

SPORE PRINTS

BULLETIN OF THE PUGET SOUND MYCOLOGICAL SOCIETY
Number 582 May 2022



IDENTIFYING THE BASIC STRUCTURE OF THE LANGUAGE OF FUNGI

Bob Yirka

<https://phys.org/>, Apr. 7, 2022

Andrew Adamatzk, a professor at the University of the West of England's Unconventional Computing Laboratory, UWE, in the U.K. has found that the electrical signal clusters sent by several types of fungi resemble human vocabularies. In his paper published in the journal *Royal Society Open Science*, he describes his analysis of electrical signals sent by several mushrooms [*Omphalotus nidiformis*, *Cordyceps militaris*, *Schizophyllum commune*, and *Flammulina velutipes*].

Prior research has shown that fungi such as mushrooms send electrical signals through underground filaments to other mushrooms. Some researchers have suggested the process is similar to the way messages are transmitted in nerve cells in animals. Prior research has also shown that electrical activity in the filaments increases when the fungus encounters a source of food, which some have suggested is a form of communication between mushrooms. In this new effort, Adamatzk took a closer look at this signaling to find out if it might be a form of language.

His work involved inserting electrodes into the areas where several mushrooms were growing and recording the electrical signals they

generated. He then analyzed the recordings looking for patterns and found that spikes in electrical activity were grouped into streams or trains of activity. After further study, he found that the trains of activity resembled vocabularies—50 of them—and that those words were made up of on average 5.97 letters, which he notes is close to the 4.8 average letters per word in the English language.

Adamatzk theorizes that the purpose of the electrical signals is to help the fungi maintain their integrity—similar, he suggests, to wolves howling to maintain the integrity of a pack. He further suggests it could also be a means for announcing food source discoveries and/or to report repellents. He also readily acknowledges that the signals might not have anything to do with communication—they may be, he notes, nothing more than spikes that occur due to differentials between pairs of signals in the filaments. But he also notes that whatever the purpose of the signals, they are not generated randomly.

INVASIVE CRAZY ANTS COULD MEET THEIR MATCH IN A MYSTERIOUS, FUNGUS-LIKE PATHOGEN

Erik Stokstad

<https://www.science.org/>, Mar. 28, 2022

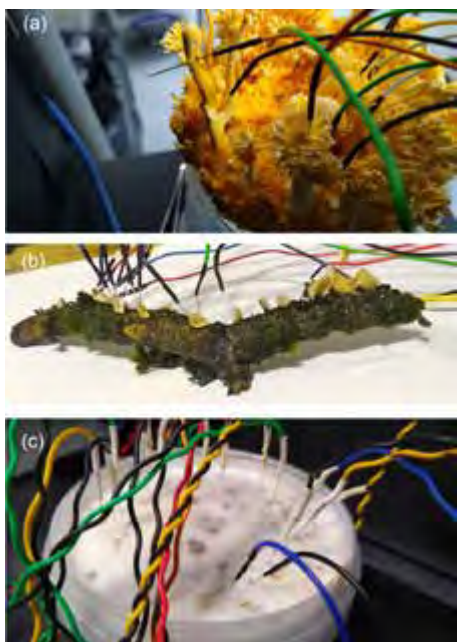
Tawny crazy ants can seem unbeatable. These invasive insects march through warm climates, killing wildlife, invading buildings, and even shorting out motors and electrical devices with their huge swarms. Pesticides barely slow them down. Yet they sometimes vanish mysteriously. Now, researchers know why: A fungus-like pathogen called *Myrmecomorba nylanderiae* can wipe out entire populations.



Tawny crazy ant
(*Nylanderia fulva*).

“This work has huge potential beneficial implications,” says Corrie Moreau, an entomologist and evolutionary biologist at Cornell University, who was not involved in the work. The new study showed that both natural and experimental infection will cause ant colonies to collapse. “What makes this work so brilliant is the authors have harnessed the power of nature to solve this problem.”

Ants are among the most worrisome of invasive species, because they can cause so much ecological and economic damage. Supercolonies, which can stretch for hundreds of kilometers, are particularly bad. That's because instead of wasting resources fighting one another, ants from multiple nests coexist peacefully and march together into new territory. Some supercolonies are prone to boom-and-bust cycles, but researchers have never figured out why.



