SPORE PRINTS

BULLETIN OF THE PUGET SOUND MYCOLOGICAL SOCIETY
Number 626 November 2026

SCIENTISTS DISCOVER "D-REX," A GIANT FUNGUS FROM CHINESE FORESTS WHOSE UNIQUE LINEAGE DATES BACK 65 MILLION YEARS

https://phys.org/, Oct. 13, 2026

Deep in the forests of Yunnan, China, scientists have discovered a "fungal giant" that challenges our understanding of how large fungi can become. The newly described species, *Dianjunus rex*, produces vertical fruiting bodies up to 50 cm (20 in.) high and weighing up to 2.2 kg (4.9 lb)—the largest known within the phylum Ascomycota.

"This remarkable species represents a new fungal family, Dianjunaceae, and provides a rare window into the evolution of extreme fungal body forms," said Dr. Indunil C. Senanayake, an associate professor at the Germplasm Bank of Wild Species of the Kunming Institute of Botany in China and corresponding author of the new study, published in *Frontiers in Fungal Biology*.

"The discovery illustrates how much fungus biodiversity remains to be discovered in East Asian forests."

During fieldwork in temperate coniferous forests near Damaidi and Yipinglang and in tropical rainforest near Nanbang, scientists from the Kunming Institute of Botany found large whitish fruiting bodies ('stromata') clearly belonging to an unknown Ascomycete fungus. These grew on woody roots of Chinese cork oak, emerging from the rhizosphere. Ascomycetes, the largest group of fungi with more than 64,000 species, don't grow true mushrooms but instead release spores from tiny, sac-like structures inside or on the surface of such fruiting bodies.

The scientists collected the fruiting bodies and deposited voucher specimens in the collections of the Kunming Institute of Botany. They grew spores on media to study the morphology of the fungus and also sequenced its genome, including the ensemble of protein-coding genes.

A King Among Fungi

Genetic results confirmed by a detailed study of its morphology revealed that the fungus represented a new species, a new genus, and even a new family (Dianjunaceae) within the order Xylariales. The authors named it *Dianjunus rex*, for its regal size and the ancient Dian kingdom. The closest known relative to "D-rex" is *Graphostroma platystoma*, which grows on dead hardwood across the Northern Hemisphere and by itself forms the family Graphostromataceae.

Xylariales are famous for their production of secondary compounds as well as enzymes which can degrade complex plant molecules. Such enzymes might likewise help "D-rex" to digest dead wood.

Frontiers in Fungal Biology (2026). DOI: 10.3389/ffunb.2026.194046

Stromata of Dianjunus rex in the field. (a, c, d, f) *Stromata attached to host roots.* (b, e, g, h) *Stromata around host plant*. (i) *Total weight of largest bilobed stromata.*

Evolutionary Origin Shortly After Dinosaur Armageddon

Using a "molecular clock" analysis of the new species' DNA and comparing it with the genomes of hundreds of fungi with known evolutionary ages, the authors were able to estimate that the Dianjunaceae arose around 65 million years ago. Strikingly, this is only one million years after the Cretaceous-Paleogene mass extinction event—famous for wiping out the dinosaurs besides countless other animals and plants.

"This timing raises an intriguing possibility. After the mass extinction, forests experienced dramatic changes, including the sudden availability of large amounts of dead plant material," said Senanayake. "For wood-associated decomposing fungi, such environmental disruption may have created new ecological opportunities."

Why does "D-rex" grow so uncommonly big? Until now, the record holders among ascomycete fruiting bodies measured 20 to 30 cm (8 to 12 in.) tall.

"A fruiting body which towers above surrounding vegetation and debris could have better dispersal of spores by wind in dense forests. However, such a large structure requires substantial

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CALENDAR

Nov. 2	Last public ID clinic, CUH, 4–7 pm
Nov. 10	Membership meeting, 7:30–9:30 pm, CUH
Nov. 16	Board of Trustees meeting, via Zoom
Nov. 21	Beginner Mushroom Class, members only; pre-registration required
Nov. 24	*Spore Prints* deadline
Dec. 8	Holiday social, members only

BOARD NEWS

Peg Rutchik

A request for proposal is being developed to bring in an outside facilitator who will help the board develop a strategic plan. The board discussed ways to acknowledge those people who contribute photographs for the show while keeping the role of compiling them manageable. The board also discussed increasing transparency of financials and acknowledging donations. The board approved a new policy on vendor/speaker links on the website as well as a request from the Index elementary school for mushroom-related materials. Finally, the board reviewed social media updates and the Seward Park bio-blitz.

