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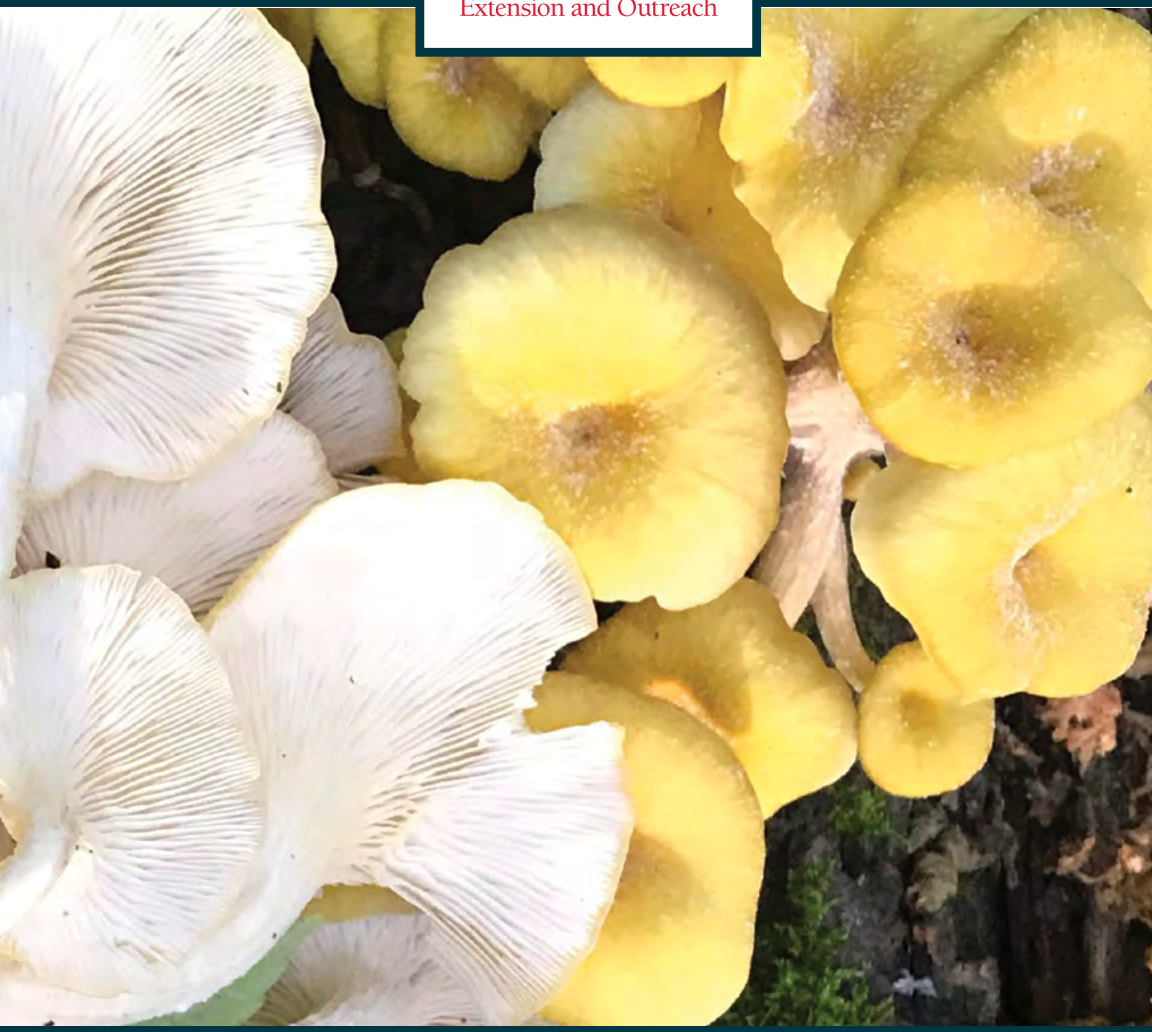
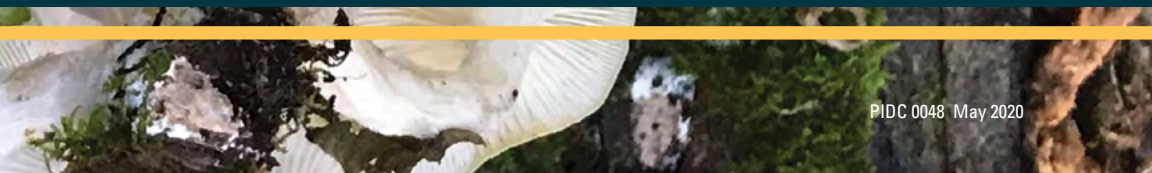
Extension and Outreach



Safe Mushroom Foraging



PIDC 0048 May 2020

Disclaimer

This field guide is not intended to be comprehensive. Many of the concepts in this guide have been simplified to fit a minimal text format, and to accommodate new learners. This guide focuses only on common wild mushrooms and other common fungi in Iowa, including those that are often reported to cause poisoning. Because this guide does not include extensive information based on microscope use and spore prints, it should be used only as an educational and reference tool to compare look-alike (poisonous and non-poisonous) species and appreciate the role of mushrooms and other fungi in nature.

Many books and online resources are available to help you learn more about wild mushrooms and other fungi in Iowa and their correct identification (see reference and resources sections on page 76).

The information in this publication is only a guide, the authors and ISU assume no liability for practices implemented based on this information.

COMMON IOWA MUSHROOMS MAY BE POISONOUS OR DEADLY.

YOU ACKNOWLEDGE THAT THE CONSUMPTION OF ANY WILD MUSHROOMS IS AT YOUR OWN RISK.

YOU MAY BE ALLERGIC OR SENSITIVE TO WILD MUSHROOMS, EVEN WHEN THEY ARE CONSIDERED EDIBLE BY OTHERS OR IN THE LITERATURE, AND YOU RECOGNIZE THAT EATING LARGE QUANTITIES OF ANY WILD MUSHROOMS MAY BE DANGEROUS.

YOU UNDERSTAND AND AGREE THAT YOU ARE RESPONSIBLE FOR ENSURING WILD MUSHROOMS HAVE BEEN APPROPRIATELY IDENTIFIED BY A COMPETENT AND EXPERIENCED MUSHROOM SPECIALIST PRIOR TO CONSUMPTION.

Introduction

In Iowa and other Midwestern states, thousands of fungal species can be found in woods, pastures, and lawns, as well as other habitats. Their primary role in nature can range from being recyclers (decomposers) of wood and herbaceous matter, mutually beneficial to associated organisms, or detrimental to trees, insects, and other organisms. In many cases, their role in nature is unknown. In this field guide, we use the following symbols to indicate current understanding of the role of specific fungi in nature*:

Mutualist/beneficial

An organism that obtains nourishment through a mutually beneficial relationship with another living organism (both organisms benefit). Many fungi are mutualists with trees such as oaks and pines, bringing nutrients and water from soil to their host tree and getting sugars in exchange.

Saprobe/decomposer

An organism that obtains nourishment from dead organisms. Fungi are the most important decomposers of wood, recycling nutrients from the wood that ultimately becomes available to other organisms.

Parasite/harmful

An organism that obtains its nourishment from another living organism to the detriment of that host. Some fungi are parasites of plants, animals, or even other fungi.

Unknown ecology

The ecology of many fungi is unknown.

*These definitions are simplifications of diverse and complex relationships that occur in nature.

What are mushrooms?

Fruiting bodies of fungi come in many different shapes and sizes, and each shape has a specific name such as mushrooms, puffballs, and boletes. In a strict sense, mushrooms are fungal fruiting bodies that are fleshy and consist of a cap and gills (thin plates or lamella). They may or may not have a stalk. However, in this book, a broader definition of the term mushroom is used to represent any macroscopic fruiting body or reproductive structure formed by fungi in two major groups: Basidiomycota and Ascomycota.

The major part of the life cycle of a mushroom is spent in a vegetative state as microscopic filaments (hyphae) within the substrate from which a given species is able to obtain nutrients (soil, leaf debris, wood, roots). These hyphae can form a complex net known as mycelia. Under certain conditions that may involve temperature, moisture, or lifecycle stage, the mycelia will organize into fruiting bodies or reproductive structures, where spores will be produced. Spores serve to disperse the fungus and start new fungal colonies.

