

Summer 2020

Spore Print



Alberta Mycological Society

Feature Mushroom: *Calvatia gigantea*

Calvatia gigantea, commonly known as the giant puffball, is a puffball mushroom commonly found in meadows, fields, and deciduous forests usually in late summer and autumn. It is found in temperate areas throughout the world.

All true puffballs are considered edible when immature, but can cause digestive upset if the spores have begun to form, as indicated by the color of the flesh being not pure white (first yellow, then brown). Immature gilled species still contained within their universal veil can be look alikes for puffballs. To distinguish puffballs from poisonous fungi, they must be cut open; edible puffballs will have a solid white interior.

Sourced 9/13/2020 from Wikipedia https://en.wikipedia.org/wiki/Calvatia_gigantea

Edibility: Good (immature)

Stalk: N/A

Growing Season: June—Sept

Spore Print: Brown

Cap: No distinct cap

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

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

Taxonomy:

Kingdom: Fungi

Division: Basidiomycota

Class: Agaricomycetes

Order: Agaricales

Family: Agaricaceae

Genus: *Calvatia*

Species: *C. gigantea*

Inside this Issue

Featured Mushroom

News from the Veil—Vegan leather

News from the Veil—Truffle
Discovery

COVID-19 Foray Guidelines

Foray Reports

Word Search





Calendar of Events

Date - Event - Area

Sept 20—Foray— Waskasoo

Sept 22—Webinar—Online

Fungal Conservation in Alberta

Oct 21, 2020, 630 to 8 pm—Zoom

<https://>

www.albertamushrooms.ca/

[events/](https://www.albertamushrooms.ca/events/)

Did you know

Ancient Egyptians referred to mushrooms as the plant of immortality in hieroglyphics more than 4,600 years ago. Mushrooms were so revered in Egyptian society that commoners were forbidden from touching them. Mushrooms were a food exclusively for royalty.



A-Wall relief of a mushroom basket in Temple of Hathor, Dendera, B-A pillar with a fan or oyster-shaped top in Temple of Philae in Aswan, Egypt, C-Mushroom relief in Edfu Temple © Abdel-Azizem 2016.



News From The Veil: Vegan leather made from mushrooms could mould the future of sustainable fashion

by Mitchell P. Jones, Vienna University of Technology, September 8, 2020

Seven millennia since its invention, leather remains one of the most durable and versatile natural materials. However, some consumers question the ethical ramifications and environmental sustainability of wearing products sourced from animals.

This shift in social standards is the main reason we're seeing a wave of synthetic substitutes heading for the market.

Leather alternatives produced from synthetic polymers fare better in terms of environmental sustainability and have achieved considerable market share in recent years.

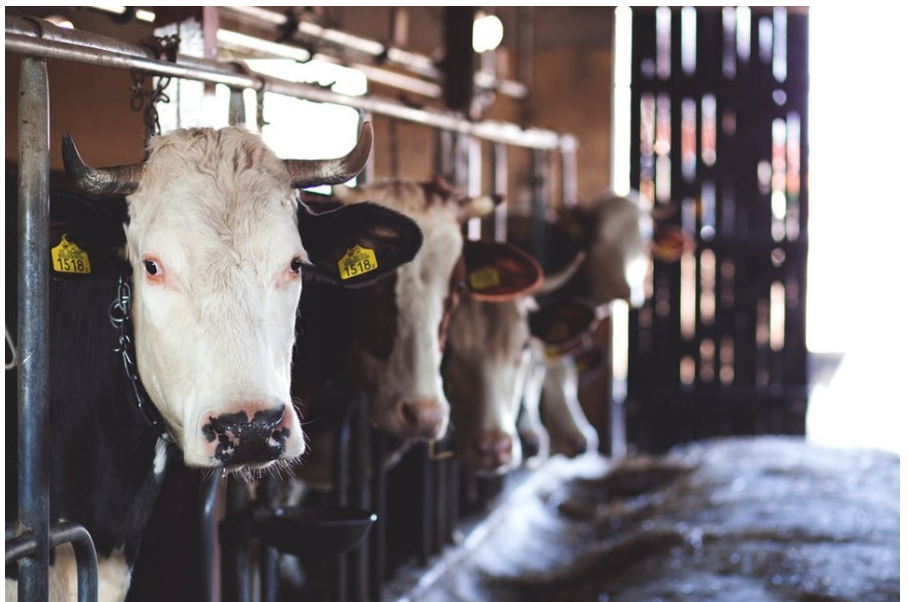
But these materials face the same disposal issues as any synthetic plastic. So, the leather market has begun to look to other innovations. As strange as it might sound, the latest contender is the humble fungus.