MEMBERSHIP MEETING

Karen Dawson

Date: Tuesday, Nov. 10, 2026

Time: Doors Open/Social, 7:00 pm
Meeting Starts, 7:30 pm

Place: Center for Urban Horticulture
3501 NE 41st Street (Mary Gates Drive)
Seattle, WA 98105

The meeting is in-person and open to all.

Dr. Greg Mueller.

At the invitation of the PSMS Conservation & Ecology Committee, we are pleased to announce our speaker for November general meeting is Dr. Greg Mueller, who will inform us about "Conserving Fungi—Progress and Next Steps."

Fungal conservation was, at best, a niche topic until recently. Fungi were not included in international, national, or state policies, and they were mostly absent from conservation actions.

The situation is changing, rapidly in some corners of the world, but much remains to be done. Some of the changes are coming through efforts to have countries and states explicitly include fungi in their conservation agendas. Two examples include (1) the Fungal Conservation Pledge that is being spearheaded by Fungi Foundation and (2) the Global Strategy for Fungal Conservation that was launched at the United Nations Biodiversity Conference in Armenia last month.

These high-level efforts are important, but the role of community scientists cannot be underestimated in the progress that has been made or in the work that lies ahead. Greg will discuss the current status of fungal conservation and ideas about what needs to be done to keep up the momentum.

Dr. Mueller has served as a fungi researcher, author, instructor, and lecturer for half a century throughout North, Central, and South America; Europe; Asia; and Australia (including research with Dr. Joseph Ammirati at the University of Washington). His research interests include systematics, diversity, biogeography, ecology of macrofungi, mycorrhizas, and fungal conservation. Most notably, he has been associated with the Chicago Botanic Garden since 2009, eventually serving as the Chief Scientist, a position that has shifted to Emeritus status since 2023. For decades, he has been active in numerous International Union for the Conservation of Nature, Illinois, and Chicago-based conservation committees and commissions.

CONSERVATION AND ECOLOGY COMMITTEE

Ron Post

The Conservation & Ecology Committee met on September 21 to finalize topics to be presented at our booth at the PSMS Annual Wild Mushroom Exhibit. Among other items, we decided to use the occasion as an opportunity to sign up potential volunteers for renewal of the Barlow Pass diversity study in 2027–2028.

We will be recruiting more volunteers at the PSMS monthly membership meetings. Anyone interested in volunteering for the study should keep an eye for more information on the PSMS website.

It looks like the drive for an official state mushroom, has possibly stalled and its prospects seem dim for another year.

FIELD TRIP REPORT, Sept. 26 — Brian S. Luther

We lucked out having great weather for our first field trip this fall. Over 100 members signed in, with 40 being brand new. Our morning hosts were Dave & Wuqi Weber, who as usual provided us with wonderful morning snacks and hot coffee. Wuqi & Dave often host, and we appreciate their generosity and involvement; thank you!

We had seven field trip guides who took out new members: Patrick Rice, Andrew White, Pat Coddington, Clay & Karen Dawson, Randy Richardson, and new guide Lawrence Cayton. Special thanks for your contributions.

Brian S. Luther

Morning meeting on Sept. 26 field trip.

Just about everyone found chanterelles, both *Cantharellus formosus* and *C. subalbidus*, most in very good condition. I don't usually do personal collecting on field trips, because I plant myself all day to identify fungi for members. But this time PSMS member Ben Moore and I went out together and we each found 10 lb of chanterelles; I would call that a good day of mushroom hunting. One lovely Cauliflower Mushroom (*Sparassis radicata*) was also found, to the delight of the member. I counted around 90 different species of fungi displayed on two picnic tables.

Brian S. Luther

Ben Moore shows off our chanterelles. They were so abundant it was like going to the grocery store.

Brian S. Luther

Amanita farinosa.

The only unusual species brought in was *Amanita farinosa*. It's very un-*Amanita* in appearance, looking more like a small gray *Russula* with a finely granular cap surface and a bulbous stem base. In fact, what we've been calling *A. farinosa* here for years in the PNW is a similar, but undescribed species.

Thirty stayed for the 3:00 pm potluck, which was enjoyed by all. Everybody pitched in to move back a table, and Jamie Rumbough swept out the entire shelter at the end of the day because our Mason Co. Parks host had a medical issue and was disabled at the time. Thanks, Jamie! It was a really good start to our fall field trip season.