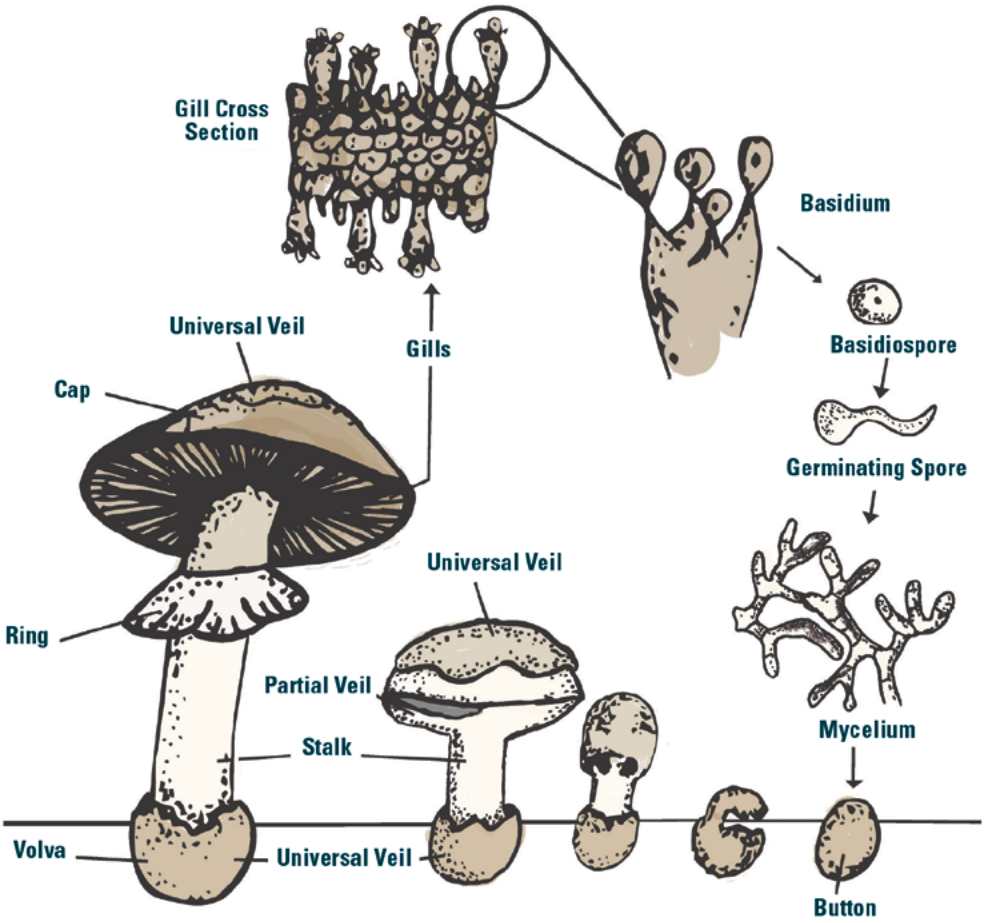


Figure 1. Diagram of the simplified life cycle of a basidiomycete. Basidiospores are produced on basidia lining the gills. The spore germinates to produce mycelia, which develops into button, young and ultimately mature mushroom fruiting body.

The Basidiomycota produce their spores on structures called basidia (Figure 1). In mushrooms, the basidia line the gills, tubes, teeth, wrinkles, or flat surfaces usually found on the underside of a cap. Common examples of this group include the button mushroom (*Agaricus bisporus*) commonly sold in local grocery stores and the deadly *Amanita* species found in woodlands.

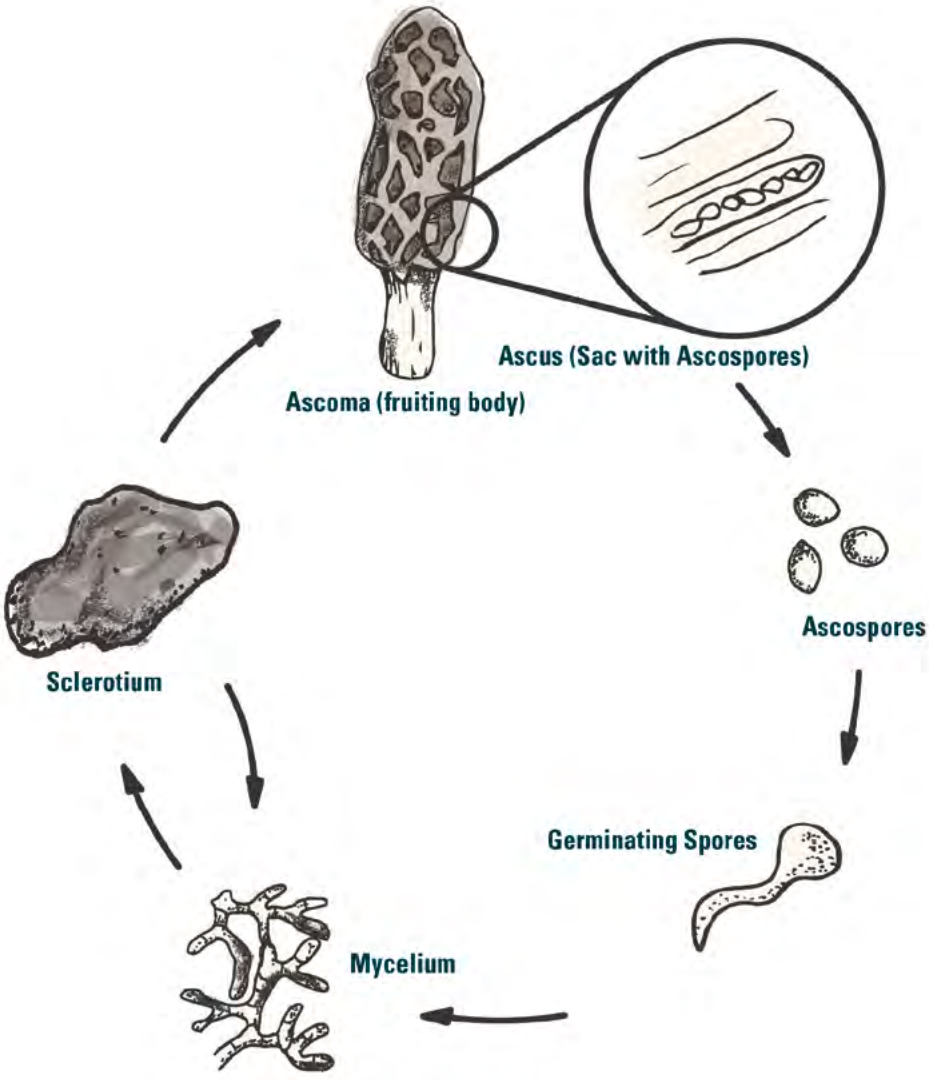


Figure 2. Diagram of the simplified life cycle of an ascomycete (Morel). Ascospores are produced within asci that line the cavities of the morel cap.

The Ascomycota produce their spores within sacs (asci). In most macroscopic Ascomycota, the asci are produced in cup-shaped to columnar fruiting bodies, with various shaped caps. The most famous examples are morels *(Morchella* species) and truffles (*Tuber* species) (Figure 2).

Under conducive environmental conditions, *Morchella* species spores germinate to form mycelia. Masses of mycelia mature to become sclerotia. Sclerotia germinate into mycelium that will give rise to fruiting bodies.

Characteristics that help mushroom identification

CHARACTERISTICS	ASCOMYCOTA	BASIDIOMYCOTA
Presence or absence of universal veil		x
Caps have gills, pores, teeth or tubes		x
Caps are cup or saucer-shaped or columnar with cavities or lobes	x	
Gill attachment to the stalk		x
Color of spores in mass (from spore print)		x
Stalk characteristics (or absence thereof)	x	x
Single vs cluster of mushrooms	x	x
Habitat (wood, lawn, soil, etc.)	x	x
Season (by geographic area)	x	x

Some mushrooms have distinctive characteristics that are easy to identify. Others are less distinctive and edibles may have dangerous look-alikes that only experts can recognize.

Are all mushrooms safe to eat?

Many mushrooms can be a great source of nutrients for wildlife and humans. Mushrooms cannot make their food as plants do. Instead, they have enzymes that help them break down and absorb nutrients present in their substrate. This is why some species of fungi can be used to clean up contaminated areas. We have learned to harness their ability to absorb, capture, and sequester complex molecules including toxic byproducts.

Mushrooms may contain a variety of toxic compounds that can cause a range of ill effects, including various degrees of upset stomach, hallucination, and organ failures that can lead to death.