Research by my colleagues and I, published today in *Nature Sustainability*, investigates the history, manufacturing processes, cost, sustainability and material properties of fungus-derived renewable leather substitutes – comparing them to animal and synthetic leathers.

How unsustainable is animal leather, actually?

How sustainable leather is depends on how you look at it. As it uses animal skins, typically from cows, leather production is correlated with animal farming. Making it also requires environmentally toxic chemicals.

Continue reading on page 8



Source: <https://theconversation.com/amp/vegan-leather-made-from-mushrooms-could-mould-the-future-of-sustainable-fashion-143988>

Picture Source: [freestocks.org/Pexels](https://www.freestocks.org/Pexels)



News From The Veil: The Great Truffle Discovery

by Lindsay Campbell, Modern Farmer, August 17, 2020

It took 40 years for Dan Luoma's finding to be recognized as a new species.

When Dan Luoma was trekking through the forest in Puget Sound, Washington, he had only a basic know-how of hunting truffles. As a first-year graduate student at the time, he hoped to return to school with something to show his professor, but never thought he would come across a novel specimen.

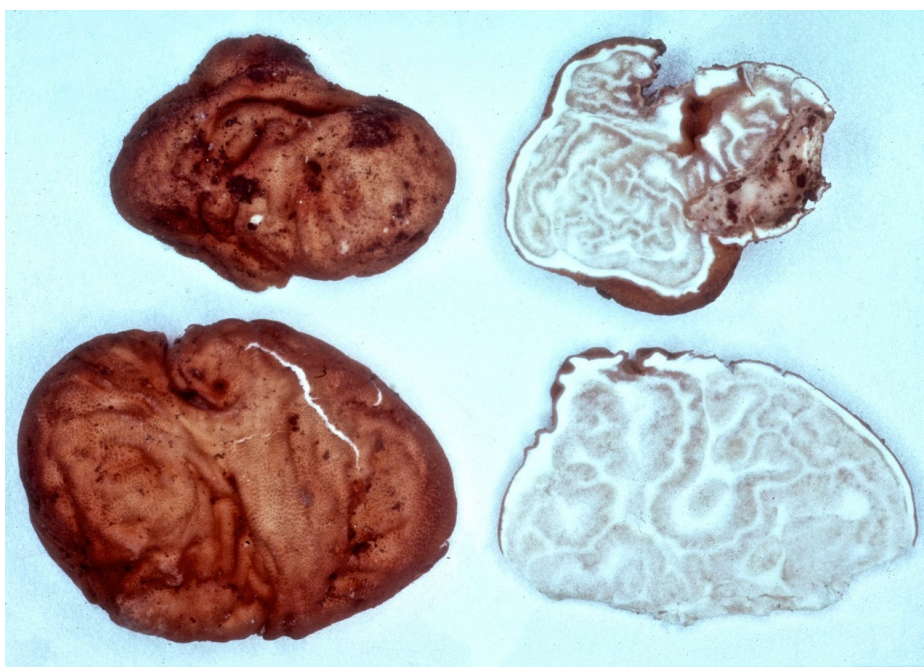
"I'm not sure if I just picked up a stick and poked it in the ground... but for whatever reason, I had poked it in the right spot and found truffles," says Luoma, who later became an ecology professor at Oregon State University until he retired this year.

His serendipitous discovery back in 1981 was brought back to Oregon State University where his mentor James Trappe and other fungi experts were unable to identify the truffle. It sat in the school's collection for

decades, but with the help of new DNA sequencing technology and a team of mycologists who analyzed the truffle over the past 12 years, Luoma's truffle was recently identified as a new species—*Tuber luomae*.

The truffle is characterized by its spiny spores and a two-layered outer skin made up of inflated cells. As a red truffle, Luoma says it likely has a mild taste, not as strong as the earthy flavor of a black or white variety that is sought by chefs.

In the 1990s, a grad student expressed interest in studying the truffle, but he graduated and moved away before he could start the project. The mystery of the lonely truffle specimen endured until 2008, when a visiting mycologist, Greg Bonito, took a look at it and decided it was time to identify it. Together with Trappe, Luoma's partner Joyce Eberhart, another mycologist and a PhD student, Bonito worked to determine if this was a new species of truffle.



