

## THE OREGON BLACK TRUFFLE, *LEUCANGIUM CARTHUSIANUM*: A Fascinating and Fragrant Find from a Local Backyard Brian Luther

In early April Hildegard Hendrickson came over and dropped off half of a truffle-like fungus with a note asking for an identification. It was found and collected by PSMS member Doug U-Ren (Young Doug) on April 7 with wood chips and soil in his backyard in Edmonds. The only trees in the area were Douglas Fir about 35 feet away.

It was a good-sized specimen that was in very good, fresh condition. It had a dark brown, almost black, and very roughened peridium, and in cross section the gleba was beautifully marbled with dark chambers surrounded by pale, whitish veins. It had a pronounced, fragrant smell that was, as I describe it, a very powerful truffleoid odor—that is, fragrant but a bit musty too. Peculiar enough that I couldn't nail down any comparative odor for reference. The odor was so strong that it filled my mycology lab and library and was very noticeable to others entering. My wife Pam thought the odor was disagreeable. I didn't find it objectionable, just really strong. The inside of the gleba briefly reminded me of the Basidiomycete false-truffle genus *Melanogaster* because of the dark fertile chambers surrounded by whitish veins, but it lacked the gelatinous texture of that genus. The only species of that genus that I've studied in detail is *Melanogaster tuberiformis*, which is very different in size, form, and appearance (inside and out) and has a distinctive garlicky odor which this collection lacked. Miller (1997) states that species in the genus *Melanogaster* have a "strong odor of latex paint."

I pondered what it could be macroscopically only very briefly before taking it into the lab and doing a microscopic examination. It turned out to be an Ascomycete "truffle" in the family Discinaceae—*Leucangium carthusianum* (*Picoa carthusiana* in Gilkey, 1954; Arora, 1979; Castellano et al., 1989; and Phillips, 1991), with only a difference in glebal color. This is the highly prized Oregon Black Truffle.



Oregon Black Truffle, *Leucangium carthusianum*.

An excellent recent publication, *Field Guide To North American Truffles*, by Trappe et al. (2007) covers true truffles, but by far it mostly treats false truffles. Of the 90 species illustrated and described in this handy little book, only 10 are true truffles in the Tuberales, making it a great reference for the diverse and more

frequently encountered false truffles as well. "Truffle," as used by the above authors, simply refers to hypogeous (subterranean) fungal fruiting bodies, regardless of the taxonomic grouping, a convenient catchall category.

The Europeans tend to be very narrow in their interpretation of a true truffle—fungi in the genus *Tuber* or in the family Tuberales of the Ascomycetes (Ascomycota). These fungi have unique spores that set them apart from the other truffle-like fungi. Thus other hypogeous fungi, both Ascomycetes and Basidiomycetes and others not possessing these characters and not placed within the Tuberales, are considered as "false truffles," if you follow this line of thinking.

Others take a more liberal or broad-minded approach, including all developmentally subterranean or even mostly subterranean fungal fruiting bodies as truffles.

As an undergraduate in the Dept. of Botany at the University of Washington in the early 1970s, while taking Dan Stuntz's Ascomycete course, I clearly remember having a conversation with Dan about exactly what a true truffle was. His view was that of the traditional Europeans and Helen Gilkey's—namely it had to be in the Order Tuberales to be a true truffle. Following this reasoning, the Oregon Black Truffle is also a "false truffle"; although it is an Ascomycete, it's placed in the family Discinaceae, not the Tuberales. In Europe this species is called the "Summer Truffle" to distinguish it from species of the genus *Tuber*.

Most of the hypogeous truffle-like fungi that have been brought or sent to me for ID over the years have turned out to be some kind of false truffle, and most of these have ended up being species in the genus *Rhizopogon*. It is worth noting that truffle-like fungi have evolved in many groups of fungi. Some are Basidiomycetes, closely related to boletes, coral fungi, agarics (gilled mushrooms), stinkhorns, or other Gastromycetes. Still others are Ascomycetes, closely related to morels, helvellas, other Discinaceae and other major fungal taxonomic groups as well, such as Zygomycetes, Glomeromycota, etc. Regardless of your personal interpretation of what a "truffle" is, the specific macroscopic and in particular microscopic features of these fungi are what define their precise taxonomic position within the Kingdom of Fungi.

The Oregon Black Truffle belongs to a family of Discinaceae that are very familiar to most of you in spring, the Discinaceae. The genera *Discina*, *Gyromitra*, and *Pseudorhizina*, in particular, are represented by several frequently encountered and conspicuous species in our spring flora and are common "snow bank" fungi, often being found near receding snow. It's interesting to note that all of our terrestrial above-ground fruiting species in this family do not have any noticeable odor.

