

Summer 2019

Spore Print



Alberta Mycological Society

Feature Mushroom: *Panaeolus cinctulus*

This is a common fungus that is found throughout the world. It's cap ranges from convex and campanulate to umbonate depending on its stage of maturity.

Fruiting bodies can range from 4-6cm in diameter and are typically found in grassy, well-fertilized areas.

The mushroom is known to contain some psychoactive effects.

Taxonomy:

Kingdom: Fungi

Division: Basidiomycota

Class: Agaricomycetes

Order: Agaricales

Family: Psathyrellaceae

Genus: *Panaeolus*

Species: *P. cinctulus*

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We have a new website!

Join us at: <https://www.albertamushrooms.ca>

The website includes featured mushrooms, blog, member log in and resources and much more!

Our old website (<http://www.wildmushrooms.ws/>) is still live and will remain so as we work on transferring information to the new platform. Once completed we will close the domain.

All pictures and database information will still be hosted and available to members of the public and membership.

Please be advised: the website does not function fully with Internet Explorer.



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*A lucky man can stumble upon a
treasure while an unlucky one can't
even find a mushroom*
—Russian Proverb

Volunteer!

If you are interested in mycology, particularly leading forays please email our board for further information about volunteering opportunities: amsdirectors@wildmushrooms.ws



Foray Report: Foray for Spring Mushrooms

What: Foray for Spring Mushrooms in West Bragg Creek Day Area

When did the foray occur: June 2, 2019

Foray Length: 3 hours

Attendance: 19 people

Mushroom Species Found:

- Morchella elata (black morel)
- Verpa bohemica
- Gyromitra species
- Cortinarius species
- Panaeolus species

Terrain: Foothills of Southern Alberta with mixed aspen and conifer

Weather Conditions: Warm, sunny and around 20-25 degrees Celsius.

Additional Comments: A very low number but a reasonable variety of spring mushrooms were found. This included 2 morels, more than one dozen Verpas, and a few Gyromitra. Perhaps the area is too dry this year...





Calendar of Events

Date - Event - Area

July 13— Lac La Biche Boreal Forest Foray

July 20—Water Valley July Mushrooms

July 21—Red Deer Region Foray

July 27—Lac Ste Anne County Foray

August 4—Red Deer Region Foray

August 14—Red Deer Region Foray

August 11—Mushroom EXPO @ U of A Botanical Gardens

September 19 -22—Great Alberta Mushroom Foray

<https://www.albertamushrooms.ca/events/>



Did you know

Before the invention of synthetic dyes, mushrooms were widely used for dyeing wool and other natural fibers. Mushroom dyes are organic compounds and produce strong, vivid colors.





News From The Veil:

Scientists say they discovered world's oldest fungus fossil in Canadian Arctic

(www.theglobeandmail.com) —For thousands of years, the steep-walled canyons of Tuktut Nogait National Park in the Northwest Territories have formed a spectacular backdrop for caribou, muskox and other Arctic species.

Now, a team of Canadian and European scientists has reported that those same rock formations harbour the remains of a life form that is far more ancient: the world's oldest fungus fossil.

The discovery opens a rare window into the early evolution of complex life. Fungi – a class of organisms that includes yeasts, moulds and mushrooms – share a common ancestor with animals and they form symbiotic partnerships with many plant species. Yet, because they lack shells, bones or other features that are easily preserved, their presence in the fossil record is almost non-existent.

Until now the oldest undisputed fungus fossil, found in Scotland, dates back 410 million years. The Canadian find, described Wednesday in the journal *Nature*, more than doubles that age. The claim is based on tiny structures and chemical clues that the team found while analyzing organic residue locked in a layer of shale that is approximately 900 million to 1 billion years old.

“The fact that we get a fungus that old is kind of amazing,” said Elizabeth Turner, a team member and geologist at Laurentian University in Sudbury. “There’s a huge span of fungal evolution that no one has accessed yet.”