Knowledge about which mushrooms are tasty and safe to eat has been accumulated over time and passed down through generations. However, mushrooms that are safe to eat in one region may have poisonous look-alikes in another. Even within the same area, some edible mushrooms may be difficult to distinguish from poisonous species. Therefore, identifying a specimen properly and being familiar with its characteristics, timing of appearance, habitats and look-alikes is imperative, though not always easy. Do NOT eat any mushroom that has not been properly identified.

Mushroom myths

The following are ✖ FALSE ✖ statements preserved in oral tradition that can result in serious injury or death if taken as truthful.

- ✖ All mushrooms are edible
- ✖ All toadstools are poisonous
- ✖ All mushrooms that grow on wood are safe to eat
- ✖ White mushrooms are safe to eat
- ✖ Mushrooms eaten by animals are also safe for humans to eat
- ✖ Cooking, pickling, or drying poisonous mushrooms will make them safe to eat
- ✖ Mushrooms that change color after being scraped with a silver coin or spoon are safe to eat

Figure 3. Morel mushrooms with advanced (left) and intermediate (right) signs of decay. Avoid picking decayed mushrooms.

Edibility, toxicity, and sensitivity to mushrooms

It is not known why toxic compounds are present in certain mushrooms. They may have evolved to repel or discourage munching by animals before spores are mature. Mushroom toxins and taste are not related; poisonous *Amanita* species, for example, may have a neutral taste and yet are deadly to eat.

Poisoning symptoms may or may not be experienced right away. Depending on the toxin, symptoms may appear within 15 minutes, 6 hours, 36 hours, or may not show up for 1-3 weeks. The amount of toxin in a particular mushroom may vary within fungal populations or regions, and toxin variants among geographical areas or habitats may also exist. The amount necessary to harm a human may also vary depending on body weight. A child is much more vulnerable than an adult. Small dogs are also more vulnerable than adult humans.

Considerable numbers of mushroom poisonings continue to occur every year, even when eating mushrooms that are considered edible.

These instances may be related to the following factors:

- Degree of sensitivity, which varies among people
- Quantity eaten
- Eating old or rotten mushrooms (Figure 3)
- Eating raw or insufficiently cooked mushrooms
- Eating a mixture of mushroom species
- Drinking alcohol within five days of eating certain mushroom species
- Eating improperly handled or stored mushrooms (plastic bags)
- Eating mushrooms from contaminated soil or surrounding environment

For extensive information about mushroom toxicity, consult the following titles in the references and resources section (page 76):

1) Mushrooms and other fungi of the Midcontinental United States, and
2) Don't Pick Poison.

Mushroom hunting

What to take

- Wax paper and brown paper bags
- A basket, bucket, or cooler with handle
- A sharp knife, small trowel, and magnifying glass
- A soft bristle brush and small ruler
- Note pad or index cards, pen/pencil
- Local guide to tree species in the area
- Hiking gear (a walking stick can come in handy for safety and to help clear the ground), insect repellent, cellphone or compass, whistle, food, and water

Best practices

- Respect private property
- Learn key characteristics of mushrooms being hunted, and learn to correctly identify their poisonous look-alikes.
- Avoid over-mature specimens; before collecting, inspect the mushroom for bruises, slime, fuzz, insect larvae, or other insect signs/activity.
- Harvest above soil level (soil debris may be an undesirable source of contamination)
- Remove and clean dirt or debris from mushrooms as they are harvested with a clean soft brush
- Store harvest in paper bags or wax paper while in transit; avoid plastic bags since they retain moisture and are prone to condensation which promotes decay
- Keep specimens wrapped or packed separately
- Keep from direct sun or warm/hot temperatures; refrigerate soon after harvest

How to use this guide

This guide has three sections:
1. Mushroom fruiting calendar
2. Mushroom Profiles
3. References and resources

1. Mushroom calendar: when to look?

The calendar on pages 14-17 shows the months when a mushroom species has been recorded in Iowa and other parts of the upper Midwest. The dates of the actual appearance of any one species can vary widely from year to year and is primarily based on environmental conditions, including ground temperature, timing of rainfall, amount of precipitation, and season.

2. Mushroom profiles

Each page contains one mushroom with

1) key characteristics;
2) common habitat where it can be found;
3) the estimated month(s) they may appear in nature, depending upon environmental conditions; and
4) mushrooms that may be mistaken as the profiled species (look-alikes).

On each page are symbols that indicate if the profiled mushroom is known to be poisonous, considered edible or inedible, or if their toxicity is unknown. These designations are defined as follows:

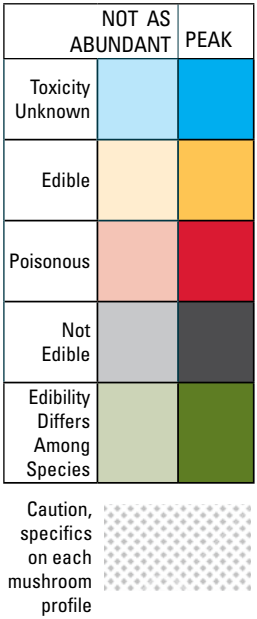
Choice or edible
Known edible, not poisonous. Individual sensitivity, including allergies, may occur.

Not edible
The texture or flavor makes it not good to eat.

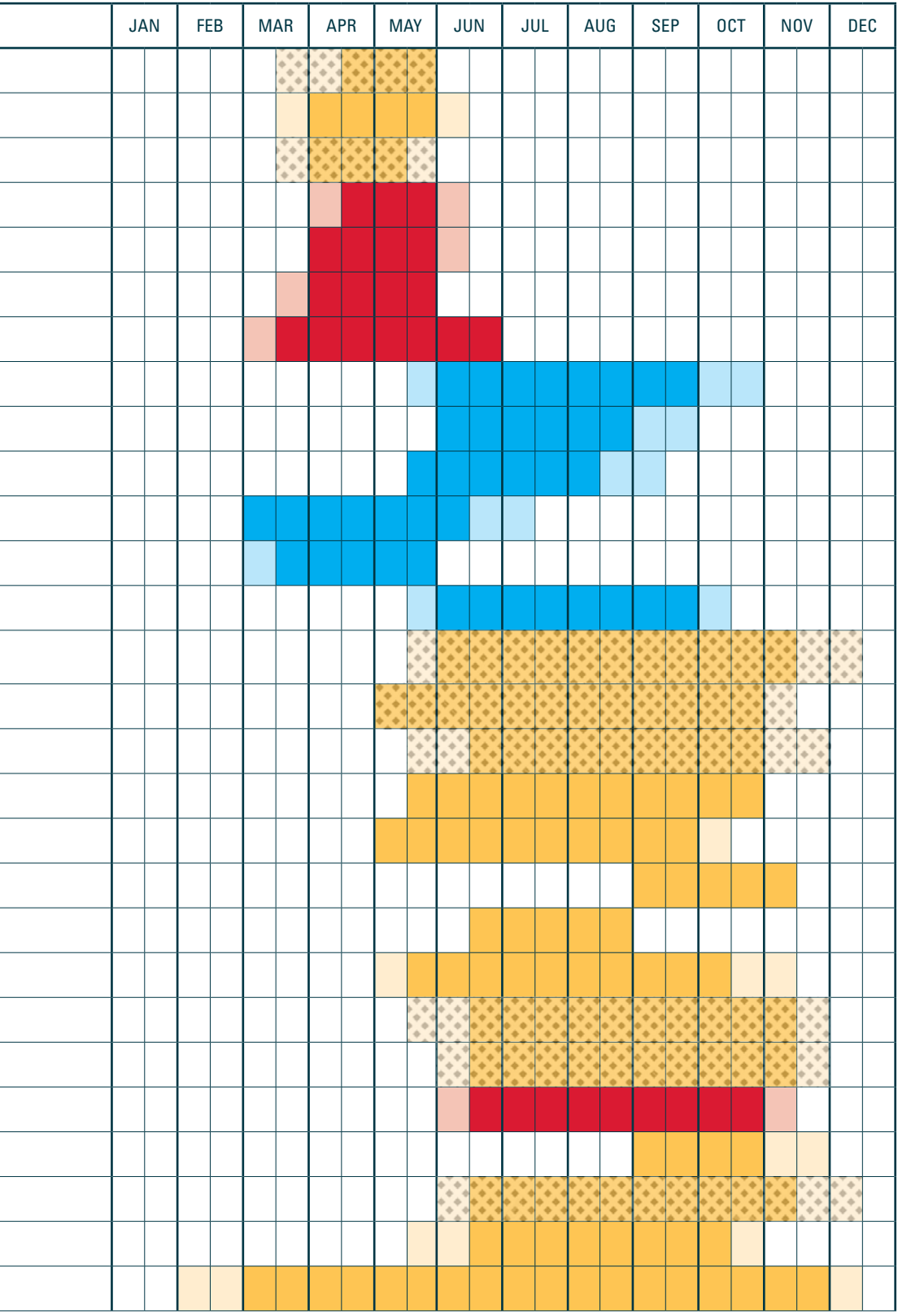
Poisonous
Known to cause discomfort, illness, or death if eaten.