It's then curious to think about the evolutionary significance of strong odors that have formed in their subterranean relatives such as the Oregon Black Truffle. It seems quite logical that the

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# Spore Prints

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## CALENDAR

May 9 Field Trip, 29 Pines  
May 11 Master Gardeners' ID clinic, 4–7 p.m., CUH atrium  
May 12 Membership Meeting, 7:30 p.m., CUH  
May 16 Field Trip, Swauk Creek  
May 18 Board Meeting, 7:30 p.m., CUH  
Master Gardeners' ID clinic, 4–7 p.m., CUH atrium  
May 19 *Spore Prints* deadline  
May 22–25 Field Trip, Eagle Creek  
May 25 Master Gardeners' ID clinic, 4–7 p.m., CUH atrium  
May 29–31 Ben Woo Foray **cancelled**

## BOARD NEWS

**Denise Banaszewski**

The good news is that Mushroom Maynia! is coming up quickly, and we're hoping to have a great turnout and a great time again this year. The sad news is that the Ben Woo Memorial Foray will be canceled this year. Mushroom ID clinics will continue on Mondays from 4:00–7:00 p.m. at the CUH in conjunction with the Master Gardener clinics, so you can get your plant questions answered and your mushrooms identified at the same time. The second series of mushroom identification classes is under way and well attended. David Aurora is interested in coming to the Pacific Northwest in the fall, so we are hoping to schedule him as a speaker (maybe at our show). Finally, Josh Birkebak will leave us to attend graduate school in Tennessee. But, according to our reliable sources, he will be at the June meeting so please be sure to come and wish Josh good luck in his studies!

## MEMBERSHIP MEETING

Tuesday, May 12, 2009, at the Center for Urban Horticulture, 3501 NE 41st Street, Seattle

Our May meeting will feature Susan Kaufman, owner of Serafina, and Serafina's executive chef, Dylan Giordan. Taste, smell, and admire the mushrooms prepared by Susan and Dylan and learn some techniques that they will share with our mushroom community. Serafina is located in the Eastlake neighborhood and serves fabulous Italian-style dishes prepared with the freshest ingredients. Susan Kaufman is a member of Les Dames d'Escoffier which provides opportunities and scholarships to women in Washington State to study culinary arts and arts of the table.



Susan Kaufman

Please come a little early to browse the book section or visit our library. Will those with last names beginning with the letters A–K please bring a treat to share.

## CARNATION FIELD TRIP Hildegard Hendrickson & Brian Luther

The morning of Saturday, March 28, was as cold and rainy as many mornings this spring.

We had scouted the area Thursday, and knew that we could not expect many mushrooms. Even though fungi were few and far between on our scouting trip, we came across a farm field near Carnation with an unusual breed of dairy cattle with distinctive markings. Brian recognized them right away as Dutch Belted. Hildegard pulled off the road so Brian could get some good photos. You rarely see this breed, but it's highly regarded for its milk production.

On Saturday, on the way to the field trip, Brian and Hildegard had a "jolt" while driving up Tolt Hill: a deer jumped in front of Hildegard's car and tested her brakes. The car did not miss the deer by more than an inch. Both we and the doe (and the car) were lucky the encounter wasn't any closer.

We had seen on Thursday how the December/January flood had devastated MacDonald Park. The park had not officially opened because the toilets were not operational (there were several "honeybuckets" available), and the electricity had been restored only the day before. The park ranger allowed us to use the red barn, which we all welcomed, so we did not have to carry all the supplies and books across the hanging foot bridge. We had coffee and munchies and Hildegard brought some delicious, rich fruit cake for the 45 persons who came. After we gave short lectures, the group divided and we took off into the woods.

The unusually cold March delayed everything, and only a handful of species of fungi were collected, even with two groups going out in different locations. Only 11 meager species were found, with nothing unusual. There was not a single *Verpa bohemica*. However, the condition of the cottonwood trees indicated that we were a bit early—their leaf buds were mostly not open, and most of the dark brown, resinous bud sheaths on the ground were from the flowers, which open a little before the leaves do.

It was a cheerful and enthusiastic group, in spite of the cold conditions and lack of fungi. We both made a point to tell the group that they'll have a lot more fun and much better luck (and be warmer)

on the May field trips. We ate our lunch then cleaned up, and most people went home.

Think morels in May!

## UPCOMING FIELD TRIPS

**Brian Luther**

The following paragraphs summarize the three remaining field trips scheduled for the spring season. Detailed descriptions of each field trip are given in the April *Spore Prints*.

**May 9** **29 Pines Campground**  
Teaway River Road, Kittitas Co. Elev.: 2500 ft

This great campground has been one of our standard field trip locations for collecting morels for many years. The morel collecting can be excellent in the entire area, depending on conditions and, of course, timing.

