

Learning About Mushrooms

United States Department of Agriculture
Forest Service
Northeastern Area State and Private Forestry
Newtown Square, PA
www.na.fs.fed.us
December 2011



It is fun and challenging to study mushrooms. Mushrooms are inherently fascinating to many people. I have personally witnessed the enthusiasm of attendees at mushroom workshops held in such places as the Small Woodland Owners Association of Maine 2011 Fall Fair.

Mushrooms come in many forms and colors. They are critical in providing the invaluable ecosystem service of decomposing wood, and they are important foods for wildlife and humans. Many form mutually beneficial associations with trees and other plants. These symbiotic associations between the fungi and plant roots benefit the host plants in a number of ways. They increase the physiologically active area of the root system and the plant's ability to capture water and nutrients; increase the plant's tolerance to drought, high soil temperature, and soil acidity extremes; provide protection from certain plant pathogenic fungi and nematodes; and cause feeder roots to remain physiologically active for longer periods of time than roots that do not have these fungi.¹ The mushrooms benefit by obtaining carbohydrates from the host plants.

It is not easy to identify mushrooms. Many mushrooms are very difficult to identify, even for mushroom experts. As David Arora, author of the popular field guide *Mushrooms Demystified*, wrote, "On even the most casual jaunt through the woods, you will find dozens and dozens of Little Brown Mushrooms (LBMs) sprouting at your feet, and very likely under them as well. The fact is, LBMs are so overwhelmingly abundant and uncompromisingly undistinguished that it is more than just futile for the beginner to attempt to identify them—it is downright foolish." In addition to LBMs there are plenty of look-alikes—different mushrooms that look very similar. Beginners need to be aware of look-alikes and to be

absolutely sure they know what species they may be picking. This is a cardinal rule of mushroom picking.

Teaching others about mushrooms is an important purpose of the North East Mycological Federation, Inc. (NEMF). NEMF was conceived in 1976. It strives "to stimulate interest in mycology and provide a forum where both amateur and professional mycologists can share their experiences and knowledge and work together cooperatively in studying the fungal flora of northeastern America for scientific and educational purposes."

NEMF lists some of New England's mushroom clubs on its Web site (www.nemf.org). These include the Boston Mycological Club in Massachusetts; the Westchester Mycological Association and the Connecticut Valley Mycological Society in Connecticut; the Maine Mycological Association; and the New Hampshire Mycological Society, Montshire Mycological Club, and Monadnock Mushroomers Unlimited in New Hampshire. The Journal of Wild Mushrooming lists additional clubs located throughout the United States on its Web site at www.mushroomthejournal.com/startingout/clubs.html.

NEMF's Web site includes a list of 200 mushrooms for beginners that was developed by Gary H. Lincoff, author of the National Audubon Society *Field Guide to North American Mushrooms*. A fun and reasonably attainable challenge for beginners is to start by learning these mushrooms (see a partial list at the end of this article; for the complete list, go to www.nemf.org/files/lincoff/beginners/beginners.pdf or to the Beginners Page on the NEMF Web site). This list includes a variety of the more commonly found species representing many different mushroom genera and is organized based on spore color and whether or not the mushrooms are gilled.

¹ Alexopoulos, C.J.; Mims, C.W.; Blackwell, M. 1996. *Introductory mycology*. 4th ed. John Wiley. 868 p.

It is important to note that the list does not provide any information about the edibility of the mushrooms; it simply provides a list for beginners. It is essential that you carefully study mushroom guides and gain extensive field experience, preferably with highly experienced mushroom educators (for example, by joining a local mycological club), so that you can identify and distinguish between edible and poisonous species. Two additional identification guides for mushrooms in our area include *Mushrooms of Northeastern North America* by Alan Bessette, Arleen Bessette, and David Fischer, and *Mushrooms of Northeast North America* by George Barron.

Boletes: Sponge Mushrooms

Boletes—sometimes called sponge mushrooms—are an especially fun and rewarding group of mushrooms to learn about here in New England.

Ask any mushroom collector. They come in many different colors and ornaments, and are sought avidly for food. However, always take precautions as with any group of fungi. Boletes with a red or orange pore surface, especially those that bruise blue, are not recommended (*National Audubon Society Field Guide to Mushrooms* by Gary Lincoff).

A bountiful fruiting of boletes arose following heavy rainfall in late summer of 2011. Mushrooms can fruit in great numbers and diversity under suitable conditions, including high soil moisture. The following are a few photos of bolete species taken during that time of fruiting. You can find these mushrooms as well while walking in your woods. Mushrooms make great candidates for photographs because of their often exceptional beauty and form.



Shaggy-stalked Bolete (*Austroboletus betula*). Note the orange cap (which can also be dark red or reddish) and stalk with veins that are coarsely netlike and raised yellow ribs that may redden with age.



Shaggy Bolete (*Boletellus russellii*). Note the reddish-brown to pinkish tan, deeply grooved, and ridged stalk.



Two-colored Bolete (*Boletus bicolor*). Note the purple-red cap (which can also be dark red, red, rose-red, or pink when fresh) and yellow pore surface when fresh.



Pallid Bolete (*Boletus pallidus*). Note the pale, gray-brown cap when young and whitish stalk that has slightly netlike veins (or is smooth) near the apex.



Red-cracked Bolete (*Boletus chrysenteron*). Note the cracked olive-brownish cap, which shows red between the cracks.



Ornate-stalked Bolete (*Boletus ornatipes*). Note the patterned (shaggy) yellow stalk and lemon-yellow pores that stain orange-brown when bruised.



Bitter Bolete (*Tylopilus felleus*). Note the tan to brown cap with white pores that become pinkish.

