

SPORE PRINTS

BULLETIN OF THE PUGET SOUND MYCOLOGICAL SOCIETY
Number 516 November 2015



THE PSMS WILD MUSHROOM SHOW SUCCESSFULLY INVADERS THE EAST SIDE

Milton Tam

The *Puget Sound* Mycological Society lived up to its name this year. We, for the first time in our 52-year history, held our show on the East Side at Bellevue College. We selected this venue because of their great facility with lots of room for displays. It proved easier for set-up and take-down, and everyone, including vendors and admissions, could be under cover inside. This new location, however, was a step into the unknown. We'd always held the show within the Seattle city limits. But we should not have worried. Fifteen hundred visitors, not including club members, attended the show over the two days, and 95 new members joined PSMS. The flow of visitors was steady all weekend and made for a very pleasant show. The exhibit floor was always busy but never felt overcrowded or confining. While there are always improvements to be made, we think the show went off remarkably well, considering this was the first year for us in a new facility.

The number and variety of mushrooms collected for display by our volunteers were quite respectable. We had a record-breaking hot, dry summer and the rains came late this year, so we knew that collecting might be spotty and diversity might be down. But our members still managed to find and collect hundreds and hundreds of beautiful specimens for display, and we also had a ready supply of edibles for cooking and tasting. Our show is still one of the largest and most complete exhibits of wild mushrooms in the United States.

This was the second year that Kim Traverse and I co-chaired the show. We both enjoyed meeting the challenges and the responsi-

bilities that come with organizing and seeing that the event runs smoothly. This year we again had the able assistance of former show co-chair and part-time truck driver Randy Richardson. Thanks go to our speakers—Denis Benjamin, Britt Bunyard, Marian Maxwell, Noah Siegel, and Daniel Winkler—who all deserve an additional round of applause for presenting thoughtful, interesting, educational, and informative lectures. Many thanks to our members, who volunteered a couple of hours or even their entire weekends to work at the show. We enjoyed working with you and we could not have put this show on successfully without you!

Kim and I would like to recognize and thank our committee chairs: Brian Luther (Mushroom ID); Dennis and Jamie Notman (Cooking and Tasting); Marilyn Droege (Arts and Crafts); James Ardena (Cultivation); Pacita Roberts (Kids' Table/Feel and Smell); Carlos Cruz (Crowd Control/Security); Brenda Fong (Hospitality); Paul Hill (Photo Contest); Katie Glew (Lichens); Wren Hudgins (ASK ME program); Ann Polin (Membership); Sherwood Stolt (Ticket Sales); and John Goldman (Books/Publicity). John was also the one who researched alternative facilities and found Bellevue College. Thanks to Daniel, Josh, Steve, and Wren (among others) for leading those informative tray tours. Kudos to Lisa Page Ramey who once again designed our show poster and cards that we scattered all over town. A huge thanks to Luise Asif who did an amazing job coordinating our volunteers and "floaters" and saw that everyone had a responsibility. Lastly, a very special thanks to our immediate past-president, Marian Maxwell, who is irreplaceable in her role in coordinating the receiving, sorting, identifying, and arranging of the all the mushrooms on trays.

Great work, everyone!

Spore Prints

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MEMBERSHIP MEETING

Tuesday, November 10, 2015, at 7:30 pm at the Center for Urban Horticulture, 3501 NE 41st Street, Seattle

Our speaker for November will be Dr. Matt Trappe, foray leader for the North American Truffling Society and author of the book *Field Guide to North American Truffles*.



His talk is entitled “Shaking the fungal tree of life: relationships between truffles and mushrooms” and will be a whirlwind tour through the fungal family tree highlighting the evolutionary relationships between mushrooms and truffles. Truffles in general are mushrooms that fruit underground. The talk will elucidate that underground fruitings are known in all branches of the fungal tree, including both ascomycete and basidiomycete. Matt will also report on the mysterious *Sedecula pulvinata*, a truffle that previously could not be placed in the tree of life. In addition, he will share some results of his research on cesium accumulation in mushrooms, research of great interest especially after the Fukushima disaster.

