



AMS

# SPORE PRINT

Issue 02 2023

## *Making mushrooms matter*

Our members are doing a phenomenal job of sharing their mushroom finds with friends and family in person and on Facebook and other social media platforms. Let's give fungi the spotlight they deserve!



## *Cortinarius caperatus*

This lovely edible mushroom was long known as *Rozites caperata* before genetic studies revealed that it belonged to the genus *Cortinarius*. Its cap colour varies from middle brown to pale brown often with a whitish bloom. With age, it becomes radially wrinkled and may contain an umbo. Its close, short adnexed gills are pale at first, becoming brown or cinnamon brown, and when mature, they produce rusty brown spores. Its stem has a persistent, membranous white ring with yellow tones beneath, usually located just above the centre of the stem. *Cortinarius caperatus*, commonly known as the "Gypsy Mushroom," is ectomycorrhizal with conifers and areas associated with the blueberry family. One of the most productive areas to collect these prize edibles is in black spruce bogs in mid-July through September. The specific epithet *caperatus* comes from the Latin adjective for "wrinkled," a reference to the wrinkled or furrowed surface of most mature caps of this fungus. This mushroom is by far the most common *Cortinarius* species collected for the table here in Alberta.

**Cap:** radial striations, wrinkles, 5-15 cm broad

**Gills:** short, adnexed

**Stem:** membranous ring in middle of stem, 5-13 cm long, 1-2.5 cm thick

**Spore print:** rusty brown

**Kingdom:** Fungi

**Division:** Basidiomycota

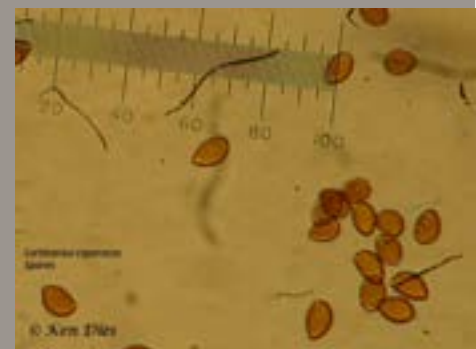
**Class:** Agaricomycetes

**Order:** Agaricales

**Family:** Cortinariaceae

**Genus:** *Cortinarius*

**Species:** *C. caperatus*



Feature mushroom brought to you by AMS member Ken Dies, fungus photographer and 2016 AMS President's Award recipient.

# TABLE OF CONTENTS

## 03. **President's Message**

*Chlorophyllum rhacodes* ... as far as the eye can see...  
July 2023 City of Edmonton.

## 05. **Summer Solstice**

A foray to Innisfail, a mushroom feast, and wonderful company to kick off the season.

## 08. **Fungal Learning**

Not only do AMS members enjoy cultivating mushrooms, we cultivate knowledge about fungi in our ecosystem.

## 14. **What is a Mushroom?**

AMS member, Mitchell Milgram, explains how mushrooms aren't plants at all. In fact, they're fruits!

## 19. **Mushroom Name Changes**

Ken Dies, our AMS feature mushroom author and photographer, shares key learnings from his contributions to the Alberta and Saskatchewan Macrofungi Reassessment.

## 23. **Mushroom Field Guides**

Mitchell Milgram has great recommended mushroom field guides for British Columbia and Alberta.

## 28. **Safety in the Bush...**

Foraging means we might encounter wildlife, get swarmed (and stung) by insects, and potentially get lost! Here are some important foraging safety tips.

## 31. **A Morel Foray**

A foray hosted in Entwistle, Alberta with members of the AMS and the Institute of Contemplative Ecology (I4C).



*Monotropa uniflora*, a "ghost plant" in Alberta found in dense forests with lots of moisture. It's edible in small amounts and may taste like asparagus!  
ERICA TO





# PRESIDENT'S MESSAGE

*Chlorophyllum rhacodes* ... as far as the eye can see... July 2023 City of Edmonton

Summer for the Alberta Mycological Society started as it should, with a celebration of the summer solstice held in Central Alberta at Shady Nook Hall. Our celebration was a moment of giving back to the AMS membership with poached salmon and mushroom-stuffed pork loin supplied by the AMS. These mains were cooked to perfection by Liz Watts, a Director of the AMS. The dinner was followed by conversation late into the long Alberta summer night. On Saturday, only one lonely mushroom was found, likely an *Agaricus campestris*.

Over the rest of the summer, we have many local forays planned across Alberta. The rain in the last two weeks of June in the Edmonton area is bringing out the best in fungi. Just a few days ago, one dinner plate sized *Chlorophyllum rhacodes* led me down a forest path of a whole arc of choice specimens. These can be found anywhere there are established stands of spruce, an old hedgerow of caragana, and perhaps even amongst a grouping of lilac bushes. Do not be afraid to poke your head into an established hedgerow. You may be pleasantly surprised. *Chlorophyllum rhacodes* (see photos above) are considered to be people mushrooms and flourish where we were. In addition to this glorious find in the Edmonton area, check our [AMS Facebook Group](#) to see what other Albertans are finding. Stay tuned with our [Events webpage](#) to find a foray near you.

Our two major summer events are coming! The 2023 Wild Mushroom Expo will be held on August 13, 2023. At the Expo, you will have the opportunity to ask experts: what is this mushroom? Can I eat it? Where can I find it myself? And any other question you can think of. A massive display of identified mushrooms, mushrooms to sample, and mushroom merchandise to buy. You cannot find a more perfect way to learn more about mushrooms. Our second major summer event is the Great Alberta Mushroom Foray (GAMF). The GAMF will be held in Waterton Lakes National Park on September 1-4, 2023. This event is a citizen science event where you have the opportunity to foray in a National Park, learn how to properly identify fungi, and contribute found specimens to the AMS fungarium.

I encourage you to participate in learning about fungi on your own, with your friends online, and in-person on forays at the Expo, or join us at the GAMF this September long weekend. See you online or in the bush!

Karen Slevinsky, President

Special thanks (and mush love) to Ken Dies, Mitchell Milgram, Rick Watts, Mel Hohn, Christine Costello, Enoki Li, and all other contributors in this *Spore Print*.

Produced by Erica To

Top: *Chlorophyllum rhacodes*. KAREN SLEVINSKY





PRESENTED BY  
THE ALBERTA MYCOLOGICAL SOCIETY



13TH AUGUST, 2023

U OF A BOTANIC GARDEN

**WILD**

# MUSHROOM EXPO

THE GREATEST SHOW *FROM EARTH!*

## FEATURING

- Fresh, *wild* mushrooms in habitat features collected from across the province
- Poisonous, medicinal, and edible mushrooms
- Mushroom presentations for adults and kids
- *Wild* Mushroom Café for sumptuous edibles

## ON SALE

- Recommended mushroom field guides
- Mushroom t-shirts, posters, mushroom blind boxes, and stickers!
- Join the Alberta Mycological Society to attend exciting foray events!



**11AM - 4PM**  
**FOR ONE DAY ONLY!**

- 11:00 AM **Mushroom Walk** in the Garden (leaving from Pine Pavilion)
- 12:00 PM Kid Talk: "**Fun with Fungi**" (Lilac Tent)
- 01:00 PM "**Martin on Mushrooms**: Join veteran mushroom educator Martin Osis as he talks about Alberta mushrooms" (Lilac Tent)
- 02:30 PM **Mushroom Walk** in the Garden (leaving from Pine Pavilion)

([www.albertamushrooms.ca](http://www.albertamushrooms.ca))



# SUMMER SOLSTICE

## A FEAST FOR FUNGI LOVERS

After taking a three-year hiatus, the AMS hosted its annual Summer Solstice event at Shady Nook Hall near Red Deer County. This event gathered AMS members together to camp outdoors, share their mushroom hunting escapades, enjoy a beautiful natural area, and partake in a glorious mushroom-filled feast with foraged delicacies.



Top: An unidentified mushroom. MEL HOHN

Above: Attendees staying hydrated with water (and some wine) on this hot summer day. MEL HOHN

Right: Attendees swapping mushroom adventures under the shade. MEL HOHN





JUNE 23-25, 2023

## AN ADVENTURE FOR THE TASTE BUDS

A potluck style feast is a great opportunity try new dishes and grab new recipes. The feast on Saturday evening wrapped up with a warm, fiery bonfire.

