

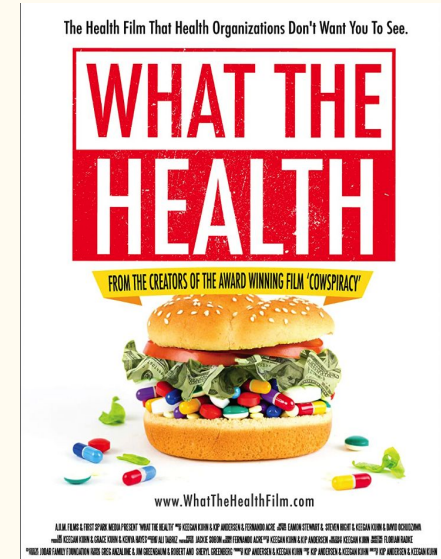
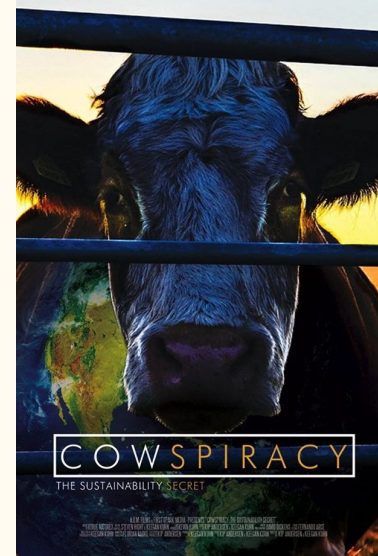


The Magical World of Mushrooms

Hannah Wilson
Certified Wild Mushroom Foraging Safety Expert

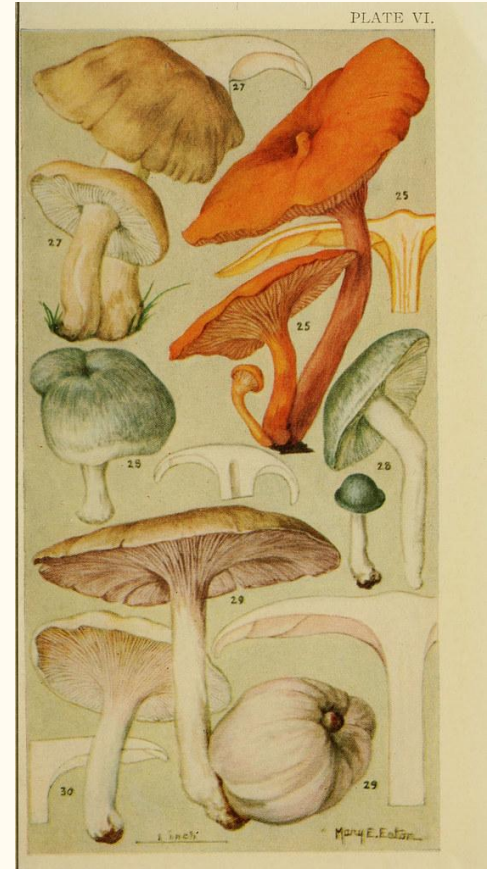
A Little Bit About Hannah

- Degrees in Chemistry and Psychology
- Vegan since July 18, 2020
 - Went Vegan overnight for sustainability
- Interest in mushrooms, foraging, and herbalism began in Fall 2021
- Received Wild Mushroom Safety Certification in September 2022
- Hobbies
 - Foraging
 - Herbalism/Holistic Healing
 - Cooking
 - Reading
 - Exercise
 - Gardening



Today's Presentation

- What are Mushrooms?
- Foraging: The 8 Rules of Mushroom Foraging
 - Always check your local and state laws on foraging - some local, state, and national parks are protected and don't allow it
- Harvesting Mushrooms
- Mushrooms You'll Find in GA
- Storing, Drying, and Freezing
- Cooking with Mushrooms
- Medicinal Benefits
- Recommended Resources



What are
Mushrooms?

What are Mushrooms?

- Technically, the “mushroom” is the **mycelium**, which is a branching structure of thin filaments that runs through the forest
 - Mycelium grows in and on the forest floor, as well as through dead and living trees and other growth media such as dead leaves
- Mushrooms are the reproductive structures of fungi, or “fruitbodies”
 - Produce spores
 - Conditions have to be right for mushrooms to grow, just like fruits and vegetables
 - Temperature, humidity, soil conditions, growth medium, etc.
- There are over 14,000 species of fungi on earth. About 2,000 of these are technically edible, and about 20 of them are delicious!