Trappe earned his MS and PhD at Oregon State University studying the effects of disturbance (such as fire) on fungal communities. He currently works with the Agricultural Research Service researching fungal diseases of grape vines.

Will members with last names beginning with the letters L–Z please bring a plate a refreshment to serve after the meeting.

FIELD TRIP REPORT, Sept. 26 Brian S. Luther

September 26 was cloudy yet mild in the morning, but before noon it began to get sunny and pleasant—a perfect day for mushroom hunting.

Dave and Wuqi (pronounced wochie) Weber were our hosts, providing a delightful selection of breakfast snacks, fruit, and hot coffee which everybody really enjoyed. This is the second time this year that the Webers have hosted, and we’re lucky to have such devoted members. Special thanks, Wuqi & Dave!

Ninety-six members signed in, and we had four field trip guides, headed by Wren Hudgins, leading out groups. However, these groups filled up fast, so other groups formed and went out as well. Wren also brought a nice load of firewood, so I was able to keep a warm campfire going most of the day.

I counted approximately 150 different species of fungi displayed on two picnic tables. Good edibles found by members included Yellow Chanterelles (*Cantharellus formosus*), White Chanterelles (*Cantharellus subalbidus*), *Boletus edulis*, *B. pinophilus*, *Suillus granulatus*, Oyster Mushrooms (*Pleurotus ostreatus*), *P. dryinus*, Angel Wings (*Pleurocybella porrigens*) and a few Orange Cap Boletes (*Leccinum aurantiacum*).

Interesting fungi brought in that we only infrequently see included *Chrysomphalina chrysophylla*, *Agrocybe erebia*, *Spathularia flavi-da*, *Lactarius olivaceo-umbrinus* and *Gymnopilus punctifolius*. The winner of the prettiest mushroom had to be *Mycena aurantiidisca*, a gorgeous little species with a colorful cap that’s very pale yellow

CALENDAR

- Nov. 10 Membership Meeting, 7:30 pm, CUH
- Nov. 16 Board Meeting, 7:30 pm, CUH
- Nov. 17 *Spore Prints* deadline
(submit articles to ronpost4@gmail.com)
- Dec. 8 Membership Meeting,
Holiday “Cookie Bash,” 7:30 pm, CUH

BOARD NEWS

Luise Asif

Thank you to all you wonderful **show volunteers** who put in many hours so we would again have a successful show in spite of late-fruiting mushrooms and a new venue. What an outstanding group of people! A **beginner’s class** is being planned for mid-November, notice to follow. In line with the **PSMS Five Year Plan** the board is working with Josh Powell on board development. As part of **PSMS outreach** the board is considering developing educational videos and is looking for people with videography skills. Preliminary discussions have started on a **Ben Woo Memorial Foray** to be held in the fall of 2016.

*A rare specimen,
PSMS Annual Show.
Fruits in morning,
Next nightfall—gone!*
—Judith Cederblom

on the margin and progressively darker yellow and finally bright orange on the center of the cap.

A very satisfying potluck ended the day at 4:00 pm, and Dave and Wuqi also made some really clever and cute mushroom shaped treats for everyone out of whole cashews (as the stem) and fresh raspberries as the cap. Several members stayed to help move tables back, as well as giving the hosts a hand and making sure the shelter was cleaned up, before departing. Many new members expressed their pleasure with how the day went and hoped to come on other field trips.



Dave & Wuqi Weber's mushroom-shaped treats.

Brian S. Luther

FIELD TRIP REPORT, October 3 Brian S. Luther

New members Virginia Bowen and Sharon Larson were our hosts, bringing all the supplies over, making hot coffee, and spreading out a great selection of tasty breakfast snacks to get us going. Thank you, Virginia & Sharon, for starting the day off right!

In spite of the travel time involved, 53 members signed in. This was the driest year I can ever remember going to this location. Unfortunately, because of the high fire danger, the US Forest Service banned all campfires in the campsite's metal fire pits as well as in the big shelter fireplace. So, the big fire I usually have going in the morning to greet members couldn't happen.



Morning meeting at old CCC shelter, Oct. 3.