Royal Society Open Science (2022)

Photographs of pairs of differential electrodes inserted in (a) *C. militaris*, the block of a substrate colonized by the fungus was removed from the plastic container to make a photo after the experiments, (b) *S. commune*, the twig with the fungus was removed from the humid plastic container to make a photo after the experiment, (c) *F. velutipes*, the container was kept sealed and electrodes pierced through the lid.

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March. This year, the board approved a “Summer Extravaganza” replacement for the Survivors’ Banquet, hopefully, to be held in June at CUH with finger foods and held outdoors if possible. It will likely be held on the Tuesday of the June general meeting, but stay tuned for the details.

Another bit of important news is that *Spore Prints* is going **completely digital as of September 2022**. This is an environmentally friendly change appropriate for an environmentally friendly organization. Be your email info is current.



MEMBERSHIP MEETING

Scott Maxwell

The membership meeting on May 10, 2022, will be a “hybrid” meeting, both in-person at the Center for Urban Horticulture and virtual on Zoom. Masks **will be** required for attendance in person. We will start letting people into the CUH meeting hall at about 7:00 pm and into the Zoom meeting at about 7:15. The lecture will begin at approximately 7:30 pm.

As has been our theme this winter, we once again are featuring one of our talented members of PSMS. To help kick off our Spring foraging season, this month’s general meeting will feature award-winning author and wild foods instructor Langdon Cook for a virtual field trip in search of local spring bounty. In this “patch to plate” slide show, Langdon will highlight some of the Pacific Northwest’s most prized wild edibles, where to find such elusive ingredients, and how to prepare them in delicious meals. Slides of plants and fungi both in their habitat and in finished dishes will have you reaching for your boots, baskets, and sauté pans. Langdon has agreed to bring some of his books along for sale so Q&A and book signing will follow his presentation.



Langdon Cook

Langdon Cook is a writer, instructor, and lecturer on wild foods and the outdoors. His books include *Upstream: Searching for Wild Salmon, from River to Table* (Ballantine, May 2017), a finalist for the Washington State Book Award; *The Mushroom Hunters: On the Trail of an Underground America*, winner of the 2014 Pacific Northwest Book Award; and *Fat of the Land: Adventures of a 21st Century Forager*, which *The Seattle Times* called “lyrical, practical and quixotic.” Cook’s work has been nominated for two James Beard Awards, a Society for Environmental Journalists award, and a Pushcart Prize. He has been profiled in *Bon Appetit*, *WSJ* magazine, *Whole Living*, and *Salon.com*, and his writing appears in numerous magazines, newspapers, and online journals, including *National Geographic Travel*, *Outside*, *Eating Well*, *Gray’s Sporting Journal*, and *Seattle Magazine*, where he was a regular columnist for a decade. Cook lives in Seattle with his wife and two children.

CALENDAR

- May 5 Special Zoom habitat presentation
- May 6–7 Field trip (see PSMS website)
- May 10 Membership meeting, 7:30 pm, in person at CUH and via Zoom
- May 14 Field trip (see PSMS website)
- May 16 Board meeting, 7:30 pm, via Zoom
- May 21 Field trip (see PSMS website)
- May 25 *Spore Prints* deadline
- May 27–30 Field trip (see PSMS website)
- June 4 Field trip (see PSMS website)

BOARD NEWS

Su Fenton

Greetings all! The board meeting was busy with lots of business to discuss. Marion Richards, the chair of the Arts and Crafts Committee, stopped by to discuss a proposed scholarship or donation to the International Fungi and Fiber Symposium which will be held this year at Ft. Warden near Port Townsend from October 16 through the 23rd. The board approved a one time donation of \$2000 to the group for this local event. Our hard-working Vice President, Scott Maxwell, has been busy trying to find dates and locations to replace our sadly missed Survivors’ Banquet normally held in

NOTICE *Spore Prints* newsletter

Starting with the September issue, this year, we will be sending digital copies of *Spore Prints* only. We will no longer be mailing paper copies. Printed copies can be taken from the online version. Thank you.