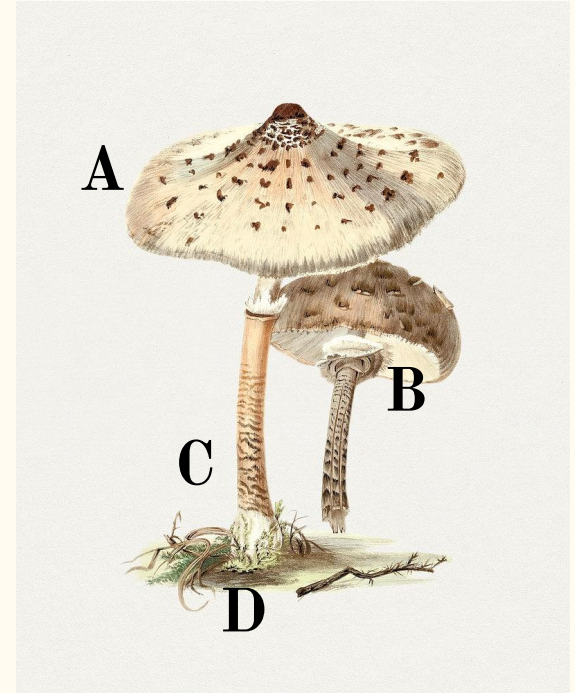
Pear Puffball Mushrooms Releasing Spores



Anatomy of a Mushroom or “Fruitbody”

- A. Cap
- B. Underside of the Cap - this is where spores are released for most species, and what we're most interested in for identification!
- C. Stalk
- D. Mycelium (not visible unless you move the surrounding debris at the base of the mushroom)

Mushrooms can be identified by a number of features on their caps, stalks, and the undersides of their caps. Today, we will mainly focus on the cap undersides and growth medium for identification.



The 8 Rules of Mushroom Foraging

RULE #1 - Never, ever take a mushroom with gills!

- Gills are blade-like structures that radiate out from the stem to the edge of the cap on the cap underside
- Gills can be crowded or spaced far apart, wavy or straight, forked, or a mixture of long and short
- Regardless, they are always easy to separate from each other and always intersect the cap cleanly



RULE #2 - Tubes, Spines, Ridges, and Mavericks

- Only take mushrooms with tubes (pores), spines, and ridges
- You can take the “mavericks” shown in this presentation as they are distinctive mushrooms and have no deadly look-alikes

TUBES



SPINES



RIDGES



Tubes

- Tubes are very tightly packed on the underside of the cap, similar to a sponge
- Tubes can be long or short. The openings where the tubes end are called pores
- Tubes can be easily removed from the cap



Spines

- Spines (sometimes called teeth) hang from the underside of the cap, similar to stalactites in a cave



Ridges

- Ridges are the most similar to gills, but there are a few ways to tell ridges and gills apart
- Ridges are irregular and cross-veined, like tree branches - no uniform pattern
 - Gills can fork, but they will not branch multiple times
- Ridges are PART of the cap, they are NOT attached to the cap
 - Gills can be easily removed from the cap; ridges can't be easily rubbed off or removed



RULES 3-5

- **RULE #3** - Only eat mushrooms that you have clearly identified with ALL of the positive I.D. markings
 - This is especially true for mushrooms in their early stages. If it's not big enough or developed enough to identify beyond a doubt, leave it
 - Some poisonous and deadly mushrooms look identical to edible ones when they are young
- **RULE #4** - If it smells rotten, it is rotten. If it feels soggy, it is soggy!
 - Would you pick a soggy, wormy mushroom out at the grocery store? Nope! Leave it, but make a note as to where you saw the mushroom so you can go back and check again after a good rain
- **RULE #5** - NEVER EVER eat ANY wild mushrooms raw
 - Mushrooms contain a polysaccharide (fiber) called **chitin** that our bodies aren't able to digest. Cooking mushrooms breaks down chitin so our bodies can digest it; if you eat them raw, you're in for a bad stomach ache (trust me, I've been there)!
 - Also, the woods are full of animals... and animals poop... enough said!