Brian S. Luther

Friday was a gorgeous warm day, but that night we were surprised by hard rain for a couple of hours, the first significant precipitation over there all season. Although fungi were not fruiting all around because of the dry conditions, the number and diversity of species found were quite surprising. The field trip

guides focused on areas of moisture, seepage, and around bodies of water, and all told approximately 80 different species were on display around the edge of the shelter. Good edibles were scarce, of course, but Erica Cline managed to find two big specimens of the White Chanterelle (*Cantharellus subalbidus*); some nice specimens of *Suillus grevillei* and *Hericium* were also found by members. Unusual or interesting species included *Hygrocybe cantharellus* and *Hypsizygus tessellatus*. The latter species used to be in the genus *Pleurotus* and is a good edible. It has a cap with a distinctive water-spotted appearance. The winner of the beauty contest was clearly the very pretty reddish and yellow-orange *Hygrocybe miniata*. The most fragrant species found was the polypore *Ischnoderma benzoinum* with a delightful odor of anise.



Hygrocybe cantharellus.

Brian S. Luther



Hypsizygus tessellatus.

Brian S. Luther

Jerry Stein was especially helpful assisting me by organizing and placing the specimens and ID tags out for display as I was writing them. Elizabeth and Kern Hendricks stopped by for a while and it's always great to see old friends. Kern was PSMS President from 1990 to 1992. Long-time member Gwen Heib brought her RV, and she invited me in to have a comfortable place to sit and chat and have wine after dark at night.

Only a handful of members stayed for the potluck, but it was excellent, with many tasty foods; everybody went away satisfied.

Sunday morning new member Dan Paull (who also camped overnight) helped me clear all the specimens, gather the ID tags, and make sure the shelter was in good condition before leaving. All in all, a very enjoyable field trip.

FIELD TRIP REPORT, October 17 Brian S. Luther

Bob Walker



Alison Johnson and Brian Luther overseeing the display table.

For this trip, we had the use of a luxurious facility for the day at Lake Cle Elum. Bob Walker and Alison Johnson were our sponsors at the beach club, making this location available to us. Thank you, Alison and Bob. Everybody had a wonderful time.

The host for this field trip was Wren Hudgins, and the hot coffee and breakfast snacks were really appreciated by all. Wren not only hosted the field trip but also lead one of the four groups going out hunting. Other field trip guides included Josh Powell, Dave Weber, and Randy Richardson. Thanks, guys, for all you did for our members!

Seventy-three members signed in, and at 9:00 am we met to discuss collecting in general, Professor Erica Cline's research project, and going out in groups. The weather was supposed to deteriorate by mid-day, but it was really nice out until just before the potluck at 4:30 pm.

Conditions had been dry up until recently, so fungi were somewhat scarce. Even so, approximately 75 species were found and displayed. Not a single chanterelle or *Boletus edulis* was brought in, but we did have one Matsutake, a couple of large clumps of *Hericium abietis*, a few Red Cap Boletes (*Leccinum* spp.), several Slippery Jacks (*Suillus* spp.), and a few Meadow Mushrooms (*Agaricus campestris*). Mostly it was a smattering of different nonedible species that were displayed on the picnic table. The prettiest mushroom contest was a three-way tie between the gorgeous apricot orange *Chrysomphalina aurantiaca*, the coral red *Mycena adonis*, and the orange polypore parasite *Hypomyces aurantius*.

We all got to have our potluck inside Bob and Alison's beautiful beach club house, which was extra pleasant. Many members then helped clean up, put tables away, and stayed to straighten up before leaving. A big thank you to all of you.



FUNGUS FOUND IN BRAINS RAISES ALZHEIMER'S QUESTIONS

Mariette Le Ro

<http://news.yahoo.com/>, Oct. 15, 2015

Paris (AFP) - Traces of fungus have been discovered in the brains of Alzheimer's sufferers researchers said Thursday, relaunching the question: Might the disease be caused by an infectious microbe?

There is no conclusive evidence, but if the answer turns out to be "yes," it means Alzheimer's Disease (AD) may be targeted with antifungal treatment, a Spanish team reported in the journal *Scientific Reports*. "The possibility that AD is a fungal disease, or that fungal infection is a risk factor for the disease, opens new perspectives for effective therapy for these patients," they wrote.