At this event, the AMS revealed our newest line of merchandise, blind boxes! They contain hidden, iconic mushrooms perched on pedestals or hung from key chains. You won't know which one you'll get until you open the box!



Top: Mushroom blind boxes. MEL HOHN  
Bottom: A culinary spread. MEL HOHN

From the top:  
1) Solstice attendees enjoying the feast.  
2) "Vegetable Surprise" (Mushrooms, vegetables, and rice bake).  
3) Beef Stroganoff.  
4) Poached salmon.  
MEL HOHN (ALL PHOTOS)

JUNE 24, 2023

# INNISFAIL NATURAL AREA FORAY

On Saturday, many summer solstice attendees hopped on a nearby foray at the Innisfail Natural Area, just thirty minutes away from Shady Nook Hall. The foray was led by AMS foray leaders and dynamic duo, Barb Shworak and Christine Costello. Despite dry conditions, they found a variety of mushrooms in the conifer and aspen mixed forest, including oyster mushrooms!



Top: *Mycena haematopus*. CHRISTINE COSTELLO  
Bottom: *Pluteus cervinus*. CHRISTINE COSTELLO

From the top:  
1) *Psathyrella* sp.  
2) *Agrocybe praecox*.  
3) *Ganoderma applanatum* (artist's conk).  
4) *Conocybe* sp.  
CHRISTINE COSTELLO (ALL PHOTOS)



# FUNGAL LEARNING

## A Commitment to Research and Education

By Erica To

As the Alberta Mycological Society (AMS), our mission is to further our understanding of fungal biology and the crucial role they play in our ecosystem. We aim to give students opportunities to grow their knowledge and share it with the public, our membership, and environmental, research, and academic organizations. In collaboration with others, we are proud to support passionate students in pursuing studies and experiences related to fungi.

### **2021 - 2026 AMS Graduate Award (University of Alberta, U of A)**

The AMS funds a \$2,000/year award granted to a U of A student registered in a master's or doctoral program with a focus on fungal biology. If donations exceed \$50,000 in five years, the funds are placed in the UAlberta Endowment, and the award will be presented to students in perpetuity.

### **2023 Appalachia Foray Scholarship (North American Mycological Association, NAMA)**

The AMS successfully applied for and received the NAMA Appalachia Scholarship to be granted to an AMS member to attend NAMA's annual foray, [Appalachia NAMA 2023](#), a highly sought after event in Hendersonville, North Carolina on August 24 - 27, 2023. The AMS also matched the scholarship amount. A scholarship committee, consisting of board and non-board AMS members, was formed to award the total amount to an AMS applicant.



Likely a *Mycena* sp. growing on moss. Photo taken by Ethan Zapach, recipient of the Appalachia Foray Scholarship. ETHAN ZAPACH



# THE AMS GRADUATE AWARD RECIPIENTS

Since its inception in 2021, two U of A students have received the AMS Graduate Award.

**Nicole Lau**, 2022 Award winner

MSc Student in Conservation Biology, [nlau@ualberta.ca](mailto:nlau@ualberta.ca)

## **Beyond mountain pine beetle: the influence of root associated fungi on soil carbon sequestration**

The focus of Nicole's research is on how changes in mycorrhizal fungal communities, following mountain pine beetle disturbances, influence soil carbon storage. Nicole is assessing aboveground plant communities and their belowground fungal partners in boreal forests. Root-associated fungi – mycorrhizal fungi - play diverse functional roles in boreal forests, including mediating carbon dynamics. By exploring these relationships, findings in this study could be used to help optimize soil carbon stocks and ecosystem services in recovering boreal forests.

### **Call of the wild**

Nicole's passion for research in conservation and forest ecology has been fostered from early childhood. She spent tons of time outdoors, skiing, camping, and enjoying the wonders that nature offers with her family. Now, we can usually find Nicole in the mountains, hiking, climbing, or skiing whenever she's off work.

*"My favourite mushrooms are chanterelles simply because they are absolutely delicious and look so elegant!" - Nicole Lau*

### **Field work near Grande Prairie**

In this photo, Nicole was heading into her forest site to survey the vegetation community, take soil samples, and collect roots with mycorrhizal fungi. In her hand is a soil corer, which is pounded into the ground to collect a packed soil sample across a vertical depth while avoiding contamination.



Nicole Lau near Grande Prairie in 2022. NICOLE LAU

# Alejandro Huereca Delgado , 2021 Award winner

MSc Student in Biological Sciences, huerecad@ualberta.ca

## Unveiling the lichen flora and lichenicolous fungi in northeastern Mexico

Alejandro's research aims to explore and reveal the lichen diversity in northeastern Mexico where there are eight different ecosystems (deserts, temperate forests, alpine meadows, grasslands, dry tropical forests, humid tropical forests, mangroves, and coastal and marine environments). When he embarked on his masters research, 2,833 taxonomic groups of fungi were known to Mexico, but an additional 5,000 were estimated to exist.

His field work focused on four areas: the Chihuahuan desert in Coahuila and the coniferous forests, thorn scrub forests, and humid montane forests in Nuevo Leon.

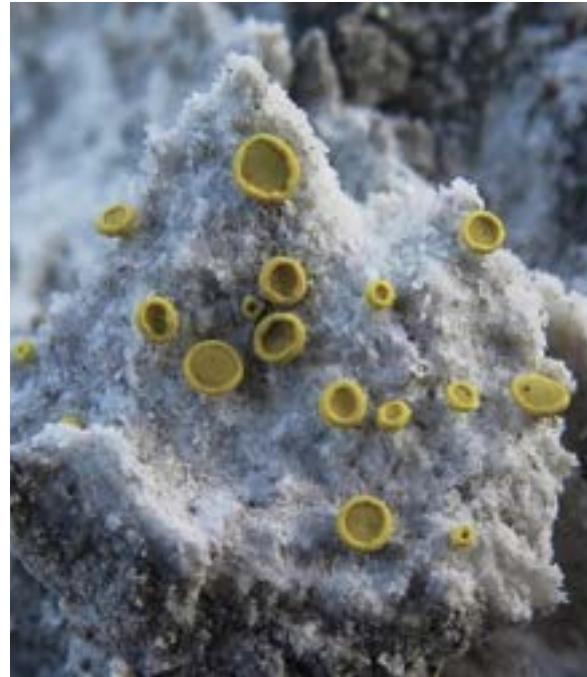
### Discovery of new taxa

Results of Alejandro's research added:

- New records to Mexico:
  - Lichens and allied fungi - 64
  - Lichenicolous fungi - 63
- New records to America - 7
- New records to North America - 24
- Novel taxa:
  - Published - 1
  - In preparation - 15+



Humid montane forest in Nuevo Leon.  
ALEJANDRO HUERECA DELGADO



Lichen, a symbiotic composite organism made up of fungi and algae (or cyanobacteria). ALEJANDRO HUERECA DELGADO



Alejandro Huereca Delgado on a field visit.  
ALEJANDRO HUERECA DELGADO



### What's next?

Alejandro is about to finish his thesis! You can follow him on Twitter to see where his post thesis adventure begins! ([@HuerecaDelgado](https://twitter.com/HuerecaDelgado)).

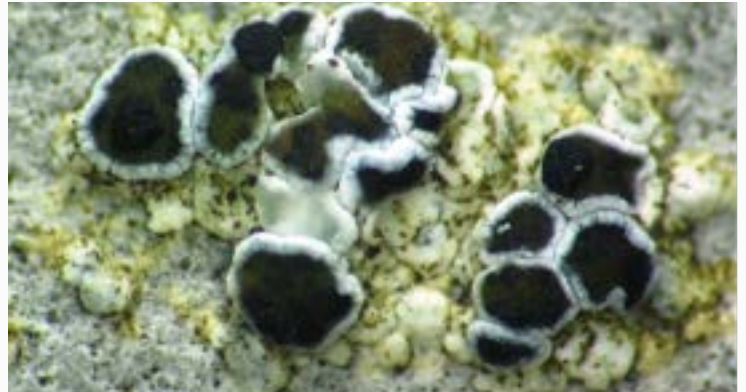


# New Records to North America

Alejandro has made exciting discoveries and advanced the body of knowledge surrounding lichenicolous fungi and lichen flora, but he believes there is yet much more field work to be done.