RULES 6-8

- **RULE #6 - Cut and cover**
 - Always cut mushrooms, don't pull them out. Cut just above the ground or just off of the log, leaving ¼" to ½". For ground mushrooms, cover the base after cutting with dead leaves or debris to allow the mycelium to regrow
- **RULE #7 - Let them breathe!**
 - Mushrooms shouldn't be suffocated in plastic bags or sealed containers - this allows bacteria to breed and your mushrooms will go bad quickly
 - Use a wicker basket, mesh bag, or paper bags to collect your mushrooms
- **RULE #8 - If in doubt, LEAVE IT**
 - Never risk your health or the health of others

Harvesting Mushrooms

Harvesting Mushrooms

- Elaborating on Rule #1, you don't need to touch or cut every mushroom to see if it has gills. Usually you can kneel down and see under the cap to check
 - If you still can't see, break off a small piece of the cap to check the underside for gills
- Elaborating on Rule #6, make sure you cut and cover
 - There are knives especially designed for mushroom foraging with a brush on one end to clean debris off before bagging, but you can also use a regular pocketknife or gardening shears
- Elaborating on Rule #7, when foraging, bring a mesh bag, wicker basket, or paper bags to collect your mushrooms so they can breathe
- It helps to pick up a stick while foraging to clear leaf debris and push aside long grass and ferns
- Be respectful of the forest and don't disturb more than you have to

Mushrooms You'll Find in Georgia

Lung Oyster Mushrooms

- Time of Year: Fall/Winter, sometimes Spring (cold weather)
- Grow on dead hardwoods (either upright or fallen) in clusters
 - I almost always see these on oak trees
- White to grayish tan in color with ridges
- Appear and mature 7-10 days after a good rain



Oyster Mushroom Lookalikes

- Flat Crep
 - How to tell them apart: Oysters will always grow in clusters from a central stalk, even though it might be very short. Flat creps can grow in groups, but each one will have its own stalk
- Angel's Wing Mushroom
 - How to tell them apart: Oysters grow on hardwoods, angel's wings grow on conifers
 - Scent - Oysters will have a stronger fishy smell, while angel's wings will smell earthy and mild
 - Angel's wings are funnel-like and thin, with wavy edges
 - Angel's wings will be bright white or ivory, while oysters tend to be grayish-tan



Pear Puffball Mushrooms (Maverick)

- Time of Year: Fall/Winter/Early Spring (pretty much anytime the temperature is consistently below 60F)
- Grow on dead or decaying hardwoods, and on the roots at the base of hardwood trees
 - Almost always on oak trees
- Always cut into one to make sure it's not rotten
 - Inside should be a pure white, no yellow, green, or grey
 - Should be nice and firm, but a little squishy
- Lookalike: poison puffball or Earthball
 - How to tell them apart: Earthballs are much harder than puffballs and always black inside, with a white outer ring. Cut one open to check



Photo: Mushroom Mountain

Giant Puffballs (Maverick)

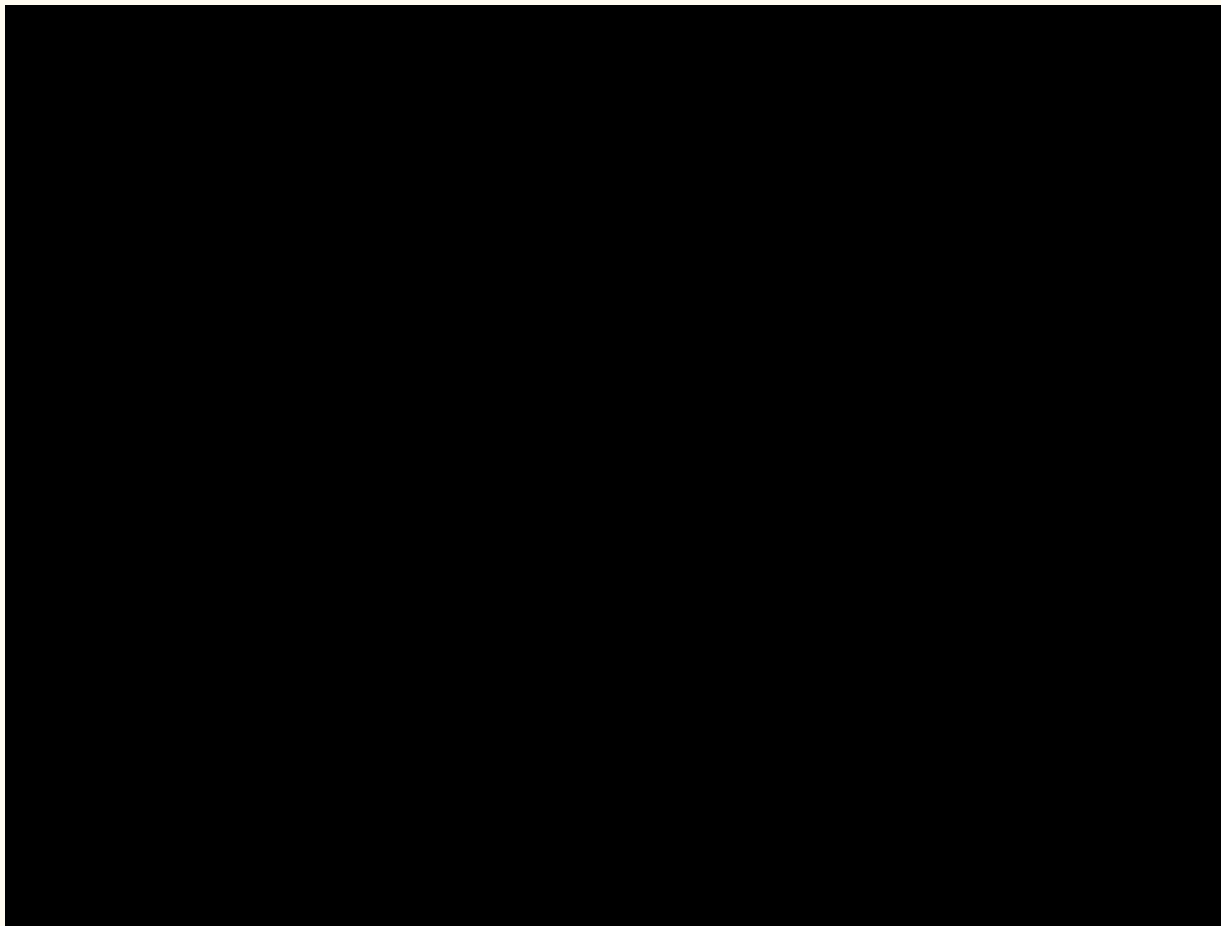
- Time of Year: August-October
- Grow in open grassy fields
- Always cut into one to make sure it's not rotten
 - Inside should be a pure white, no yellow, green, or grey
 - Should be nice and firm, but a little squishy
- Lookalike: Amanita mushrooms (young)
 - How to tell them apart: cut the mushroom in half. If there is a mushroom shape inside, it's a poisonous Amanita