The five-member team had found cells and other material from "several fungal species" in the brain tissue and blood vessels of all 11 deceased Alzheimer's patients analyzed, but not in ten Alzheimer's-free controls.

The findings are published just a month after scientists warned in the sister journal *Nature* that people injected with hormones extracted from cadaver brains in a long-abandoned medical procedure may have received "seeds" of Alzheimer's—raising the specter of it being a transmissible disease.

Alzheimer's Disease is the most common form of dementia, which the World Health Organization (WHO) says affects nearly 50 million people worldwide—some 7.7 million new cases per year.

Old age is the major risk factor, and there is no therapy to stop or reverse Alzheimer's symptoms, which include memory loss and disorientation as well as anxiety and aggressive behavior.

Some researchers have suggested Alzheimer's may be an infectious disease or, at least, that infection with certain microbes may boost Alzheimer's risk.

Genetic material from viruses and bacteria had previously been found in the brains of Alzheimer's patients, and viruses that cause herpes and pneumonia have been suggested as potential AD "agents," according to the study's authors.

The main suspect in AD to date has been brain "plaques" caused by a build-up of sticky proteins, but trials with drugs targeting these have yielded disappointing results.

The new study adds another possible cause to the list of hypotheses.

Traces of several fungal species were found, said the team, which "might explain the diversity observed in the evolution and severity of clinical symptoms in each AD patient."

A fungal cause would fit well with the characteristics of AD, the researchers added, including the slow progression of the disease and inflammation, which is an immune response to infectious agents such as fungi.

The researchers did point out, however, that fungal infection may be the result, not the cause, of AD.

Alzheimer's sufferers may have a weaker immune response, or changes in diet or hygiene, that could leave them more exposed.

"It is evident that clinical trials will be necessary to establish a causal effect of fungal infection of AD," wrote the team.

"There are at present a number of highly effective antifungal compounds with little toxicity. A combined effort from the phar-

maceutical industry and clinicians is needed to design clinical trials to test the possibility that AD is caused by fungal infection."

Outside experts agreed that further study must be done to confirm or disprove the fungus theory.

As they stand, the findings are "very speculative", French neurodegenerative disease expert Sylvain Lehmann told AFP.

"We cannot conclude from this work that such (fungal) infections cause or increase the risk of the disease," added Laura Phipps of Alzheimer's Research UK.

EXPLORING THE FRAGRANT MATSUTAKE

Constance Green

<http://fantasticfungi.com/>, Oct. 10, 2015

This legendary mushroom is probably the greatest barely explored ingredient in the kitchens of western culture. In terms of preciousness, dollars, and demand; only Italian white and Perigord truffles surpass it in the world. The face of any Japanese person to whom I've handed a matsutake always looks much like ours when we got our first bicycle. Every single time, with glowing face, they hold the matsutake with great care, lift it to their nose, and inhale deeply with closed eyes. Nothing in the world smells like matsutake.



Three things have unnecessarily slowed the progress of this great mushroom into western kitchens. The first is simply money. Historically matsutake have commanded knee-buckling prices. This is no longer the case, owing both to the weakening Japanese economy and to the increasing numbers of countries harvesting matsutake for export to Japan. Even now, over 95% of these mushrooms are shipped to Japan. In years like 2003, Korea, China, and Mexico have had huge crops of the brown matsutake preferred by Japan. This has left the white matsutake of Canada and the U.S.A. as bargains in a more and more flooded marketplace. Even in years of high prices, however, the open-capped (#3-#5 grade quality) are affordable for Americans. Since prices are based on Japanese auction prices, they can vary significantly based on demand and the important Japanese holiday schedule. These variants are now diminishing to the point that price should no longer be a major barricade to our kitchens.

The insidious second reason is cooking technique. A horribly boring date could be had with the sexiest and most fascinating person if you chose to take them bowling, for instance. Likewise chefs have sautéed matsutake and wondered what the hoopla is about. This technique is not the path to the marvelous matsutake.

A final obstacle is the unique character of this mushroom. It is not for the faint-hearted chef. Its flavor is so unlike most familiar western mushrooms that it demands a different cooking vocabulary.



