

Morel Mushrooms – Morchella!

By Natalie Haley



Let's begin at the beginning...

What is a mushroom?

So... the Kingdom Plantae is divided into two groups;

1. Embryophytes: all non-flowering and flowering vascular plants.
2. Thallophytes (algae, fungi, lichen) lack vascular tissue

"A mushroom is the fruiting body of a plant, the part of the fungus that typically appears above ground and contains reproductive units, or spores."

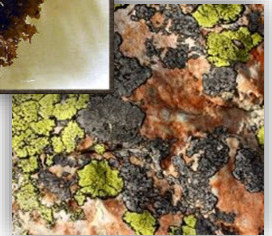
The Audubon Society Field Guide to North American Mushrooms

- Mushrooms (a fungi) are considered part of the plant kingdom, but they lack chlorophyll and cannot photosynthesize like algae and lichen.
- Therefore, they do not need direct sunlight to grow. So...how do they get their food?

Fungi



Algae



Lichen

Fungi acquire nutrients in three ways:



1. As **saprophytes**: live on dead organic matter, including dead wood, the dead tissue of living trees, dung, or leaf/conifer litter.



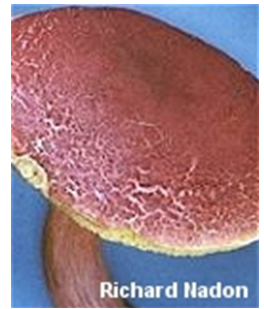
2. As **parasites**: attack living plants or animals.



3. As **mycorrhizae**: symbiotic relationship with plants (usually trees and shrubs) where the underground, vegetative part of the fungus – **the mycelium** – extracts nutrients from the substrates. The mycelium of mycorrhizal mushroom sheathes the root ends of the flowering plant, expanding the plant's root system; the mushroom receives necessary carbohydrates from the tree.

Parts of a Mushroom – taken from The Audubon Society Field Guide to North American Mushrooms:

1. **Cap:** most obvious part; shape can be used for identification purposes. May be nearly round, conical, bell-shaped or convex and as the mushroom matures, it may become convex, flat or the edges may become uplifted. Some are vase-shaped, some have centers which are knobbed or sunken. The margin may be upcurved, downcurved, straight, torn, wavy, hairy or smooth. Others have hanging veil remnants along the margin, some are radially lined, deeply furrowed, wrinkled, pitted, etc... Some caps are dry, moist, sticky, slimy when fresh. However, a sticky, slimy cap becomes dry with old or dried out, so put a drop of water on it to see if it becomes sticky or slimy. The color of a cap fades as the moisture in the cap fades. Cap surfaces may be smooth, hairless, powdery, granular, adorned with radial lines, hairs, scales or veil remnants. If hair is present it may be silky, fibrous, or scale-like. The flesh beneath the surface layer (**cuticle**) may be thick, thin, soft, tough, white or pigmented. It may exude fluid when cut. Most mushrooms have distinctive odors, especially when crushed. Some smell like anise (black licorice), fruit, cucumbers, green corn, creosote, fish, radishes, garlic or raw potatoes. Taste can be used to identify different species. Some may taste mild, acrid, biting or peppery. Chew a very small piece until flavor becomes apparent. **Study deadly and poisonous species in advance (obviously) and avoid taste-testing them!** Allen County's morel mushroom man, Alex Babich, says: "Every mushroom is edible, sometime only once!" – www.mushroomgear.com.
2. **Stalk:** Most mushrooms have a stalk located at the center of the cap. Some stalks are off-center or attached at the side (lateral). Some are stalkless or very small. These mushrooms usually grow on wood, e.g. tree fungi. Stalked mushrooms possess various shapes. Learn if the stalk is straight, club-shaped, flattened or spindle-shaped. The base of the stalk may be bulbous, abruptly bulbous, or tapering to a rootlike growth at its base; or may have runners called *rhizomorphs* growing out of it. The stalk surface itself may be smooth, dotted, lined, netted, scaly, powdery, or hairy. Stalks may be hollow, solid or filled with cottony tissue. Many stalks have a ring, or skirt, or band-like tissue; or a zone of fibers left on the stalk by the partial veil as the mushroom expands. Some may even have a remnant piece of a universal veil, called a *vo/va* cup found about the stalk base.
3. **Veils:** Membranes that cover and protect either the entire immature mushroom or the immature gills. As the mushroom enlarges, the membrane ruptures, usually leaving traces on the cap or stalk. If the membrane covers the entire mushroom it is called a *universal veil* and may leave patches on the cap, or a saclike cup, patches or bands of tissue at the stalk base after rupturing. The membrane that encloses the immature gills on the unexpanded cap is called a *partial veil*. When the cap expands, the partial veil breaks and may leave remnants along the cap margin or on the stalk. The remnants often appear as a ring or skirt around the stalk. Usually, the ring left by a partial veil is single, but in some species, it is 2-layered. The ring can be removed in some species.