Lion's Mane Mushroom (Maverick)

- Time of Year: fruiting begins in late April/early May, but peak is during the fall
- Grow high up on dead or decaying hardwoods
- Solid mass with long spines, white to yellowish color
- Lookalike: coral mushroom
 - How to tell them apart: corals grow up, not down, are branched, not solid, and grow near the ground, never up high





Reishi Mushroom

- Time of Year: May-November
- Grow at the base of living and dead hardwoods
 - You'll find them individually in a radius of 3-5ft out from trees
 - I find these around oaks, dead but still upright = higher likelihood
 - Solitary but there can be more than one near a single tree
- Can also grow in the hardwoods themselves
- Thick, corky, hard fans with a shiny surface
- Colorful rings that lighten as they radiate out
 - Purplish reds to orange to yellow to white



Turkey Tail Mushroom

- Time of Year: I find these year-round in GA
- Grow on dead or decaying hardwoods, fallen or upright
 - I find these mostly on oak trees
- Fan-shaped, hard but pliable, and always grow in clusters or overlapping rosettes
- Colorful rings - colors can vary, you'll see grey, green, orange, blue, and brown but the outermost ringo will always be white
- Have tiny pores on their undersides (white)
- Velvety surface



Turkey Tail Lookalikes

- False Turkey Tail
 - How to tell them apart: False Turkey tails are paper-thin and have smooth undersides, not pores
 - Usually more tan-colored
- Purple-Tinged Polypore
 - How to tell them apart: the Purple-Tinged Polypore is purple-colored underneath; turkey tails will always be white underneath
- Stiff-Gilled Polypore
 - How to tell them apart: the Stiff-Gilled Polypore looks similar from the top, but underneath you'll see very thick, scaly "pores" that resemble ridges



Chanterelles

- Chanterelles are one of the most sought-after mushrooms in the culinary world as they cannot be cultivated. They have a symbiotic relationship with trees and grow out of the ground
- Dried chanterelles can fetch \$200/lb!
- Time of Year: a very narrow 2-4 week window in late summer/fall (August-September)
- Extremely finicky - weather and soil conditions have to be just right
 - Has to be hot and rainy - best case scenario is regular heavy thunderstorms throughout the summer
 - Chanterelles are slow to fruit - you won't see them appear until about 10 days after heavy rain
 - I tend to find them under and around ferns or in mossy areas
- If you see one, **STOP** and look around... you will always find more!