Toxicity unknown
No information on toxic compounds produced.

Mushroom calendar: when to look?



PAGE	COMMON NAME	SCIENTIFIC NAME
19	Half-Free Morel	*Morchella punctipes*
20	Common Morel, White Morel, Grey Morel	*Morchella americana*
21	Common Eastern Black Morel	*Morchella angusticeps*
22	Smooth Thimble Cap	*Verpa conica*
23	Wrinkled Thimble Cap	*Verpa bohemica*
24	Beefsteak False Morel	*Gyromitra brunnea*
25	Carolina False Morel	*Gyromitra caroliniana*
26	White Elfin Saddle	*Helvella crispa group*
27	Saddle	*Helvella stevensii*
28	Cabbage Leaf Helvella	*Helvella acetabulum group*
29	Devil's Urn	*Urnula craterium*
30	Crimson Cup, Scarlet Elf Cup	*Sarcoscypha austriaca*
31	Palomino Cup, Recurved Cup	*Peziza varia*
32	Tippler's Bane, Common Ink Cap	*Coprinopsis atramentaria*
33	Inky Caps, Mica Caps	*Coprinellus micaceus*
34	Shaggy Mane	*Coprinus comatus*
35	Oyster (Pearl) Mushroom	*Pleurotus ostreatus*
36	Golden Oyster Mushroom	*Pleurotus citrinopileatus*
37	Elm Pleurotus, White Clamshell Mushroom	*Hypsizygus tessulatus*
38	Chanterelles	*Cantharellus cibarius group*
39	Scotch Bonnet, Fairy Ring	*Marasmius oreades*
40	Giant Puffball	*Calvatia gigantea*
41	Puffballs	*Lycoperdon species*
42	Hard Puffballs, Earthballs	*Scleroderma species*
43	Bulbous Honey Mushroom	*Amillaria gallica*
44	Honey Mushroom	*Armillaria mellea*
45	Sulphur Shelf, Chicken of the Woods	*Laetiporus sulphureus*
46	Velvet Stem, Winter Mushroom	*Flammulina velutipes*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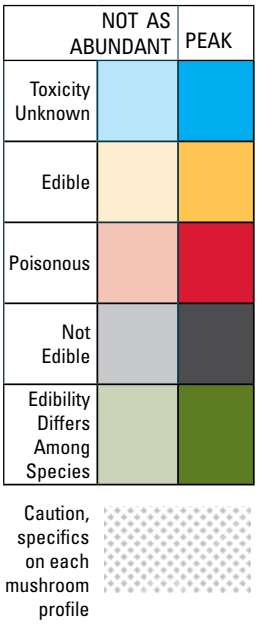
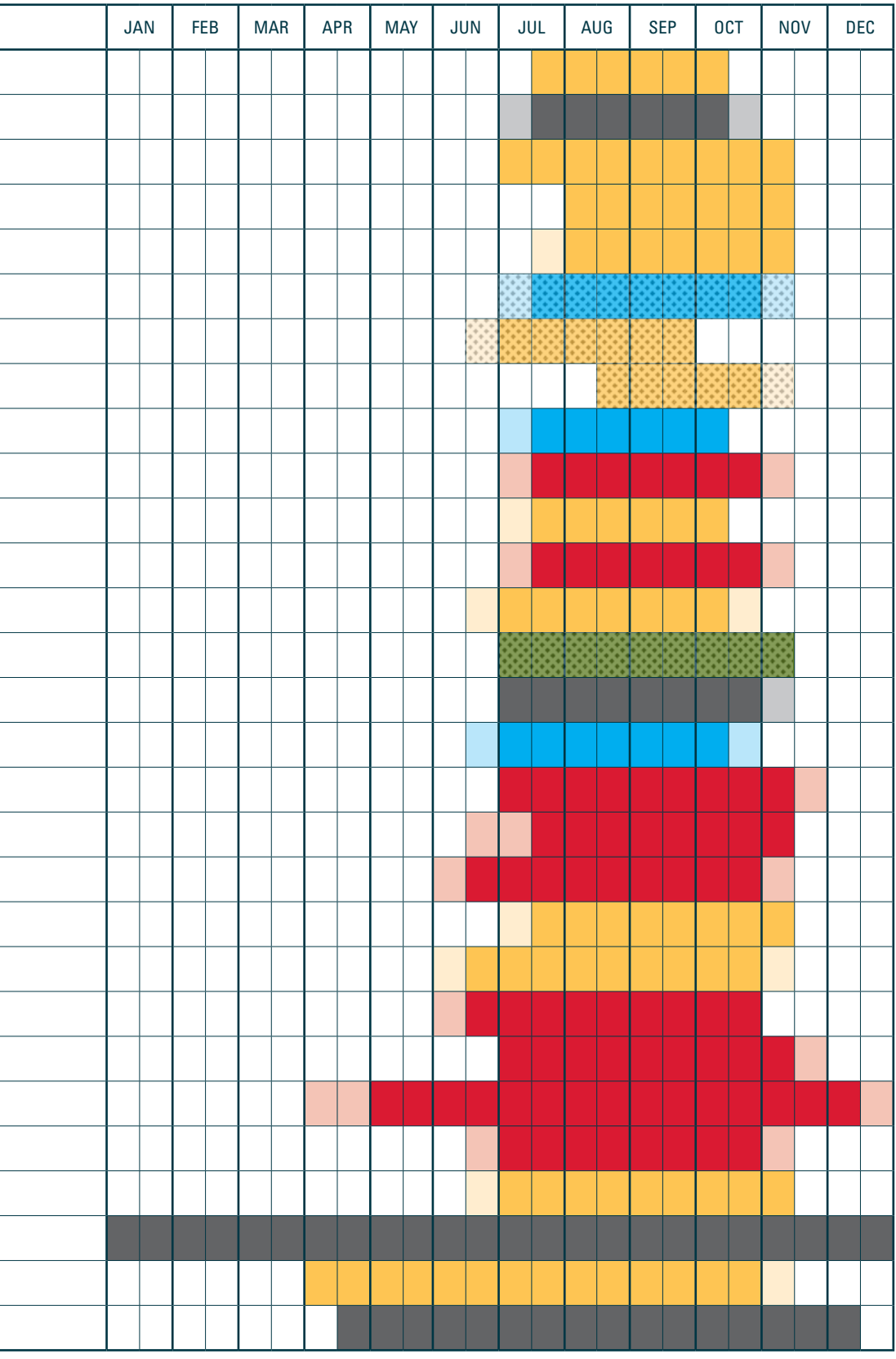


PAGE	COMMON NAME	SCIENTIFIC NAME
47	King Bolete	*Boletus edulis group*
48	Bitter Bolete	*Tylopilus felleus group*
49	Hedgehog Mushroom, Sweet Tooth Mushroom	*Hydnum repandum*
50	Bear's Head Tooth Fungus	*Hericium americanum*
51	Chicken of the Woods, Hen of the Woods	*Grifola frondosa*
52	Lobster Mushroom	*Hypomyces lactifluorum*
53	Giant Polypore, Black-staining Polypore	*Meripilus sumstinei*
54	Aborted Entoloma, Shrimp of the Woods	*Entoloma abortivum*
55	Blackening Russula	*Russula dissimulans group*
56	Red Brittlegills, Sickener	*Russula emetica group*
57	Green Russula	*Russula parvovirescens group*
58	Wooly Milkcap	*Lactarius torminosus*
59	Tawny Milkcap	*Lactifluus volemus*
60	Webscaps	*Cortinarius group*
61	Fairy Fingers	*Clavaria vermicularis*
62	Golden Coral	*Ramaria aurea*
63	Death Angel	*Amanita bisporigera*
64	False Parasol, Green Gill	*Chlorophyllum molybdites*
65	Stinking Parasol, Stinking Dapperling	*Lepiota cristata*
66	White Dapperling, White Agaricus Mushroom	*Leucoagaricus leucothites*
67	Meadow Mushroom, Pink Bottom	*Agaricus campestris*
68	Flat Top Agaricus	*Agaricus placomyces*
69	Jack-O-Lantern Mushroom	*Omphalotus illudens*
70	Deadly Galerina	*Galerina marginata*
71	Torn Fibercap	*Inocybe rimosa*
72	Black Trumpet	*Craterellus cornucopoides*
73	Artist's Conk	*Ganoderma applanatum*
74	Dryads Saddle, Pheasant's Back Mushroom	*Polyporus squamosus*
75	Turkey Tail	*Trametes versicolor*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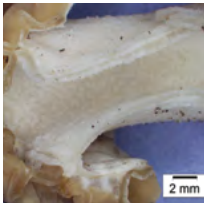
Mushroom Profiles

Half-Free Morel

Morchella punctipes (formerly known as *M. semilibera*)

CHOICE OR EDIBLE

UNKNOWN ECOLOGY



CLOSE UP OF CAP ATTACHMENT

Some people react badly to consuming half-free morel mushrooms. Best quality when young.