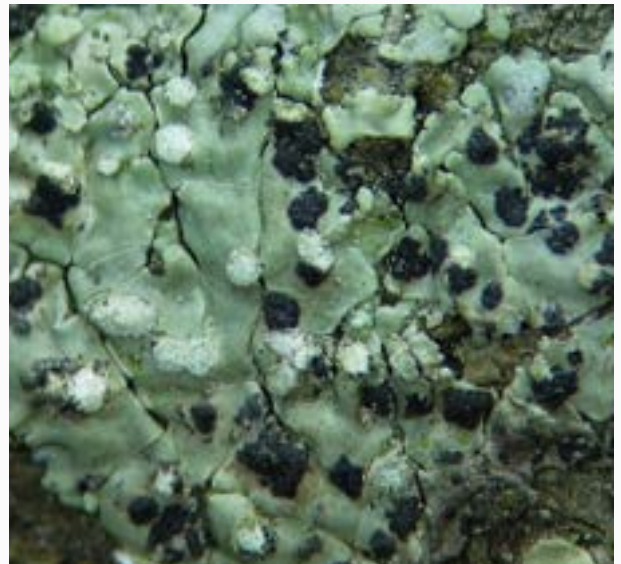
*Pronectria* sp. ALEJANDRO HUERCA DELGADO



*Arthonia subvarians*. ALEJANDRO HUERCA DELGADO



*Phacopsis* sp. ALEJANDRO HUERCA DELGADO



*Arthonia* sp. ALEJANDRO HUERCA DELGADO



*Gowardia nigricans* (syn. *Alectoria nigricans*). ALEJANDRO HUERCA DELGADO



*Rosenilliella* sp. ALEJANDRO HUERCA DELGADO



# APPALACHIA FORAY

## SCHOLARSHIP RECIPIENT

The AMS received several applications for this scholarship opportunity. Applicants were required to submit a cover letter and qualifying essay, and commit to providing a report and presentation after the event. A scholarship committee evaluated the applications, and the AMS is pleased to award the scholarship to Ethan Zapach.



### Ethan Zapach

BSB Student at Okanagan College, ethanzapach@shaw.ca



Ethan Zapach hiking at Bow Glacier Falls, Alberta. ETHAN ZAPACH.

#### Beyond mycology towards environmental conservation

Ethan is a 4th year student pursuing a bachelor's degree in business, majoring in Marketing.

Upholding his values for environmental conservation, he currently volunteers with the Athabasca Watershed Council to assist in the restoration of the Tawatinaw River and help build their database of local biodiversity in this Boreal Natural Region. After discovering that no members of the Council have experience in mushroom identification, Ethan leaped on this opportunity to expand his fungal knowledge and taxonomy skills.

With enough experience and mycological education, Ethan aims to teach members of the council mushroom identification.

#### Bringing fungi to the forefront

Ethan has reached out to mushroom cultivators to better understand their operations and learn about their lifecycles. With his videography expertise, graphic design background, and storytelling skills, Ethan plans to document the 2023 Appalachia Foray to bring this event to the AMS membership in an engaging presentation.

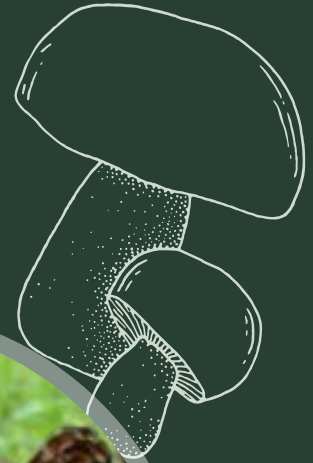
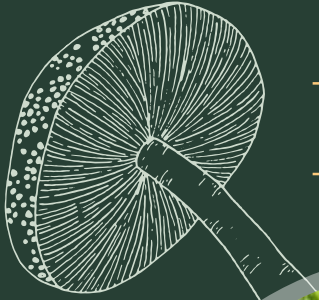
*"Delving deeper into the world of fungi has transformed my world view, providing perspective on the resilience and fragility present in the balance of nature, and how this needs to be preserved and conserved." - Ethan Zapach*



Likely a *Lentinus sp.* on wood. ETHAN ZAPACH.



# JOIN OUR CORPORATE MEMBERSHIP



We support businesses that share our passion for mushrooms, environmental conservation, and natural stewardship. Our AMS membership, who are outdoor lovers, foragers, amateur mycologists, and even culinary enthusiasts, may love your products and services!

## A FEATURE CORPORATE MEMBER:



Based out of Sundre, Alberta, Fungi Akuafu offers everything you need to cultivate mushrooms from grain spawn and cultivation supplies to valuable workshops to help you get started or finesse your techniques.

[Fungi Akuafu Website](http://Fungi Akuafu Website)  
[info@fungiakuafo.com](mailto:info@fungiakuafo.com)

[LEARN MORE ABOUT OUR CORPORATE MEMBERSHIP](#)

What is a

# M U S H R O O M ?



An earthstar mushroom *Geastrum saccatum*. MICHAEL BEUG

by Mitchell Milgram

A question that periodically comes up when I'm out with a group of people on a mushroom identification field trip is "Aren't you killing the plant when you pluck it out of the ground?" Well, first, no, we're not killing anything. And second, a mushroom is not a plant, not in the same sense as a flower or a tree.

What we're looking at when we see a mushroom emerging from the ground or from a rotting log is the fruiting body of the fungus. The mushroom is the fruit, comparable to an apple on a tree. The main body of the fungus is mostly hidden underground, consisting of a vast network of mycelium, the rootlike fibres that make up the main vegetative body. This mycelium, made up of thousands of rootlets called hyphae, spreads throughout the soil, rotting vegetation, and in some instances, inside living plants and organisms.

By plucking the mushroom, we're doing no more harm to the main body of the fungus than we do when picking an apple off the tree, which can be stripped bare year after year with no harm to the tree. Having said this, there's a caveat. Just as when picking an apple from the tree, you'll take care to not break or strip off branches. This applies to fungi as well. As long as the mushroom is plucked in such a way as to not disturb the main body of the fungus, all will be well. There are reports of some commercial mushroom pickers damaging the fungi, as with those harvesting the sought after pine mushroom, *Tricholoma murrillianum*. Some of these harvesters use hard rakes to expose the mushrooms lurking beneath the duff and leaf litter, and in the process, disturb the fungi and the complex community of organisms in the soil.

The living world around us is divided into a number of kingdoms. Most people are familiar with the two main kingdoms, plants and animals. There are also other kingdoms, and the fungi kingdom is one of these. Historically, fungi were grouped into the plant kingdom, but in 1969 they were recognized as being in a separate kingdom of their own, distinct from plants. Believe it or not, in some regards, fungi are genetically closer in their characteristics to animals than to plants. In evolutionary history, plants separated from animals before fungi diverged from animals. Thus, fungi retained their commonality with animals for millions of years longer than





A classic illustration of the variety of shapes mushrooms have developed. ERNST HAECKEL, Public domain, via [Wikimedia Commons](#)

plants did. Like animals, the fungi kingdom, which includes yeasts and moulds, are not able to generate their own food through photosynthesis as plants can. They need to seek their food from the environment around them. To do this, fungi use a number of strategies.

Many are **saprobies**, breaking down dead and dying plants and animals. They'll secrete digestive enzymes into their environment and then absorb the released nutrients. Visualize mushrooms sprouting from a fallen tree or emerging from a dung pile. Their mycelia are busily secreting enzymes and absorbing their food.

Some are **parasitic**, attacking living plants and animals, and gathering their nutrients from their hosts. The honey mushroom, *Armillaria ostoyae*, is a common parasitic mushroom, valued as an edible by many, and disliked by foresters for the damage it does to harvestable timber, creating a white rot. This species also has the distinction of containing one of the largest living organisms on the planet, with one specimen in Oregon recorded as covering 2,200 acres and being 2,400 years old.