Chanterelles - Wide Variety

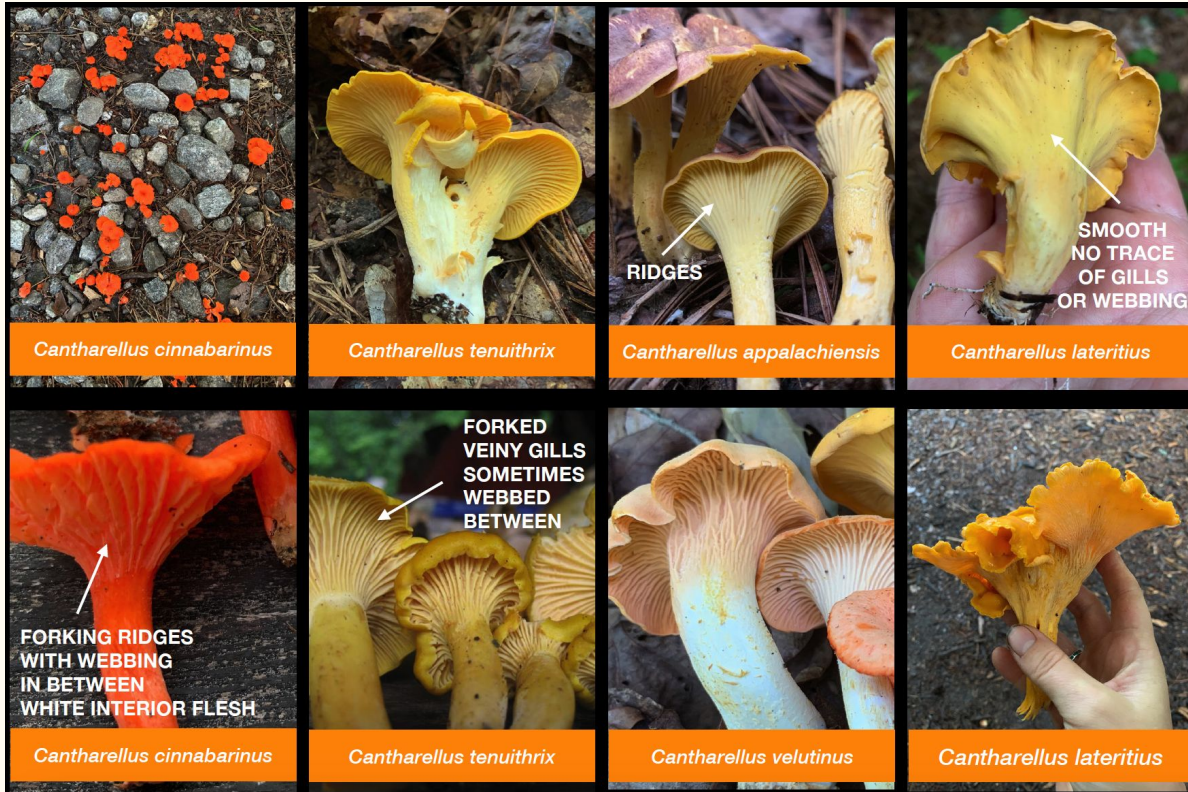


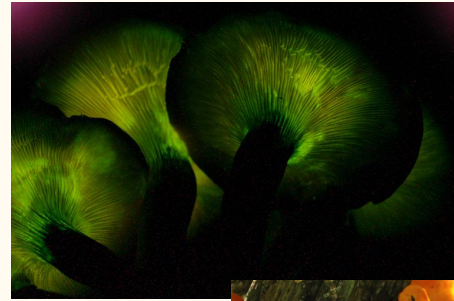
Photo: Mushroom Mountain

2022 Chanterelle Season



Chanterelle Lookalikes

- Chanterelles have a distinct fruity, sweet smell - most distinguishing feature
 - White inside, similar to string cheese
- Jack-O-Lantern Mushrooms
 - How to tell them apart: Jacks have organized gills
 - Jacks grow on wood or at the base of trees
 - Chanterelles are white inside, Jacks are orange inside
 - Jacks grow in clusters and are bioluminescent!
- Woolly Chanterelle
 - How to tell them apart: Cap and undersides are different colors; true chanterelles have the same colored caps and undersides
 - Scaly and vase-shaped; mature ones don't fold out their edges like chanterelles do



Horn of Plenty or Black Trumpet Mushroom (Maverick)

- Time of Year - July-October
- Funnel-shaped hollow stalks with black/dark brown color
 - Tops are curled out and wrinkled; thin, fibrous, brittle
- Scattered in groups and they like to grow out from under things - mossy rocks, fallen branches, etc.
- Lookalike: Devil's Urn
 - How to tell them apart: Devil's urns are vase-shaped cups that always grow on fallen sticks, black trumpets grow from the ground
 - Devil's urn fruits in spring - they aren't found at the same time of year