**May 16** **Swauk Campground**  
Hwy. 97 near Blewett Pass, Kittitas Co. Elev.: 3200 ft.

This is another one of our standard favorite locations for morel collecting. Accessible and virtually unlimited Forest Service logging roads are everywhere for potential morel collecting.

**May 22–25** **Eagle Creek**  
Eagle Creek Road, NE of Leavenworth Elev.: 1800 ft.

Chelan Co. Free camping, RV parking (no hookups), and day use. This is private property, compliments of Coleman Leuthy and Brian Luther.

## PRESIDENT'S MESSAGE

**Patrice Benson**

Well, the first morels have been reported and the spring season has begun! The board met last night and welcomed our new Secretary, Denise Banaszewski, and trustees Debra Lehrberger and Randy Richardson. I wish to thank all of the members who ran for offices and welcome them to help manage our mushroom community.

We have regrettably had to cancel the Ben Woo Memorial Foray owing to lack of registrations. We will honor Ben's educational spirit at a later date.

Mushroom Mondays have begun! Come bring mushrooms to be identified on Mondays in the atrium at CUH. Spend some time with the identifiers and learn a little from those in the know. Thank you Hildegard Hendrickson for all of your time spent coordinating this and identifying our mushrooms. Hildegard is also one of the team teaching the beginner's classes. Volunteers are what make the club function, so see where you can help!

Our club is a sponsor of Mushroom Maynia! at the Burke Museum on Sunday, May 3. We need lots of volunteers between 10 and 4 p.m. to make this a fun day for all. E-mail [president@psms.org](mailto:president@psms.org) to volunteer. I will forward your name to the chair, Joanne Young. I received my postcard announcing the event today. The photo is Hildegard holding a giant morel found by Joanne Young and featured at last years' Mushroom Maynia!

Also, consider donating to the Stuntz foundation. Funds generated by the foundation are used to fund mushroom projects, support student work, and support the new Stuntz endowment at the UW. We have a long way to go to fund a curator for the mushroom herbarium at the UW. Our long-term goal is to ensure that a mycologist

is always a faculty member at the University of Washington. Go to [www.stuntzfoundation.org](http://www.stuntzfoundation.org) for more information and to donate directly to the endowment.

Field trips are a great way to learn from experienced members and get to meet and make mushroom friends. You will be amazed at the number and kinds of mushrooms that a group can find! Take the time to attend and you will have a great time in our beautiful Northwest.

I hope to meet and see you at the Eagle Creek field trip May 23–25. Many thanks to Brian Luther and Coleman Leuthy for sponsoring us and opening their properties for camping and camaraderie.

## NEW SPECIES OF LICHEN NAMED AFTER PRESIDENT BARACK OBAMA

**Science Daily**  
April 15, 2009

A researcher at UC Riverside has discovered a new species of lichen—a plant-like growth that looks like moss or a dry leaf—and named it after President Barack Obama.

"I discovered the new species in 2007 while doing a survey for lichen diversity on Santa Rosa Island in California," said Kerry Knudsen, the lichen curator in the UC-R Herbarium. "I named it *Caloplaca obamae* to show my appreciation for the president's support of science and science education."



*Caloplaca obamae*

Knudsen published his discovery in the March issue of the journal *Opuscula Philolichenum*.

"I made the final collections of *C. obamae* during the suspenseful final weeks of President Obama's campaign for the United States presidency, and this paper was written during the international jubilation over his election," Knudsen said. "Indeed, the final draft was completed on the very day of President Obama's inauguration."

*C. obamae*, the first species of any organism to be named in honor of President Obama, grows on soil and almost became extinct.

"This species barely survived the intensive grazing of cattle, elk, and deer on Santa Rosa Island," Knudsen said. "But with cattle now removed, it has begun to recover. With future removal of elk and deer—both of which were introduced to the island—it is expected to fully recover."

Knudsen is excited about his discovery. "A new lichen validates the value of the public support for preserving public lands as ecological sanctuaries," he said. "*C. obamae* teaches us that possibly other species of lichens and plants unique to Santa Rosa Island may have disappeared, without ever being known to science."

## MUSHROOM MISSIONARIES

On April 7–10, 2009, Patrice Benson, Cathy Lennebacker, and Alissa Allen journeyed to Corvallis and Eugene, Oregon, to teach and lecture on the art and craft of using mushrooms for color. Two dyeing with mushrooms lectures and a hands-on dyeing workshop resulted in fun and interest for all.

On April 16, Patrice Benson spoke to the Kitsap Peninsula Mycological Society about edible mushrooms and cooking with mushrooms.