Partial List of Northeast Mushrooms for Beginners (adapted from a list by Gary H. Lincoff)

Gilled Mushrooms

1. White-spored Gilled Mushrooms

- Caesar's Mushroom (*Amanita caesarea*)
- Gem-studded Amanita (*Amanita gemmata*)
- Yellow-orange Fly Agaric (*Amanita muscaria*)
- Destroying Angel (*Amanita virosa*)
- Yellow Patches (*Amanita flavoconia*)
- Citron Amanita (*Amanita citrina*)
- The Blusher (*Amanita rubescens*)
- Honey Mushroom (*Armillaria mellea* complex)
- Club Foot (*Clitocybe clavipes*)
- Blewit (*Clitocybe nuda*)
- Jack O'Lantern (*Omphalotus olearius*)
- Common Laccaria (*Laccaria laccata*)
- Purple-gilled Laccaria (*Laccaria ochropurpurea*)
- Oak Collybia (*Collybia dryophila*)
- Smooth Parasol (*Lepiota naucina*)
- Oyster Mushroom (*Pleurotus ostreatus*)
- Elm Oyster (*Hypsizygus tessulatus*)
- Bear Lentinus (*Lentinellus ursinus*)
- Late Fall Oyster Mushroom (*Panellus serotinus*)
- Yellow-green Tricholoma (*Tricholoma flavovirens*)
- Delicious Lactarius (*Lactarius deliciosus*)
- Short-stalked White Russula (*Russula brevipes*)
- White Waxy Cap (*Russula eburneus*)

2. Pink- to Salmon-spored Gilled Mushrooms

- Orange Mock Oyster (*Phyllotopsis nidulans*)
- Deer Mushroom (*Pluteus cervinus*)

3. Brown-spored Gilled Mushrooms

- Meadow Mushroom (*Agaricus campestris*)
- White Dunce Cap (*Conocybe lactea*)
- Violet Cort (*Cortinarius violaceus*)
- Viscid Violet Cort (*Cortinarius iodes*)
- Silvery-violet Cort (*Cortinarius alboviolaceus*)
- Bracelet Cort (*Cortinarius armillatus*)
- Deadlly Galerina (*Galerina autumnalis*)
- Velvet-footed Pax (*Paxillus atrotomentosus*)

- Poison Paxillus (*Paxillus involutus*)
- Gypsy (*Rozites caperata*)

4. Purple-brown to Black-spored Gilled Mushrooms

- Brick Cap (*Naematoloma sublateritium*)
- Wine-cap Stropharia (*Stropharia rugosoannulata*)
- Alcohol Inky (*Coprinus atramentarius*)
- Shaggy Mane (*Coprinus comatus*)
- Mica Cap (*Coprinus micaceus*)

Non-gilled Mushrooms

5. Boletes

- Red-and-Yellow Bolete (*Boletus bicolor*)
- King Bolete or Porcini (*Boletus edulis*)
- Ash-tree Bolete (*Gyrodon merulioides*)
- Chestnut Bolete (*Gyroporus castaneus*)
- Old Man of the Woods (*Strobilomyces floccopus*)
- Chicken-fat Suillus (*Suillus americanus*)
- Dotted-stalked Suillus (*Suillus granulatus*)
- Painted Suillus (*Suillus pictus*)
- Bitter Bolete (*Tylopilus felleus*)

6. Polypores

- Berkeley's Polypore (*Bondarzewi berkeleyi*)
- Artist's Conk (*Ganoderma applanatum*)
- Hen of the Woods (*Grifola frondosa*)
- Chicken of the Woods (*Laetiporus sulphureus*)
- Multicolor Gill Polypore (*Lenzites betulina*)
- Dryad's Saddle (*Polyporus squamosus*)
- Cinnabar-red Polypore (*Pycnoporus cinnabarinus*)
- Turkey-tail (*Trametes versicolor*)

7. Chanterelles and Black Trumpets

- Golden Chanterelle (*Cantharellus cibarius*)
- Cinnabar-red Chantarelle (*Cantharellus cinnabarinus*)
- Black Trumpet (*Craterellus fallax*)

8. Coral Fungi and Allies

- Cockscomb Coral (*Clavulina cristata*)
- Spindle-shaped Coral (*Clavulinopsis fusiformis*)

9. Tooth Fungi

- Northern Tooth (*Climacodon septentrionale*)
- Comb Tooth (*Hericiium coralloides*)
- Hedgehog (*Hydnum repandum*)
- Scaly Tooth (*Sarcodon imbricatum*)

10. Parchment and Crust Fungi

- False Turkey Tail (*Stereum ostrea*)
- Earth Fan (*Thelyphora terrestris*)

11. Puffballs and other “Gasteromycetes”

- Purple-spored Puffball (*Calvatia cyathiformis*)
- Gem-studded Puffball (*Lycoperdon perlatum*)
- Netted Stinkhorn (*Dictyophora duplicata*)
- Ravenal’s Stinkhorn (*Phallus ravenelii*)

12. Jelly Fungi

- Jelly Tooth (*Pseudohydnum gelatinosum*)

13. Cup Fungi (including morels and their look-alikes)

- Ochre Jelly Club (*Leotia lubrica*)
- Hairy Earth Tongue (*Trichoglossum hirsutum*)
- Common Morel (*Morchella esculenta*)

14. Flask Fungi

- Lobster Mushroom (*Hypomyces lactifluorum*)

Author:
Roger Monthey works at the Northeastern Area State and Private Forestry Field Office in Durham, NH 03824-0640, phone: 603-868-7699

The USDA is an equal opportunity provider and employer.