

What's That Mushroom?

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“What’s that mushroom? Can I eat it?”

Please. If you need to ask the first question, maybe hit pause on the second.

I’m still in the ‘I didn’t know that’ category of amateur mushroom enthusiasts, but for me at least, mushrooms are *way* harder to ID than wildflowers or birds. When I see a mushroom, I want to know who it is and what it does for a living. You, too? Well, here are some tips that have worked for me, and first a bit of get-to-know-you info on this kingdom of life.

Mushrooms are the reproductive structures of fungi. They exist to produce microscopic spores by the millions, which are distributed by air currents. That’s all you really need to know about that. The rest of the organism – the vast bulk by weight – is a tangled mass of microscopic threads that make up the mycelium (my SEEL ee um): the body of the fungus. When people refer to a mushroom as a “fruiting body,” they are making an analogy to a tree and its fruit. Just as picking an apple does not kill the tree, so picking a mushroom does not kill the mycelium.

Most of the estimated 1,500,000+ species of fungi remain unnamed. Of the 100,000 or so that have been given scientific names, only a small fraction have “common” names. And to make matters worse, sometimes multiple different species share the *same* common name (e.g. “turkey tail” shelf fungi). Latin names are not that bad once you realize that pronunciation is entirely up to you: no wrong answers.

Historically, people thought fungi were plants. But they are not. In a bit of a shocker, we now understand that these organisms are more closely related to animals than to plants. Our common ancestors lived eons ago, but still, wow.

The world of fungi is mostly hidden, but they are essential connectors in healthy, intact ecosystems. You can find mushrooms in lawns, on mulch, and even in house plant pots. But in my experience, the most striking diversity and abundance of mushrooms will be found in the forest. Especially woods with oaks, and not too many invasive plants.

Some mushrooms are parasites or pathogens, depending on a living host. Many others are decomposers, breaking down and eating wood and other organic matter. The most heartwarming mushrooms, in my humble opinion, are the symbionts: the tree partners. These mushrooms impressively extend the root systems of plants, and “trade” nutrients and water found in the soil for carbohydrates made by the plant. Way, way before our time, mushroom symbionts helped early plants colonize land.

Do you want to learn to identify mushrooms? This is what has worked for me:

1) **Learn from experts.** Join the North American Mycological Association (NAMA), or one of the many regional associations. Follow the experts on forays and ask questions. Forays are like slow-motion hikes. Walk a few steps, someone finds a mushroom, and everyone mills around looking at it and (with luck) learning something about it. Pictures are taken. Then another few steps. If you are interested in foraging, I highly recommend Adam Haritan’s *Learn Your Land* videos on YouTube. He also offers outstanding online courses that I thought were great. I still check in with the content several years later.

2) **Read about them.** Learn how to use the keys in field guides to narrow down the possibilities, then *read the descriptions*. Leafing through books or websites looking at pictures rarely works, sorry. An excellent online source is MushroomExpert.com, provided by Michael Kuo. The site includes plenty of information on how to get started, as well as keys. His descriptions are as entertaining as they are helpful.

3) **Crowdsourcing.** My go-to favorite is MushroomObserver.org. Post your photos, and other information about the mushroom, and human beings help you try to identify it. Often these are experts. There are also several Facebook pages – including those of regional associations mentioned above – that can help. I particularly appreciate the ones devoted to specific groups of mushrooms (e.g. Crust Fungi and Polypores).

I am not yet a fan of Artificial Intelligence (AI) for mushroom identification. Although AI can often get you in the ballpark for distinctive species, beyond these it tends to be unreliable. Many non-charismatic mushrooms have lookalikes, and with little information on the substrate, nearby trees, staining or latex, smell, and myriad other characteristics, you might get an inaccurate ID. Good people are working to train iNaturalist's AI (upon which Seek depends), and identifying some mushrooms posted there, but I advise awareness of limitations at this point.

So now you are out in nature and faced with a handsome young mushroom. It is refusing – politely – to tell you its human-given name. But gazing at your beautiful mushroom, you decide to try and figure out what it is. It may be tempting to snap a quick photo of the cap and toss it up to the crowdsourcing crowds or the AI algorithms. But if you really want to get to know your new friends the fungi, why not try on your own?

Start with the substrate it is fruiting on. If it is wood, is it alive or dead? Hardwood or conifer? Are the mushrooms bunched together, or fruiting singly? Next, check out the fertile surface where the spores come from (hint: usually the underside). Your smartphone might have a magnifier that you can use for a close look. You are looking for structures like gills, sponge-like pores, or even teeth or spines. What about the stem? Is the base emerging from some type of cup or sack? Is there a ring part way up? What about texture and color? Now, the cap. Cap color is notoriously unreliable because many variables affect color, but check for scales, patches, warts, striations, slime... really any distinguishing features. These visual clues might help you when you are deep in one of the keys.

I wish this was all, but alas, you may also want to check for bruising of pore surfaces, milky latex produced when gills are scratched, distinctive odors, and color of spores. Although individual spores are microscopic, you can catch enough for a “spore print” by placing the cap fertile-surface-down on paper overnight. Some field guide keys start with spore color, so this is a useful trick to know.

When you have accumulated all of this information, and field-guide quality photos of all the relevant parts, you are equipped to maybe, possibly, perhaps – figure out the name of your specimen, and what it does for a living. Say hi for me.

If you are thrilling to the foraging hunt, please remember to avoid impatience, laziness, and especially hubris. And yes, I *am* channeling my mom. You don't want to burden our medical establishment with making a diving catch of your health (or life) if you eat a poisonous mushroom.

Finally, if you like mushrooms and enjoy a book with paper pages, consider Britt Bunyard's *The Lives of Fungi* (2022). It is very readable, handsomely illustrated, and covers a vast and astonishing array of topics. You will appreciate fungi in ways you never expected. Promise.