MORE EXCITING NEWS FROM THE MYCOPHAGY COMMITTEE

Marcus Sarracino & Molly Watts

Mycophagy is the eating of mushrooms, and that is exactly what we plan on doing!

By popular demand, the Mycophagy Committee has paired with the Pantry in Ballard on Monday, June 6, 2022, at 6 pm to offer another fungus-themed cooking class. Attendance is limited to 18 people and the cost is \$135 per person.



Our first class offering in May quickly sold out with an additional 18 people on the waiting list. We are thrilled to have our partnership with the Pantry and plan to keep running this class if the need and popularity continues.



Chef Rutherford

The June 6th class will feature chef Marie Rutherford.

Chef Rutherford was born, bred, and burrito-fed in Berkeley, California. She grew up amongst bakery collectives, Thai sticky rice, Seder gatherings, and free Sunday Hare Krishna vegetarian dinners. After receiving her degree in art history, she jumped on a cruise ship and sailed the world, cooking and traveling along the way. She later settled in Seattle and cooked at restaurants Le Pichet and

Le Gourmand followed by a stint in Normandy, trying her hand at farming and cheese-making.

Marie returned to Seattle and began working with chef Renee Erickson at Boat Street Café where she worked her way up from line cook to chef de cuisine, before finally moving on to become chef de cuisine at The Whale Wins, where she earned a 2015 StarChefs Rising Star Chef Award.

Marie is happiest building a fire to cook over and insisting that the “simple,” the “plain,” and the “traditional” are in fact exciting, wonderful, and satisfying.

Menu

Morel Mushrooms on Toast Points
Porcini Mushroom Salad with Pine Nuts and Lemon Salt
Dan Dan Noodles with Shiitakes, Pork,
Pickled Mustard Greens, and Chile-Peanut Oil

The cooking class will be hands-on: chopping, stirring, sautéing, and mixing with 17 of your fellow mycophiles and instructor throughout class. All guests will receive copies of the recipes and enjoy a communal meal with wine at the end of class.

Reminder: The Pantry may require students to wear an N95 or KN95 mask during instruction, depending on the local transmission rate at the time of the class, in addition to showing proof of ID and vaccination.

As a special “thank you” to all the members who volunteer their time and experience to the club, we will be giving them first dibs to sign up for this class. Any unfilled spots may be claimed by the general membership when/if they become available. Please be sure you can attend when you register as there are *No refunds*. All attendees *must* be PSMS members To ensure this, each member must register separately for this class. Thank you for your understanding!

Questions about this event should be directed to Molly or Marcus at Mycophagy@psms.org.

If you have problems registering, please reply to the email above. P.S. Big thanks to Karen Armijo for her supporting efforts.

Stay tuned for more exciting mycophagy events!

BRIDLE TRAILS GROUP IS MEETING AGAIN

Luise Asif

The Bridle Trails State Park Survey under the leadership of Daniel Winkler has resumed. To date the group has been out four times. Search on iNaturalist PSMS Bridle Trails to see what has been found to date.

To keep the group manageable, a notice goes out the Monday or Tuesday before the scheduled survey date. The first 7 people who respond to that email receive the detailed information on where and when to meet. If you have signed up to be part of this group and not seen the notice, please check your spam/trash folder. Emails are sent from PSMS and have “Bridle Trails” in the subject line.

The Bridle Trails Foundation has additional on-going projects for people interested in documenting invasive species and flowering shrubs and forbs. For more information check out the park link,

<https://www.bridletrails.org/citizen-science-in-the-park>

Jim Erckmann of the Bridle Trails Park Foundation spoke to the on group on April 28 detailing the projects.

If you have questions or wish to verify that you are on the Bridle Trails Study notification list, contact volunteers@psms.org.



SPECIAL ZOOM PRESENTATION

7 pm on Thursday, May 5, 2022

Hunting For “Natural” Morels And Spring Kings
by Randy Richardson

When I joined, many years ago, there were no guides, and I was lost. It took me years to finally find natural morels on my own. Remembering that frustration was my impetus for putting together this presentation.

Being a field trip guide has shown me that one of the most important skills to learn is how to recognize good habitat, for whatever you’re hunting. This talk will concentrate on “naturals,” with burn mushrooms being a very different topic.