KEY CHARACTERISTICS Hollow caps have pits and attach halfway down the stalk draping out like a skirt. Hollow stalk.

HABITAT Grows on the ground in open wooded areas, edges of dense hardwoods, old orchards, and sometimes in lawns or pastures from the Great Plains eastward.

LOOK-ALIKES *Verpa conica* and *Verpa bohemica* (pages 22, 23)

TIMING Mid-April to end of May

Common Morel, White Morel, Grey Morel

Morchella americana (formerly known as *M. esculentoides, M. esculenta, M. deliciosa,* and *M. crassipes*)

CHOICE OR EDIBLE

UNKNOWN ECOLOGY

CLOSE UP OF CAP ATTACHMENT

KEY CHARACTERISTICS	Sponge-like cap grey, yellow, or white in color with lighter ridges and darker elongated pits. Hollow stalk.
HABITAT	Grows on the ground in woodlands.
LOOK-ALIKES	*Morchella ulmaria*
TIMING	Early April to May

Common Eastern Black Morel

Morchella angusticeps

CHOICE OR EDIBLE

UNKNOWN ECOLOGY

POISONOUS

Known to become poisonous when consumed with alcohol.

KEY CHARACTERISTICS	Narrow cone-shaped-caps with long pits surrounded by black ridges. Hollow stalk.
HABITAT	Grows on the ground under hardwoods; especially white ash, tulip trees, cherry, aspen, and sometimes pine trees.
LOOK-ALIKES	*Morchella septentrionales*
TIMING	Early April to mid-May

Smooth Thimble Cap

Verpa conica

POISONOUS

SAPROBE/DECOMPOSER

UNKNOWN ECOLOGY

KEY CHARACTERISTICS Long white stalk with a yellow to red-brown bell-shaped cap, attached at the top of the stalk and hangs free from the stalk. The stalk is not hollow, having a cotton-like pith.

HABITAT Grows on the ground in open wooded areas, edges of dense hardwoods, old orchards, and sometimes in lawns or pastures.

LOOK-ALIKES *Morchella punctipes* (page 19) and *Morchella populiphila*

TIMING Mid-April to end of May

Wrinkled Thimble Cap

Verpa bohemica

POISONOUS

SAPROBE/DECOMPOSER

UNKNOWN ECOLOGY

KEY CHARACTERISTICS Wrinkled bell-shaped cap which hangs completely free of the stalk. The stalk is not hollow, having a cotton-like pith.

HABITAT Grows on the ground under hardwoods and conifers.

LOOK-ALIKES *Morchella punctipes* (page 19) and *Morchella populiphila*

TIMING April to May

Beefsteak False Morel

Gyromitra brunnea

POISONOUS

SAPROBE/DECOMPOSER

UNKNOWN ECOLOGY

KEY CHARACTERISTICS	Reddish-brown to tan saddle shaped cap. Saddle shape comes from the 2-5 lobes that are raised and pinched together. The stalk is not hollow.
HABITAT	Grows on the ground under hardwoods, near stumps, and downed trees.
LOOK-ALIKES	None
TIMING	April to May

Carolina False Morel

Gyromitra caroliniana

POISONOUS

SAPROBE/DECOMPOSER

UNKNOWN ECOLOGY

KEY CHARACTERISTICS	Large, roundish, dark red-brown to brown cap that is heavily wrinkled on top of a white furrowed stalk. Cap is never lobed, and stalk is not hollow.
HABITAT	Grows on the ground under hardwoods near rotting stumps and downed trees.
LOOK-ALIKES	None
TIMING	Mid-March to May

White Elfin Saddle

Helvella crispa group

TOXICITY UNKNOWN

MUTUALIST/BENEFICIAL

KEY CHARACTERISTICS White to light brown cap, inturned margin when young, turning down with age, margin free from the stalk. Underside of the cap is slightly frosted in appearance. Stalk is white, ridged or fluted.

HABITAT Grows on the ground in mixed woods or under hardwoods.

LOOK-ALIKES *Helvella lactea*

TIMING June to mid-October

Saddle

Helvella stevensii

TOXICITY UNKNOWN

MUTUALIST/BENEFICIAL

KEY CHARACTERISTICS	White to light brown, edges fold upward away from the stalk when young and downward with maturity. The stalk is smooth, hollow, white, and bald.
HABITAT	Grows on the ground under hardwoods.
LOOK-ALIKES	*Helvella elastica*
TIMING	June to September

Cabbage Leaf Helvella

Helvella acetabulum group

TOXICITY UNKNOWN

MUTUALIST/BENEFICIAL

KEY CHARACTERISTICS	Deep cup-shaped brown cap with deep forked ribs extending from the base of the short stalk and part way up the cap, sometimes all the way to the cap margin. Stalk white, indented areas between ribs forming pockets.
HABITAT	Grows on the ground in deciduous woodlands.
LOOK-ALIKES	*Helvella costata, H. costifera,* and *H. solitaria*
TIMING	Mid-May to mid-August

Devil's Urn

Urnula craterium

TOXICITY UNKNOWN

SAPROBE/DECOMPOSER

PARASITE/HARMFUL

KEY CHARACTERISTICS	Urn-shaped when young becoming more goblet shaped with age. The black cup often has an uneven margin. Spores produced on the upper surface of the cup.
HABITAT	Grows on fallen oak branches.
LOOK-ALIKES	None
TIMING	March to mid-June

Crimson Cup, Scarlet Elf Cup

Sarcoscypha austriaca

TOXICITY UNKNOWN

SAPROBE/DECOMPOSER

KEY CHARACTERISTICS	The cup is concave, red on the inside and white on the outside.
HABITAT	Grows from downed, partially buried branches of deciduous trees, especially basswood.
LOOK-ALIKES	*S. coccinea, S. dudleyi,* and *S. occidentalis*
TIMING	Mid-March to May

Palomino Cup, Recurved Cup

Peziza varia

TOXICITY UNKNOWN

SAPROBE/DECOMPOSER

KEY CHARACTERISTICS Large, shallow, tan to light brown cups that are wrinkled toward the center. The undersurface is lighter brown to white and has a slightly fuzzy texture.

HABITAT Grows on rotten logs, wood chips, or on the ground with large amounts of wood chips or rotting wood.

LOOK-ALIKES *Peziza domiciliana*

TIMING June to September

Tippler's Bane, Common Ink Cap

Coprinopsis atramentaria

CHOICE OR EDIBLE

SAPROBE/DECOMPOSER

POISONOUS

Known to become poisonous when consumed with alcohol.

KEY CHARACTERISTICS	Cap is conical to expanded, silky gray to brown, and finely scaled. In age the gills deliquesce, forming an inky black mass from the margin towards the center. Stalk is white.
HABITAT	Grows in crowded clusters on decaying wood and on dead roots.
LOOK-ALIKES	Other coprinoid mushrooms
TIMING	June to mid-November

Inky Caps, Mica Caps

Coprinellus micaceus

CHOICE OR EDIBLE

SAPROBE/DECOMPOSER

POISONOUS

Known to become poisonous when consumed with alcohol.

KEY CHARACTERISTICS Amber to honey brown cap covered with fine flakes that look like mica chips, which wash off with rain. As spores mature from the margin toward the center, the gills self-digest, ultimately turning into a black inky mass.

HABITAT Grows in crowded clusters on or near tree stumps or where tree roots have started to decay underground in lawns.

LOOK-ALIKES Other coprinoid mushrooms

TIMING May to October

Shaggy Mane

Coprinus comatus

CHOICE OR EDIBLE

SAPROBE/DECOMPOSER

POISONOUS

Known to become poisonous when consumed with alcohol.

