

The Common Chanterelles (*Cantharellus* and *Craterellus*) of Florida¹

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Summary

Chanterelle mushrooms (species of *Cantharellus* and *Craterellus*) are common edible fungi that are most commonly found during hot and humid times of the year. Their bright shades of yellow, orange, pink, and other colors make them conspicuous in the forest. These mushrooms are not grown commercially because they form mycorrhizas, symbiotic relationships with trees, and rely on living host trees for nutrition. Chanterelles have blunt “false gills,” which sets them apart from other mushrooms that have bladelike “true gills.” Chanterelle mushrooms belong to the genera *Cantharellus* and *Craterellus*, and all known species are considered edible. This document is intended to introduce the general public to the chanterelle mushrooms of Florida and includes a preliminary key to Florida’s most common chanterelle species. When in doubt about an ingested fungus in the state of Florida, contact the American Association of Poison Control Centers hotline (800-222-1222) or Dr. Matthew E. Smith (352-273-2837, trufflesmith@ufl.edu).

Introduction

Species of *Cantharellus* and *Craterellus* are commonly known as “chanterelle mushrooms” or “chanterelles.” These are popular edible mushrooms that can be found growing in soil. Chanterelles are most common during the warm periods of the year but can be found year-round,

particularly in the southernmost regions of Florida. These mushrooms are commonly found in forests or in other areas with trees because they form symbiotic relationships called mycorrhizas with the roots of some woody plants. Their funnel-shaped fruiting bodies are often bright colors of yellow, orange, pink, or cream. Many species within the genus *Cantharellus* are morphologically similar to each other, even when viewed under a microscope. This means that genetic techniques are sometimes needed to accurately identify these mushrooms at the species level (Buyck and Hofstetter 2011; Leacock et al. 2016; Foltz et al. 2013). In this article we refer to species of both *Cantharellus* and *Craterellus* as chanterelles. When discussing species of these fungi in this document, we abbreviate the genus *Cantharellus* as “C.” (as in *C. minor*) and *Craterellus* as “Cr.” (as in *Cr. fallax*). The purpose of this document is to introduce Florida citizens to these colorful and attractive mushrooms, to provide basic information about their biology, and to aid in basic identification.

Morphology and Identification

The name “chanterelle” comes from the Greek word *kantharos*, which means “goblet” or “cup.” This name is a reference to the iconic funnel-shaped fruiting bodies that are formed by the chanterelle fungi. Chanterelle mushrooms come in a wide variety of colors that include red, orange, yellow, creamy white, purplish, and black. These fungi occur in the soil in the vicinity of their host plants.

1. This publication is PP369, one of a series of the Plant Pathology Department, UF/IFAS Extension. Original publication date February 2023. Visit the EDIS website at <https://edis.ifas.ufl.edu> for the currently supported version of this publication.

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Chanterelles will never fruit directly from wood, which sets them apart from many look-alike mushrooms. Many species of chanterelles have caps with wavy edges, with the center often sunken into the central stipe. Chanterelle mushrooms typically have a white or creamy-colored spore print (i.e., when spores are deposited en masse on a surface such as a piece of paper). Chanterelles have flesh that is firm and dense, with a texture that is sometimes compared to string cheese (Arora 1986). Some chanterelles have a fruity, pleasant aroma that is often described as similar to apricots, while other species have no distinctive aroma at all. In Florida, they are most prolific during the warmer and wetter months of the year (May–September) but can be found anytime when it is warm and there has been sufficient rain (Bessette et al. 2019).

One defining feature of chanterelle mushrooms is their blunt “false gills” that are decurrent (run down the stipe). These false gills are found on the underside of the cap, and are the part of the mushroom that produces microscopic spores. The “true gills” of other mushrooms can usually be plucked individually and resemble individual blades. In contrast, “false gills” cannot be individually plucked and do not move as freely—they are more like ridges than the true gills found in most other mushrooms. To test whether a mushroom has true gills or false gills, one may run a finger across the gills or try to pluck the blades. Some species of chanterelles have a completely smooth underside without any gills at all, or they may have false gills that are fused together (anastomosed), especially toward the edge of the cap.

