

# Exploring the Horizons of Mycophagy On the Olympic Peninsula of Washington by storm

*Mycophagy --The eating of fungi; esp. of those species usually neglected or avoided*  
(Oxford English Dictionary)

## Mushroom Mystique

As I sit down to compose this article, a new generation of fungus gnats emerges and takes flight in my cabin, flittering around my desk lamp like myco-foragers combing a promising new patch of wet, lush ground. A seething conglobate of their future cohorts writhe across my desk, desperate to return to the wild. I oblige them via an index card. Fungi of various shapes and sizes, and in various stages of health and decay (hence the insects), wait to be identified while scattered upon sheets of white printer paper. Having spent the last three years in the San Francisco Bay region, and now on the Olympic Peninsula of Washington, has provided me with the glorious opportunity to *stalk the wild mushroom* in some very mycologically-diverse regions of North America. As I forage for edible or otherwise useful botanicals, insects and geologic gifts, it is rare to not encounter the ubiquitous Yellow-Stemmed *Mycena* (*Mycena epipterygia*), the omnipresent, gelatinous Poor-Man's Gumdrop (*Guepiniopsis alpinus*) or the abundant troops of the delightfully slimy Oregon Gomphidius (*Gomphidius oregonensis*). During the cooler, rainy winters here the mushroom can nearly always provide a sizeable and reliable meal. It would be a shame to ignore such a feast for the eyes and stomach for the wont of a little knowledge of how to incorporate these organisms into one's everyday foraging habits. You may even be rewarded by a hidden population of fungus gnat larvae that gracefully float to the top of any soup that your mushrooms may have become part of (delicious!). Why not learn about our fungal friends and partake of this woodland bounty?



I decided to write this article in response to the richly diverse reactions I get from passersby while I hunt mushrooms. Basket and camera in tow, up in a tree or face-first in the dirt, whatever breed of spectacle I present inevitably elicits the fear, the fantasy or the fascination the general public holds for Kindgom Fungi. Here is a sample of comments people have offered me in passing:

- *from a young man*: "If you boil the mushroom with a piece of silver, the mushroom will be edible if the water doesn't turn black."—Does this mean that deliquescing *Coprinus sp.* (Inky Cap) are poisonous?

- *from a young man*: "I only eat mushrooms that don't taste sour."—unfortunately that closes the door on a lot of perfectly edible Boletes, and welcomes a host of deadly Amanitas!

- *from a middle-aged couple*: "They're safe if they aren't bitter, right?"—*Amanita phalloides* (Death Cap) and *A. ocreata* (Destroying Angel) aren't the least bit bitter...

- *from an elderly couple*: "You remind me of when we were children, picking mushrooms with our grandparents in France. That was during the war, you know, and people got sick trying to eat all sorts of mushrooms when the food supply was down. But Grandfather knew what he was doing, and mushrooms got us through."—I love these kinds of interactions.



- *from a group of young men*: "Hey, man...have you found any real good ones? You know, the kind that stain blue?"—I get *tired* of these interactions.

- *from a middle-aged woman*: "I never touch those things. They can kill you! One of my friends ended up in the hospital after touching one that grew in the woods!"—I've never encountered a mushroom that bites...

- *from a group of pre-schoolers*: "Awwww, they're so cute! Are they alive?"—*That's* why I'm a naturalist...

In light of these interactions, and many more, I thought it was time for me to educate myself on the various positive aspects of fungi, especially those related to edibility, and relate my findings and personal

experiences to other mycophiles. I write this article from the perspective of a person who get bombarded with the anxiety and fear from students of all ages regarding fungi. I am also a student of all things Stone-Age, including paleo-nutrition and foraging dynamics: I have eaten nearly 250 species of fungi and value the consumption of wild mushrooms as a way to understand and directly interact with my environment. The pictures that accompany this article present some of the lesser-eaten species that I am particularly fond of.