It is eagerly sought by my customers who are chefs of great imagination (Thomas Keller, Daniel Boulud, Traci des Jardin, Kory Lee, etc.), but it remains puzzling to most others. This is a terrible shame.

ANNUAL EXHIBIT PHOTO CONTEST Paul Hill

The photo exhibition at the PSMS Annual Wild Mushroom Show was a great success. We had about 50 entries from many photographers, most of whom were not PSMS members. Hundreds of people put in votes for their favorite. The winning photograph by popular vote was titled “Enchanted Forest” by Jen Strongin. The 2nd place winner was also from by Jen titled “Blue Cup,” a colorful macro shot of very blue example of *Mollisia cinerea* taken in the Seattle Washington State Arboretum.



Enchanted Forest



Blue Cup

JAPAN REPORTS BUMPER CROP OF MATSUTAKE MUSHROOMS

Atlanta Journal Constitution, Oct. 15, 2015

Thanks to a lot of rainy days in mid-summer and a quick end to late summer, Japan has seen a rich harvest this year of matsutake mushrooms, dubbed “the king of autumn foods.” This has pushed the luxury item’s price down compared to an average year.

At the Kyoto Yaoichi produce corner in the Takashimaya department store in Nihonbashi, Tokyo, an about-300 gram package of four or five matsutake mushrooms from Iwate Prefecture costs 35,000 yen (about \$291), about 30 percent cheaper than usual.

At the Seibu Ikebukuro department store in Tokyo, the prices of domestically produced matsutake are 20 percent to 30 percent lower than last year. Sales are up 20 percent.

According to Tokyo Seika Co., a major wholesaler of vegetables and fruits, the amount of Japanese matsutake it handled in September rose 13 percent. The per-kilogram price for matsutake grown in Iwate Prefecture was about 24,000 yen—about 10 percent lower than last year.

“We had sufficient rainfall in August, then it quickly became cooler. Those were good conditions for the healthy growth of matsutake,” said a spokesperson at Naganoken Rengo Seika Co., a vegetable and fruits wholesaler headquartered in Ueda, Nagano Prefecture.

Kyoto and other areas are also expected to enjoy a rich harvest of the mushrooms this autumn, according to Fumihiko Yoshimura, a representative of the Kyoto-based citizens group Matsutakeyama Fukkatsu Sase-tai (Matsutake Forest Revival Troop).



HYPOMYCES AURANTIUS—A BEAUTIFUL PARASITE ON POLYPORES Brian S. Luther

At the Lake Cle Elum field trip on October 17, a large layered polypore was brought in that was almost totally bright orange, owing to a superficial Ascomycete parasite called *Hypomyces aurantius*. All parts of the host on this specimen (caps and pores) were covered with this mature brilliant orange parasite.

We have several species of *Hypomyces* here in the Pacific Northwest, and all are parasites on different kinds of fungi.* *Hypomyces aurantius* is found almost exclusively on polypores. *Hypomyces lactifluorum*, a related species that’s bright orange or red, normally parasitizes only *Russula brevipes* or *R. cascadenensis* in the PNW. The mature infected hosts are then called Lobster Mushrooms and are sought after by mycophagists. None of the other hosts infected with *Hypomyces* species are edible, only the two species forming the Lobster Mushroom. These two brightly colored species can be readily distinguished not only by their hosts, as mentioned above, but by a difference in their microstructure. A recent DNA study has confirmed that *H. aurantius* is a distinct species (Poldmaa, et al., 1999).



Mushroom covered with *Hypomyces aurantius*.



Hypomyces aurantius ascospores at 1000× in ammonium hydroxide and Phloxine.

The genus *Hypomyces* belongs to a group of Ascomycetes we’ve traditionally called Pyrenomycetes, because they bear their asci (the cells that form the ascospores) inside tiny flask-shaped structures called perithecia. The ascospores of *Hypomyces aurantius* measure 20–25 × 4–6 μm, are two celled (with one septa), have a pronounced apiculus (short, sharp projection) on each end, and have low (up to 0.5 μm high) ornamentation (verrucae). Applying a solution of KOH (3 percent or stronger) results in a purplish-red color reaction.