KEY CHARACTERISTICS Cap-cylindrical to barrel-shaped, with surface covered with shaggy tan to brown scales. Gills liquify and turn the cap inky black with age.

HABITAT Grows alone or in groups on the ground along roadsides, grassy areas, hard packed soils, wood chips, and near compost piles.

LOOK-ALIKES *Coprinus quadrifidus* and *Coprinopsis variegata*

TIMING Mid-June to October

Oyster Mushroom, Pearl Oyster Mushroom

Pleurotus ostreatus

CHOICE OR EDIBLE

SAPROBE/DECOMPOSER

PARASITE/HARMFUL

KEY CHARACTERISTICS	Short-stalked to sessile fan or oyster shell shaped caps with gills that extend down the stalk.
HABITAT	Grows in overlapping clusters on living trees or downed logs, especially hardwoods.
LOOK-ALIKES	*Pleurotus pulmonarius, Pleurotus populinus*
TIMING	Mid-May to October

Golden Oyster Mushroom

Pleurotus citrinopileatus

CHOICE OR EDIBLE

SAPROBE/DECOMPOSER

PARASITE/HARMFUL

KEY CHARACTERISTICS	Golden brown to bright yellow caps with stems that are white and usually bent. The gills are close together and extend down the stalk.
HABITAT	Grows in overlapping clusters on decaying hardwoods.
LOOK-ALIKES	None
TIMING	May to September

Elm Pleurotus, White Clamshell Mushroom

Hypsizygus tessulatus (also known as *H. marmoreus*)

CHOICE OR EDIBLE

SAPROBE/DECOMPOSER

PARASITE/HARMFUL

KEY CHARACTERISTICS	Thick white to tan cap centrally attached to a tough stalk. Gills attached to stalk, not deccurrent.
HABITAT	Grows singly or clustered in knots on living or dead cottonwood or maple trees.
LOOK-ALIKES	*Hypsizygus ulmarius*
TIMING	September to October

Chanterelles

Cantharellus cibarius group

CHOICE OR EDIBLE

MUTUALIST/BENEFICIAL

KEY CHARACTERISTICS Sturdy flat to funnel-shaped cap with thick gill-like ridges on the underside that extend part way down the stalk. Species of this group are shades of yellow to orange.

HABITAT Arises singly or in clumps from the ground in open hardwoods, sometimes in troops.

LOOK-ALIKES *Omphalotus illudens* (page 69), *Hygrophoropsis aurantiaca,* and species of orange or yellow *Craterellus*

TIMING Mid-June to August

Scotch Bonnet, Fairy Ring Mushroom

Marasmius oreades

CHOICE OR EDIBLE

SAPROBE/DECOMPOSER

KEY CHARACTERISTICS	Broadly expanded and flattened cap with widely spaced white gills attached to stalk, white spores.
HABITAT	Grows in lawns and other grassy areas, numerous, often forming fairy rings.
LOOK-ALIKES	Other little to medium-sized brown mushrooms in lawns such as *Clitocybe, Gymnopus,* and *Panaeolus*
TIMING	May to mid-October

Giant Puffball

Calvatia gigantea

CHOICE OR EDIBLE

NOT EDIBLE

SAPROBE/DECOMPOSER

White and firm flesh is considered choice edible, other stages may not be edible.

KEY CHARACTERISTICS	Very large, white, round mushroom with no stem. Thin outer covering breaks away into large irregular pieces.
HABITAT	Grows on the ground in meadows and wooded areas.
LOOK-ALIKES	Other *Calvatia* species
TIMING	Mid-June to mid-November

Puffballs

Lycoperdon species

CHOICE OR EDIBLE

NOT EDIBLE

SAPROBE/DECOMPOSER

White and firm flesh is considered choice edible, other stages may not be edible.

KEY CHARACTERISTICS Round to pear-shaped, with or without stalk, most species white to yellow-brown. Thin outer covering remains intact except for a hole in the top at maturity. Small, 1-3 inches. Mature spore mass is olive green to brown, never purple black.

HABITAT Grows on the ground or on downed logs or stumps in wooded or grassy areas.

LOOK-ALIKES *Scleroderma* species and young *Amanita*

TIMING Mid-June to mid-November

Hard Puffballs, Earthballs

Scleroderma species

POISONOUS

MUTUALIST/BENEFICIAL

KEY CHARACTERISTICS	Round to elliptical, yellow-brown to brown, some species with markings or scales over the thick (in most species) outer rind. Purple black inside.
HABITAT	Grows on the ground in forests or in wooded lawns.
LOOK-ALIKES	*Lycoperdon* species (page 41)
TIMING	June to October

Bulbous Honey Mushroom

Amillaria gallica

CHOICE OR EDIBLE

SAPROBE/DECOMPOSER

PARASITE/HARMFUL

KEY CHARACTERISTICS Mostly flat cap with tiny yellow brown scales concentrated near the center of the cap. Cobweb-like partial veil covers gills on young mushrooms. Gills white, attached to stalk, spores white. Stem club shaped with a yellow ring zone.

HABITAT Grows singly or in clusters at the base of hardwoods, or on or near downed logs and occasionally on conifers.

LOOK-ALIKES Other *Armillaria* and *Pholiota* species

TIMING September to October

Honey Mushroom

Armillaria mellea (formerly *Armillariella mellea*)

CHOICE OR EDIBLE

PARASITE/HARMFUL

Some people react badly to consuming honey mushrooms.

KEY CHARACTERISTICS Honey-colored cap with small darker-colored scales. When moist, the cap can be sticky. Partial veil covers gills when young, gills white, attached to stalk, spores white. Stalk with ring, whitish, sometimes with yellowish areas.

HABITAT Grows in clusters from common base, near the base of trees or stumps or on downed logs. Frequently on oak.

LOOK-ALIKES Other *Armillaria* and *Pholiota* species

TIMING Mid-June to November

Sulphur Shelf, Chicken of the Woods

Laetiporus sulphureus

CHOICE OR EDIBLE

SAPROBE/DECOMPOSER

PARASITE/HARMFUL

KEY CHARACTERISTICS Upper surface has various shades of bright sulfur yellow to orange. Undersurface is yellow and composed of tubes with pores of gills.

HABITAT Grows in overlapping clusters on living trees, downed logs, and stumps of oak, maple, willow, chestnut, and other hardwoods.

LOOK-ALIKES *Omphalotus illudens*

TIMING Mid-June to mid-October

Velvet Stem, Winter Mushroom

Flammulina velutipes (formerly known as *Collybia velutipes*)

CHOICE OR EDIBLE

SAPROBE/DECOMPOSER

KEY CHARACTERISTICS Yellow to red-brown caps are sticky or slimy on upper surface. Stalks covered with dense velvety blackish brown hairs. Gills whitish, attached to stalk, spores white.

HABITAT Grows in crowded, overlapping clusters on decaying logs and stumps or on living trees.

LOOK-ALIKES *Flammulina populicola*

TIMING March to November

King Bolete

Boletus edulis group

CHOICE OR EDIBLE

MUTUALIST/BENEFICIAL

KEY CHARACTERISTICS Large, sturdy fruiting bodies, with cream-brown to reddish fleshy brown caps. Undersurface is white becoming pale yellow, with tubes and pores rather than gills, olive brown spores. Stalk is club-shaped, white, and upper part often has raised reticulate pattern.

HABITAT Grows singly to scattered, on the ground under oak.

LOOK-ALIKES *Tylopilus felleus*

TIMING Mid-July to September

Bitter Bolete

Tylopilus felleus group

NOT EDIBLE

MUTUALIST/BENEFICIAL

KEY CHARACTERISTICS Fleshy pink-brown to tan cap, with white undersurface becoming pinkish with maturity, composed of tubes and pores rather than gills. The stem features a net-like pattern. The taste is very bitter.

HABITAT Grows singly or scattered on the ground under hardwoods.

LOOK-ALIKES *Boletus edulis* group

TIMING Mid-July to September

Hedgehog Mushroom, Sweet Tooth Mushroom

Hydnum repandum (formerly known as *Dentinum repandum*, *Gomphaceae, Hydnaceae*

CHOICE OR EDIBLE

MUTUALIST/BENEFICIAL

KEY CHARACTERISTICS Light pinkish-brown to yellow brown cap with lower surface covered in white conical spines instead of gills or pores. The spines extend part way down the stalk.

HABITAT Grows on the ground underneath hardwoods, scattered.