The shale samples were collected during a series of expeditions to Tuktut Nogait beginning in 2014, led by Robert Rainbird, a scientist with the Geological Survey of Canada. The fungus fossil was not spotted until last June, when Corentin Loron, a PhD student at the University of Liège in Belgium, was working on the samples in a laboratory.

To identify the fragile fossils, Mr. Loron first had to dissolve away the surrounding rock with acid and then examine the remaining material through a powerful microscope. At one point, while a technician was refocusing the image, a telltale shape popped into view.

“This was the real moment of excitement,” Mr. Loron said.

What he saw were tiny spheres and filaments with T-shaped branches. The features are similar to those exhibited by some types of fungus found in the environment today, which develop from spores and extend filaments in search of nutrients.

Further analysis showed the fossils contained chitin, a durable, carbon-based molecule that fungi use in their cell walls. Chitin is also found in the bodies of insects, among other animals, but the samples the team collected predate the emergence of any chitin-producing form of animal life by many hundreds of millions of years...

More information: https://www.theglobeandmail.com/canada/article-scientists-say-they-discovered-worlds-oldest-fungus-fossil-in/?fbclid=IwAR0wPg75_nhlJW37I2xbz7c86YcT0D3CFyK_tvfw5aRnDS3vEvfHvltOf9M



Morels of Alberta

Many of us have already enjoyed the morel season this year, with the fantastic culinary delights that these mushrooms bring. However, when asked which species of morel people are eating, even the most experienced mushroomers will often respond with vague answers like "a blonde", "a fire morel", or "well it's what we *used* to call *Morchella elata*...". This is because the taxonomy of morels has changed drastically in the last few years based on DNA studies. These have shown that our former defaults of *M. elata* (black morel) and *M. esculenta* (yellow morel) are strictly European species, and that there are a diversity of yellow, black, and blushing morel species potentially present in Alberta.

While this doesn't affect the edibility of these species, it does affect their conservation. Right now we really don't know which species are all present in Alberta, and whether there are rare species that may be of conservation importance. An additional confounding factor is that although we are in "western Canada", we are mostly east of the Rocky Mountains, which is typically used as the divider between east and west in the fungal literature. Thus it is very possible that we have a mix of "eastern" and "western" species in Alberta.

So how do we fix this problem? Short of doing mass DNA sampling across the province, we can all start to try to correctly identify our morels, and then start posting our findings, descriptions, and photos on the Mushroom Observer website. This allows the information to be publicly available, and yes you can make it less specific and/or hide the exact location so that you're not giving away your sweet spots.

The next step is then to properly identify your mushrooms. To help do this, I've developed a synoptic key to help you identify your mushrooms. While it may look intimidating at first, it can be a lot more useful than a regular dichotomous key because it allows you to prioritize based on what you know best about your mushroom. For example, the colour of the ridges in *Morchella* is a key characteristic, but it will change from younger to older specimens; the colour of mature mushrooms is what's really important. If you have only younger specimens, though, and the question of ridge colour is the first thing in the key, you may throw up your hands in frustration, or just make a guess that may end up being incorrect. To use a synoptic key, you start with the features that you're most confident in, and then start eliminating possibilities and refining your search. I'll do an example:

I have a morel that I have some mature specimens of, and the ridges are black. This allows me to go into the "Ridge Colour" column and now only use the ones with "B" in this column (2, 3, 5-8, 10, 13-17). It was collected in a forest that hadn't recent burned near trembling aspen, jack pine, and balsam poplar, so I should choose the ones with "D" or "C" in the "Habitat" column, which narrows it down to 2, 3, 8, 10, 13, 15, and 17. I know that the species lists are not exhaustive so I'll leave the more...Next Page



Morels of Alberta Cont.

... specific tree associations for now, and I'm in the foothills of Alberta so I'm not too confident if it's eastern or western, so I'll also leave the Range column for now.