## Oregon Black Truffle, cont. from page 1

development of strong odors is what entices a variety of animals (rodents mostly) and other creatures to seek out and consume these subterranean delicacies, thus disseminating their spores and helping to successfully spread the species. Credence for this view seems obvious to me, since many of the strong odors of truffles and truffle-like fungi are only formed, or are at their strongest, when the fruiting bodies are fully mature, attracting wild foragers just at the peak of spore maturation, increasing the chances for effective spore dispersal and survivability of the species. These strong odors are attractive to humans as well.

Commercial harvesters of the Oregon White Truffle (*Tuber gibbosum*) mix fruiting bodies at greatly varying degrees of maturation—some with almost no odor because they're so young and others that are fully mature with a strong odor. The most appealing, fragrant, and desirable truffles are those found just at the perfect stage of full maturity.

The mycological monograph that I used to identify this species is by Gilkey (1954). I also found Castellano et al. (1989) to be very useful, as well as Trappe et al. (2007).

### Classification Hierarchy for the Oregon Black Truffle, *Leucangium carthusianum* (*Picoa carthusiana*)

Kingdom Mycota (the fungi)

Division Ascomycota (Ascomycetes)

Subdivision Pezizomycotina

Class Pezizomycetes

Order Pezizales

Family Discinaceae

### Technical Description of the Collection

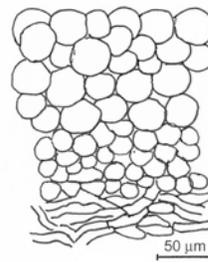
**Fruiting body (ascocarp):** irregularly spherical in shape and spheroidal in outline, up to 6 cm in widest dimension or diameter. Outer peridial surface irregularly lumpy rounded, very dark brown to charcoal colored or almost black (in my copy of Ridgway, 1912, the closest color is "Clove Brown" or darker), consisting of a layer of tissue broken up by cracks into a regular pattern of fine tubercles varying from 0.5 to 2 mm in dimension; this layer is approximately 0.5 mm deep in the cracks. On drying the outer peridial layer appears uniformly charcoal black under the dissecting microscope. The gleba is strikingly beautiful in cross section, consisting of a dramatic marbling of irregular, various sized, more or less round fertile chambers up to 5 mm in diameter (but most much smaller), dark brown or charcoal colored at first ("Fuscous" to "Clove Brown") then changing slightly with natural drying to "Raw Umber," "Chestnut Brown," "Mummy Brown," "Bister," or "Sepia" (Ridgway, 1912), with some minutely fine light-colored veining within the dark chambers (visible under the dissecting microscope and close up photos), surrounded by and contrasted with very conspicuous, irregular, and interconnected sterile tissue. Sterile veins whitish or creamy whitish ("Light Buff," Ridgway, 1912) or lighter, varying widely from infinitely fine in thickness to irregular areas 10 mm in thickness, but averaging around 1 mm. Odor very powerful, fragrant, and peculiar when fresh, but hard to describe or compare with anything I've ever experienced before, except other truffle-like fungi. Odor diminishing in strength while slowly drying at room temperature over a period of a few days.

I tested the sterile whitish glebal vein tissue for polyphenol oxidase enzymes using tincture of Guaiac Resin for a general scan.

This resulted in a negative color reaction after standing for some time, meaning that no polyphenol oxidase enzymes were present, which is what I anticipated. As a result I did no further testing to pinpoint the specific polyphenol oxidase enzymes present, as described by Kaarik (1965).

**Microscopic Features:** I used the following clear mounting media on different squash mounts or thin section slides for the outer peridial tissue and the fertile dark glebal chamber tissue: 3 percent ammonium hydroxide, 3 percent KOH, Lacto-phenol (no stain added), and glycerine. I also used 3 percent ammonium hydroxide with Phloxine as a protoplasm stain and 3 percent ammonium hydroxide with Congo Red as the cell-wall stain. Melzer's reagent and IKI were used on the fertile and sterile tissue to see if there was either an amyloid or a dextrinoid reaction.

**Outer dark peridial tissue layer** 100–170  $\mu\text{m}$  thick, composed of beautiful, dark red-brown, mostly isodiametric cells, packed together like bubbles, 20–40  $\mu\text{m}$  in diameter, smooth or with some granulations and thin-walled. Below this distinct layer was another layer of slightly smaller isodiametric cells 20–30  $\mu\text{m}$  in diameter which were lightly colored closest to the outer layer, then became hyaline inward; below this was a third layer composed of compact interwoven hyphae 5–17  $\mu\text{m}$  in diameter, terete or irregularly swollen, hyaline, septate, and with some branching.



Drawing of *Leucangium carthusianum* showing dark outer peridial layer.