Others are actually **carnivorous**. The tasty oyster mushroom, *Pleurotus ostreatus*, found both in the woods and on the grocery shelf, has the ability to devour tiny insects such as nematodes. The mushrooms will use a number of methods to achieve this from injecting their spores into the insect, having the insect ingest the spores, which in turn perforates their internal organs, and even snaring the hapless nematode.

Many of the mushroom-forming fungi in North America develop a symbiotic (**mycorrhizal**) relationship with living plants, from grasses to trees. In this mutualistic relationship, the fungi gather water and minerals through their fine hyphae for their partner plant, and in return, fungi are provided carbon from sugars that they are not able to generate themselves.

A common turkey tail mushroom, a polypore. MICHAEL BEUG



Fungi are similar to some animals in that they have chitin in their cell walls. Chitin, which is a long chain polymer, doesn't occur in plants, but you will find it in some animals, such as crustaceans, insects, mollusks, and some fish and some amphibians.

Fungi propagate by releasing microscopically-sized spores, comparable to a plant's seeds, and the mushroom is the vehicle to do this. To release spores, mushrooms have assumed many novel and sometimes bizarre shapes and strategies. One of the foremost strategies is the astronomical number of spores produced. The common bracket fungi, *Ganoderma applanatum*, the artist's conk, can produce 350,000 spores per second, adding up to 30 billion per day and 4,500 billion per season.

Most mushrooms rely on wind currents for spore dispersal, though most spores fall close to the mushroom, and often drape and colour the surrounding area in their multitudes. Aroma is another method for dispersal, such as the aromatic underground truffles that attract hungry animals, which in turn spread the spores through their droppings. In others, particularly among the ascomycete mushrooms, the spores are shot out of the sausage shaped tubes, asci, in which the spores are produced. Occasionally, when picking up a cup mushroom or a morel, the gentle disturbance will trigger the release

of tens of thousands of spores which appear in a drifting cloud.

To do all this, mushrooms have assumed various shapes. The standard-shaped mushroom that we usually visualize, with its central stem, gills, and domed cap is actually very ingenious. The cap protects the spores until maturity. The gills, that support the cantilevered cap in the same way that floor joists support a house, contain the spore-bearing structures (called basidia), and the stem elevates them all to aid in capturing the wind currents.



*Helvella crispa* with its beautiful fluted stem. MICHAEL BEUG

In addition to the standard-shaped mushroom, fungi have developed every imaginable shape, from cup shapes to clubs, from wrinkly morels and false morels to exquisitely branching coral shapes. The earth star fungi are interesting as they emerge as a dome, and then split into star-shaped

Magnified view of the spores on a four-pronged *Basidiomycete* mushroom.





rays. They'll then develop further. As the rays bend earthward, contacting the ground, they'll elevate the spore-bearing nucleus of the mushroom to catch the wind currents and rain droplets, which help propel the spore's dispersal.

When I'm out for a hike in the forest looking for mushrooms, particularly in the hot dry days of July and August when mushrooms are often scarce, I occasionally stop and consider the ground I'm standing on. I know the fungi are there, that their hyphae, their mycelial networks, are crisscrossing the soil beneath my feet, that they're creeping up and through the stumps and fallen trees all around. And I know that when the fall rains come, the fungi will fruit, sending up a fascinating display of mushrooms.



*Hericium coralloides*, one of the many unusual shapes mushrooms can take. MITCHELL MILGRAM

WATERTON  
LAKES NATIONAL PARK

# GREAT ALBERTA MUSHROOM FORAY

SEPTEMBER 1 - 4, 2023

The Alberta Mycological Society (AMS) has obtained special permits to collect specimens and forage in the Waterton Lakes National Park this year for scientific research and accession in our fungarium. During this exciting event, outdoor enthusiasts and those new to fungi get practical hands on experience with foraging and identifying mushrooms alongside biologists, ecologists, amateur mycologists, and of course, renown mycologists!

## KEYNOTE SPEAKERS

-  **Andy MacKinnon**, Ecologist and co-author of *Mushrooms of British Columbia*
-  **Larry Evans**, founder of the Western Montana Mycological Association
-  **Dr. Keith Seifert**, author of *The Hidden Kingdom of Fungi: Exploring the Microscopic World in Our Forests, Homes, and Bodies*
-  **Martin Osis**, former president of the AMS
-  **Paul Kroeger**, founding member of the Vancouver Mycological Society



[LEARN MORE](http://www.albertamushrooms.ca)

[www.albertamushrooms.ca](http://www.albertamushrooms.ca)





# MUSHROOM NAME CHANGES

**Are you confused yet?**

**By Ken Dies**

Mushroom name changes have been occurring at a fast rate due to the advancement of DNA sequencing. It was not long ago that name changes only occurred from morphological or microscopic examination of specimens, which led to many variables and many names for what could be the same mushroom. Fungal DNA barcoding through the amplification and sequencing of specific DNA has allowed mycologists to be able to see the generic relatedness of mushrooms. With at least 1,920 different species of macrofungi recorded in Alberta, many name changes have occurred. Environment and Climate Change Canada is responsible for preparing a report every five years on the status of all wild flora and fauna species in Canada. Michael Schulz, our AMS Vice President and mycologist, was awarded the contract for the previous Alberta, Saskatchewan, and Manitoba macrofungi reassessments for 2020, and he's also been awarded the current contract for Alberta and Saskatchewan for 2025. To support this huge project, I was asked to make sure all mushroom names in the Wild Species Status List are up to date. All 1,920 fungi recorded from Alberta and 744 fungi from Saskatchewan were searched through "Index Fungorum." [Index Fungorum \(IF\)](#) is an international project to index all scientific names in the fungus kingdom, listing over 600,000 known species. When searching for a specific mushroom, a currently correct name is indicated in green, misapplied names are indicated in red, and names in blue don't have



*Amanita alba* is now known as *Amanita thiersii*. RICK WATTS



*Volvariella speciosa* is now known as *Volvopluteus gloiocephalus*. RICK WATTS



*Pholiota alnicola* is now known as *Flammula alnicola*. RICK WATTS



*Leucopaxillus giganteus* is now known as *Asporopaxillus giganteus*. RICK WATTS

a taxonomic opinion yet. All names are linked to pages giving the current correct name and synonymy, other names the mushroom may be known as. New names listed in IF are generated from peer-reviewed scientific papers. It is a long process, taking many months before these papers are accepted and actually appear in IF. To assure the most current names were being used, many peer-reviewed papers were searched and current name changes applied. Since the last Alberta macrofungi reassessment five years ago, 87 mushrooms that are known to occur here have had their name changed (Figure 1). I was surprised by the large number of mushrooms that have been changed to different or newly created orders or families. Seventeen mushrooms have been placed in a different order and 52 now belong to a different family. Findings from DNA sequencing has determined that 12 mushrooms in Alberta no longer fit into any order and 124 do not fit into any family. In these cases, the Latin term for unknown placement, *Incertae sedis*, is used for these taxonomic groups where their broader relationships are unknown or undefined. The next steps in this reassessment are the conservation rank calculations by Michael Schulz and the creation of a final database with the assistance of Rick Watts, a board member of the AMS.

The large number of mushrooms recorded in Alberta is in large part the result of the amazing work and dedication of members of the Alberta Mycological Society.



*Ramaria myceliosa* is now known as *Phaeoclavulina mycelliosa*. RICK WATTS



*Fomitopsis pinicola* is now known as *Fomitopsis mounceae*. RICK WATTS

**By Ken Dies**



# FIGURE 1

A comparison of old and current mushroom names.