## The Joy of Mushrooms



Would it surprise you to hear that some evolutionary biologists consider fungi to be more closely related to Kingdom Animalia than Plantae? It appears that humans and fungi had a common ancestor around 460 million years ago (Stamets 2002). To wit: Mushrooms can store energy in the form of glycogen; some mushrooms contain vitamin B12 (very important for vegetarians); and mushrooms produce chitin, the substance that forms the carapaces of crustacea. While animals share these characteristics, there may be no plants that can perform such feats. A curious note: at least some slime molds' (*Myxomycetes*) spores, when released and having alighted upon a suitable substrate, transform into an *animalcule* equipped with flagellae (similar to sperm). It then has the

animal-like capability of swimming to a desirable location and again transmuted to "a living envelope of cellular ooze" (Zahl, 1965).

If this isn't enough to endear you to rush outside and embrace the nearest fleshy fungal fruitification that adorns your compost heap, rotting outbuilding or the canes of your favorite armed berry-plant, then consider their proposed nutritional benefits. Although it is not within the scope of this article to fastidiously and independently verify each of the following claims (see *References* at the end of this article for more information), read on:

- ◆ The common grocer's brown button mushroom (*Agaricus bisporus*) and its slightly older self, the portabella, which is a cultivated form of the wild field mushroom (*Agaricus campestris*), is nearly equivalent to milk regarding amino acid content (NRCM, 2002).
- ◆ Some mushrooms add fiber, niacin, riboflavin, vitamin B12, and all of the amino acids—complete protein (various Internet sources).
- ◆ "The vitamin content of mushrooms resembles that of meat" (The Mushroom Council, 2002).
- ◆ "Scientists have only recently confirmed what ancient cultures have known for centuries: mushrooms have within them some of the most potent medicines found in nature. Long viewed as tonics, we now know that their cellular constituents can profoundly improve the quality of human health. Differing from most pharmaceuticals, these healing agents have extraordinarily low toxicity, even at high doses." (Stamets 2002)
- ◆ Many polypore species, and some gilled mushrooms are great sources of anti-tumor, anti-viral and anti-bacterial metabolites. The cosmopolitan Turkey Tail fungus has been shown to impede the growth of *Candida* infections (Stamets 2001).
- ◆ A lot of mushrooms contain MSG, which can magnify the flavor of other foods. Some of you may recall the purported link between MSG and certain illnesses, but Professor William Wood of Humbolt State University explains, "This is the same chemical once believed to be responsible for the 'Chinese Restaurant Syndrome.' It is now known that histamines in soy sauce are the real culprit" (DeShazer, 2002).
- ◆ Since many mushrooms contain chitin and its more easily digested derivative, chitosan, their consumption can elicit such benefits as: enhanced tissue repair, quicker burn and wound healing, increased resistance against some blood and skin pathogens, among others (Goodman, 1989). Dr. Goodman also notes that, "Mexicans have used mushrooms with their chitosanaceous cell walls to accelerate laceration wound healing."

"There is but one way by which to determine the edibility of a species. If it looks and smells inviting, and its species cannot be determined, taste a very small piece. Do not swallow it. Note the effect on the tongue and mouth. But many species, delicious when cooked, are not

inviting raw. Cook a small piece; do not season it. Taste again; if agreeable eat it (unless it is an Amanita). After several hours, no unpleasant effect arising, cook a larger piece, and increase the quantity until fully satisfied as to its qualities. Never vary from this system, no matter how much tempted. No possible danger can arise from adhering firmly to it.”  
(McIlvaine et al., 1973 ed.)