Another species that reacts the same way with KOH and also sometimes parasitizes polypores is *H. rosellus*, but it’s pink or rose red, not orange, and has ascospores that measure 25–30 × 4–5 μm and have verrucae up to 1 μm high (Rogerson & Samuels, 1993).

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- Rogerson, Clark T. & Gary T. Samuels. 1993. Polyporicolous Species of *Hypomyces*. *Mycologia* 85(2): 231–272..

*For an excellent online key and color photos of the species found here in the PNW, consult Gibson (2008).

LOST MUSHROOMERS

Lost Mushroom Picker Found After Hour-Long Search

Peninsula Daily News, Oct. 14, 2015

FORKS - A lost hiker was found cold but safe after she and her husband set out to pick mushrooms in a wooded area about 10 miles north of Forks, the Clallam County Sheriff's Office reported Wednesday. The hiker was found standing in shallow water of the Sol Duc River after an hour's search on Monday evening, the sheriff's office said.

Shortly after Nichole and Mark Vanderschelden of Forks entered the woods at about 6 pm, the two became separated, deputies said. He looked for her unsuccessfully and eventually called for help.

Deputy Ed Anderson contacted the sheriff's Search and Rescue unit. Headed by Detective Jim McLaughlin, the unit responded with volunteers who split into four two-person teams. Rayonier security officer Tim Pinard provided access to the wooded area where the hike began by opening gates, the Sheriff's Office said.

The terrain was rugged and steep, and it took the teams until after 1:15 am Tuesday to bring her out of the woods, deputies said.

The hiker went home after volunteers provided her with dry clothing, food, and water.

Lost Mushroom Hunter in Grays Harbor County Found Safe

<http://www.kirotv.com/>, Oct. 13, 2015

COPALIS CROSSING - A woman who did not return from picking mushrooms in the Copalis Crossing area of Grays Harbor County Sunday night was found Tuesday morning.

Deputies received a report of a missing mushroom picker at 11:10 pm Sunday from a man who said he and two women had been picking mushrooms in a wooded area about two miles south of Copalis Crossing early Sunday afternoon.

At about 5 pm, one of the women had not returned to their vehicle, so the other two started looking for her. When they couldn't find her, they called for help. The missing woman was identified as Jeannie Nichols of Hoquiam.

Search and rescue efforts were started Monday morning. Shortly after 8 am Tuesday, a citizen who was in a field near Robertson School Road, south of Copalis Crossing, called to report hearing a whistle and then speaking with a woman who said she had been lost for the last two days.

The woman was identified as Nichols. She was across the Hump-tulips River from the citizen's location.

Ground searchers initially tried to access her location from Ocean Beach Road, but because of the terrain, were not able to get to her.

Just after 10:15 am, a fisherman in a boat was able to transport a deputy to Nichol's location. She was then brought back across the river and checked out by aid personnel. She appeared to be in good health.



A FUNGUS THAT CAN INSTANTLY INDUCE ORGASMS IN WOMEN WITH ITS SMELL

Doug Bolton

independent.uk.com, Oct. 2015

via *The Spore Print*, L.A. Myco. Soc., Oct. 2015

The medicinal qualities of certain plants and herbs are well known, and these types of natural remedies been used to heal people for thousands of years. However, there is one much less well-known type of fungus with an unusual but potentially very important power.

The fungus, which appears to grow only on Hawaiian lava flows that are between 600 and 1,000 years old, can apparently induce spontaneous orgasms in women when they smell it.

The fungus, an unnamed *Dictyophora* species, was described by medical scientists John C. Holliday and Noah Soule in 2001.

They published their findings in the *International Journal of Medicinal Mushrooms*, and said the bright orange fungus has a reputation as a "potent female aphrodisiac when smelled."

Interested to find out whether it lived up to its reputation, the two conducted a test on volunteers.

As the journal says: "Indeed, nearly half of the female test subjects experienced spontaneous orgasms while smelling this mushroom."

The two hypothesized that the hormone-like compounds presents in the fungus's spores may be similar to the human neurotransmitters released during sexual encounters.

The mushroom's "fetid" smell didn't seem to have the same effect on the male test subjects, however.