FIELD TRIP REPORT, Oct. 10 — Brian S. Luther

We had 131 members sign in at this, our second field trip this fall. Of those, 45 were new members on their very first trip. Our morning hosts were Kai Voeks, Rita Vincent, and Kitty Loceff, who set out a delightful selection of breakfast snacks and hot coffee for all to enjoy. Thank you Kitty, Rita, and Kai, you definitely started our day out right!

Our four field trip guides were Ashley Laabs, Patrick Rice, Julia Benson, and Randy Richardson. Thank you!

We had good conditions for most of the day, although in the early afternoon it rained briefly. About 130 different species of fungi were found and displayed on two overflowing tables. Good edible species found included White Chanterelles (*Cantharellus subalbidus*), along with *Boletus edulis*, *B. fibrillosus*, *Hericium abietis*, *Suillus brevipes*, *and S. granulatus*. Several nice specimens of *Clitocybe nuda* (Wood Blewit) and a very meaty orange *Leccinum* sp. were also collected.

Brian S. Luther

One of two tables covered with mushrooms found Oct.10, 2026.

Interesting species included *Hygrophorus pudorinus* var. *fragrans*, a beautiful orange-pink fungus with a fragrant odor. This species reacts strongly to a solution of KOH, instantly turning brilliant red-orange where tested on the stem, as I demonstrated in front of the members. The other unusual fungus found was *Cortinarius salor*, which has a very striking, gorgeous purple-blue viscid cap. Thanks to Wren Hudgins and Richard Martija for helping with identification.

Only a handful of members, maybe 15, stayed for the potluck at 3:00 pm. Everybody seemed to have a good time out in the woods collecting and getting some exercise.

D-Rex, Giant in a New Fungal Family, *cont. from p. 1*

energy investment, suggesting that this strategy likely evolved only where the ecological benefits outweighed the costs," hypothesized Senanayake.

The researchers predicted that more discoveries of fungi from subtropical China lie in store. "This region combines exceptional habitat heterogeneity, climatic stability, and complex biotic interactions that promote fungal diversification. Historically, however, fungal diversity in these ecosystems has been underestimated due to logistical difficulties in field sampling, the seasonal and cryptic nature of fungal fruiting, and a historical emphasis on economically important fungi," said Senanayake.

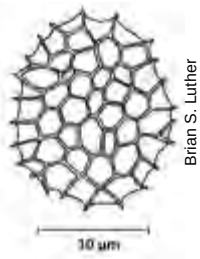
THE AMAZING SPORES OF TRUE TRUFFLES

Brian S. Luther

True truffles are Ascomycetes (Division Ascomycota, Class Pezizomycetes, Order Pezizales, Family Tuberaceae and Pezizaceae) that have evolved to have hypogeous, i.e., subterranean, ascocarps (fruiting bodies) and can't forcibly discharge their spores. In contrast, terrestrial (above ground) Ascomycetes (ascos for short), all forcibly discharge their spores. Almost all subterranean species have lost the ability to forcible discharge spores, but there are a few subterranean truffle-like asco species that can, for example, *Geopora cooperi* and *Hydnotria* spp. Spore discharge into the air is happening all the time with terrestrial ascos when they mature, but the spores are so small that you can't normally see them being released with the naked eye.

As I mentioned previously, true truffles in the genus *Tuber* and others have lost the ability to discharge spores. How then do the fungi manage to reproduce? One way is when the mature fruiting bodies decompose, releasing the spores into the soil. The spores are then carried away by soil insects and other invertebrates and spread around.

Most, but not all, terrestrial ascos have small smooth spores which are easily picked up and carried by the wind for dispersal. But true truffles have incredible spores that are not only very large, but highly ornamented, having raised honeycomb-like structures and/or spines. This ornamentation presumably evolved to more easily attach the spores to creatures passing underground, allowing them to be picked up and moved around for the fungus to be spread.



Brian S. Luther

Tuber gardneri spore showing ornamentation.

Another, even more important, way that truffles evolved to disperse their spores was to develop strong odors when mature which attract both insects and many mammals. These foragers find the buried truffles by smell, then dig them up, eat them, and thereby disperse the spores through their feces or by just carrying bits of them off to consume in different locations.

Many mammals have a special fondness for truffles, actively seeking them out. For further study of animals and truffles you may be interested in reading a review I did of a fascinating book on this subject (Luther, 2009a). Even some flies are attracted to the smell of truffles (Luther, 2009b); they lay their eggs on them, with the larvae then eating the truffles.