### Those Before Me

Although I disagree with that last sentence, I am inspired by the sheer volume of McIlvaine’s mycophagic experimentation (nearly 800 species!), especially when considering the relative paucity of information back then regarding the possible dangers of this undertaking. The modern “toadstool tester” can now thankfully peruse the pages of such books as David Arora’s *Mushrooms Demystified* and note the various *accumulative* (*Hygrocybe punicea* concentrates cadmium within its tissues), *synergistic* (*Coprinus* and alcohol shouldn’t be mixed), or *latent* (serious symptoms of *Cortinarius* poisoning can delay up to 20 days) dangers that may have been little-known a century ago. But perhaps there are still those of us who, while deeply respecting the powers of Kingdom Fungi, simply wish to *replenish a body of knowledge lost in part by the past ravages of cultural displacement*. Some assert that experimenting with mushrooms is unnecessary, for, “our ancestors have already provided for us, through trial and error, a comprehensive list” from which we can glean (Vizgirdas, V5: 12). While I agree that we should take the time to learn about wild organisms before stuffing them into our mouths, the available body of knowledge is far from complete, if not unavailable. I am hard-pressed to find such information on mushrooms eaten by past tribes in the whole of North America. I feel a certain excitement when, upon looking up the edibility of a freshly keyed-out specimen, I’m offered the succinct disappointment, “Unknown,” which is oft-tempered by that fickle admonition, “Do not experiment.” Woe cometh the day when I do not heed such judgment as a *charge* to step forth and claim my right—No, my *privilege!*--to push the horizons of current wisdom surrounding the species at hand (and soon at mouth!). The miraculous gifts inherent within dozens, if not hundreds, of otherwise edible (in *my* experience) and quite common—to the experienced eye--species are being inadvertently snubbed by condemnations such as: too slimy; rank odor; acrid or bitter taste; not recommended; not edible due to its resemblance to species of unknown edibility; too tough or gelatinous in texture; of no consequence due to small size. Many of these misconceptions can be remedied thusly: pounding of species with tough flesh to render them more palatable; cooking and pickling can dispel many acrid or bitter tastes, especially within the genera of *Lactarius*, *Agaricus* and *Russula*; infusing tough, woody species with hot water in order to ingest nutrients, essences and flavors as a tea; be sure of your identification; and, lastly, my favorite—expanding acceptance of diverse foodstuffs through the purging of food prejudices.



“With regard to tastes, it is always well to remember that they are individual; ‘otherwise moths would not eat cloth.’” (Krieger, 1920)

### A Word of Caution



Although I respectfully consider the monumental amount of experience and wisdom that the readership of this journal possesses regarding the dangers of experimenting with wild edibles in general, I sternly warn everyone who may consider experimental mycophagy: **Eating mushrooms of unknown edibility can result in illness or death.** There is no room for a cavalier attitude nor for intermittent attention to detail. I have studied a myriad of warnings and case histories on this subject from a plethora of authorities. I consider myself extremely fortunate to have never experienced deleterious effects—thus far. There is that infinitesimal, lingering concern in the far corner of my psyche regarding possible long-term effects of this research. But as with mountain climbing, para-sailing, or stepping outside (even *inside*) one’s dwelling, there is an inherent risk involved with every activity. Study. Be careful.

Evaluate your reasons for doing what you do. I am a Naturalist by vocation and hobby—I am driven to acquire primary experiences and then share them. I am *not*, however, predisposed to acquiescing when someone attempts to corral my actions based upon their prejudices or murky, nebulous claims perpetuated by fear. I am not advocating that you go out and pick the mushrooms I mention in this article and eat them. I am merely supplementing the existing literature with my knowledge. I invoke the words of Roy Chapman Andrews, “Each one of us is a trustee of the past; we have the task of living up to our heritage – and adding something to it.” (Wescott, 2002)

## Methods

What follows is the procedure I use when determining the edibility of a species of mushroom, whether it is generally regarded as inedible, hallucinogenic, or unknown. I do not necessarily endorse *your* use of this method—I do not know what will work and be safe for you. This method is constantly undergoing improvement, so waiting periods can change from species to species for me and can depend upon the time of day I start the process. When in doubt—I go without (for a while longer, anyway)!

1. I am absolutely confident of the specimen’s identity—doubt can manifest itself physically. Recently I keyed out a specimen of *Tubaria furfuracea*, an mushroom generally regarded as dangerous to eat due to it’s relation to potentially deadly genus *Galerina* and similar appearance to a myriad of other poisonous LBM’s. When it came time to eat it, I had doubts. So I put it in the refrigerator and “slept on it.” The next morning I went into the field and collected another couple specimens and keyed them out to *T. furfuracea* again, examining the spores, which eased my doubt and I consumed it in the manner described below. Other than the acrid-burnt taste, no harm was experienced (cooking dispels most of the displeasing flavor, however).
2. I consider what the field guides have to say about the species in question.
3. I eat a dime-sized piece of raw cap on an empty stomach. I choose to test mushrooms “in the raw” because I think if any adverse reactions are to occur, this will expedite matters. I’d rather know sooner than later.
4. I wait about 12 hours.
5. I eat half of the remaining raw cap.
6. I wait about 8 hours.
7. I eat rest of raw cap and stem.
8. I wait about 8 hours.
9. I eat one whole, cooked mushroom on an empty stomach.
10. If I’m better for the experience, then I’ll eat the mushroom once I encounter it again and give thanks to the aborigines and the McIlvaines of the world who have done this for us with hundreds of other species!