I look at the edge of the cap and there is a small groove that I measure to be 3-5 mm wide on average (in mature mushrooms) between the cap edge and the stem. I can now go to the "Cap Attachment" column and eliminate 8 and 10 which are half-frees, and 3 and 13 which have smaller grooves, leaving me with 2, 15, and 17. I'll leave in 15 and 17 which have 2-4 mm grooves because it's overlapping quite a bit. I now look at the last two columns to see if there is anything distinctive separating them. I notice that 15 has a confident "R" in the "Cap & Stem" column, meaning the stem is strongly ridged and pocketed, and in mine there are only occasional ridges and pockets, so I'll eliminate that, leaving me with 2 and 17. Based on the last column, I find some immature mushrooms to see if the ridges are darker at maturity, and take some height measurements. I find that the ridges are consistently darker in the older mushrooms and the mature mushroom heights are 7-12 cm tall, so I'll suspect that I have 2, which is *Morchella angusticeps*. I'll now go to the Mushroomexpert.com website and do a more thorough comparison, looking at the complete description for this mushroom. This website also has a dichotomous key that you can use as well.

So I hope this gives you the motivation and confidence to start identifying and posting your morel finds.
Happy hunting!

Michael J Schultz, M.Sc., E.P., P.Biol.

Paypal:

There have been some questions about PayPal memberships and subscription services.

We would like to help with anyone that would like to cancel a subscription and renew each year manually.

Cancelling a subscription cancels all future scheduled payments of that subscription. A subscription can be cancelled up until the day before the next scheduled payment in order for you not to be charged.

1. Log into PayPal.
2. Go to Settings.
3. Click Payments.
4. Under "Preapproved payments", click **Manage preapproved payments**.
5. Select the merchant whose agreement you want to cancel and click **Cancel**.
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Cooking with Mushrooms

Oyster Mushroom Soup w/ Potato & Leek—Serves 6

Ingredients

- 1 tbsp. oil
- 2 leeks, white and light green only, thinly sliced 2 cups
- chopped oyster mushrooms
- 1/2 cup dry white wine
- 1 tbsp. fresh tarragon, finely chopped 1 tsp salt
- 1/4 tsp. pepper
- 3 medium yellow potatoes, diced 1 bay leaf
- 4 cups stock (mushroom, chicken or beef)
- 4 cups water
- 1/2 cup heavy cream

Oyster Mushroom Facts

- The oyster mushroom or *Pleurotus ostreatus* is a late spring or early summer mushroom.
- The name 'oyster' refers to their shape.
- Some evidence that they help lower cholesterol
- The oyster mushroom has a very mild flavour and firm texture.
- In Alberta, wild oyster mushrooms typically grow on dead or dying aspen / poplar.
- The oyster mushroom is one of the few known carnivorous mushrooms. Its mycelia can kill and digest nematodes, which is believed to be a way in which the mushroom obtains nitrogen.
- Wild Oyster mushrooms are a common host to beetles and their larvae, called 'The Pleasing Fungus Beetles'. Therefore, if these are to be eliminated before eating, it is best to tease apart the mushroom along the gills and give the mushrooms a soak in salted water to remove the critters. They can then be rinsed and dried before processing.

Recipe

PREPARATION

1. Chopped chives or green onions for garnish
2. Heat oil in a large stock pot over medium-high heat. Add leeks and oyster mushrooms and cook, stirring often, for about 10 minutes until soft and lightly browned.
3. Add the wine, scraping up any browned bits. Then add tarragon, salt, pepper, potatoes, bay leaf, stock, and water.
4. Bring to a boil. Then cover, reduce heat to a simmer and cook for 30 - 45 minutes.
5. Add cream and bring to a gentle simmer (about 1-2 minutes). Serve immediately, garnished with chopped chives or green onions.

Vegan version (cream replacement)

1. Soak 1/4 - 1/2 cup raw cashews in hot water for 15 minutes. Drain the cashews.
2. Transfer the cashews and 1 tbsp. lemon juice along with 2 cups of the soup to a blender.
3. Process until smooth. Then add back to the rest of the soup in the pot. Stir to combine.