Wren Hudgins, Guides & Safety co-chair, will be joining me to try to help members get a feel for what good terrain should look like. This will not guarantee finding morels, but should greatly increase the chances. The presentation will consist of photos taken in spring of 2020 and 2021 with some slides including mushrooms found—both “naturals” and Spring Kings (*Boletus rex-veris*).

The talk is for PSMS members only. A web announcement will be sent out about a week before with the Zoom link.



MUSHROOM STAMPS FROM ZIMBABWE

Brian S. Luther

The southern African country of Zimbabwe is landlocked and bordered by Zambia, Mozambique, Botswana, South Africa, and a tiny point of Namibia west of Victoria Falls. It has just a couple sets of postage stamps illustrated with fungi, as well as some colorful mushroom TB seals, all of which I thought you might like to see. They are listed in the following table

Mushroom-Themed Stamps from Zimbabwe.

<u>Issue Date</u>	<u>Value</u>	<u>Scott Cat. #</u>	<u>Type</u>	<u>Subject</u>
4/8/1992	20 c	658	M	<i>Amanita zambiana</i>
"	39 c	659	M	<i>Boletus edulis</i>
"	51 c	660	M	<i>Termitomyces sp.</i>
"	60 c	661	M	<i>Cantharellus densifolius</i>
"	65 c	662	M	<i>C. longisporus</i>
"	77 c	663	M	<i>C. cibarius</i>
1992	n/a	n/a	M	Sheet of 25 TB seals
1/17/2006	\$25,000	1006	M	African Dishes

M=mushrooms or fungi as the main stamp illustration; FDC=a first day cover, an envelope (cover) with the stamps affixed and cancelled on the day of issue, often with a similar themed cancel and cover illustration (a cache); all catalog numbers are from the Scott Postage Stamp Catalogue.

Comments

The 1992 stamps are titled “Edible Mushrooms of Zimbabwe” and have the native common names and the scientific names. All show species that are good edibles, but what’s unusual is that half of the stamps show three different species of chanterelles, two of which are native only to Africa and Madagascar. Many people in Africa harvest and eat native mushrooms, and several different species are regularly sold in food markets, including some of these above. The FDC for this set has circular cancels with a single *Amanita* and the cache is attractive, showing a smiling woman holding a basket full of mushrooms.



Scott Catalog stamps 658–663.



FDC for Scott Catalog stamps 658–663.

The 2006 stamp is one of six in a set titled “African Dishes,” and is the only stamp showing mushrooms. It was issued on a sheetlet of six. This stamp shows three edible species and is labeled “Feld Mushroom. Cep. *Cantharellus*.” They meant to say Field mushroom, which is one of the common names for the *Agaricus* shown. The FDC for this set does have this stamp, but shows other food items with no mushrooms on either the cancel or cache, so I’m not showing it.



Zimbabwe 2006. “African Dishes.”

In 1992 Zimbabwe also issued a full sheet of 25 different mushroom-illustrated TB seals (=non-postage Cinderellas). The sheet is titled “Mushrooms of Zimbabwe” at the top and was issued by their RAPT (Rehabilitation and Prevention of Tuberculosis) National Headquarters. All are labelled with the scientific names and are perforated with gum. Although very simple illustrations, they’re nonetheless recognizable, quite attractive, rarely offered for sale, and highly collectible.



Zimbabwe 1992. TB seals with 25 different mushrooms.

In previous articles, I reported on the mushroom stamps from a few other African nations and emphasized how edible fungi are highly regarded on that continent (Luther, 2012, 2014 & 2015). I also wrote an overview of colorful, mushroom illustrated non-postage stamp-like seals which you may be interested in reading since I present some of these seals here (Luther, 2012b). Many other African nations have issued fungus-illustrated postage, and I’ll continue to present some of these in future articles.

References

Luther, Brian S. 2012a. The first African mushroom stamps. *Spore Prints* 485 (October), pp. 6–7. Online and in color at www.psms.org.

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Luther, Brian S. 2014. Largest edible mushroom shown on postage. *Spore Prints* 502 (May), p. 5. Online and in color at www.psms.org.