We're lucky that truffles developed this strategy, because as humans we also get the delightful culinary benefit from the amazing complex aromas that many of these fungi produce when mature. The degree of edibility of true truffles, however, varies greatly. *Tuber californicum* is tasteless and *T. gardneri* is edible but not flavorful. *Leucangium cascadiense*, on the other hand, is an excellent, very tasty fungus.

We have several species of true truffles here in Washington State. I show photos of just three here, along with photomicrographs of their ascospores at high magnification as seen under a compound microscope. All species in the genus *Tuber* have spores with pronounced ornamentation.

Brian S. Luther

Tuber californicum, exterior view.

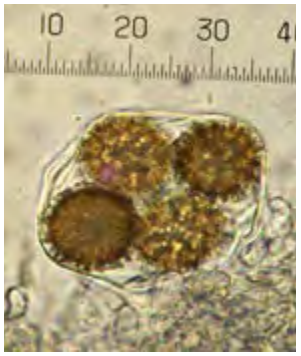
T. californicum section.

Brian S. Luther

T. californicum spores at 1000×.

Brian S. Luther

Tuber gardneri, whole (left) and sectioned (center and right).



Brian S. Luther

Tuber gardneri ascus with four ascospores - 400×.

In addition to the species mentioned above, we have two main species in the Oregon White Truffle complex here—*Tuber gibbosum*, and *T. oregonense*. The Winter White Truffle (*T. oregonense*) can be found in fall and early winter and the similar Oregon Spring White Truffle (*T. gibbosum*) from January to June (Trappe et al., 2007). They're both edible and choice and are mycorrhizal with the roots of Douglas Fir trees that are about 15 to 30 years old. Thus young tree plantations in the western Cascades or coastal ranges are the perfect place for finding them. They're generally found at elevations from sea level to around 2,000 ft. and are usually 1 to 4 or more inches underground, so care must be taken not to damage the tree's roots when collecting them.

We also have some species of true truffles that are in the family Pezizaceae (not Tuberaceae), and these fungi have smooth ascospores. Examples of these include species in the genera *Leucangium* and *Kalapuya* (e.g., *Kalapuya brunnea*, the Oregon Brown Truffle). Below, I show a photo of *Leucangium cascadiense*, the Oregon Black Truffle, along with its ascospores. Note how smooth they are, in contrast to the spores of *Tuber* truffles.

Brian S. Luther

Leucangium cascadiense ascospores - 400×, in 3% ammonium hydroxide.

Brian S. Luther

Leucangium cascadiense, Oregon Black Truffle, found at a PSMS field trip in 2023.

Popular mushroom field guides detail more information on the truffles we have here in the PNW. The vast majority of subterranean, truffle-like fungi that are found by mushroom hunters are false truffles, which are Basidiomycetes, not Ascomycetes. For the most part (there are some exceptions) these are inedible or worthless and include many genera. Some of these false truffles also have strong aromas, but most do not. When mycophiles

bring me what they think are truffles for identification, they're virtually always false truffles and most commonly in the very large genus *Rhizopogon*, which we call "pogies."

Tuber californicum and *T. gardneri* were identified using Gilkey (1939).

If you're interested in all things related to truffles, you might also enjoy reading some of the articles I've published on worldwide postage stamps showing truffles (Luther, 2014; Luther, 2022). If you go to these references I list all of my other truffle stamp articles in *Spore Prints*, so far, with the stamps illustrated. More of my articles on this subject will appear in the future.

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DORMANT FUNGUS HID INSIDE A BRAIN SURGERY WOUND FOR TWO YEARS BEFORE STRIKING

https://bioengineer.org, Oct. 16, 2026

Doctors in Xi'an, China, have documented an extraordinary case of fungal stealth: a common yeast species, *Candida parapsilosis*, apparently lay dormant inside a patient's brain for two full years after routine neurosurgery before finally announcing itself. The report, published in the *British Journal of Biomedical Science*, describes the first known instance of this particular fungus establishing a chronic intracranial infection following burr-hole drainage for a chronic subdural hematoma, one of the most frequently performed operations in neurosurgery. The case is a striking reminder that the human skull can harbor quiet infections that mimic entirely different diseases, and that the tissue surgeons remove during operations can hold the decisive diagnostic clue.

