

FUNGI

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Summary:

Without mushrooms there would be no trees and no forest, but best to just take pictures of them, as mushrooms can kill you.

Fungi (plural of fungus) were only identified as a kingdom separate from plants in 1969. They are microorganisms that cannot make their own food. Some are parasitic, but most are either **saprophytic** (e.g. serving as **decomposers** in ecological systems by turning matter like dead wood into rich soil), or **Mycorrhizal** that is forming a mutually **beneficial relationship with the roots of plant life** (mostly trees) i.e. the exchange of nutrients between the soil and the tree is done through the fungi. Some will only grow with only one kind of tree.

Abundant worldwide, most fungi are completely inconspicuous - e.g. as invisible mycelium in the soil - until they **fruit and produce what we know best: mushrooms**, whose role is to spread spores and start new fungi further away.



Figure 1 Example of spore print (obtained by placing a cap upside down on a plate.)

Nobody knows how many species of mushrooms live in the Greenbelt Preserve but it is probably in the order of several hundreds. The older the forest the more mushrooms can be found. The Greenbelt Preserve forest is not very old yet, but it is diverse and since all trees need fungi to thrive mushrooms can be found everywhere in the forest. Each kind of mushroom reproduces and germinates within a certain humidity range so they appear at different time of year, or not at all. To spread the spores some mushrooms have gills under their caps, others have tubes, pores or pins. Some have a foot, others don't; they might look like jello, sticks, or curtains.

Mushrooms are mysterious and somewhat scary because while some are edible many are **poisonous**. They can make you **very sick, or even kill you** in a matter of days! No mushroom is to eat safe until you become an expert. Joining an **association** like the local Mycological Association of Washington (<https://mawdc.wildapricot.org>) is the best way to learn about mushrooms. You will learn to differentiate them by their shape and color but also by their feel, odor, stickiness, how they break, where they grow, how they change color when bruise, the color of the spores etc. (things that are quasi impossible to learn in a book.) Sometime even experts cannot tell which species of mushroom they are looking at because there are so many species and variations.

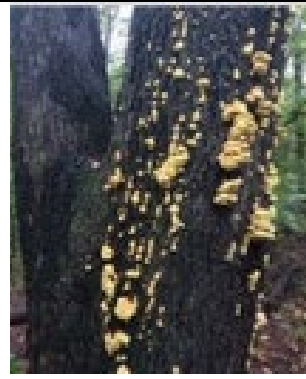
Research about fungi is more limited than research on plants or animals so many properties of fungi still need to be explored, such as the use of mycorrhizal fungi to improve tree resistance to disease or stress, or mycoremediation. **Mycoremediation** is using fungi to degrade or sequester contaminants in the environment. Some fungi are hyperaccumulators, capable of absorbing and concentrating heavy metals in the mushroom fruit bodies, which may be useful for cleaning toxic spills - but can also be dangerous for mushroom hunters. The systematics (i.e. the study of the diversification of living form of mushrooms) is just starting and DNA analysis is changing everything people know about mushrooms – but also constantly changing the scientific names given to them (which is really annoying). The mushrooms themselves vary by region, and it is not possible to rely on common names. In addition a mushroom you know well in one part of the country is likely to be different in another region, or have different look-a-likes to confuse you.

Remember: without mushrooms there would be no trees and no forest, but best to just take pictures of them, as mushrooms can kill you.

[Ideally would include a list of mushrooms that were observed in Greenbelt National Park by members of the Mycological Association of Washington – not sure such thing exists – will ask]

A small selection of mushrooms which can be found in the forest

 		
<p><i>Amanita bisporigera</i> or destroying angel. One of the most poisonous mushrooms (it will kill you in a few days)</p>	<p>Very young <i>Amanita muscaria</i> (Fly Agaric). One of the most recognizable mushroom. Mycorrhizal. Poisonous.</p>	<p><i>Calvatia gigantea</i> (giant puff ball)</p>
		
<p><i>Cantharellus cinnabarinus</i> (cinnabar chanterelles). Bright orange with false gills on the under side of the cap. Mycorrhizal with hardwoods- especially beech and oaks.</p>	<p><i>Craterellus cornucopioides</i> (black trumpet). They're thought to be both saprobic and mycorrhizal.</p>	<p><i>Ganoderma</i> is another polypore mushroom that grows on wood. This is probably a lingzhi mushroom or reishi mushroom, used as a medicinal mushroom in traditional Chinese medicine.</p>
		
<p>One of the many species of coral mushrooms</p>	<p><i>Lycoperdon perlatum</i> (a kind of puff balls). Puffballs produce spores internally, in a ball. When the spores mature, they are released in little clouds.</p>	



Hericium erinaceus (Lion's Mane) grows on dead tree trunks. This mushroom has teeth (opposed to gills or pores)

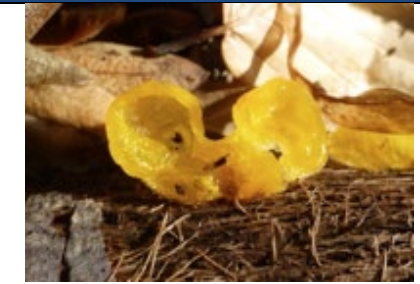
Laetiporus sulphureus or ***cincinnatus*** (Chicken of the Woods). Parasitic and saprobic on living and dead hardwood trees (often oaks)



* but seen in GHI
Omphalotus olearius (Jack-o'-lantern). A beautiful bright orange gill mushroom, growing on dead wood. Poisonous, which is bad because it is often confused with Chanterelles

Pleurotus ostreatus (Oysters): Saprobic gilled mushrooms. Pleurotus have been used in mycoremediation of pollutants such as petroleum

Russula (many different kinds, very common)



Sparassis (cauliflower mushroom) . A genus of parasitic and saprobic mushroom.

Trametes Versicolor (Turkey tail, here a purple variation)

Jelly fungus, most likely ***Tremella mesenterica*** (witches' butter), often seen on recently fallen branches. Gelatinous to rubbery consistency.