## Old Name

*Amanita alba*  
*Arrhenia sphagnicola*  
*Bisporella citrina*  
*Boletinus punctatipes*  
*Botryohypochnus isabellinus*  
*Ceraceomyces serpens*  
*Cheimonophyllum candidissimum*  
*Clitocybe clavipes*  
*Clitocybe gibba*  
*Clitocybe squamulosa*  
*Collybia butyracea*  
*Conocybe blattaria*  
*Coprinellus impatiens*  
*Coprinus atramentarius*  
*Coprinus micaceus*  
*Cortinarius argutus*  
*Cortinarius callisteus*  
*Cortinarius causticus*  
*Cortinarius citrinifolius*  
*Cortinarius colus*  
*Cortinarius crassus*  
*Cortinarius elegantissimus*  
*Cortinarius fulvo-ochrascens*  
*Cortinarius glaucopus*  
*Cortinarius limonius*  
*Cortinarius melitosarx*  
*Cortinarius multiformis*  
*Cortinarius mutabilis*  
*Cortinarius ochroleucus*  
*Cortinarius olidus*  
*Cortinarius pallidifolius*  
*Cortinarius percomis*  
*Cortinarius porphyropus*  
*Cortinarius purpurascens*  
*Cortinarius renidens*  
*Cortinarius saginus*  
*Cortinarius scaurus*  
*Cortinarius splendens*  
*Cortinarius triumphans*  
*Cortinarius variicolor*  
*Cortinarius vespertinus*  
*Cortinarius vibratilis*  
*Crepidotus versutus*

## Current Name

*Amanita thiersii*  
*Lichenomphalia umbelifera*  
*Calycina citrina*  
*Suillus punctatipes*  
*Botryobasidium isabellinum*  
*Crystallicutis serpens*  
*Nothopanus candidissimum*  
*Ampulloclitocybe clavipes*  
*Infundibulicybe gibba*  
*Infundibulicybe squamulosa*  
*Rhodocollybia butyracea*  
*Pholiotina blattaria*  
*Tulosesus impatiens*  
*Coprinopsis atramentaria*  
*Coprinellus micaceus*  
*Phlegmacium argutum*  
*Aureonarius callisteus*  
*Thaxterogaster causticus*  
*Phlegmacium citrinifolium*  
*Cortinarius bulliardii*  
*Cystinarius crassus*  
*Calonarius elegantissimus*  
*Thaxterogaster fulvo- ochrascens*  
*Phlegmacium glaucopus*  
*Aureonarius limonius*  
*Cortinarius circinans*  
*Thaxterogaster multiformis*  
*Thaxterogaster mutabilis*  
*Thaxterogaster ochroleucus*  
*Phlegmacium olidum*  
*Phlegmacium pallidifolium*  
*Phlegmacium percome*  
*Thaxterogaster porphyropus*  
*Thaxterogaster purpurascens*  
*Hrgyonarius renidens*  
*Phlegmacium saginum*  
*Thaxterogaster scaurus*  
*Calonarius splendens*  
*Phlegmacium triumphans*  
*Cortinarius varicolor*  
*Thaxterogaster vespertinus*  
*Thaxterogaster vibratilis*  
*Crepidotus bresadolae*

# FIGURE 1 CONT'D

A comparison of old and current mushroom names.

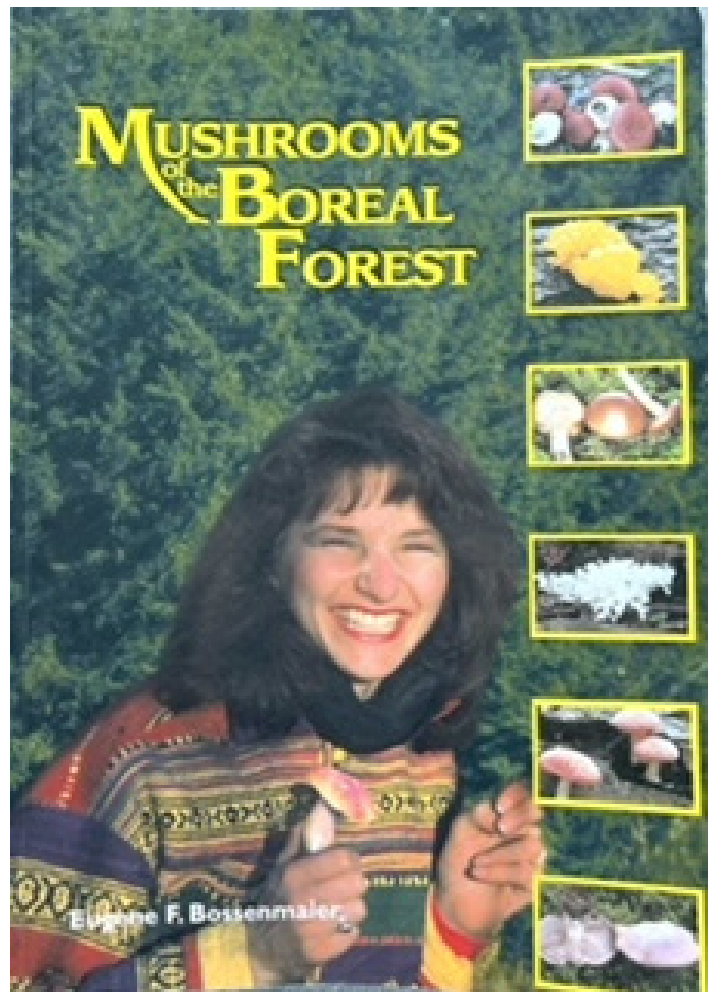
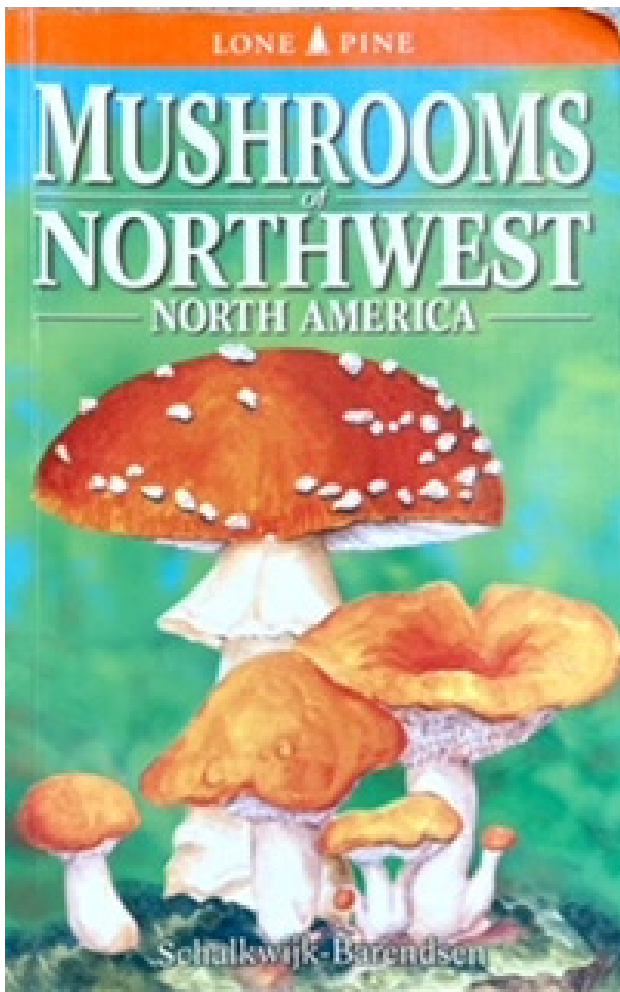
## Old Name

*Dacrymyces cokeri*  
*Fomitopsis pinicola*  
*Galzinia incrustans*  
*Gloeotromera alba*  
*Guepiniopsis tortus*  
*Gymnopus peronatus*  
*Helvella confusa*  
*Helvella leucomelaena*  
*Hyphodontia floccosa*  
*Hyphodontia subalutacea*  
*Infundibulicybe trulliformis*  
*Inocybe adaequata*  
*Inocybe fuscomarginata*  
*Inocybe gymnocarpa*  
*Inocybe maculata*  
*Inocybe terrigena*  
*Kuehneromyces vernalis*  
*Lachnella populina*  
*Lachnum bicolor*  
*Lachnum lachnoderma*  
*Lecanicillium lecanii*  
*Leiosepium tulasneanum*  
*Leucogyrophana romellii*  
*Leucopaxillus giganteus*  
*Limacella illinita*  
*Melanoleuca subacuta*  
*Ophiocordyceps gracilis*  
*Oxyporus latemarginatus*  
*Pezoloma ericae*  
*Pholiota alnicola*  
*Pholiota highlandensis*  
*Psathyrella multipedata*  
*Psathyrella typhae*  
*Ramaria eumorpha*  
*Ramaria myceliosa*  
*Rhodocybe harperi*  
*Sphaeronaemella helvellae*  
*Tricholoma magnivelare*  
*Tricholoma populinum*  
*Tricholoma sejunctum*  
*Tricholoma sulphurescens*  
*Valsa sordida*  
*Volvariella speciosa*  
*Xylodon sambuci*