Foray Report: Spring Mushroom Foray in the City

What: Spring Mushroom Foray in the City
(Calgary); Edworthy Park

When did the foray occur: May 28, 2019

Foray Length: 1.5 hours

Attendance: 14 people

Mushroom Species Found:

- *Morchella esculenta*
- *Verpa bohemica*

Terrain: Valley and sloped with mixed woods.

Weather Conditions: 20 degrees celsius and sunny!

Additional Comments: Conditions were somewhat dry. Approximately 3 morels and 4 verpas were found. Not many but better than nothing! The group also found a small cluster of yellow stemmed brown mushrooms, ID unknown.



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Synoptic Key to North American Morels

Michael J. Schulz, MSc, PBIOL, EP

Instructions: on a separate sheet, make a list of possible species based on the most reliably known feature (use numbers). For example, if you have a mature mushroom, the cap ridge colour would be reliable; if only immature mushrooms are present, it would not be. Use a process of elimination based on other features to determine which species are possible. Note that not all species can be distinguished macroscopically, and some may even require genetic testing. Other species are known from North America based on genetic testing but have not yet been described.

<i>Morchella</i> sp.	Habitat ¹	Ridge Colour ²	Range ³	Cap Attachment ⁴	Cap & Stem ⁵	Other Key Features ⁶
1. <i>americana</i> (<i>esculentoides</i>)	D & C (Ap, As, Bo, El, Fi, Ma, Oa, Pi, Po, Pr, Sp)	Y	T	A	V, I, C?, R?	Pits and ridges somewhat regularly shaped, with ridges becoming thin and sharp at maturity, head typically egg-shaped to cylindrical, common across North America
2. <i>angusticeps</i>	D (As, Tu)	B	E	G2-5	V, R?	5-14+ cm tall, spores 22-27 u long
3. <i>brunnea</i>	D (Ar, Oa), C?	B	W	G2-3	V	Ridges dark when young
4. <i>diminutiva</i>	D (As, Hi, Tu, others)	Y	E	A	V, S	Typically only 3-9 cm tall, cap usually pointed
5. <i>eximia</i> (<i>septimelata</i>)	F	B	T	G1-3	V	ES subclavate to clavate
6. <i>exuberans</i> (<i>capitata</i>)	F	B	T	G1-7	C, R?	ES capitate
7. <i>importuna</i>	L	B	T	G2-5	V, S, R?	Horizontal ridges typically numerous and at varying depths
8. <i>populiphila</i>	D (Po)	B	W	H	V	Under <i>P. trichocarpa</i> near rivers, ES 100-175 x 10-25 um
9. <i>prava</i>	D, C	Y	C	A	I, R?	Pits and ridges contorted; ridges remain wide at maturity, head widely egg-shaped, often in sandy soil near lakes & rivers, uncommon
10. <i>punctipes</i>	D (As, El, Tu, others)	B	E	H	V	ES 50-100 x 10-25 um
11. <i>rufobrunnea</i>	L	R	T	A	V, R?	Pits dark relative to ridges
12. <i>sceptriformis</i> (<i>virginiana</i>)	D (Tu)	Y	E	A	V	Cap usually egg-shaped
13. <i>septentrionalis</i>	D (As, Po)	B	E	G2-3	V, R?	4-7 cm tall, spores 20-22 um long
14. <i>sextelata</i>	F	B	W	G1-3	V	ES more rounded; identical to <i>eximia</i>
15. <i>snyderi</i>	C (Do, Fi, Pi)	B (Y)	W	G2-4	R, V	Ridges pale when young but darken at maturity
16. <i>tomentosa</i>	F	B	W	A	T, V	Projecting hairs 120-250+ um
17. <i>tridentina</i> (<i>frustrata</i>)	D & C (Ar, Do, Fi, Oa, Pi)	B & Y	T	G2-4	V	Cap ridges don't darken at maturity
18. <i>ulmaria</i> (<i>cryptica</i>)	D (As, El, Ma, Tu)	Y	E	A	V, I	Like <i>americana</i> but only in Great Lakes region