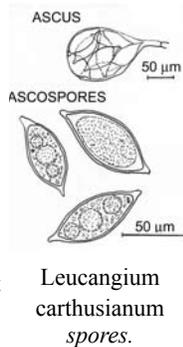
**Light-colored sterile glebal vein tissue** composed of compact, interwoven hyphae, 10–15  $\mu\text{m}$  in diameter, smooth, thin-walled to slightly thick-walled, hyaline, septate, and inamyloid (not amyloid or dextrinoid).

**Asci** 115–190  $\mu\text{m}$ , in largest dimension, globose, elongate globose or ellipsoidal, thin-walled, hyaline, often with a long narrow base, up to 50  $\mu\text{m}$  long, the base narrowing to 5–12  $\mu\text{m}$  in diameter, often with a septum along the narrow base, mostly eight spored, but varying from four to eight, abundantly scattered throughout the darker fertile glebal tissue. The asci that I observed in this collection were somewhat larger than the range given by Gilkey (1954) for *L. carthusianum* (as *Picoa*). Individual asci were readily observable on an open section of the gleba on the higher powers of my zoom dissecting microscope, appearing either light amber brown or very dark brown (owing to spore color only, because the ascial walls were hyaline). These different-colored spore bundles in the asci were intermixed throughout the gleba, giving an interesting color pattern when viewed under the dissecting microscope.

**Ascospores** 67–82  $\times$  28–35  $\mu\text{m}$ , fusiform with prominent and distinctive apiculi, normally equally apiculate on both ends of the spore, but occasionally more so on one end, thick-walled, almost hyaline under 1000 $\times$ , but appearing very noticeably colored as olive or grayish-green under lower power and contrasting with the hyaline asci they developed in, spore wall smooth (lacking ornamentation) and inamyloid in Melzer's reagent. Spore wall thickness 1–2  $\mu\text{m}$ , but noticeably thicker at the pointed apiculate spore ends, up to 5  $\mu\text{m}$  thick. Apiculi varying from acuminate to acute or somewhat rounded. Most spores with two to three large guttulae and numerous smaller oil-drop or granular inclusions mounted in 3 percent ammonium hydroxide, but with only one large guttule when mounted in Melzer's reagent. Ascospores forming in very compact bundles inside the asci, which explains the

distinctive slight curvature seen on many spores, since they formed in tight clusters around each other. Ascospore walls not staining in Congo Red, instead appearing a distinctive olive color.

What's amazing is that the spindle-shaped or fusiform ascospores are so large that they were easily distinguishable as individual spores and as clumps of spores in asci or partially ruptured asci in open sections of the gleba as viewed under the highest powers of my stereo zoom dissecting microscope, varying in color from a beautiful transparent light amber brown to a dark olive brown, or darker. It's interesting that this clear amber color seen under the dissecting microscope was so light that it was not observed under the compound microscope when using a clear mounting medium (3 percent ammonium hydroxide); only a grayish-green color was observed, as noted above.



**Habitat:** In soil that had been dug out for a hole to plant a tree. Beauty bark had then been put down over the soil, and the specimen was accidentally found while raking the bark out over the dug soil. The specimen was found about 35 feet from a cluster of three Douglas Fir (*Pseudotsuga menziesii*) trees that were approximately 20 to 22 inches in diameter. I estimate the age of the trees to be around 50 to 60 years or so. The specimen has been dried and preserved as Brian S. Luther collection #2500.

It appears that this species is associated only with the coastal form of Douglas Fir here on the West Coast (Lefevre et al., 2008) and the trees have to be relatively young (10 to 60 years old), just as with the Oregon White Truffle, *Tuber gibbosum*.

This collection seems to differ only slightly from the typical form of *L. carthusianum* by virtue of having dark brownish fertile glebal chambers with highly contrasting veins of very pale, creamy-whitish sterile tissue surrounding them, making it very striking in cross section compared to the typical color form of this species. The typical species described in the literature has gray chambers, much lighter or paler than in this collection with much less contrast between the fertile and sterile tissue. Gilkey (1954) describes and Phillips (1991) and Trappe et al. (2007) describe and illustrate a very pale gray form. It is distinctly possible that these color variations are a result only of differences in degrees of maturity. The spores, however, are diagnostic for this species. Castellano et al. (1989) state that the spores of this species are "unique among the hypogeous fungi," making it easily recognizable microscopically.

The combination of the rough, dark exterior composed of large, dark red-brown isodiametric cells and the fruiting body possessing a strong fragrance, along with the very large, lightly to darkly colored, unornamented fusiform ascospores with pronounced apiculi, are distinctive and unmistakable features.

*Leucangium carthusianum* is considered a choice edible.