Hedgehog or “Sweet Tooth” Mushroom

- Time of Year: August-November
- Grows on the ground in old growth forests
 - Common under oaks and other hardwoods
- Matte white spines, and top of cap is wavy-edges with a yellow-brown or yellow-orange color
- Tend to grow solitary or in groups of 2, sometimes 3
- Lookalike: Sarcodon
 - How to tell them apart: colors are completely different
 - Sarcodons also have scaly, greyish-brown caps



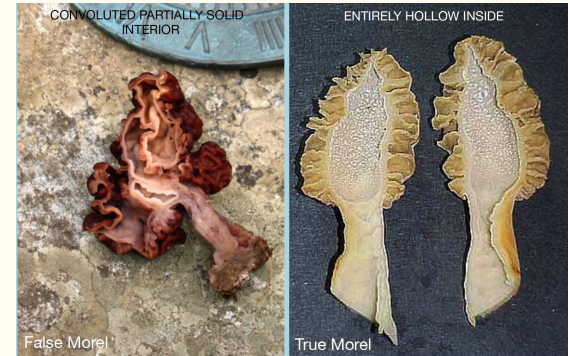
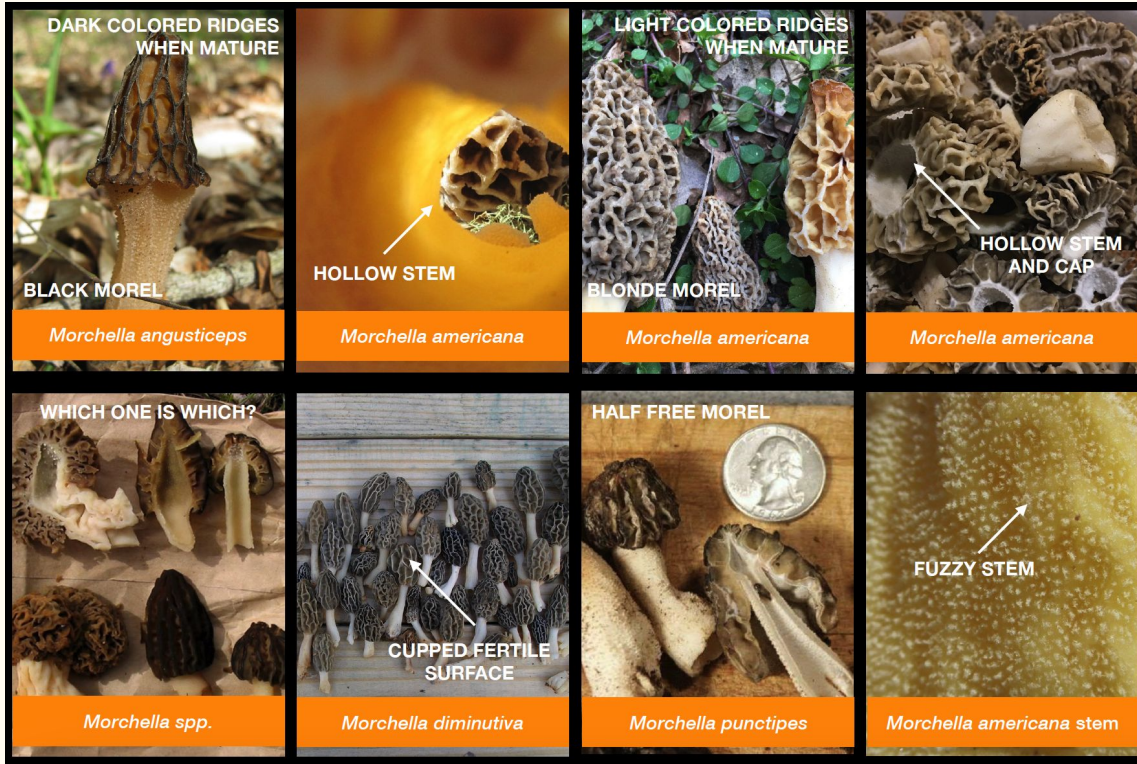
Morels

- Time of Year: March-April
- Very finicky - need daytime temperatures to be in the 60s but no lower than the 40s at night
- Pitted and twisted caps, look like tiny brains. Morels are completely hollow all the way through
- Colors can range from light tan to black
- Grow on the ground near dead/decaying trees near water sources
- Excessive ground cover can be a sign of morels - clear debris with a stick
- <https://www.thegreatmorel.com/morel-sightings/>



Morel Varieties

- Lookalike: False morel
 - How to tell them apart:
false morels are not completely hollow