Luther, Brian S. 2015. Mushroom stamps from Namibia. *Spore Prints* 515 (October), pp. 4–5. Online and in color at www.psms.org.

Crazy Ants, cont. from page 1

Tawny crazy ants (*Nylanderia fulva*) go through such volatile cycles. Like other crazy ant species, they're named for their unpredictable movements while foraging. Native to Brazil and neighboring countries, tawny crazy ants spread to the Caribbean by the 20th century, and to the southern United States by the late 1990s. Once in a new place, the ants hitch a ride in landscaping supplies, for example, or in RVs. After a nest is established, the ants can terrorize nearby homeowners and businesses.

The ecological impact is even more drastic. Tawny crazy ants take over the nesting sites of other ant species, including dominant fire ants. They also kill larger arthropods such as crickets and scorpions and drive away lizards, snakes, and tree-nesting birds. Infested areas are rife with ants that stream up and down tree trunks, says Edward LeBrun, an ecologist at the University of Texas, Brackenridge Field Laboratory, at Austin and an author of the new paper. "There's no insect noise and there's no bird noise," he says. "They have really profound ecological impacts."

LeBrun has tracked 15 populations of tawny crazy ants in Texas for more than 9 years. In 2013, the ecologist received some dead ants from Florida and noticed their abdomens were swollen. He and his colleagues soon discovered the ants had been sick with a fungus-like pathogen called a microsporidian. After being ingested, this pathogen fires a harpoon-like filament and injects its cellular machinery into a host cell to produce more spores. Infected ants die within months. The microsporidian infecting the Florida ants was one scientists had never seen before. In 2015 researchers including LeBrun dubbed it *M. nylanderiae*.

LeBrun checked the bodies of Texas ants stored in his lab freezer, and he discovered the pathogen had already infected more than one-third of local populations. Fieldwork revealed it was spreading to more and more nests in southeastern Texas. "Just seeing it pop up from nowhere was shocking," he recalls.

To figure out how the pathogen destroys colonies, LeBrun brought samples of nests into the lab. Ants became infected as larvae when fed by workers. The subsequent infection shortened their lives by at least 24 percent. That's especially bad for tawny crazy ants, because—as the team discovered—their queens only lay eggs from April to November, rather than year-round like most other ant species. By the time egg laying began again in spring, so many workers had died in the infected nests that there weren't

enough to care for the new brood. In the fall, the infected nests lost 75 percent of their workers in 90 days and were on the brink of collapse.

In the wild, ants move freely between nests, which means infected workers likely spread the pathogen through the entire local population. To test whether that happens, LeBrun and colleagues brought infected ants to a natural area near Austin where the disease was not present. After testing native ant species to make sure they wouldn't be harmed by the microsporidian, they released the ants into local nests. They also transported 3200 infected worker ants to Estero Llano Grande State Park in southern Texas. There, an infestation of tawny crazy ants had caused the park's showcase attraction, scorpions, to disappear. Lizards had vanished as well.

In both locations, the pathogen spread throughout the population within 7 months. Within 2 years, the tawny crazy ants were entirely gone, the researchers report today in the *Proceedings of the National Academy of Sciences*. (Uninfected populations did not decline during this time.) At the park, the scorpions and lizards have returned. LeBrun is waiting to see whether native ant species recover, too.

Biocontrol interventions will typically control a population, but not eliminate it as appears to have happened with the tawny crazy ants. The results are "very suggestive," says James Wetterer, an ant ecologist at Florida Atlantic University. But he notes that the declines might have occurred by chance, and the number of trials is too low for statistical tests. LeBrun has since taken infected ants to four other sites and says he has seen the disease take hold in two so far. Another three to four tests are planned for this year.

Biocontrol will likely be used to protect ecological reserves. Introducing the pathogen takes a lot of work: Scientists must bring nest fragments from the target site to the lab, for example, so unusual environmental odors don't disrupt the integration of ants from the same supercolony. Homes and businesses near the intervention sites might benefit, but the problem of tawny crazy ants won't be solved with a dose of infectious workers. "It's not going to be on a shelf at Walmart anytime soon," LeBrun says.