## Current Name

*Cerinomyces cokeri*  
*Fomitopsis mounceae*  
*Mycobernardia incrustans*  
*Ductifera pululahuana*  
*Guepiniopsis torta*  
*Collybiopsis peronata*  
*Dissingia confusa*  
*Dissingia leucomelaena*  
*Kneiffiella floccosa*  
*Kneiffia subalutacea*  
*Spodocybe trulliformis*  
*Inosperma adaequatum*  
*Mallocybe fuscomarginata*  
*Mallocybe gymnocarpa*  
*Inosperma maculatum*  
*Mallocybe terrigena*  
*Pholiota vernalis*  
*Lachnellula populina*  
*Capitotricha bicolor*  
*Lachnum lachnodermium*  
*Akanthomyces lecanii*  
*Sepedonium tulasneanum*  
*Penttilamyces romellii*  
*Asporopaxillus giganteus*  
*Zhuliangomyces illinitus*  
*Tricholoma subacutum*  
*Paraisaria gracilis*  
*Irpex latemarginatus*  
*Hyaloscypha hepaticicola*  
*Flammula alnicola*  
*Pholiota carbonaria*  
*Britzelmayria multipedata*  
*Candolleomyces typhae*  
*Phaeoclavulina eumorpha*  
*Phaeoclavulina mycelliosa*  
*Harmajaea harperi*  
*Melanospora karstenii*  
*Tricholoma murrillianum*  
*Tricholoma ammophilum*  
*Tricholoma atrofibrillosum*  
*Tricholoma lutescens*  
*Cytospora chrysosperma*  
*Volvopluteus gloiocephalus*  
*Lyomyces sambuci*





Photos of mushroom field guides. ERICA TO

# MUSHROOM FIELD GUIDES

by Mitchell Milgram

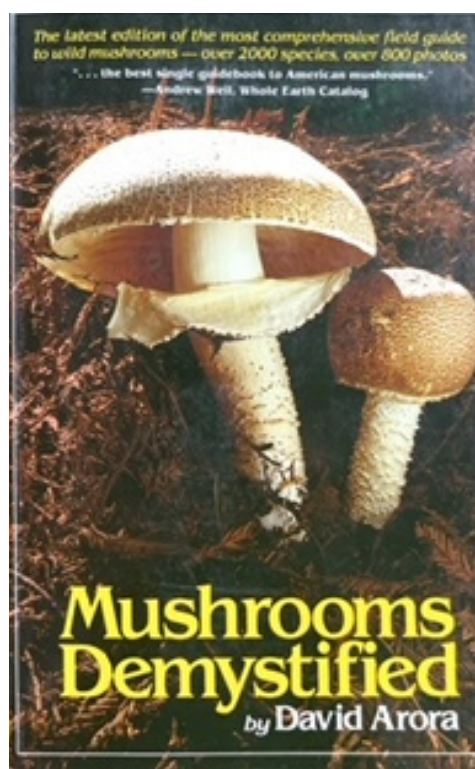
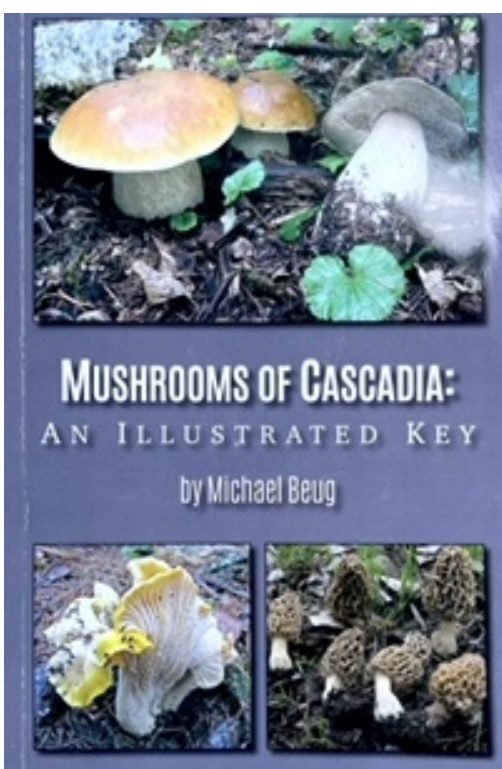
You can tell that the hunt for wild mushrooms is becoming increasingly popular by the number of identification field guides available now and by the popularity of books, such as *The Secret Life of Trees*, *Finding the Mother Tree* and *Entangled Life*. When I first started

collecting and trying to identify wild mushrooms back in Ontario in the 1970s, there were very few guides available. The most relevant was the government publication *Edible and Poisonous Mushrooms of Canada* by Agriculture Canada, which, while it had good descriptive text, had very small, poor quality photos. Through the 1980s, more books began appearing, and now, compared to then, it's a flood. This is good, as no one field guide can do the job of identification. It often takes a few, as there are thousands of mushroom species and one field guide, at best, can illustrate and describe only a fraction of them. With so many choices now available, which are the best guides?

The first thing to look for is a guide that describes the species in your area. Some mushrooms are cosmopolitan, that is, you can find them across a broad geographic range and in a variety of climatic zones. This would include many of the saprophytic mushrooms, mushrooms that break down dead or waste organic materials. Every field guide will include many of these commonly occurring mushrooms, such as the common field mushroom, *Agaricus campestris*. However, many mushrooms are specific to a particular climatic zone, and many mushrooms are mycorrhizal, living in a symbiotic relationship with a host tree. As tree species vary across Canada, so too will the associated mushroom species. Hence, a field guide written for eastern North America, with its Carolinian hardwood forests of oak, maple, and beech will have vastly different species than the coniferous forests of the Pacific Northwest with its western red cedar and Douglas fir. Beware of field guides written for European countries that are translated and adapted to a North American audience. Many of the species described in these books do not occur in North America, and thus, they'll tend to confuse readers at times. Since I live in British Columbia's interior, bordering on the interior wet-belt forest region, an area of elevated moisture, most of the mushroom field guides written for the coastal Pacific Northwest are relevant for this region. I'll describe a few of those guides later.

Alberta is different; it has a wide range of habitats and forest types, from the coniferous forest of the Rockies to the central Aspen parkland, to dry arid south, and finally to the boreal forest of the north. Additionally, Alberta is transitional, hosting many eastern and western species. As a result, there aren't very many field guides specific to Alberta.

The field guide ***Mushrooms of Western Canada* by Helene Schalkwijk-Barendsen** is one most people in the Alberta Mycological Society are familiar with. Its strength resides in its focus on mushrooms in Alberta. At first, though I appreciated the beauty of the illustrations, I preferred the exactness of other



Photos of mushroom field guides. ERICA TO



books' photos. Over time I learned to appreciate the details of the paintings, where Helene would highlight important field characteristics in her paintings. Unfortunately, the book is getting dated and many of the species' names have changed. However, this can be remedied by cross referencing names on the internet to get the most current names.

Another book relevant to Alberta is ***Mushrooms of the Boreal Forest* by Eugene F. Bossenmaier**. Though written in Saskatchewan, it describes many species common to the boreal region that spans Canada's north and includes species not commonly included in other guides.