Photos: Mushroom Mountain

Storing, Drying, and Freezing Mushrooms

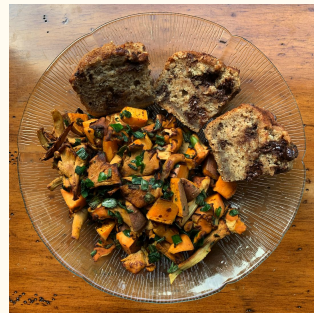
Storing, Drying, and Freezing Mushrooms

- Storing Mushrooms
 - Mushrooms should be stored by species in paper bags in the vegetable drawer of the fridge. Make sure they have plenty of room to breathe and aren't squished together
 - Same goes for store-bought mushrooms - remove them from the plastic packaging when you get home and move them to a paper bag. They'll last twice as long!
- Drying Mushrooms
 - The key to drying mushrooms is **low and slow**. I dry my mushrooms in my dehydrator at 110F for 7 hours
 - If you don't have a dehydrator, you can dry them in the oven at 170F for 2-3 hours
 - Spread the mushrooms on racks with plenty of space between them - don't crowd them
 - If you have a mesh cooling rack, put them on this and then set the rack on a cookie sheet
 - Once your mushrooms are completely dry, store them in airtight jars in the pantry. They will last up to 2 years
- Freezing Mushrooms
 - Always saute your mushrooms before freezing. A little olive oil and salt does the trick

Cooking with Mushrooms

Cooking Prep

- Try to eat mushrooms immediately after foraging, not more than a day after
- Dried mushrooms will need to be **reconstituted** prior to cooking
 - Place dried mushrooms in a bowl of hot water for 5-10 minutes
 - If you're making a soup, save the water to add to the broth - flavor!
 - Dried mushrooms can be put directly into soups and stews, but I prefer to saute mine first
- Cleaning mushrooms
 - If possible, avoid washing mushrooms with water as they will get soggy
 - Use a paper towel to wipe off any dirt or debris
 - For foraged mushrooms, check between the ridges/spines to make sure there are no little grubs
- If you have time, let them get some sun
 - Mushrooms make Vitamin D when they are exposed to sunlight, just like humans!
 - Lay them on a paper towel in a sunny spot in your kitchen for 10-15 minutes before cooking



Anything You Can Cook, I Can Cook Vegan!



Cooking With Mushrooms Tips

- It's impossible to overcook mushrooms - if texture is an issue, cook them longer!
- Choose your mushrooms type to compliment the flavor and texture of your dish
 - Oyster mushrooms: earthier dishes, good texture for fried “chicken”
 - Shiitake mushrooms: spongy and substantial; hold up longer than other mushrooms
 - Sliced - pizza topping, soups/stews or ramen; accent
 - Quartered or in chunks - good for meat replacement in any dish
 - Chanterelles: texture is chewy and substantial, also a good meat replacement
 - Dried chanterelles I use for soups and stews and on pizzas (reconstitute first)
 - Frozen cooked chanterelles I'll toss into pastas
- Fun Vegan Dupes
 - Lion's Mane “crab cakes”
 - King Trumpet “scallops”
 - Oyster mushroom fried “chicken”



Medicinal Benefits

Mushrooms as Medicine

- Mushrooms have been used as traditional medicine for thousands of years
- Chronic inflammation and oxidation are the two biggest things at the root of the majority of modern-day diseases
 - Also cause the most symptoms of aging



Fig. 2-2 Illustration of Lingzhi in the *Compendium of Materia Medica* by Li Shi-Zhen



Chaga Mushroom

- Grow on birch trees (not found in GA)
 - Lookalike - Cherry Burl
- Woody conk that seems to burst out of the tree
- Medicinal Uses
 - Cancer treatment (ex. Hodgkin's disease) - increases antioxidant activity and slows or stops growth of cancer tissue and metastasis
 - Adaptogen - helps balance the body when stressed
 - Anti-inflammatory and anti-viral - good for preventing ulcers and is effective against Hep-C
 - Lowers blood sugar, reduces fatigue, increases physical endurance (lowers lactic acid levels, boosts glycogen stores)
- Supplements - look for “double extracted” tinctures
 - Avoid “alcohol free” tinctures - you need alcohol to get half of the good stuff out!



Lion's Mane Mushroom

- Medicinal Uses
 - Enhances brain function and memory
 - Slows the progression of neurodegenerative diseases like dementia, Alzheimer's, Parkinson's, and Multiple Sclerosis
 - Treats anxiety, depression, stress, and mental health issues
 - Heals the nervous system and stimulates nerve growth factor - good for Diabetes (neuropathy)
 - Protects against cancer
 - Heart health and circulation - helps lower LDL ("bad") cholesterol
 - Reduces inflammation and oxidation - good for autoimmune diseases and digestive issues
 - Increases energy, relieves fatigue, enhances athletic performance
- Supplements: look for "double-extracted" tinctures
 - Avoid "alcohol free" tinctures - you need alcohol to get half of the good stuff out!