At any point during this procedure that I sense ill effects, I would discontinue the experiment on that species. To date, I’ve never perceptively suffered from any of these trials.

Regarding cooking procedures: I use a skillet (cast iron preferably) on medium heat that is washed between each frying of different species. I use no oil, which can impart taste to the mushroom. For watery specimens, I fry until all excess water has dissipated. Nary a day goes by (literally) when I do not consume these mushrooms as meat or tea, for I view this process as a life-long exploration. Polypores or otherwise tough-fleshed mushrooms are made into *teas* and ingested in this fashion (having filtered out the mushroom solids). Exceptions include *Panus conchatus*, *Lenzites betula* and *Poria corticola*, which I pound with a wooden billet to tenderize the flesh to make it more palatable.



“To ask a person to gather his own mushrooms for the table, without previous instruction that will enable him to avoid the deadly kinds, is equivalent to, if not worse than, inviting him to put his unprotected hand into a den of rattlesnakes.”<sup>11</sup>

## Tips On Researching About Edible Mushrooms

Admittedly, my search for information on the edibility of mushrooms was by no means exhaustive. But this endeavor has yielded some insights for enhancing one's mycophagic research and experimentation:

1. Get to know the half-dozen mushrooms in North America that are known to be deadly.
  - Death Cap (*Amanita phalloides*)- Destroying Angel (*Amanita verna*, *A. ocreata* and *A. virosa*): together, they comprise 95% of mushroom poisoning fatalities in the US.
  - Deadly Galerina (*Galerina autumnalis*)
  - False Hooded Elvin Saddle *Gyromitra infula* (contains the toxin MMH, which is a key ingredient in rocket fuel!)- *Cortinarius gentilis*
  - Ringed Cone Head (*Conocybe filaris*)
2. Consider your sources. Be critical of everything you read. Everyone has an opinion.
3. Try your best to exhaust available research tools. You may be surprised by what you discover.
4. Draw your mushrooms while keying them out. It requires you to pay close attention to their characteristics, which help aid in their correct identification.
5. Beware of individualized reactions to some mushrooms. Even though most people can ingest these with impunity, there are reports of folks suffering intestinal distress as a result of consuming such species as Blewits (*Clitocybe nuda*), Sulphur Shelf (*Polyporus sulphureus*), Morels (*Morchella spp.*) and Early Morel (*Verpa bohemica*). People falling ill from consuming Caesar's Amanita (*Amanita caesarea*) and Chanterelle (*Cantharellus cibarius*) have also been reported.
6. Although recent research has shown that picking certain mushrooms can stimulate their fertility, conservation can allow for others to also enjoy your favorite fungi!

## A Plea For Unity

Finally, I'd like to address the minor but pervasive undercurrent within various mycological communities from which the experimental mycophagist is looked upon with disdain. Derisive accusations of "exaggeration," "recklessness," "needless heroism," and having "the foolhardy pretence of tempting fate" are slung harshly and quite erroneously (Rose, 1999). While I can appreciate the need for caution and the responsible dissemination of information (indeed, some people die each year from mushroom poisoning), I find it alarming that the sincere objective of restoring a mostly disintegrated mycogastronomic record, which serves to further strengthen our biologic ties to our local landscape, would elicit such acerbic attacks. After all, mushroom eating seems to me to be only as "dangerous" as consuming plants. Out of several thousand species, only a half-dozen mushrooms are considered deadly poisonous (Arora, 1986). Compare this to the number of plant species that have been shown to be toxic. Perhaps the bad rap that has been inflicted upon fungi is due to our basic fear of the unknown, since mushrooms have been studied far less than have plants. In this modern world, fear perpetuated by blind ignorance has given birth to the countless procession of warnings and disclaimers that inundate us constantly: We all should recognize ownership of our own existence. Adventurers and pioneers have forever elevated the *zeitgeist* of each successive generation! Let us deconstruct such ego-barriers, which thwart effective communication and further injures a world wracked by negativity. Ultimately, we have the right to decide what we want to do with our lives. Basic human freedoms....



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