LOOK-ALIKES *Sarcodon imbricatus*

TIMING July to October

Bear's Head Tooth Fungus

Hericium americanum

CHOICE OR EDIBLE

SAPROBE/DECOMPOSER

PARASITE/HARMFUL

KEY CHARACTERISTICS	White branched fungus with long spines that hang down from the branches of the fungus.
HABITAT	Grows on stumps and dead hardwood logs. Can also be found growing in wounds of hardwoods.
LOOK-ALIKES	Other species of *Hericium*
TIMING	August to October

Chicken of the Woods, Hen of the Woods, Sheepshead, Maitake

Grifola frondosa

CHOICE OR EDIBLE

PARASITE/HARMFUL

KEY CHARACTERISTICS	Rosette of numerous small fan-shaped grey caps. The tightly packed caps are attached by branches leading to a central stem. Undersurface is white and composed of tubes and pores, not gills.
HABITAT	Grows at base or stumps of oak trees.
LOOK-ALIKES	*Meripilus sumstinei* (page 53)
TIMING	August to October

Lobster Mushroom

Hypomyces lactifluorum

TOXICITY UNKNOWN

PARASITE/HARMFUL

The risk associated with eating this variety comes from not knowing the identity of the parasitized species.

Key characteristics	Ridges instead of gills, bright orange-red, malformed cap and stalk. This fungus is a mix of a host mushroom that is parasitized by another fungus (Hypomyces). This parasitism leads to malformation of the host mushroom. The host, when identified, has been Russula or Lactarius species.
HABITAT	Grows on the ground, scattered, in deciduous woods, especially forests containing oaks and poplars.
LOOK-ALIKES	None
TIMING	Mid-July to mid-October

Giant Polypore or Black-staining Polypore

Meripilus sumstinei

CHOICE OR EDIBLE

SAPROBE/DECOMPOSER

PARASITE/HARMFUL

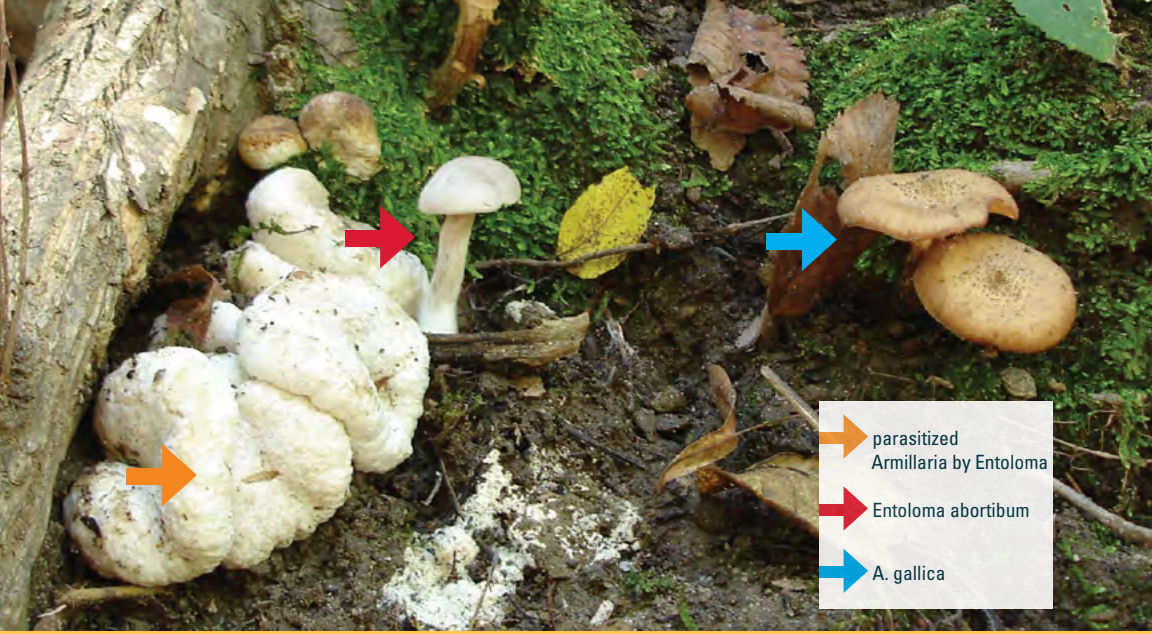
Choice/edible when young and fleshy, but becomes tough and unpleasant when older.

KEY CHARACTERISTICS Fan-shaped and white when young then tan to brown when older. Multiple caps grow branch-like from a single stem forming a rosette. Flesh discolors black, particularly along cap margin. Undersurface white, composed of minute pores and tubes instead of gills.

HABITAT Grows on living and dead oaks and other hardwoods.

LOOK-ALIKES *Grifola frondosa* (page 51)

TIMING July to August



Aborted Entoloma, Shrimp of the Woods, Hunter's Heart, Ground Prune

Entoloma abortivum

CHOICE OR EDIBLE

SAPROBE/DECOMPOSER

PARASITE/HARMFUL

Some poisonous *Entoloma* species. could be difficult to distinguish from the edible *E. abortivum*. Thus, only the parasitized form is recommended.

KEY CHARACTERISTICS

Sturdy gray mushroom with white gills that turn pink from pore color at maturity. It is a parasite of *Armillaria* species, which develop in clusters with no gills or stalk, and are white bruising pinkish brown. While parasitized forms of *Armillaria* are considered choice edible, exercise extreme caution.

HABITAT

Grow at base of trees, around stumps and on rotting logs in hardwood forests.

LOOK-ALIKES

Many *Entoloma* species, including toxic ones, are similar in appearance, but only *E. abortivum* causes the malformed *Armillaria* clusters.

TIMING

Mid-August to mid-October.

Blackening Russula

Russula dissimulans

TOXICITY UNKNOWN

MUTUALIST/BENEFICIAL

KEY CHARACTERISTICS Sturdy, white, discoloring red followed by grey-brown to black. Cap with margins that roll inward toward the gills. Thick, brittle gills range from white when young to grey when mature or when bruised.

HABITAT Grows on the ground underneath hardwoods and conifers.

LOOK-ALIKES *Russula densifolia*, *R. nigricans,* and the toxic *R. subnigricans*

TIMING Mid-July to September

Sickener, Red Brittlegills

Russula emetica group

POISONOUS

MUTUALIST/BENEFICIAL

KEY CHARACTERISTICS	Group of mushrooms with scarlet red cap with a smooth surface and gills that are attached to the white stalk, and are white to cream-colored. Flesh is brittle, with stalk that snaps like chalk.
HABITAT	Grows on the ground, associated with hardwoods.
LOOK-ALIKES	Other *Russula* species
TIMING	Mid-July to mid-October

Green Russula

Russula parvovirescens group

CHOICE OR EDIBLE

MUTUALIST/BENEFICIAL

KEY CHARACTERISTICS	Convex to flat cap that is green to blue-green in color. The cap's surface cracks to form irregular raised patches.
HABITAT	Grows on ground under oaks and other hardwoods.
LOOK-ALIKES	*Russula virescens* and *R. crustosa*
TIMING	Mid-July to mid-September

Woolly Milkcap

Lactarius torminosus

POISONOUS

MUTUALIST/BENEFICIAL

KEY CHARACTERISTICS	Cap curled inward, with "mat of hairs" when young. When cut or broken, a milky juice (latex) can be seen leaking out.
HABITAT	Grows on the ground in the woods with birch and aspen trees.
LOOK-ALIKES	*Russula* species (page 57)
TIMING	Mid-July to mid-October

Tawny Milkcap

Lactifluus volemus

CHOICE OR EDIBLE

MUTUALIST/BENEFICIAL

KEY CHARACTERISTICS Sturdy mushroom, brown to orange-colored cap that is relatively smooth and bald. When broken open it leaks a milky latex that stains everything brown. Said to smell fishy when broken. Stalk is light orange-brown.

HABITAT Grows on ground under oaks, other hardwoods.

LOOK-ALIKES *Lactarius corrugis*

TIMING July to September

Webcaps

Cortinarius group

MUTUALIST/BENEFICIAL

POISONOUS

Use caution as some species are poisonous and some are edible. Many mushrooms in this group are toxic.

KEY CHARACTERISTICS Fleshy with short stalks. A partial cobweb-like veil covers the gills when the mushroom is young. Rusty-brown to cinnamon-brown spores color the mature gills and veil.

HABITAT Grows in wooded areas with oaks, other hardwoods, and pines.

LOOK-ALIKES This genus includes many colorful species that can be mistaken for other genera. Brown species may be mistaken for Inocybe.