¹F=Conifer forests within 1-2+ years after fire, C=Conifer forests, D=Broadleaf (deciduous) forests, L=Landscaped settings (usually wood chips); Ap=Apple (*Malus*), As=Ash (*Fraxinus*), Ar=Arbutus (*Arbutus*), Bo=Boxwood (*Buxus*), Do=Douglas-fir (*Pseudotsuga*), El=Elm (*Ulmus*), Fi=Fir (*Abies*), Hi=Hickory (*Carya*), Ma=Maple (*Acer*), Oa=Oak (*Quercus*), Pi=Pine (*Pinus*), Po=Poplar/aspen (*Populus*), Pr=Prickly Ash (*Zanthoxylum*), Sp=Spruce (*Abies*), Tu=Tulip tree (*Liriodendron tulipifera*). Lists are not exhaustive.

²Colour of **mature** cap's ridges; B=Black/very dark, Y=Yellow or other light colour, R=Light & bruising reddish

³W=Western, E=Eastern, N=Across North America, T=Transcontinental. Note that this is typically interpreted relative to the Rocky Mountains, however it would not be unexpected to find either in Alberta

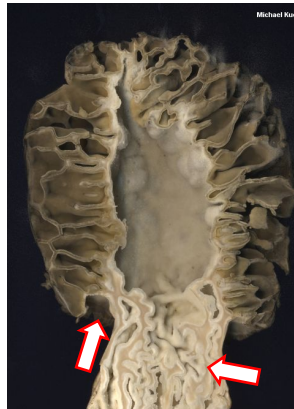
⁴A=Cap adnate to stem (no groove or indentation), G=Groove between cap and stem (numbers are length & width of groove in mm, e.g. G2-4 has a groove 2-4 mm deep & wide), H=Cap attached to the stem only about halfway up, with a significant portion hanging free ("half-free")

⁵C= Stem chambered & layered internally at least near base, I=Irregular/rounded pits, R =Stem very ridged & pocketed, especially on upper half, S= Vertical ridges of pits high and in relatively straight lines & few horizontal ridges connect at the same height as vertical ones, T=Cap surface densely velvety at least when young, V=Pits primarily elongated vertically *Note that a "?" means that a feature is variable and so may or may not be present

⁶ES=Elements on sterile ridges (microscopic)



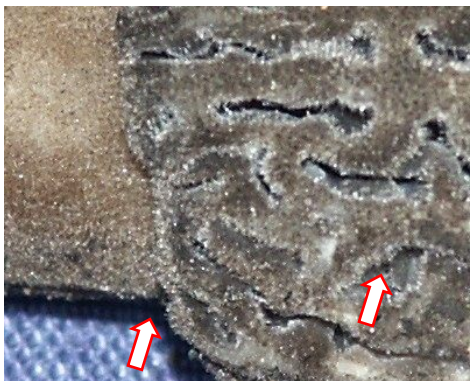
Prominently ridged stem of *M. snyderi* = "R"



Chambered stem in *M. exuberans* = "C". Also note groove ("G") between cap & stem



High vertical and lower horizontal ridges of *M. importuna* = "S"



Densely velvety cap of *M. tomentosa* = "T". Also note adnate cap, attached completely to stalk = "A"



Irregularly shaped pits of *M. prava* = "I"



"Half-free" cap of *M. populiphila* = "H"



Vertically elongated pits of *M. rufobrunnea* = "V". Also note light ridges & dark pits in this species.

Photos from www.mushroomexpert.com. Please also note that a dichotomous key, complete descriptions, and additional photos can also be found on this site.

Taxonomy based on F. Richard, J. Bellanger, P. Clowez, K. Hansen, K. O'Donnell, A. Urban, M. Sauve, R. Courtecuisse & P. Moreau. 2017. True morels (*Morchella*, Pezizales) of Europe and North America: evolutionary relationships inferred from multilocus data and a unified taxonomy, *Mycologia*, 107:2, 359-382.