The patient was a 66-year-old man with hypertension and schizophrenia who had undergone bilateral burr-hole drainage at another hospital two years earlier to treat chronic subdural hematomas, collections of old blood that accumulate slowly between the dura mater and the brain surface, typically in older adults after minor head trauma. Burr-hole drainage is favored because it is minimally invasive and generally safe: surgeons drill a small opening in the skull, evacuate the liquid hematoma, and often leave a temporary drain. In this patient, drainage had been limited, the drain was removed after 48 hours, the wound healed well, and he was discharged without fever or any obvious complication. On the surface, the operation appeared to be a success.

Over the following two years, however, the man experienced recurrent, progressively worsening headaches, along with involuntary tongue protrusion and shaking of his limbs. His body temperature remained normal throughout, a detail that would later prove diagnostically misleading. Ten days before admission, he suffered a generalized tonic-clonic seizure that resolved spontaneously after roughly two minutes. Imaging performed on arrival revealed bilateral frontotemporoparietal hematomas of inhomogeneous density, including hyperdense areas and a significant mass effect on the brain. Those hyperdense regions suggested that the chronic hematomas had organized, meaning the liquid blood had transformed into a thick, fibrous, scar-like structure, a known but troublesome evolution of subdural collections.

Because organized hematomas cannot be drained through a burr hole, the surgical team concluded that conservative management or repeat drainage would fail to relieve the brain compression. After confirming that the patient had normal serum immunoglobulin levels and no immunosuppressive history, they performed a bilateral craniotomy to evacuate the hematomas. What they found in the operating room was unusual: the hematoma membrane had become abnormally thickened and organized, reaching approximately one centimeter at its thickest point, with a leathery, tough consistency. The cavity contained a small amount of yellowish fluid and abundant organized material with a distinctive sandy appearance. Recognizing that these findings deviated from a typical chronic subdural hematoma, the surgeons sent the membrane and its contents for pathological examination, a decision that would ultimately crack the case.

The patient was transferred to intensive care with a low-grade fever and lethargy, and empirical antibiotics were started. Five days after surgery, histopathological examination of the resected membrane revealed fibrous connective tissue with hyaline degeneration, hemosiderin deposition from old blood, and structures suggestive of fungal hyphae upon hematoxylin and eosin staining. A lumbar puncture followed, revealing cerebrospinal fluid with a markedly elevated nucleated cell count dominated by polymorphonuclear cells. A serum (1→3)-β-D-glucan test, which detects a cell wall component shared by many pathogenic fungi, came back positive. Empirical antifungal therapy with voriconazole was initiated, and a lumbar drain was placed for continuous cerebrospinal fluid drainage to limit fungal spread within the now widely opened subdural cavity.

Definitive identification came from the laboratory. Analysis of cerebrospinal fluid sediment identified the isolate as *Candida parapsilosis* with 99.9 percent confidence. Fungal spores were also visible on direct microscopic examination of the cerebrospinal fluid sediment. Rigorous controls were applied to rule out contamination and hematogenous spread. Once the identification was confirmed, therapy was switched to targeted fluconazole at 400 milligrams daily.

The recovery was not smooth. After completing eight weeks of antifungal therapy, the patient was discharged with only mild residual involuntary tongue protrusion, free of headaches and limb shaking. Three months after discharge, he remained asymptomatic, with no clinical or radiological evidence of recurrent infection.

INSIDE OREGON'S PSILOCYBIN CENTERS: MORE THAN JUST "HEY, GIVE ME MUSHROOMS"

https://www.technologynetworks.com/, Oct. 14, 2026

A new study has found that Oregon's licensed psilocybin centers largely follow recommended safety guidelines, offering reassurance about how the first regulated psilocybin programs in the U.S. function in practice—though the cost of treatment may keep it out of reach for many.

The study, led by researchers at Washington University in St. Louis and the University of Missouri, is the first independent look at how these centers vet their potential clients.

Since 2023, when Oregon became the first state to legalize regulated, supervised psilocybin—the psychoactive ingredient in "magic mushrooms"—it has drawn people with mental health conditions ranging from depression and anxiety to post-traumatic stress disorder and substance use disorders.

Some clinical trials have suggested that psilocybin, combined with psychological support or psychotherapy, can provide relief for some of these conditions, though the drug remains federally illegal. Until now, little has been known about what people actually encounter when they contact a psilocybin center—or what safeguards are in place.

To find out, researchers posing as prospective clients reached 15 of Oregon's 22 active centers by phone and found that they consistently followed safety practices required by state law: no center allowed unsupervised or take-home use, and staff routinely asked about psychiatric history, medications, and contraindications before discussing next steps. These findings complement a recent cohort study in which serious adverse reactions among 346 Oregon clients were uncommon.