From the summit of Mount Revelstoke National Park within British Columbia's wet belt forest, the only temperate inland rainforest in the world. MATHIAS BERLIN/Shutterstock.com

***Wild Edible Mushrooms of Alberta* by Tom Cervenka** is good in that it's specific to Alberta. It's small and portable with good pictures and descriptions. However, the number of species described is limited, and as the title suggests, it focuses almost entirely on edibles. I find it is equally important in a field guide to have comprehensive descriptions of the non-edible species for comparison.

Alberta has both eastern and western mushroom species, so many of the broader ranging North American guides have good application. **David Arora's *Mushrooms Demystified*** was my go-to book for many, many years. It's dated now, like Schalkwijk-Barendsen's book, but it too can be cross-referenced for current names. It's still a very valuable book, and one that I frequently consult. It's

extensive with many described species. Though most photos are black and white, they still work. What I particularly like about the book are the dichotomous keys, a feature most mushroom guides lack. Additionally, the book is hugely entertaining.

There is a number of other books spanning North America that have been around for years, which I find valuable and periodically use. There's ***North American Mushrooms* by Orson Miller**, which includes many species from western United States where Miller did much of his collecting. ***Mushrooms of North America* by Roger Phillips** is extensive with excellent photos. The earlier ***Audubon Society Field Guide to North American Mushrooms* by Gary Lincoff** was a standard, but I never liked the way the book organized mushrooms by grouping them by their morphological

features rather than by genus as most other guides do. The recently released mushroom book from the Audubon Society looks very promising. There are many more field guides available, too many to list here, almost all of which have value as they complement one another.

If you travel west of the Rockies, you'll encounter a whole new forest with associated mushrooms perhaps unfamiliar to you, such as the white chanterelle, *Cantharellus subalbidus*, or the admirable bolete, *Auroboletis mirabilis*. There are a number of very good guides available to help you. **Andy Mackinnon and Kem Luther's *Mushrooms of British Columbia*** is very extensive, clear, and contains high resolution photos. **Steve Trudell's** revised edition of ***Mushrooms of the Pacific Northwest*** is also a fine book. **Drew Parker's and Teresa Marrone's *Mushrooms of the Northwest*** is a compact and good basic field guide. Again, there are numerous other guides available, but any one of these would serve you well. For those who want to delve more deeply, you'll find books dedicated to more in-depth examination of specific genera, such as *Tricholoma*, *Lactarius*, and other major groups such as the *Boletes* or *Ascomycetes*.

Then there are the internet resources. Most people now use a combination of mushroom identification websites and field guides. I have two favourite sites, **Michael Kuo's Mushroom Expert**, [www.mushroomexpert.com](http://www.mushroomexpert.com), and the website for the South Vancouver Island Mycological Society (SVIMS) through which you can access dichotomous keys and picture keys, as well as the excellent **Mycomatch**, created by **Ian Gibson** and **Danny Miller**. Mycomatch is a free download, and it brings together the information of many authors. Plus, the program has a mushroom identification feature. Danny Miller has another website, **Danny's DNA Discoveries**, <https://www.alpental.com/psms/ddd/>, which is very helpful and up-to-date.

*Cantharellus subalbidus*. MICHAEL BEUG



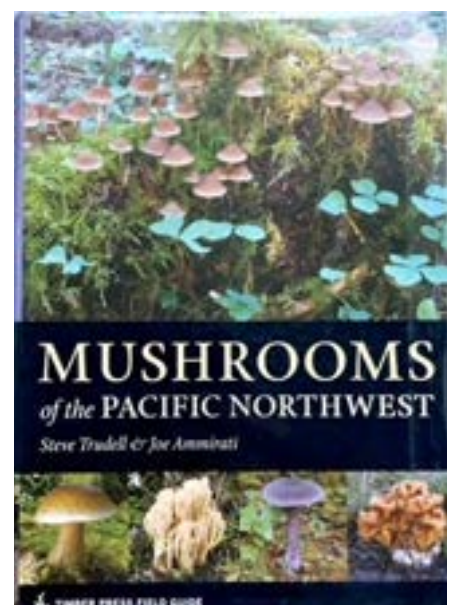
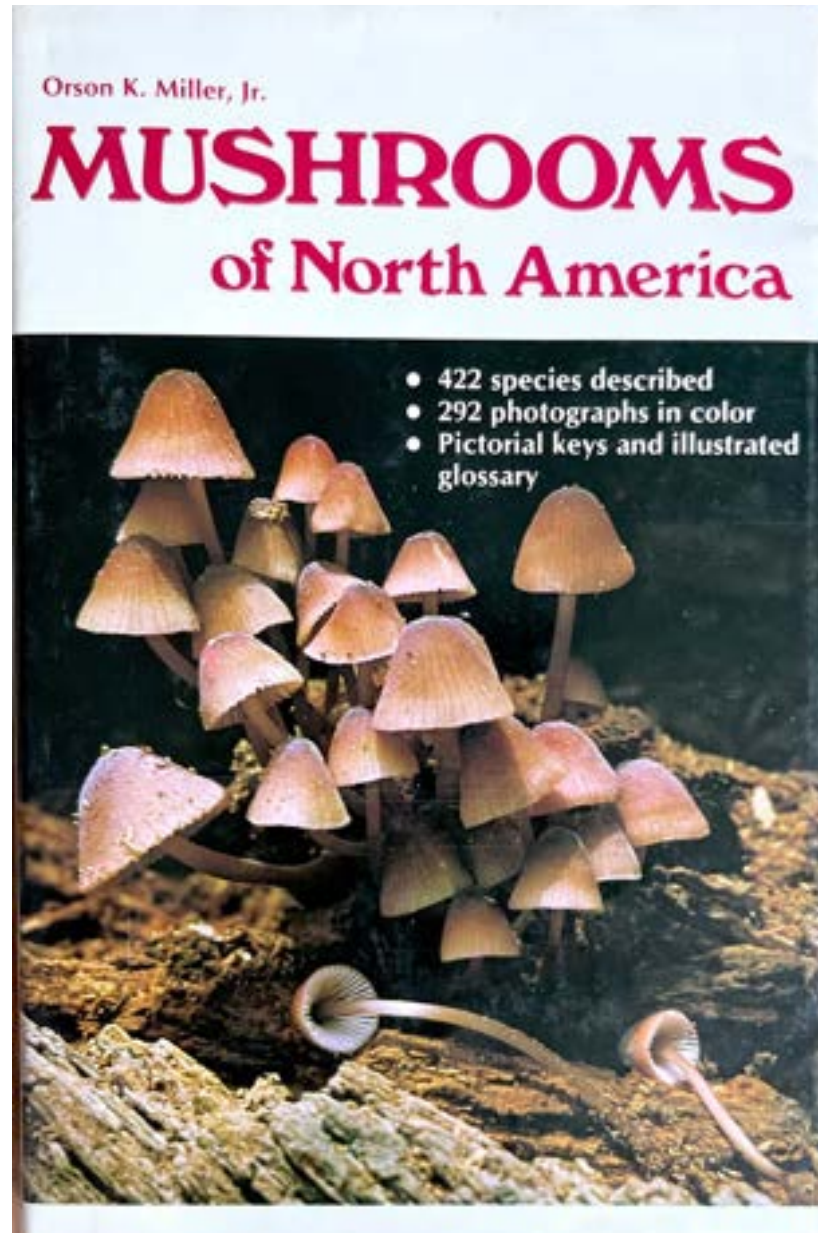


Lastly, there are mushroom identification apps that people are using with their cell phones. The idea is promising, but as of this date, they're very hit and miss. They work much better for birds or vascular plant photos. Perhaps over time, their database will increase and improve, but it's very difficult to identify mushrooms from a single photo. Far more information, such as gill characteristics and the substrate, is required for accurate identification.

Beyond the most commonly occurring mushrooms, mushroom identification is an engaging challenge. As you can see, the good news is that there are many resources available to help.

Here's a list of some of the websites you may find helpful.

- [South Vancouver Island Mycological Society \(SVIMS\) Keys](#)
- [Mycomatch](#)
- [Mushroom Expert](#)
- [Danny's DNA Discoveries](#)
- [iNaturalist](#)
- [E-Flora BC](#)
- [Mushroom Observer](#)



Photos of mushroom field guides.  
ERICA TO

# SAFETY IN THE BUSH

*... especially while foraging*

By Karen Slevinsky

This is a short common-sense article about keeping yourself safe while foraging. This will deal with getting bitten, getting lost, eating the wrong mushroom (never), bumping into a bear, and finding garbage. I learned these tips from good old CBC Radio, The Globe and Mail, and yes, even Google.