Tuber luomae was recently identified as a new species of truffle.
Photography courtesy of University of Oregon



News From The Veil: The Great Truffle Discovery Cont.

The result of their work was a paper about the new truffle, which was published this month in the journal [Fungal Systematics and Evolution](#).

The group named the truffle species after Luoma.

Luoma says it's probably a good thing that so much time passed before the analysis started on the new truffle, as the identification process was more rigorous than it would have been decades before. "It's more comprehensive than it would have been even 20 years ago, so it makes a stronger case that it's a unique species," he says.

The Pacific Northwest has been a truffle-hunting hotspot for more than a hundred years, but Luoma's truffle has only been found in three other counties.

While he is no longer part of the faculty at Oregon State University, Luoma says that he and Eberhart would like to go back to those areas to see if they could find other samples. After all, he knows a lot more than he did 40 years ago when he made his big discovery.

Source: Modern Farmer; <https://modernfarmer.com/2020/08/the-great-truffle-discovery/>

Retrieved: September 13, 2020



Dan Luoma with his partner Joyce Eberhart who co-authored the paper on the new species.



Foray Report: Sherwood Park Natural Area

What: Foray at Sherwood Park Natural Area

When did the foray occur: Saturday, August 15, 2020

Foray Length: 2 hours

Attendance: 15 people

Mushroom Species Found: Because of the varied terrain the expectations were that we would find boletes, hericium and hedgehogs and we were not disappointed. There was a great variety of fungi, including:

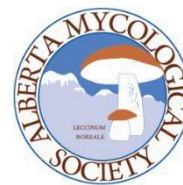
Bleeding agaricus, Earth stars (not open yet), Hericium, Russulas of many varieties, Ramaria/Clavaria, Elfin Saddle, Marasmius hematopus, Red belted conks, Red tops, Birch boletes, Fomes fomentarius, Ganoderma applanatum (artist conk), Black footed polypore, Scutellinia scutellata – red eyelash cup, Hohenbuehelia petaloides, beautiful specimens of an immature and mature Amanita fulva, Large scalloped edged Phyllotopsis nidulans – stinky oyster – looking almost like Chicken of the woods, Volvariella speciosa – looking very much like Amanitas, Pholiota squarrosa, Coprinus atramentarius – inky cap, Tricholoma flavovirens (formerly equestre) – man on horseback, Inocybe sororia, Leucopaxillus sp., Paxillus involutus – Poison Pax

Terrain: Varied Terrain: gently-rolling upland terrain covered by mature poplar forests scattered with white birch – remnant stands of matures white spruce, poplar and birch – permanently wet depressions with a few spruce and larch – areas dominated by willows and sedges

Weather Conditions: very mild, partly sunny, perfect weather for a treasure hunt in the bush!

Additional Comments: There were several members that were attending for the first time and they all mentioned what a great time they had. For a foray held during COVID conditions, there was great compliance with the wearing of masks, use of hand sanitizer and wet wipes. Thank you to everyone for following our guidelines!





COVID-19 Foray Rules

Isolation, social distancing, face masks, hand sanitizer, hand washing. These are all terms that have entered our vocabulary and general conversations, becoming commonplace. As the saying goes, '**an ounce of prevention is worth a pound of cure**', it is important that the new phrases do not fade into the background as we adapt to life within the parameters of the COVID-19 pandemic precautions. Make them your first thoughts when planning a foray.

Forays, as we all know, are good for the soul, not to mention potentially our dinner! Now that the 'lockdown' is easing, it is possible to go out with friends and share small open-air events. Mushroom forays are an excellent way to enjoy the fresh air with good company and friendly rivalry as the best spots are found and our discoveries shared.

To arrange and/or take part in an AMS foray it is now, more than ever, important to abide by a few simple rules.

Be safe, stay healthy and have fun.

AMS foray rules:

1. Foray notifications will announce the maximum number of participants.
2. All participants **MUST** register prior to the foray and check in with the Foray Leader. Registration procedures will vary.
3. Anyone with symptoms of COVID-19 must **NOT** participate, and **WILL** be asked to leave if present.
4. Social distancing (6 ft/2 metres) **MUST** be strictly enforced when in the field **AND** at follow-up get-togethers.
5. Non-medical masks/face coverings **MUST** be worn whenever social distancing cannot be applied; while in vehicles, the field, or elsewhere with other participants that are not in the same household.
6. Hand sanitizer containing at least 60% alcohol **MUST** be used after touching common touch points (including mushrooms!)
7. Participants must abide by all current Alberta Health Services restrictions on socializing.