The new study was published Oct. 12 in *Health Affairs Scholar* (Hartman et al., 2026).

"Going in, we wondered whether Oregon's model might work like a dispensary in practice—that you could call a center, pick up psilocybin, and take it home with little screening along the way," said co-senior author Kevin Xu, MD, an assistant professor of psychiatry at WashU Medicine. "Far from a dispensary model, I was surprised by how service centers asked detailed questions about callers' mental health and risk factors. Services were also very expensive."

The research team later interviewed center staff and found that high operating and licensing costs make these services hard to sustain for centers and hard to afford for people who might seek them. Indeed, four of the 26 centers Oregon had licensed closed before the study's calls began, and another seven could not be reached by phone.

What do Prospective Clients Experience When Seeking Psilocybin Services?

The research team, which included experts in medicine, social work, and public health, designed the study to follow the path a real client would take: reviewing the center's website, then calling to ask questions.

"This latest innovative study highlights our unique interdisciplinary approach to psychedelic science," said Dr. Ginger Nicol, professor of psychiatry at WashU Medicine.

Three co-authors made scripted calls in which they posed as potential clients with depression and a history of alcohol use disorder or a family history of psychosis. They documented whether staff asked about medications, suicidal ideation, and psychiatric history, as required by Oregon's legal framework for psilocybin services. They also documented the price quoted for services.

"These interactions were not just, 'Hey, give me mushrooms,' and that's it," said co-senior author Leopoldo J. Cabassa, PhD, a professor at WashU's Brown School who also co-directs WashU's Center for Mental Health Services Research. "These were thoughtful conversations where the facilitator engaged people, asked good questions, and tried to get as much information as possible. Facilitators pushed past a simple checklist to actually understand a caller's history before making a recommendation for services."

Nearly every center flagged psychoactive medications that should not be combined with psilocybin, and no center advised callers taking antidepressants to stop them without first consulting with their primary care physician.

The median cost of a session was $1,900, and no center accepted insurance, which would limit accessibility if the treatment is legalized in other U.S. states.

"Oregon has dosed more people with psilocybin in a regulated model than anywhere else in the world," said first author Dani Adams, PhD, an assistant professor of social work in the College of Health Sciences at the University of Missouri and Director of the Collaborative for Missouri Psychedelic-Assisted Therapy, who began this line of research while a postdoctoral fellow at WashU working with Cabassa. "But it is still out of reach for most Americans who are struggling with their mental health."

"We have to figure out what safeguards are needed and make sure those are maintained as the system solves for accessibility," said Cabassa.

Reference

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31 KILOGRAMS OF RADIOACTIVE MUSHROOMS FOUND IN PASSENGER'S LUGGAGE AT RUSSIAN AIRPORT

https://www1.ru/, Oct. 19, 2026

A box of dried porcini mushrooms weighing 31 kg (68 lb) failed inspection at the Moscow, Russia, Domodedovo Airport. Devices detected radiation exceeding the natural background by more than ten times. Inside was Russian-made produce, and the inspection revealed cesium-137—a radioactive isotope.

According to the Federal Customs Service, the box was checked in as luggage by a passenger who was going to fly to Uzbekistan.

The radiation control system signaled, after which customs officers opened the cargo and checked the contents with a portable radiometer-spectrometer.

The information was forwarded to Rospotrebnadzor, Russia's national public health and consumer rights agency. The agency recognized the batch as radioactive waste subject to disposal.

Professional mushroom picker Dmitry Tikhomirov explains that mycelium absorbs substances from the environment. If the soil is contaminated with cesium-137, it can accumulate in mushrooms as well.

[He] suggested that the raw materials could have been collected in an area affected by radioactive contamination in the past. As one of the possible reasons, he named the consequences of the Chernobyl accident and mentioned the Bryansk region. However, the collection site of tthe batch discovered at Domodedovo has not been officially established, so this site cannot be considered confirmed.

When drying, mushrooms lose water, and the accumulated substances remain. Therefore, their concentration per unit mass of the product can increase. Tikhomirov notes that checking raw materials for radiation is important even before mushrooms reach the shelves.

"I ONLY ATE SHIITAKE MUSHROOMS" ... SO WHAT HAPPENED TO THE U.K. WOMAN WHO DEVELOPED "WHIP MARKS" ALL OVER HER BODY?