HIGHLY POISONOUS AMANITA PHALLOIDES IDENTIFIED IN IDAHO

Madison Guernsey

<https://www.idahostatejournal.com/>, Apr. 8, 2022

A mushroom never before detected in Idaho is popping up around Boise. But be warned: You don't want to chop this one up and throw it in your stir fry.

Amanita phalloides, also known as the "Death Cap," has been found on Harrison Boulevard in Boise's North End, according to Mickey Myhre, a retired physician and current mycologist. The Idaho Department of Health and Welfare later said the mushroom was found under an oak tree "in an established neighborhood in Boise." Myhre said the mushroom has also been found "in some locations in the North End."

It's highly poisonous and responsible for more than 90 percent of mushroom poisoning deaths worldwide, according to the Centers for Disease Control and Prevention.

cont. on page 6

***Amanita phalloides* Found in Idaho, cont. from page 5**

You won't get sick from touching the fungi. But if it's ingested, the Death Cap causes flu-like symptoms, before a brief reprieve provides false hope and precedes organ failure, specifically the liver and kidneys. Death can occur 7 to 10 days after ingestion.



Paul Kroeger

A. phalloides found in Idaho.

On average, one person a year has died in North America from ingesting Death Caps, though that number is rising as the mushroom spreads, *The Atlantic* reported in 2019.

The Death Cap is native to Europe, but has spread to several continents and likely reached North America “many decades ago,” according to the British Columbia Centre for Disease Control.

A spokesperson for the Idaho Department of Health and Welfare confirmed to the Idaho Press that *Amanita phalloides* has been identified in Boise. “It may be present and undetected in other places (in Idaho) and it may not be,” the spokesperson said.

The mushroom is also deadly if eaten by dogs, the spokesperson said.

OREGON STATE RESEARCH HELPS PROVIDE SCIENTIFIC FRAMEWORK FOR PSILOCYBIN USE IN THERAPEUTIC SETTINGS Sean Nealon

<https://theworldlink.com/>, Apr. 14, 2022

A new paper by an Oregon State University-led research team (*Fungal Biology*, 2022; 126, pp. 308–319) provides a scientific framework to help shape the rollout of a program in Oregon that will legally permit the use of psilocybin for therapeutic reasons.

Oregon voters approved a ballot measure in 2020 to allow use of psilocybin, a hallucinogenic compound found in some magic mushrooms, in therapeutic settings, becoming the first state to do so. Preliminary clinical trial data has shown psilocybin has potential to address mental health issues including depression, anxiety, and PTSD.

The state created an advisory board to recommend how to roll out a safe and equitable system for psilocybin use. The Oregon Health Authority in February released draft rules crafted by the advisory board. They are expected to be finalized in the next year.

Jessie Uehling, a mycologist at Oregon State University who studies fungi and their applications that benefit humanity, was appointed last year by Gov. Kate Brown to the advisory board. Her involvement with the board made her realize the need for the recently published paper.

“There was not a synthesis of all the information about psilocybin that an entity like the advisory board or any other state- or federal-level group would need to make decisions that are informed by science,” said Uehling, an assistant professor who has a doctoral degree in genetics and genomics and a master’s in mycology.

She, along with researchers in Mexico and several universities in the U.S., set out to change that. The paper they just published provides an overview of the biology, diversity, and history of psilocybin-containing fungi.

The authors detail that there are hundreds of fungal species belonging to at least seven genera that are capable of producing psilocybin. Further, they discuss how many psilocybin-producing fungi have deadly poisonous lookalikes which grow in similar locations in natural habitats.

They also focus on how Indigenous people around the world have historically used the compound for sacred traditions in part because they say these cross-disciplinary insights need to be published, citable, and publicly available.

While indirect evidence of hallucinogenic mushroom rituals dates back thousands of years in northern Africa and Spain; its use, for hundreds of years, still persists in Mexico. Rules governing how these mushrooms are used among Indigenous Mexican groups has resulted in safe consumption for centuries, the researchers note. These rules include being guided by an elder or shaman, not mixing alcohol, medicine or drugs, and discouraging travel for a week after the ceremony.