Caps crack with age



Ring: tissue around the upper part of the stem, resulting when the partial veil collapses



Universal Veils

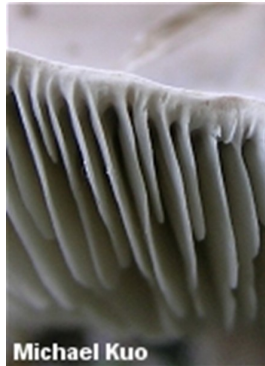
Taxonomy: a branch of science that encompasses the description, identification, nomenclature, and classification of organisms

Reproduction:

All mushrooms produce millions of *spores*, microscopic reproductive units that are dispersed in a number of interesting ways. You can make a spore print by cutting off the mushroom's stalk close to the base. Place the cap, with the gills or pores facing down on a piece of paper. Enclose the cap and paper in wax paper to take the mushroom back home with you. Some produce spore prints in a few hours; others take much longer, sometimes overnight.



False Gills



True Gills



Gill Spacing

Distant

Sub-Distant

Close

Crowded

Morel



A black morel in Poland

Scientific classification

Kingdom: Fungi
 Division: Ascomycota
 Class: Pezizomycetes
 Order: Pezizales
 Family: Morchellaceae
 Genus: ***Morchella***
 Dill. ex Pers.: Fr. (1794)

Type species

Morchella esculenta
 (L.) Pers.: Fr. (1801)

Species

~70 worldwide (see text)



A Spore Print

Ascomycetes: produce microscopic spores in tubes (asci)



Hunting Morels?

3 Rules for Proper Picken'

1. Use a plastic knife or pinch the stem of the mushroom, leaving the roots intact.
2. Use mesh mushroom bags (never wash) or onion/orange bags to allow spores to spread while collecting.
3. Don't step on your mushrooms! Enter the area carefully, watching where you step.

When do you start looking for morels?

- When the yellow dandelions are up, the gray morels are up!
- Before that, the black morels are up (so when dandelion greens start showing!)

How else can you predict when to start looking?

- Check your soil temperature with either a soil thermometer or a meat thermometer. When it reads greater than 55° F, your soil is warm enough (hence enough sun exposure).
- Also, the more rain the better! Follow the rain and visit the wetter woods.

What kind of trees do the morels like to utilize in Indiana?



Ash



Tulip



Elm

Watch out for Poisonous mushroom look-a-likes: “If its not hollow do not swallow!”



Why are these look-a-likes poisonous?

They contain gyromitrin which is hydrolyzed into a toxic compound called monomethylhydrazine or MMH. The toxin affects the liver, central nervous system, and kidneys.

Morel Mushrooms Links:

* *Mushroom hunting gear:* www.mushroomgear.com

* *Youtube:*

Just search: morel mushroom hunting indiana

* *The First Morel of the season!* View latest reports here:

<https://www.thegreatmorel.com/morel-sightings/>

<http://hoosiermushrooms.org/index.php?/mushroom-hunting/locations-in-indiana/>

* *General information on morel mushrooms:*

<http://en.wikipedia.org/wiki/Morchella>

<http://mushroomexpert.com/>

<http://www.mushroomexpert.com/glossary.html>

* *Growing Morel mushrooms:*

<http://www.gmushrooms.com/morel/>

* *Taxonomic Key to Morel Mushrooms:*

<http://www.mushroomexpert.com/morchellaceae.html>

We are often asked where to find mushrooms. Best mushroom hunter quote: 'You find them out in the woods ... close to the ground,'" said retired Pokagon State Park interpretive naturalist Fred Wooley.