*Moral: Don't overlook fungi or fungal habitats in your own yard. You never know what you might find.*

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## Follow-up e-mail by Doug U-Ren:

*Sauteed a piece of truffle in vegetable oil and fried up an egg. Seemed to be very rich tasting like when I eat too many crabs. Couple hours later developed stomach churning and cramps for about half hour then diarrhea. Feel good now, but don't think I'll try any more.*  
Young Doug

## SECRECY IS PARAMOUNT DURING MOREL SEASON

George Little

*The State Journal-Register*, Springfield, IL, April 18, 20009

Sometime in the next week, someone will find a mess of mushrooms, or say they have.

Mushroom mania will be off and running. People who have never even seen a wild morel will become intensely interested in finding them. A mushroom sack, bug spray, and a lucky walking stick will be placed in vehicles and remain there until Mother's Day.

Mushrooming hot spots are secret places for many people, especially for those hunters who do most of their searching on public land.

Secretive hunters will take the long way around when they go into their favorite hunting grounds, just in case someone is watching. Once they get there, some will find footprints and the heartbreaking evidence that another hunter walked straight in from the road, got there in half the time, and harvested the crop while Joe Secret was sneaking through a good-sized patch of multiflora rose.



Mushroomers have more secrets than King Tut's tomb. I think the optimum soil temperature is 51 degrees, measured on the sunny side of that long hill, on the far bank of LaHarpe Crick, about a mile and a half from the old bridge. Then again, it could be 49 degrees. Or maybe it was 55.

I wrote it down and put the notebook in a secret place. Now, the bigger secret is where I put it.

## MUSHROOM(S) OF THE MONTH: Morels

Agnes Sieger

May is morel month all over the U.S. As well as including a few articles on morels, we therefore thought it only fitting that the May issue of *Spore Prints* feature this—the most-sought after fungus by mushroom hunters across the country—as our mushroom of the month.

### What is a Morel?

True morels belong to the genus *Morchella*, a genus of edible mushrooms closely related to anatomically simpler cup fungi. Some hunters (and at least one Pike Place Market stall) loosely include *Verpa bohemica* (sometimes called the “early morel.”) True morels should not be confused with false morels in the genera *Gyromitra*, *Helvella*, and *Disciotis*.

### Nicknames

Morels are called by many nicknames. Some of the more colorful include “dryland fish,” because when sliced lengthwise then breaded and fried, their outline resembles the shape of a fish. They are known as “molly moochers” in most parts of West Virginia. In many parts of Kentucky they are known as “hickory chickens,” “merkels,” or “miracles.” Around here, they are often called “sponge mushrooms” or “pine mushrooms.”

### How Many Kinds of Morels Are There?

All species of true morels are characterized by a head (or cap) with pits completely surrounded by distinct ridges and have a hollow stalk. In most species the cap is attached to the stalk along its whole length; in one the cap is attached halfway down its length and the rest hangs down like a skirt.



Taylor Lockwood

*Morchella tormentosa*, the Fuzzy Foot Morel

Aside from these similarities, morels can be big or small, fat or skinny, round or pointy. Some grow as tall as a foot; others never exceed a few centimeters. They can be yellow, tan, black, or even white.

Based on the differences in their appearance, you might think there would be hundreds of morel species. However, mycologists currently recognize only a dozen or so. To date, DNA analysis (Kuo, 2008) has identified 16 species of morels,

based on a genetic study of 500 North American morels from across the continent. Only four of these can be identified based on their morphology (i.e., physical features)—the “Fuzzy Foot” morel, *Morchella rufobrunnea*, what Kuo (2008) calls the “Western Blond,” and a new species from Puget Sound and southwest Oregon tentatively called simply “Taxon J.” Four species groups, however, can



Mark Davis

apparently be reliably determined from their morphology—black morels, half-free morels, *esculenta*-like yellow morels, and *deliciosa*-like yellow morels. Other species of morels currently listed in U.S. field guides, such as the Mid-Western and eastern-U.S. “gray morels,” do not appear to be genetically distinct.



This may explain the experience several years ago of a mycologist who found that wild morels

*Morchella angusticeps* may be getting a new name.

growing together in a single cluster had different genetics and that morels grown from a single culture exhibited several forms, leading him to wonder if the number of morel species might be much fewer than estimated at the time.

### When to Hunt for Morels

Spring is the season for hunting morels. Of course, spring is relative. Depending on where you live, morels sprout from January to early June, with April and May being the peak season. In Canada, the morel season usually starts in May, and can extend to July, as the snows recede slowly in different regions. Further north, in the Northwest Territories and Alaska, morel season runs from the first of June to the end of July, peaking at the end of June.

Generally speaking, the best time to begin looking for morels is when daytime highs in your area have been in the 60s (15°–21°C), with nighttime lows no colder than the 40s (5°C). Rain is important, too. Mushrooms like it warm and moist, but not soggy. Morels grow where soil is moist yet well drained, not oversaturated. If you have a dry spring, the crop will be sparse. If you have ample rain—but not an unusually wet spring—the crop will be plentiful. Many mushroom hunters know to head out after receiving warmer rains. Morels need moisture, warm days, and warm nights.