EARLIEST MAMMAL FUR REVEALS ANCIENT CRITTER SUFFERED FROM FUNGAL INFECTIONS SEEN TODAY

Rebekah Marcarell

<http://www.hngn.com/>, Oct. 14, 2015

Scientists looked at the stunningly well-preserved fur of a 125-million-year-old rat-sized mammal, and found the ancient animal suffered from fungal infections still seen today and had hedgehog-like spines.

The animal, dubbed *Spinolestes xenarthrosus*, represents the earliest-known examples of microscopic structures of hair and spines in mammalian evolutionary history, the University of Chicago Medical Center reported.

"*Spinolestes* is a spectacular find. It is stunning to see almost perfectly preserved skin and hair structures fossilized in microscopic detail in such an old fossil," said study co-author Zhe-Xi Luo, professor of organismal biology and anatomy at the University of Chicago. "This Cretaceous furball displays the entire structural diversity of modern mammalian skin and hairs."

The specimen was discovered at the Las Hoyas Quarry in east-central Spain, which was a lush wetland during the early Cretaceous period. The



Living reconstruction of the Cretaceous mammal *Spinolestes xenarthrosus*.

Oscar Sanisidro /
Publishing Group

Spinolestes had compound follicles in which multiple hairs emerge from the same pore and spines on its back similar to what is seen in modern hedgehogs and African spiny mice. The researchers also observed abnormally truncated hairs that indicated a fungal skin infection called dermatophytosis, which is seen in animals today.

“Hairs and hair-related integumentary structures are fundamental to the livelihood of mammals, and this fossil shows that an ancestral, long-extinct lineage had grown these structures in exactly the same way that modern mammals do,” Luo said. “*Spinolestes* gives us a spectacular revelation about this central aspect of mammalian biology.”

The specimen also provides the earliest-known record of mammalian organ systems. Its anatomy included microscopic bronchiole structures in the lungs, a large external ear, and extra articulations between vertebrae that strengthened the spinal column. These articulations are seen in modern armored shrews and armadillos, which use this added spinal strength to destroy logs and feast on the insects within.

“With the complex structural features and variation identified in this fossil, we now have conclusive evidence that many fundamental mammalian characteristics were already well established some 125 million years, in the age of dinosaurs,” Luo concluded.

The findings were published in a recent edition of the journal *Nature*.

WORLD'S TINIEST, FREE-LIVING INSECT DISCOVERED FEASTING ON FUNGI

Catherine Griffin

Science World Report, Oct. 12, 2015

Scientists may have discovered the world's tiniest, free-living insect. As many as 85 individuals from the tiny beetle species have been retrieved from Columbia. While the species itself was first described in 1999, it's only now that researchers have thoroughly examined and measured it.



Dr. Alexey Polilov

Scydosella musawasensis.

Scydosella musawasensis is morphologically characterized by its elongated oval body, yellowish-brown coloration, and antennae split into 10 segments. It's also the only representative of this featherwing beetle genus.

In the past, researchers were not able to precisely measure the size of the beetle because the preserved specimens were embedded in preparations for microscopy studies. Now, with the help of specialized software and digital micrographs, researchers have used new individuals to find out that the length of the smallest was 0.325 mm.

What makes this tiny beetle species so interesting is that it lives independently rather than parasitically off of another organism.

This latest survey is actually only the second record of the beetle species. It shows that the range of distribution is much wider than first expected. This, in turn, means that the localities of the fungi that the insect feeds on are also more widely distributed than once thought.

PRESIDENT'S MESSAGE

Kim Traverse

One of the things I value most about PSMS is the wonderful intermixture of interests and talents we have and how happily shared they are. Somehow, the fascination with fungi that we *share* makes it just fine that we have a wide spectrum of approaches that *differ*. Some of us respond to the deep science of fungal ecology, DNA sequence-based clades, and the intricate, albeit microscopic, structures of cystidia and trama; others revel in how to best prepare the days “catch” and preserve the rest for the winter months. I've been out with people who love to hunt even if they never eat what they find and hunted with people who are as intrigued by the eighth little brown mushroom they find as they were by the first. No one bristles at scientific names being used or hearing for the hundredth time the question: “Is it edible?” We are a group that blends all those approaches, where science and the culinary arts flourish side by side with paintings, mushroom themed (and dyed) textiles, identification and classification—and all tied together by friendly socializing. We are not merely cordial, we *enjoy* each other! We have a dedicated board of trustees and a membership that supports a wide range of educational activities and public events that are a lot of fun. I think we are doing a terrific job fulfilling our mission.