These simple rules will help keep us all safe and able to enjoy mushrooming at its best.



News From The Veil: Vegan leather made from mushrooms could mould the future of sustainable fashion, Cont.

by Mitchell P. Jones, Vienna University of Technology, September 8, 2020

The livestock sector's sustainability issues are well known. According to the United Nations Food and Agriculture Organization, the sector is responsible for about 14% of all greenhouse emissions from human activity. Cattle rearing alone represents about 65% of those emissions.

Still, it's worth noting the main product of cattle rearing is meat, not leather. Cow hides account for just 5-10% of the market value of a cow and about 7% of the animal's weight.

There's also no proven correlation between the demand for red meat and leather. So a reduction in the demand for leather may have no effect on the number of animals slaughtered for meat.

That said, leather tanning is still energy- and resource-intensive and produces a lot of [sludge waste](#) during processing.

This gives leather a higher environmental impact than other minimally processed animal products such as blood, heads and organs (which can be sold as meat products or animal feed).

From spore to mat

Fungus-derived leather technologies were first patented by US companies [MycoWorks](#) and [Ecovative Design](#) about five years ago.

These technologies take advantage of the root-like structure of mushrooms, called [mycelium](#), which contains the same polymer found in crab shells.

When mushroom roots are grown on sawdust or agricultural waste, they form a thick mat that can then be treated to resemble leather.



Mycelium is the vegetative body for fungi that produces mushrooms. Fungal colonies made of mycelium can be found in and on soil and wood. Shutterstock



News From The Veil: Vegan leather made from mushrooms could mould the future of sustainable fashion, Cont.

by Mitchell P. Jones, Vienna University of Technology, September 8, 2020

Because it's the roots and not the mushrooms being used, this natural biological process can be carried out anywhere. It does not require light, converts waste into useful materials and stores carbon by accumulating it in the growing fungus.

Going from a single spore to a finished "fungi leather" (or "mycelium leather") product takes a couple of weeks, compared with years required to raise a cow to maturity.

Mild acids, alcohols and dyes are typically used to modify the fungal material, which is then compressed, dried and embossed.



Going from fungal spores on a Petri dish (left) to a natural fungal mat (right) takes just a couple of weeks. Antoni Gandia



MOGU is one company producing materials and products from fungal mycelium. Ars Electronica/Flickr

The process is quite simple and can be completed with minimal equipment and resources by artisans. It can also be industrially scaled for mass production. The final product looks and feels like animal leather and has [similar durability](#).

Mushroom for progress

It's important to remember despite years of development, this technology is still in its infancy. Traditional leather production has been refined to perfection over thousands of years.

Continue reading on page 12



Current Board

Rosemarie O'Bertos - Past President

Karen Slevinsky - President

Mike Schulz - Vice-President

Rob Simpson - Treasurer

Elizabeth Lakeman - Secretary

Christine Costello - Membership Coordinator

Dr. Claude Roberto - Director at Large

Bill Richards - Director at Large

Catherine Jevic - Director at Large

Elizabeth Watts - Director at Large

Erica To - Director at Large

Lisa Oishi - Director at Large

Ryan James - Director at Large

Vacant - Director at Large

Vacant - Director at Large

“Fungi are the interface organisms between life and death.”

— Paul Stamets



Volunteer!

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



Word Search

Created with TheTeachersCorner.net Word Search Maker

More fungal genera

Words may be written forwards, backwards, diagonally, upwards or downwards.