TIMING July to October

Fairy Fingers

Clavaria vermicularis (also known as *Clavaria fragilis*)

NOT EDIBLE

SAPROBE/DECOMPOSER

KEY CHARACTERISTICS	White to translucent and cylindrical in shape. These mushrooms are very brittle.
HABITAT	Grows on moss in wet conditions. Also grows on the ground in the woods underneath hardwoods or conifers.
LOOK-ALIKES	*Clavaria acuta* and *Multiclavula mucida*
TIMING	Early July to mid-October

Golden Coral

Ramaria aurea

TOXICITY UNKNOWN

MUTUALIST/BENEFICIAL

KEY CHARACTERISTICS Golden in color when young, then ochre in color when mature. Numerous clusters of branches that resemble coral. Stem is thick, fleshy, and white in color.

HABITAT Grows on the ground under deciduous or coniferous trees.

LOOK-ALIKES Other *Ramaria* species including *R. formosa* which is toxic

TIMING July to September

Death Angel

Amanita bisporigera

POISONOUS

MUTUALIST/BENEFICIAL

KEY CHARACTERISTICS The mushroom is very white with a ring around the stalk and a cup around the base of the stalk. The cap is completely bald and white. The gills are free from the stem. Spores are white.

HABITAT Grows on the ground in woods with oaks and other hardwoods.

LOOK-ALIKES *Volvopluteus gloiocephalus*, other *Amanita* species and *Leucoagaricus leucothites* (page 66)

TIMING July to October

False Parasol, Green Gill

Chlorophyllum molybdites
(formerly known as *Macrolepiota molybdites*)

POISONOUS

SAPROBE/DECOMPOSER

KEY CHARACTERISTICS White caps that feature patchy, dark scales and green spores. When spores are mature, the gills turn a green to gray-green color. The gills are free from the stem.

HABITAT Grows in lawns and other grassy places, sometimes in a fairy ring.

LOOK-ALIKES *Chlorophyllum rhacodes*, *Agaricus* species, *Amanita* species, and *Leucoagaricus leucothites* (page 66)

TIMING Mid-July to October

Stinking Parasol, Stinking Dapperling

Lepiota cristata

POISONOUS

SAPROBE/DECOMPOSER

KEY CHARACTERISTICS	White to cream-colored cap with reddish-brown scales. The stem is smooth and bare except for a very fragile ring around it. The gills are free from the stem. Said to smell like burnt rubber.
HABITAT	Grows on ground in woods or wooded yards.
LOOK-ALIKES	Some other *Lepiota* species, some *Leucocoprinus* species, some *Leucoagaricus* species (page 66)
TIMING	Mid-June to mid-October

White Dapperling, White Agaricus Mushroom

Leucoagaricus leucothites (formerly known as *Leucoagaricus naucinus* or *Lepiota naucina*)

CHOICE OR EDIBLE

SAPROBE/DECOMPOSER

KEY CHARACTERISTICS	White smooth cap and club-shaped stalk. A thick ring is left around the stalk as the cap expands.
HABITAT	Scattered groups in lawns, other grassy places, and occasionally near conifers.
LOOK-ALIKES	*Amanita* species and *Chlorophyllum molybdites* (page 64)
TIMING	Mid-July to October

Meadow Mushroom, Pink Bottom

Agaricus campestris group

CHOICE OR EDIBLE

SAPROBE/DECOMPOSER

KEY CHARACTERISTICS White cap with bright pink gills when young and dark brown when spores develop. The gills are free from the stalk. Stalk has a substantial ring. Spores are dark chocolate brown.

HABITAT Grows in grassy areas such as lawns, pastures, or fields. Sometimes grows in fairy rings.

LOOK-ALIKES *Amanita*, *Chlorophyllum molybdites* (page 64), and other *Agaricus* species.

TIMING Mid-June to mid-October

Flat Top Agaricus

Agaricus placomyces

POISONOUS

SAPROBE/DECOMPOSER

KEY CHARACTERISTICS Cap is generally flat with the middle being dark brown, usually with scales or fibers, and are usually dry to the touch. The gills are generally free from the stem and are pink becoming dark brown when mature.Stalk has a substantial ring. Spores are dark chocolate brown. Base of stalk discolors yellow when scratched.

HABITAT Grows on the ground in woodlands or yards with hardwood or conifer trees, east of the Rocky Mountains.

LOOK-ALIKES Other *Agaricus* species

TIMING Mid-June to mid-October

Jack-O-Lantern Mushroom

Omphalotus illudens

POISONOUS

SAPROBE/DECOMPOSER

KEY CHARACTERISTICS Bright yellow to orange-yellow on both surfaces, with narrow gills extending along the yellow stem. Gills will glow yellow-greenish in the dark.

HABITAT Grows in dense clusters from stumps and the roots of buried hardwoods, especially oak trees.

LOOK-ALIKES *Laetiporus sulphureus* (page 45) and *Chanterelle* species (page 38)

TIMING July to mid-October

Deadly Galerina

Galerina marginata (formerly *G. autumnalis, G. unicolor*)

POISONOUS

SAPROBE/DECOMPOSER

KEY CHARACTERISTICS As it dries, the cap has a two-toned appearance of cream-colored and cinnamon-brown. The cap is tacky when dry but sticky when wet or fresh. Distinctive feature is its rusty-brown spore print and thin, fragile, white to rusty-brown ring around the upper stalk.

HABITAT Grows on the fallen and rotting wood of hardwoods.

LOOK-ALIKES Species of *Armillaria*, *Pholiota*, and *Hypholoma*

TIMING May to mid-November

Torn Fibercap

Inocybe rimosa (also known as *I. fastigiata*)

POISONOUS

MUTUALIST/BENEFICIAL

KEY CHARACTERISTICS	The cap has a prominent umbo or point at the center with darker yellow-brown fibers radiating from the center to the margin revealing the whiter undersurface between fibers.
HABITAT	On the ground in hardwood or conifer woodlands or wooded yards.
LOOK-ALIKES	Other *Inocybe* species
TIMING	July to September

Black Trumpet

Craterellus cornucopoides

CHOICE OR EDIBLE

MUTUALIST/BENEFICIAL

KEY CHARACTERISTICS	Trumpet-shaped with a very dark brown hollow inside and a dry black to gray outer surface.
HABITAT	Grows on the ground underneath beech, oak, and occasionally other hardwood trees.
LOOK-ALIKES	Other dark-colored species of *Craterellus*
TIMING	July to mid-October

Artist's Conk

Ganoderma applanatum

NOT EDIBLE

SAPROBE/DECOMPOSER

PARASITE/HARMFUL

KEY CHARACTERISTICS	The cap surface is dull-brown and lumpy. It is perennial and is shaped like a half circle.
HABITAT	Grows on a wide variety of living or dead hardwoods.
LOOK-ALIKES	None
TIMING	May to October

Dryads Saddle, Pheasant's Back Mushroom

Polyporus squamosus

CHOICE OR EDIBLE

SAPROBE/DECOMPOSER

PARASITE/HARMFUL

KEY CHARACTERISTICS Flat, kidney, semicircular, or fan-shaped cap that is creamy tan to yellow in color, with a short stalk. The cap is covered in brownish black scales.

HABITAT Grows on living or dead hardwoods and stumps, particularly silver maples and boxelders.

LOOK-ALIKES None

TIMING April to October

Turkey Tail

Trametes versicolor

NOT EDIBLE

SAPROBE/DECOMPOSER

KEY CHARACTERISTICS	Small, thin, and leathery mushroom without a stalk. It has many multi-colored zones on top and white tubes and pores on the underside.
HABITAT	Grows on dead, deciduous wood, conifers, and in the wounds of living hardwood trees.
LOOK-ALIKES	*T. hirsuta* and *T. pubescens*
TIMING	May to November

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PHOTOS

Drew Henderson	*Verpa bohemica*
Mike Hopping	*Morchella angusticeps*
Lina Rodriguez Salamanca	*Morchella americana* *Pleurotus citrinopileatus* *Meripilus sumstinei*
Jon Shaffer	*Gyromitra caroliniana*

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ADDITIONAL TRAINING OPPORTUNITIES

For additional information on webinars and training sessions related to the identification, safe consumption, and best practices for hunting mushrooms, contact your local Iowa State University Extension and Outreach county office.

Iowa State University also offers certification classes to sell mushrooms in Iowa. Information on these classes, which are offered yearly and open to residents of Iowa, can be found at www.ipm.iastate.edu/morel-mushroom-certification.

Sales of wild-harvested mushrooms are regulated by the Iowa Department of Inspections and Appeals.

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