Jeon Sang

https://en.fnnews.com/, Oct. 19, 2026

Stir-fried shiitake mushrooms served at an ordinary dinner table. No one could have imagined that this familiar ingredient would leave a 38-year-old woman in the U.K. with long, red streaks resembling horrific "whip marks" on her thighs, back and other areas.

Karponis and Venables, Oxford Medical Case Reports (2026).

Shiitake-induced flagellate dermatitis.

On Oct. 15 (local time), the U.S. medical news outlet *Medical Daily* highlighted the unusual skin condition experienced by a 38-year-old woman in the U.K. after she ate stir-fried shiitake mushrooms. The case was reported in detail in the medical journal *Oxford Medical Case Reports*.

The episode began simply enough. Two days after eating stir-fried shiitake mushrooms, the woman began experiencing severe itching all over her body. Five days later, dermatographism—a condition in which raised welts appear along areas where the skin has been scratched—developed. Two days after that, a widespread red, linear rash spread from her thighs to her scalp.

The bizarre marks looked as though someone had severely whipped her all over. Interestingly, the rash was relatively sparse only in the middle of her upper back, an area difficult to reach with her hands. This suggests that scratching to relieve the itching made the streak-like rash more pronounced.

The medical team's final diagnosis was "shiitake-induced flagellate dermatitis (shiitake flagellate dermatitis)."

The culprit was lentinan, a polysaccharide found in large quantities in shiitake mushrooms. This substance, which affects the immune response, triggered allergic dermatitis in her body. Lentinan is generally heat-sensitive and is inactivated when heated sufficiently to 130–145° or higher. As a result, this dermatitis usually occurs after eating raw or undercooked shiitake mushrooms.

Of course, the woman had eaten cooked mushrooms, not raw ones. However, it is highly likely that the cooking temperature and time were insufficient. (There have also been rare cases in which the condition developed after eating thoroughly cooked shiitake mushrooms.)

The diagnosis was not straightforward. The woman had a history of receiving targeted therapy for chronic myeloid leukemia 10 years earlier. The medical team conducted blood tests and other examinations, considering the possibility of a side effect from a particular anticancer drug or an inflammatory autoimmune disease, but all the results were negative. Ultimately, the fact that she had eaten shiitake mushrooms shortly before the rash appeared became the decisive clue.

Fortunately, the treatment was successful. After being prescribed steroid ointment and antihistamines, the woman was completely rid of the whip marks and itching within two weeks.

Specialists advise that shiitake-induced dermatitis appears within 1–3 days of eating the mushrooms and improves within a few weeks, but that accurate differential diagnosis is essential because its symptoms resemble those of medication side effects and other conditions. Above all, there is one sure way to prevent it: avoid eating shiitake mushrooms raw or lightly blanched, and instead boil them vigorously or stir-fry them thoroughly over high heat so they are "fully cooked."

Even healthful wellness foods can become toxic if prepared improperly. That is the important lesson the shiitake mushroom revolt—which left whip marks all over the body—has taught us.

MUSEUM SPECIMENS REVEAL PATHOGEN BEHIND DECADES-OLD MYSTERY OF DISAPPEARING FROGS

superadmin

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In the 1970s, researchers began to observe drastic amphibian declines in Brazil's Atlantic Forest, a global hotspot of frog biodiversity. For decades, these disappearances remained a mystery. Now, new research from scientists at the Center for Conservation Genomics at the Smithsonian's National Zoo and Conservation Biology Institute (NZCBI) and Pennsylvania State University (PSU), published today in the journal *Molecular Ecology*, points to amphibian chytridiomycosis, a devastating infectious disease, as the likely culprit.

Chytridiomycosis, commonly known as chytrid, is caused by the microscopic fungal pathogen *Batrachochytrium dendrobatidis*. Believed to have originated in Asia, the chytrid fungus likely swept the globe in the 1970s and 1980s, but scientists did not formally describe the pathogen until 1999. At that point, amphib-

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Museum Specimens Reveal Decades-old Mystery

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ian populations around the world had suffered catastrophic declines, with hundreds of species pushed to the brink of extinction or beyond. Because many of these declines occurred before the pathogen's discovery, however, establishing whether the chytrid fungus was responsible has remained a challenge.

"After almost 50 years, we still aren't confident what caused many historical amphibian die-offs, making these declines some of the most enduring cold cases in wildlife epidemiology," said Jack Boyette, an NZCBI graduate fellow and doctoral candidate at PSU, who led the study.