“These mushrooms and their traditions constitute a unique bio-cultural heritage whose use by Western society must be based on their respect and conservation,” said Roberto Garibay-Orijel, a researcher at the Universidad Nacional Autónoma de México and co-author of the paper.

He said it’s important that the paper emphasizes that the species of mushroom only found in Mexico, and strains from Indigenous territories in Mexico, are protected by the Nagoya protocol, an international agreement that prohibits their use for commercial purposes without the consent of their ancestral owners.

Recent Western, medicalized psilocybin trials have been designed to mirror the guided experience used by Indigenous groups. The trials have confirmed the importance of preparation and setting when using psilocybin-producing fungi.

There are currently more than 60 psilocybin clinical trials overseen by the National Institutes of Health. Preliminary data suggest psilocybin therapies are effective in treating major depressive disorder, obsessive-compulsive disorder, smoking cessation, and alcoholism.

Results of psilocybin ingestion outside of clinical trials have found an increased connection to nature, enhanced creativity, greater enjoyment of music, and increased positive mood.

Meanwhile, cities across the U.S. are decriminalizing psilocybin, and Washington is considering a measure similar to Oregon’s that would legalize psilocybin for therapeutic reasons.



<https://theworldlink.com/>

Composite image showing the diversity of mushrooms from the genus *Psilocybe* that contain psilocybin.

MUSHROOMS ARE HAVING A MOMENT

Jenna Sach

<https://www.fox6now.com>, Apr. 7, 2022

First it was kale, then acai berries and chia seeds, but there's a new "it" food in town: The mighty mushroom! *Consumer Reports* explains why mushrooms are having quite a moment.

Look closely and you'll see that mushrooms are popping up everywhere: on supermarket shelves, in snacks, coffee, broth, and supplements, even in personal-care products.

Mushroom-mania is sweeping the country. Sales of fresh mushrooms reached almost 111 million dollars in January of this year, up more than 8 percent from 2020. And it's no wonder.

Edible mushrooms like shiitake and oyster can contain all kinds of nutrients. Mushrooms can be great sources of potassium, selenium, and antioxidants. Plus they have fiber, and some types are rich in vitamin D. All that goodness plus their deep savory flavor make them versatile culinary candidates too, great for salads, stir-fries, and meat substitutes.

But what about claims that mushrooms have medicinal properties? That the reishi mushroom helps with anxiety, for example, or that lion's mane improves concentration? Can chaga mushrooms really help kill cancer cells?

There has been some preliminary research to support a few of these claims, but what works in a lab or in mice doesn't necessarily apply to humans. More studies are needed.

If you are interested in mushroom supplements, *Consumer Reports* says check with your doctor before taking them, especially if you have a medical condition. Some can interfere with medications you may already be taking. And because supplements aren't tightly regulated, you can't always be sure that what you're buying contains what the label says it does.

INDIANA MUSHROOM HUNTER FINDS BOY'S BODY

<https://www.wave3.com/>, Apr. 20, 2022

WASHINGTON COUNTY, Ind. (WAVE) - Indiana State Police are still soliciting the public's help identifying a 5-year-old boy who was found dead inside a suitcase in the woods of Eastern Washington County. The boy's body was discovered over Easter weekend by a mushroom hunter scouring the area. The name of the mushroom hunter was not disclosed.

The boy's death, and the accidental finding of his body, has sparked an around-the-clock search for information. Indiana State Police have created a tip line specifically for any information connected to the death investigation: (888) 437-6432. So far, more than 200 calls have been received from the public, but none have led to the identification of the child, ISP spokesperson Sgt. Carey Hul said.

However, experts told WAVE News the discovery of a body is a bit more commonplace than many people may believe.

"I mean it is definitely a shocking occurrence," Stephen Russell, president of the Hoosier Mushroom Society, said. "But looking back throughout history, almost every year people will find something that odd in the woods, and it does make the news almost every year, unfortunately."

Russell said mushroom hunting is extremely popular in Indiana, with tens of thousands of people hunting for mushrooms at any given time across the state.

"People will travel deep into the woods to seek out these mushrooms, and not very many people go to those kinds of places with any regularity," Russell said. "And so, a lot of things are out there people tend to find, just due to the number of people who are going out as well as the time of the year."