In the Mid-West, the morel season is intense but short, lasting only a couple of weeks. We are luckier here in the Northwest, where extremes in elevation allow morel hunters to follow the season from sea level up into the mountains, prolonging the mushroom season significantly.

### Where to Hunt for Morels

Morels grow in every state, every Canadian province, and most countries throughout the world. They thrive best in climates with pronounced seasonal changes. Morels are particularly popular in Europe, and they are commercially harvested in India, Turkey, Morocco, Peru, Nepal, and Afghanistan.

Where do you find them? Some of the places to look just make common sense. If it is cold and early in the morel season, check lower elevations and south-facing slopes. If it is late and hot, check higher up and on north-facing slopes. If it is dry, check gullies and other places that collect water.

One of the best tips for finding morels, or any mushroom, is to become intimately familiar with the type of terrain and plants with which they are associated. Unfortunately, you probably won't figure this out until after you have already found a few. There are, however, some basic habitats to check.

In parts of the U.S., morel hunters associate morel spots with particular types of trees—in particular, American Elms, White Ashes, Tulip Poplars, and apple trees. A mother lode of yellow morels can often be found around elms, particularly dead ones, and in old, overgrown apple orchards.

Morels, especially Black Morels, like disturbed ground, which explains why they sometimes grow profusely the year following a forest fire (search around the edges, not in the middle where the fire was hottest; also investigate cracks and fissures in the earth as well as burned out root systems within the ground) and after the ground has been disturbed by logging or other activity. This is probably also the reason that morels seem to be fond of campgrounds.

Morels can even be found in town. Look for old apple trees where the fruit has been left on the ground to rot (morels seem to love applesauce) and landscaping that has been mulched with bark.

Actually, morels seem to grow everywhere. The first wild mushroom I ever saw was a morel, found by a co-worker in a planter by Group Health on Capital Hill. The most unlikely mushroom I ever saw was also a morel, an 8-incher growing out between an old car battery and the concrete floor of our garage on a bit of spilled fertilizer. (I almost didn't pick it; I was sure a friend of ours was playing a practical joke.)



## Reference

Kuo, M. (2008, November). "Identifying morels with morphology," retrieved from the *MushroomExpert.Com* Web site: [http://www.mushroomexpert.com/mdcp/kuo\\_08.html](http://www.mushroomexpert.com/mdcp/kuo_08.html)

## MOREL MADNESS MONTH

Dan Brawner

May is the season when animals, crazed with mating fever, blunder onto highways, oblivious of oncoming traffic. Perhaps not coincidentally, this is also morel mushroom season, when otherwise rational individuals abandon their families or call in sick from work to pursue an illusive fungus that is a second cousin to athlete's foot.

The morel, like Beluga caviar, is considered an expensive delicacy for those with the refined taste to appreciate it. There might be annual Beluga festivals if the stuff could be harvested in your own back yard, without having to personally remove it from a large toothy fish. But it's not as if hunting mushrooms is not dangerous. The chance that you might get sick or die from eating the wrong kind of mushroom is part of the attraction. Lots of people have died from eating mushrooms, including the Roman emperor Claudius, who should have known better than to eat his wife's cooking in the first place.

Mushrooms are like spiders. They evoke images of death and decay. They thrive in dark secretive rotting places that make the average person shudder.

Maybe more people would eat spiders, if they weren't so common. Morels sell for about \$20 a pound. If you leave them sitting on the kitchen counter for two days, they melt into a festering ooze you couldn't pay somebody \$20 to scoop into the trash. The perishable nature of morels contributes to their reputation as a dainty treat for sophisticated palettes.

A true mushroomer has a little larceny in his heart. He wants something rare and expensive—and he wants it for free. The best place to hunt morels is on someone else's property. If you're not trespassing, you don't get the genuine morel experience.

It takes a special kind of person to hunt morels. If you're wondering if you have what it takes, the following test might help you decide: You have been hunting unsuccessfully for morels for hours when suddenly, you trip over a wet log and break your leg and, simultaneously, discover a huge patch of yellow morels. When you hear a distant hiker walking by, you... (a) call for help, (b) pick all the mushrooms in sight before calling for help, or (c) pick all the mushrooms in sight, then drag yourself back to your car and set your broken leg yourself because the doctor might horn in on your morels while you're in traction.

If you did not answer (c), chances are you probably also think \$20 a pound is a lot to pay for mushrooms.

## THE ZEN OF LOOKING

Frank Evans

*NATS Current News*, North Amer. Truffling Soc.