Reishi Mushroom - “The Mushroom of Immortality”

- Medicinal Uses
 - Adaptogen - helps balance the body when stressed
 - Balances hormones - good for PCOS, acne, and prostate health
 - Anti-inflammatory, anti-aging, anti-microbial, anti-fungal, anti-bacterial
 - Treatment and prevention of cancer
 - Treats fatigue, depression, insomnia, anxiety, and adrenal fatigue
 - Treats seizures, convulsions, and restless leg syndrome
 - Helps with bronchitis, allergies, asthma
 - Heart health and circulation - helps lower LDL (“bad”) cholesterol
- Supplements: look for “double-extracted” tinctures
 - Avoid “alcohol free” tinctures - you need alcohol to get half of the good stuff out!

Turkey Tail Mushrooms

- Medicinal Uses
 - Most commonly used today in conjunction with chemotherapy and radiation - increases their effectiveness - fights cancer and helps reduce relapse rates
 - Watch Paul Stamets TED Talk
 - Regulates immune system, prevents and treats cold and flu
 - Treats HPV, cervical dysplasia, herpes, and shingles, helps prevent and treat HIV/AIDS and Kaposi's sarcoma
 - Improves digestion and leaky gut - candida overgrowth
 - Lowers blood sugar - good for diabetes
 - Anti-inflammatory, lowers LDL cholesterol
- Supplements: look for “double-extracted” tinctures
 - Avoid “alcohol free” tinctures - you need alcohol to get half of the good stuff out!

Recommended Resources

Recommended Resources

- APP
 - PictureMushroom - for on-the-spot identification (note that this is not 100% accurate, so make sure to consult other identification resources once you get home to make sure)
- BOOKS
 - The Lost Book of Herbal Remedies by Nicole Apelian and Claude Davis
 - Mushrooming Without Fear by Alexander Schwab (**#1 recommendation** for mushroom foraging)
 - The Forager's Harvest: A Guide to Identifying, Harvesting, and Preparing Edible Wild Plants by Samuel Thayer
 - The National Audubon Society Field Guide to Mushrooms (general foraging, not just culinary)
 - Reads more like a dictionary for mushrooms, but the photos are good for showing slight differentiation between species
 - Not great for on-the-spot identification
- Facebook Groups: Atlanta Mushrooming, Georgia Mushrooming

Recommended Resources (continued)

- DOCUMENTARIES

- Sustainability and Health
 - Cowspiracy
 - Seaspiracy
 - What the Health
 - The Game Changers
- Herbalism and Foraging
 - History Channel show Alone Season 2 (features the author of The Lost Book of Herbal Remedies, Nicole Apelian, as a contestant)
- Mushrooms
 - Fantastic Fungi (#1 recommendation - definitely watch this one!)
 - The Kingdom: How Fungi Made Our World
 - How to Change Your Mind (Netflix Series) - Season 1 Episode 2 - Psilocybin*

*I am not promoting or condoning the use of psilocybin mushrooms, simply providing resources if you are interested in learning about them

Citations and Disclaimer

- Schwab, A., Lehmann, M., & Mantle, R. (2006). *Mushrooming without fear: The beginner's guide to collecting safe and delicious mushrooms*. Skyhorse Publishing.
- Apelian, N., & Davis, C. (2019). *The lost book of herbal remedies*. Global Brother Publishing.
- All photos courtesy of Google Images and Hannah Wilson unless otherwise noted

Disclaimer:

This presentation was created to provide information about mushrooms, including foraging, preparation, and medicinal properties that have been used for thousands of years by cultures and civilizations all over the world. This information is shared with the knowledge that Hannah Wilson is not offering medical advice. In the case that you become ill, consult with your primary care physician, or in the case of an expected accidental poisoning, proceed to your nearest emergency room. You can also call Poison Control Centers 24/7 at 800-222-1222.

This presentation does not include all information available on the subject of mushrooms, and should therefore not be used as a medical guide. Hannah Wilson will incur no liability nor be held responsible to any entity or person regarding any loss of life or injury, alleged or otherwise, that happened directly or indirectly as a result of using the information contained in this presentation. Hannah Wilson holds no responsibility for the misuse or mis-identification of a mushroom using the contents of this presentation, or any and all consequences to your health or that of others that may result. If you wish to use mushrooms for medicinal purposes in any form, you should consult with your physician first to ensure there are no limitations, most notably preexisting conditions and/or currently prescribed medications that could interact with mushroom supplements.

Questions?