USE OF PSYCHEDELIC DRUG PSILOCYBIN IN MAGIC MUSHROOMS ASSOCIATED WITH LOWER RISK OF OPIOID ADDICTION

<https://scitechdaily.com/>, Apr. 8, 2022

Adults who have at some time in their life used psilocybin—a psychedelic substance produced by some types of mushrooms—are 30 percent less likely to have opioid use disorder, according to a nationally representative survey of US adults reported in the journal *Scientific Reports*.

Grant Jones and colleagues investigated the incidence of opioid use disorder and the prevalence of psychedelic use among 214,505 adults using survey data collected between 2015 and 2019. Participants reported whether they had abused or experienced dependence on heroin or prescription pain relievers in the past year and reported whether they had ever taken the psychedelic drugs psilocybin, peyote, mescaline, or LSD. 2,183 (1.0 percent) participants met the criteria for opioid use disorder in the past year. 22,276 (10.4 percent) of participants reported having used psilocybin, and 10,284 (46 percent) of those also reported using heroin or prescription pain relievers recreationally at least once in their lives.

The researchers found that opioid use disorder was 30 percent less likely among those had used psilocybin, compared to those who had never used it. Those who used psilocybin were also between 17 percent and 34 percent less likely to have experienced seven of the 11 symptoms of opioid dependence and abuse in the past year, compared to those who had never used it. This suggests that psilocybin use could have a protective effect against a range of opioid use disorder symptoms. The researchers did not identify significant associations between peyote, mescaline, or LSD use and the likelihood of opioid use disorder.

The authors speculate that psilocybin may protect against opioid use disorder by affecting the transmission of serotonin and dopamine—neurotransmitters that previous research has found are associated with addiction. Additionally, they suggest that the mystical or spiritual experiences that psilocybin induces could decrease the likelihood of users developing opioid use disorder as previous studies have observed associations between spiritual experiences and beliefs and positive substance abuse recovery outcomes. Further research, including long-term observational studies and clinical trials, is needed to investigate the relationship between psilocybin and opioid use, they add.

Reference:

"Associations between classic psychedelics and opioid use disorder in a nationally-representative U.S. adult sample." Grant Jones, Jocelyn A. Ricard, Joshua Lipson, and Matthew K. Nock, April 7, 2022, *Scientific Reports*. DOI: 10.1038/s41598-022-08085-4.

MUSHROOM BUTTS GET VIDEO GAME SLAPPED FOR “NUDITY”

<https://www.pcgamesn.com/>, Apr. 21, 2022

While Tiny Tina’s Wonderlands may skip the cleavage featured in the mainline Borderlands series, it still managed to garner a “T for Teen” rating from the ESRB, the US video games industry regulatory board. Indeed, that rating is based partly on the presence of “partial nudity” in the fantasy co-op game, but this time around, it’s mushrooms that are being provocative.

During a Tiny Tina’s Wonderlands panel this week at PAX East in Boston, Gearbox developers revealed that the shrooms’ bare backsides were flagged by the ESRB in its rating for Wonderlands. “Shroomie Butt is what got us the partial nudity part of our Teen rating,” one member of the dev team explained, as someone in what we suppose is an anatomically accurate shroom costume joined them on stage.

It’s mushroom butts that the team appeared most pleased with during the panel, however.



RICOTTA-STUFFED MORELS

Derek Hevel

The Puget Sound Mycological Society Cookbook, 2019

Ingredients

- 8 oz. ricotta
- ½ tsp dill pepper
- ½–¾ lb stuffable morel mushrooms
- 4 cups tomato sauce
- 1 sprig rosemary



Preparation

1. Mix the ricotta, dill, pepper, and a little water to create a hummus-like texture. Place the mixture in a pastry or piping bag or a sandwich-size plastic bag with a corner cut off.
2. Insert bag into each morel stem and gently fill. Alternatively, cut open half of each cap lengthwise and squeeze the ricotta in from there.
3. Preheat oven to 350°F. Place the morels in a baking dish and pour the tomato sauce around them. Add the rosemary on top. Cover with foil and bake for 30 minutes.

May is morel month!



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