CLERGY PSYCHEDELICS STUDY AIMS TO INDUCE SPIRITUAL EXPERIENCES

Don Lattin

Religious News Service, Oct. 22, 2015

Researchers investigating beneficial new uses for psychedelic drugs have set their sights on what may seem an unlikely group of volunteer subjects—your local priest, minister, or rabbi.

Roland Griffiths, a professor of psychiatry and behavioral sciences at Johns Hopkins, is leading the new research, which stems from findings that volunteers who've taken psilocybin in a wide variety of research settings often report profound mystical experiences.

Griffiths wonders whether these altered states of consciousness are the same as those reported by longtime meditators or highly religious individuals. And he now has a three-pronged research project that will attempt to answer that question

First, anyone in the world is invited to participate in an online survey about mystical experiences and “God-encounters,” whether they were inspired by Christian prayer, Buddhist meditation, a walk in the woods, or a dose of LSD in the 1960s.

Second, spiritual seekers with extensive experience in Buddhist or other forms of meditation are being sought for another study that allows them to try psilocybin in a clinical setting with experienced guides. Eighteen of an anticipated 40 research subjects have gone through sessions for that project at Johns Hopkins.

Longtime contemplatives, Griffiths said, “have a vocabulary and a nuanced understanding of the nature of mind.” He hopes that insight will help scientists identify differences and similarities between mystical states induced by drugs and those induced by meditation.

Griffiths has had the hardest time getting volunteers for the third part of the research—the study involving ordained ministers. He and colleagues at NYU are looking for two dozen full-time members of the clergy in any religious denomination.

BEWARE OF ASIAN CANNED PUFFBALLS

Brian S. Luther

Brian S. Luther



At our Annual Exhibit in October, chefs Jamie and Dennis Notman brought to my attention some canned puffballs that were found at a local Asian grocery here in Seattle. Canned mushrooms are common, of course, but finding puffballs is unusual to begin with. What was alarming about these particular puffballs was that they were at all stages of development; many even had g-lebas filled with dark spores. All literature on

edible mushrooms will tell you that if any tinge of color is present, and certainly if the gleba has formed black spores, then puffballs are to be totally avoided. Fortunately, Dennis and Jamie knew they shouldn't use them, and instead brought them over to show me.

Although the can was a mixture of all stages of maturity, the label said "Extra Quality" with an arrow pointing to a picture of puffballs that were all totally white inside, the favorable stage for eating. Clearly, in this case the label falsely represented the product found inside the can, so the edibility of the product is in question. The safety of this product would have to be determined by official public health testing.

Another word of caution—some kinds of puffballs are always poisonous regardless of the stage of development. One example would be species in the genus *Scleroderma*.

Study the different puffballs in any mushroom handbooks you have and always show questionable specimens to a mycologist for ID and to confirm edibility. As a precaution always cut all puffballs in half first, both to determine the stage of maturity and also to ensure you haven't mixed in the button of a poisonous *Amanita*. An *Amanita* button cut in half lengthwise would show the outline of a cap, stem, and immature gills versus a uniform white area for an immature puffball.

Asian canned puffballs. Note that some of the puffballs are filled with black spores.



Brian S. Luther

MUSHROOM ASTROLOGY

Bob Lehman, LAMS



Scorpio (Oct. 23–Nov. 21): You love the mysteriousness of mushrooms. You plot your mushroom hunting strategy in advance, taking into account the motives and likely strategies of competing mushroom hunters. While others on a foray engage in small talk, you sneak away from the group to fill your basket from your secret spot. Aires may cover more ground, but you know how to get more out the ground you cover. You don't mind Leo's boasting about his chanterelles because you know he'll be proud to give you some. You are willing to endure difficult conditions in order to find the mushrooms you want. You are fascinated by poisonous mushrooms.

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