In Brazil's Atlantic Forest, amphibian die-offs at the Boracéia Biological Station between 1979 and 1982 have been attributed by some scientists to climate change or extreme weather events. "While environmental factors could have played a role, our findings most directly implicate the chytrid fungus, revealing that regional invasion of the pathogen coincided with these unexplained amphibian disappearances," Boyette said.

To crack the case, Boyette and his colleagues turned to the Smithsonian's National Museum of Natural History, which holds the collections of William Ronald Heyer, a former curator of amphibians and reptiles. Heyer collected specimens at Boracéia across five field campaigns: two in the 1970s, prior to the sudden amphibian declines, and three in the 1980s, during the aftermath of the die-offs. These collections offered a rare opportunity to trace the pathogen's arrival across a critical period of amphibian declines. NZCBI researchers collected samples from more than 370 museum specimens representing 17 species to determine when the chytrid fungus first appeared at Boracéia and how infection prevalence varied through time.

The team also returned to Boracéia six times between 2022 and 2024, alongside researchers from the University of São Paulo, to sample modern amphibian populations. Of the 17 species represented in Heyer's collection, the researchers could find only 12 at the site. The fate of the other five species remains uncertain, although their continued absence raises concerns that they may have been lost locally.

The results were stark—specimens collected prior to 1979 showed no evidence of chytrid infection, while more than half of the 1980s specimens tested positive. Surprisingly, the species that suffered the most dramatic declines had no detectable infections, while the species that never declined were highly infected. Although these infection patterns may seem counterintuitive, the researchers hypothesize that they reflect natural patterns of disease tolerance among the amphibian community.

"It's important to keep in mind that not all species suffered catastrophic losses at Boracéia," Boyette said. "The species that didn't decline may have naturally tolerated the fungus, allowing them to become infected without suffering mass mortality. By contrast, the species that declined most dramatically may have been so susceptible that infected frogs died before Heyer could collect them." Together, these findings suggest the chytrid fungus spread rapidly through the amphibian community at Boracéia, shedding light on how quickly this emerging disease can sweep through a community of naive hosts. The use of museum collections is a game changer for researchers seeking to reconstruct historical disease impacts, according to Michael Campana, a genomicist at NZCBI who participated in the study.

"Museum collectors could not have anticipated how important their collections would be to our modern conservation challenges, but without them, we would never be able to detect pathogens that went unnoticed for decades and reconstruct disease outbreaks that would otherwise remain a mystery," Campana said.

Reconstructing historical disease dynamics may also help researchers anticipate future disease outcomes. This is especially relevant as the emergence of another fungal pathogen, *B. salamandrivorans*, threatens salamanders in Europe and could pose a serious risk to salamander populations in North America.

At Boracéia, however, the story today is one of resilience. Modern sampling shows that most amphibian species appear to have recovered since the early 1980s. While the chytrid fungus still infects frogs at Boracéia, infection patterns suggest the evolution of widespread pathogen tolerance among species that historically declined, likely promoting their persistence and recovery in the decades since the declines.

While the researchers acknowledge the site-specificity of the study means the results cannot be extrapolated to the broader Atlantic forest, they do solve the mystery of Boracéia's disappearing frogs and provide a blueprint for other researchers to conduct similar disease retrospectives in the future.

"OPERATION BAD TRIP"—1,500+ POUNDS OF MUSHROOMS SEIZED

Joe Schroeder

https://fox59.com/news/, Oct. 22, 2026

Indianapolis Metropolitan PD

INDIANAPOLIS, IL - Indianapolis police say that over 1,500 lb of psilocybin mushrooms have been seized in a raid that also turned up guns, marijuana, and counterfeit pills.

"Operation Bad Trip" was conducted by the Indianapolis Metropolitan Police Department this week. The investigation began in early 2026 following a fatal overdose in the city.

IMPD said that two suspects, identified as Paul Grimes (41) and Jacob Anspach (26), were arrested during the investigation. On Wednesday, IMPD, state police and DEA agents seized the following:

> 2 sawed-off shotguns - 3 AR pistols - 2 AR rifles - $9,500 - 2 forfeited cars - 1,500+ lb of unprocessed psilocybin (mushrooms) - 25 lb of dried cultivated psilocybin (mushrooms) - 66 lb of psilocybin (mushroom) edibles - 277 lb of liquid psilocybin (mushroom) drinks - 6 lb of marijuana - hundreds of pressed counterfeit pills (X, ecstasy, Molly).

Both Grimes and Anspach were arrested on preliminary charges of dealing a controlled substance and possession of a controlled substance. Official charges have not yet been filed.