As one who has been bitten by a black legged deer tick and made some mistakes in dealing with the tick and its bite, here are my suggestions. Use bug spray (did not), wear long sleeves and pants (did), do a thorough body check (did not) after returning, and save the tick (did not). Upon coming in from a foray in Manitoba (a province known for tick infestations in May - ticks are a bit seasonal), I bathed but did not wash my hair. The tick was hiding in my hair and despite a thorough brushing, it was missed. Hours after my foray, the tick began snuggling behind my ear; my glasses “saved me.” As the tick was settling in to bury into my flesh, I realized my glasses did not fit right. My fingers felt the little beast and with some help from my friends, the tick was removed correctly, with tweezers, head and all. We examined and identified it as a black-legged deer tick and then discarded it.



Tick on green leaf (species unidentified). ERIK KARITS/Pexels.com





A wasp's nest found at the Poplar Creek Natural Area. ERICA TO

If this happens to you, save the tick in a little snack bag. Some doctors will ask for it to determine if it carried any life altering bacteria. After the bite, I went to the Medicentre and got a prescription for an antibiotic. Tick bites are nasty for many reasons as they can cause at least two or three other diseases, not just Lyme disease.

When you are foraging, you tend to be looking for something – on a tree or on the forest floor. This is a different manner of enjoying the bush than hiking. It is so easy to become disoriented. If you suspect you are getting lost, stop! Listen! Can you hear traffic? If so, walk towards it. Look. Where is

the sun now? Where was the sun when you started? What time is it? Use the position of the sun and the passage of time to find your location. Or find a fence line or a stream and walk along these landmarks. This should bring you to people. If you are hopelessly lost, STOP MOVING. Take the whistle you remembered to bring, blow three blasts, YELL SOMETHING, and repeat. Yelling between sets of whistle blows provides the necessary pause time. If you see a plane or helicopter, wave with both arms. At this time, you are not saying “hi.” You are saying “help.” As a last resort, start a smoky fire that creates a column of smoke. This is extremely

dangerous in Alberta with all the wildfires currently. Regardless, always forage with a friend and always tell a family member or other friend where and when you are going foraging. Phone your mom:

“

*Hi ma, I am going to Hinton this weekend. Gonna find some gypsy mushrooms. I'll be back Sunday night.*

Bears are an entirely different story. First, find out if you are foraging in bear country, i.e., the foothills, the boreal forest, or almost any backcountry in Alberta. Then Google for specific information on how to protect yourself from different bear species in the area you'll be



Black bear in forest. AARON BREWER/Pexels.com

exploring. Buy yourself a can of bear spray from stores like Atmosphere, Breathe Outdoors, and MEC, and learn how to use it. Be aware bear spray does expire and may not expel as forcefully as required once expired.

Never eat any mushroom or fungus that has not been identified conclusively - conclusively by you AND conclusively by an expert. You may have heard the saying: when in doubt, throw it out. A double identification helps remove or add to the doubt, helping you to make the right decision. However, even choice, edible mushrooms affect some people adversely. So try not to overindulge and keep a sample of the mushrooms you ate just in case you are feeling ill and feel compelled to call The Alberta Poison and Drug Information service (1-800-332-1414).

Finally, a brief word on garbage. I carry a disposable glove and plastic bag tied to my belt loop. I pick up some garbage. If you come across a tiny bit of garbage, I encourage you to pick it up. When I come across a large or regularly occurring mess, I report it to the City of Edmonton by calling 311. Unfortunately, in Edmonton, city spaces are parks and these are cleaned when someone lodges a complaint. This same number applies to Calgary (311 Calgary Community Standards).

Forage safely, my fungal friends.



Successful foraging. CHRISTINE COSTELLO





INSTITUTE FOR CONTEMPLATIVE ECOLOGY

# A MOREL FORAY

On long weekend of May 20-21, 2023, the Institute for Contemplative Ecology (I4C), held a two-day morel foray at the CHANGE Centre near Entwistle, Alberta. CHANGE Health manages the facilities and land at the CHANGE Centre, where there is over 80 acres of forest. Hosted by Enoki Li, Joshua Key, Christopher Peet, and Cassandra McKenna, who are I4C and Alberta Mycological Society members, the event brought together people who share a deep respect and appreciation for the conservation and sustainability of our environment. Beginning with introductions and orientations, the attendees explored a trail along the Pembina River, and then they returned to identify and dry collected specimens. Although the site was experiencing drought conditions at this time and not too far from the wildfires near Entwistle, they found 22 morels, which were devoured in a fine, well-deserved meal after a hard day's work of foraging. Due to the poor air quality from wildfire smoke, the planned evening astronomy events were cancelled as were many outdoor activities in areas of Alberta.

Top (3): Unidentified mushrooms (left) and field horsetails (right). MEL HOHN  
 Left: A humble haul of morels. MEL HOHN

I4C Vision and Mission kindly provided by Enoki Li.

I4C is a not-for-profit organization established in 2021 by Christopher Peet, a Professor of Psychology at King's University.

**VISION**

*The existence of a thriving network of holistic ecological communities integrating human culture within the living world across central Alberta.*

**MISSION**

*We provide a living laboratory of ongoing education, research, and retreat demonstrating an ecologically respectful relation of humans to the living world on a local, small scale that inspires others.*



INSTITUTE FOR  
 CONTEMPLATIVE  
 ECOLOGY

[Learn more about I4C](#)



## AMS Board of Directors

Rosemarie O'Bertos - Past President  
 Karen Slevinsky - President  
 Mike Schulz - Vice-President  
 Melanie Fjoser - Treasurer  
 Lisa Oishi - Secretary  
 Nadia Shiwdin - Membership Coordinator  
 Christine Costello - Director-at-Large  
 Elizabeth Lakeman - Director-at-Large  
 Elizabeth Watts - Director-at-Large  
 Enoki Li - Director-at-Large  
 Erica To - Director-at-Large  
 Mel Hohn - Director-at-Large  
 Rick Watts - Director-at-Large  
 Robert Simpson - Director-at-Large  
 Sean Campbell - Director-at-Large



With the goal of enhancing fungal research, the Alberta Mycological Society (AMS) is proud to champion the AMS Graduate Award with the University of Alberta (U of A).

With the creation of this award, AMS wishes to inspire university students to pursue fungal research to foster an appreciation for fungi and their role in our ecosystem. The AMS hopes that many more people will become just as enthralled and interested in mushrooms as we are.

AMS has committed to funding this award at \$2,000 per year for five years. If donations towards this award exceed \$50,000 in five years, the funds will be placed in the Endowment foundation at the U of A enabling this award to be awarded in perpetuity. We encourage all members to donate. Your donations must be made directly to the U of A. You will receive a taxable donation receipt from the U of A. If the Endowment reaches more than \$2,000 per year there may be more than one award presented each year.



Website: [www.albertamushrooms.ca](http://www.albertamushrooms.ca)  
 Email: [contactus@albertamushrooms.ca](mailto:contactus@albertamushrooms.ca)  
 Mailing Address:  
 Alberta Mycological Society  
 PO Box 1921  
 10405 Jasper Avenue  
 Standard Life Bldg.  
 Edmonton, Alberta T5J 3S2  
 Canada

**Don't forget to check out our social media!**



[Click here](#) or on the photo of Alberta's *Leccinum boreale* mushroom to donate.



You can also contact Michelle Ngo, Assistant Director, Leadership Annual Giving from the U of A by telephone (780) 492-9487 or email [mngo1@ualberta.ca](mailto:mngo1@ualberta.ca) to make a one-time or recurring donation by credit card or EFT transfers. Cheques can be written out to the "University of Alberta" and mailed to: University of Alberta, University Development, 3-501 Enterprise Square, 10230 Jasper Ave, Edmonton, AB, T5J 4P6.