June/July 2004

I just finished six days of hunting for morels and as a result, I had ample opportunity to observe my own habits and which work best for me. In the title, I used the word "looking" for a reason. The key to success in finding morels is to be effective in the way that you "look" as you move through the forest.

Morels are experts in camouflage. They have evolved to look just like the pine and fir cones that litter the forests where *Morchella* grows. To defeat this devious deceit, it is necessary to see the morel as being different. There are subtle differences in color, texture, and shape that can be used to distinguish the reward from the booby prize. It is, however, a very difficult and tedious job to look at each and every cone in the hope that it really will turn out to be morel. The human eye is designed to see details only at the place where we direct our attention, the place where we are "looking." This highly sensitive region of our vision is not very large. Most of our field of view, the whole picture that we see, is of much lower resolution. It all looks continuous to us but it is obvious that, in order to *see* something, we must look right at it. It turns out that the center of our vision and the peripheral of our vision are actually wired for different tasks.

The one thing that the peripheral vision is good at is protecting us from danger. There are special capabilities wired in that can quickly determine that something is "not right." "Not right" usually means danger, and the peripheral-vision nerves are hard wired to detect things that don't quite look right: to detect things that are hiding in their own devious ways.

WAIT! Isn't this exactly what I need to find morels? I need to detect which, of all of those pinecones, is really a morel, hiding in the clutter. So, what I want to do is look "toward" the pinecones but not "at" them. This is the Zen part of the article title. You can't find the prize by looking for it. You must look at the whole picture at once and only then can you see the prize. Then, of course, you will look at the morel and magic! there it is. The peripheral wiring has separated the "not quite right" look of the morel from all of those "looks like a cone" objects.

I discovered this behavior in myself because I find myself doing a double take most of the time. When I find the first morel of a patch, I always quickly "look back" and then I am looking at what I have already seen.

Best of luck "looking."

*Look what I found!*



*One of Alexander Smith's students, a very wealthy woman, went back home to Cleveland to show off her new mycological knowledge. After the first fall rain, she went out, gathered wild mushrooms and invited socialites of the city over for dinner.*

*All was going well until the butler suddenly appeared at her side and said, "Madam, your dog is dead." Now it turns out that the lady had fed some mushrooms to the dog before serving them to her guests, just to be safe. The dog had seemed fine before dinner.*

*All the guests were quickly shuttled to the hospital to have their stomachs pumped. Shortly after this, it was discovered that the dog had been hit by a car.*

—James Swan, *ESPNOuthdoors.com*, April 9, 2009

## Morel Values

E. Peter Brunette, Northfield, MN, via thegreatmorel.com

*I'll share with you a secret,  
If you promise not to tell.  
About a tasty mushroom,  
It's known as the Morel.*

*Some people plan all winter,  
It's why they wait for spring.  
To go afield out searching,  
For that delightful little thing.*

*When lilacs have turned purple,  
And about to go to bloom,  
It's time to be out looking  
For your favorite mushroom.*

*You'll be putting up with woodticks,  
And nettle weed that stings.  
But I guess it's all quite worth it,  
For all the joy it brings.*

*When you bring this your treasure,  
That a hat would barely fill,  
But will make one meal so special,  
For this an annual thrill.*

*Some fry them up in butter,  
Or put them in a stew.  
You can dice them up for meatloaf,  
I guess it's up to you.*

*So if you find yourself a spot,  
Where the tasty mushrooms sprout,  
You dare not breath a word of it,  
That's what it's all about.*

*Cause if you share it with a friend,  
Though sworn to secrecy,  
Next year you'll go back to your spot,  
And there your friend will be!*

## MORELS A LA CRÈME

Patrice Benson

8 oz. fresh morels  
1 cup cream  
2 oz. butter  
Salt, pepper to taste

optional ingredients as desired:

1 Tbs fresh Italian parsley, minced  
1 large chopped shallot  
½ cup of good, dry, white wine  
1 small clove of minced garlic  
½ tsp minced fresh herb such as thyme, basil,  
summer savory, or chervil

Heat skillet, add butter and mushrooms. Mushrooms may be whole or sliced lengthwise or crosswise. Sauté for 5 minutes. Add wine, if using it, and reduce. Add cream and herbs and reduce to desired consistency—less for pasta sauce, more for serving on bread as an hors d'oeuvre. It is also incredibly delicious on grilled chicken or steak.



## YAHOO DISCUSSION GROUP

Want to stay in touch? The PSMS e-mail discussion group maintained by Yahoo Groups is an easy way to keep in contact with other members, circulate information about PSMS events, and post general mushroom information. To join, follow the directions on the PSMS website (<http://psms.org/members/index.html>) or on page 40 of the PSMS roster.



May is morel month!



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