL/?utm_source=ig_embed #BrieLarson #BrieLarsonMushrooms #BrieLarsonCaptainMarvel

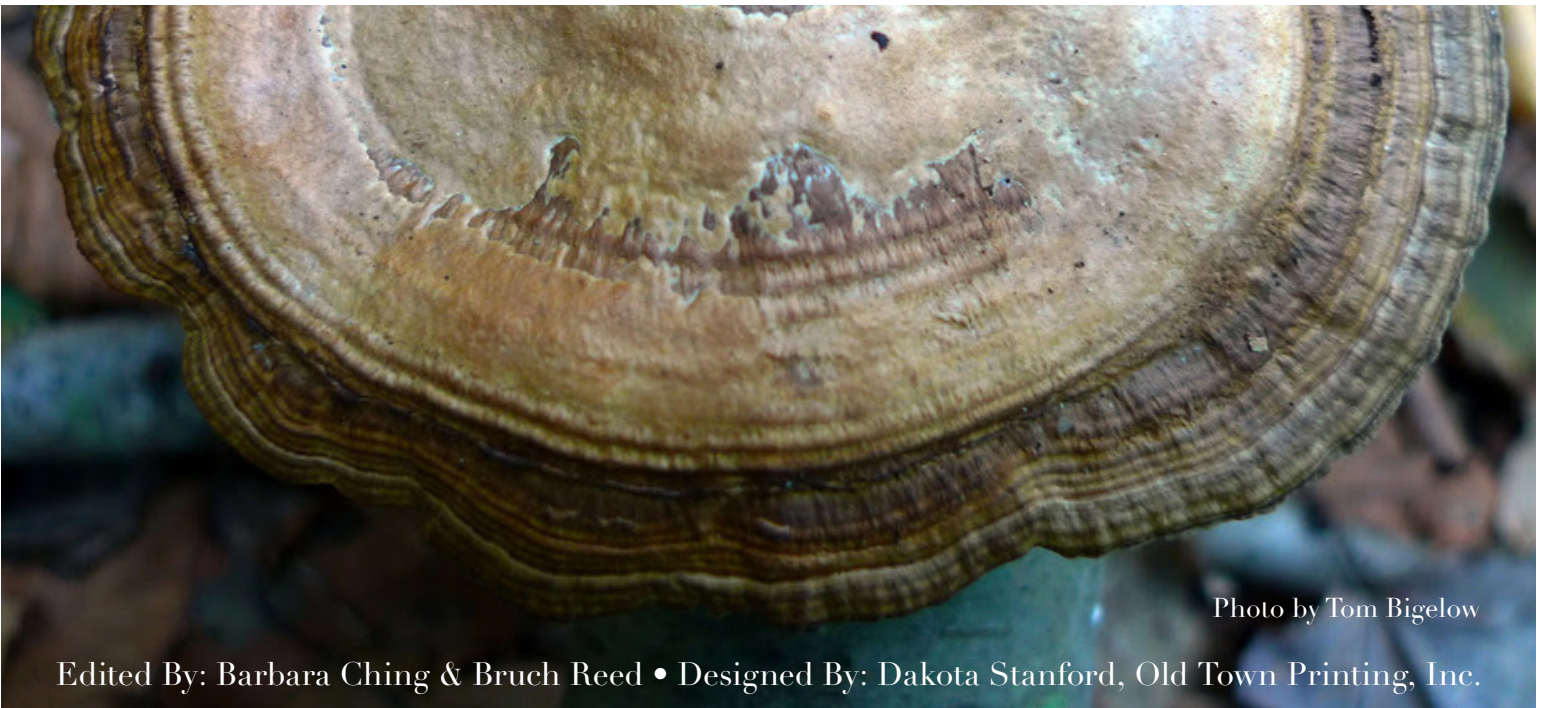


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