L C W H Y D N U M A L L E M E R T F D H R I Z M R
L E P I O T A H P S A T H Y R E L L A V Z T H Q U
S N O T I D E A X Z E L A P H O M Y C E S B B A H
B U E F T J Q N L M C L I T O C Y B E W F O N Z G
E A N O A L L E I R A V L O V M V F F Q V I M A F
A K Z I B P X G S A M R E D O T S Y C I L U L P R
Z P F W L U W I L K S G M B J U T O S A E L R A C
I A R M I L L A R I A J V B M A I T H R E R E N O
Z D Y I M O E G V N Y A Z O M C A P E N Q B S A R
E O N U D U X H A J U J P O E B M T E S F U M E D
P G V H H U F F P R Z A T Y K O S K U J M L E O Y
S K E L E T O C U T I S P O C O C H M O G A G L C
H R U L Z X I O R R O A P O R I P U C R R W A U E
Y W S W P C X J A I A M P D R Y S O X T P L K S P
P A U J R H P H R E N R N R C S R G I G L Q L A S
O V I B U B P Y R A I O C S O E D M C E A E U I S
X B L J D O M R R N H Z O L X S O M I N N M Q N E
Y J L W R F A O E C F N G T M R E S I T C O R I R
L P U T R T H L G M E O M J Y Q N L I X M R O D P
O Z S E T P L F Z M E Q H G R A U N L T D B R L U
N Y B A O U Z E Y G N E I Z M V U A P I D I N A L
S U B I S S K H D R G F Q E A S N L I H N L N D A
T L N M X Z C K W W G Y D L O J G R B I D I M I O
K E E F H O O F C V K U C S G H S O G N C A A U I
P Z K H C C I C U D O N I E L L A L S V D H P H R

ARMILLARIA
CLAVULINA
CUDONIELLA
GEOGLOSSUM
HYPOXYLON
NEOBULGARIA
OUDEMANSIELLA
PHELLINUS
SERPULA
TREMELLA

BATTARREA
CLITOCYBE
CYSTODERMA
GYROMITRA
LENTINUS
OMPHALINA
PANAEOULUS
PSATHYRELLA
SKELETOCUTIS
TUBER

BOVISTA
COPRINELLUS
DALDINIA
HYDNUM
LEPIOTA
ORBILIA
PENIOPHORA
RICKENELLA
STROPHARIA
VOLVARIELLA

CHONDROSTEREUM
CORDYCEPS
ELAPHOMYCES
HYMENOSCYPHUS
MYRIOSTOMA
OTIDEA
PEZIZA
ROSELLINIA
SUILLUS
XEROCOMUS



News From The Veil: Vegan leather made from mushrooms could mould the future of sustainable fashion, Cont.

by Mitchell P. Jones, Vienna University of Technology, September 8, 2020

There are bound to be some teething problems when adopting fungal leather. And despite its biodegradability and low-energy manufacturing, this product alone won't be enough to solve the sustainability crisis.

There are wider environmental concerns over animal farming and the proliferation of plastics – both of which are independent of leather production.

Nonetheless, using creativity to harness new technologies can only be a step in the right direction. As the world continues its gradual shift towards sustainable living, perhaps seeing progress in one domain will inspire hope for others.

Will I be wearing it anytime soon?

Commercial products made with fungi-derived leather are expected to be on sale soon – so the real question is whether it will cost you an arm and a leg.

Prototypes were released last year in the [US](#), [Italy](#) and [Indonesia](#), in products including watches, purses, bags and shoes.

And while these fundraiser items were a little pricey – with one designer bag selling for US\$500 – manufacturing cost estimates indicate the material could become economically competitive with traditional leather once manufactured on a larger scale.

The signs are promising. MycoWorks raised US\$17 million in venture capital last year.

Ultimately, there's no good reason fungal leather alternatives couldn't eventually replace animal leather in many consumer products.

So next time you pass the mushrooms at the supermarket, make sure you acquaint yourself. You may be seeing a whole lot more of each other soon.



US-based startup Bolt Threads has used mycelium leather to successfully create products such as this bag. Bolt Threads



Upcoming AGM

With the pandemic clearly not over, the AMS has decided to host its Annual General Meeting a few months late, and online. The AGM will be held on October 21, 2020, from 630 to 800 p.m. by ZOOM. The ZOOM link with all necessary documents will be sent to all AMS members soon. If you are interested in serving as a Director on the AMS board, please contact Karen Slevinsky by email at kjslevinsky@hotmail.com. In the weeks prior to the AGM a subcommittee will review all those interested in serving. There is no better time to serve a Society than during a time of adversity.

The recent news around the world hints at a COVID-19 resurgence locally. AMS remains cautious. We are holding fewer forays, with fewer attendees, and with greater social distancing. Continuing in the spirit of safety, the President's Dinner will be cancelled this year. We will find another way to recognize long serving Directors and members who have made a tremendous contribution to our Society. Stay tuned.

Hope to see you online, soon.

Karen Slevinsky

President, AMS



Instagram

[Alberta
Mycological
Society](#)



Facebook

[Alberta
Mycological
Society](#)



Twitter

[Alberta
Mycological
Society](#)