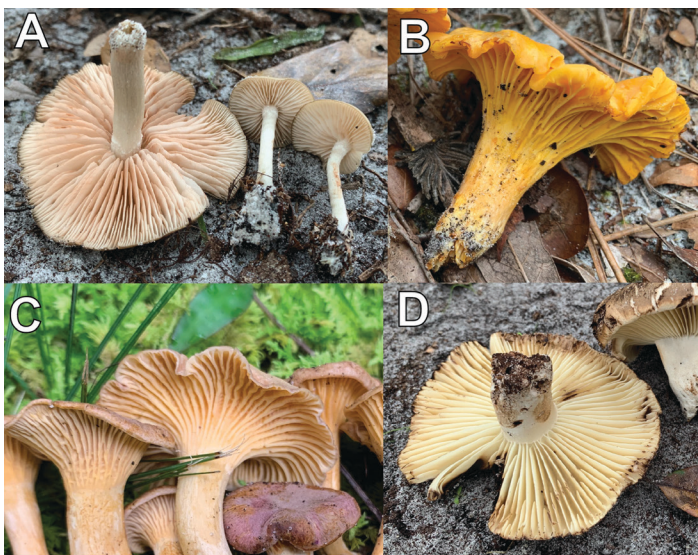


Figure 1. A comparison between true gills and false gills: (A) True gills of an *Entoloma* species. (B) Decurrent and anastomosing (fusing) “false gills” of *Cantharellus tenuithrix*. (C) The “false gills” of *Cantharellus quercophilus*. (D) True gills of *Russula nigricans*.

Credits: Matthew E. Smith, UF/IFAS

Look-Alike Fungi

Chanterelle mushrooms are relatively easy to identify compared to some other mushrooms due to the combination of their false gills, their typically bright coloration, and their growth on the ground (but not on wood). However, a few look-alike mushrooms are sometimes mistaken for chanterelles, so it is important to be aware of these fungi. In Florida, there are a few mushrooms that are sometimes confused with chanterelles. These include the jack-o’-lantern mushrooms (*Omphalotus subilludens* and *O. illudens*) and some species of rust gill fungi (*Gymnopilus* spp.). However, both *Omphalotus* and *Gymnopilus* are wood-decay fungi that are produced directly on wood, and these mushrooms also have true gills (Arora 1986). *Gymnopilus* species can also be differentiated from *Cantharellus* because they have rusty-brown spores. Another differentiating feature is that species of both *Omphalotus* and *Gymnopilus* are sometimes produced in clusters that are fused at the base. In contrast, chanterelles often grow “gregariously,” with many individuals fruiting in the same area, but they are not typically found in large clusters that are fused at the base (the exception to this rule is that one species, *Craterellus odoratus*, may occasionally occur in clusters). Although both *Omphalotus* and *Gymnopilus* always grow on decaying wood, it is important to remember that sometimes the wood can be buried in soil, and these fungi can therefore appear to be fruiting on the ground.

Hygrophoropsis is another genus of mushrooms that can resemble chanterelles, and species in this genus are sometimes known as “false chanterelles.” Some *Hygrophoropsis* species look like chanterelles because they have decurrent gills and bright orange or yellow coloration (Pilz et al. 2003). Although species of *Hygrophoropsis* are also wood-decay fungi, they can sometimes be found fruiting directly on the ground, although some wood will always be present near the mushrooms. Because of this fruiting habit, species of *Hygrophoropsis* can appear similar to some chanterelles. Species of *Hygrophoropsis* are either absent or extremely rare in Florida, but it is possible that they may occur in the northern part of the state.



Figure 2. A comparison between a common *Cantharellus* species and two common look-alike mushrooms that occur in Florida: (A) *Cantharellus tenuithrix*; (B) *Omphalotus subilludens*; (C) an unidentified *Gymnopilus* species.

Credits: Matthew E. Smith, UF/IFAS

Habitat and Ecology

Chanterelles are ectomycorrhizal, meaning they form a symbiotic relationship with plants. They attach to the outside of plant roots and exchange nutrients with the plants. They do not form this relationship with just any plants; only some species of trees or shrubs benefit from this specialized association with fungi (Brundrett and Tedersoo 2018). The most common trees associated with chanterelles in Florida are oaks (*Quercus*) and pines (*Pinus*), but these mushrooms may also be found with hickory (*Carya*), beech (*Fagus*), birch (*Betula*), ironwood (*Ostrya*), willow (*Salix*), and sea grape (*Coccoloba*). Chanterelle mushrooms are found close to the host plant, and the fungi need this connection with the host to complete their life cycle. Because of this association, chanterelles have not been successfully cultivated and grown commercially.

Taxonomy

Some species of North American chanterelles were previously called by European names. However, molecular tools have shown that most North American chanterelle species are distinct from those that occur in Europe, and that many species of chanterelles resemble one another. So far, there are approximately 31 described species of *Cantharellus* in North America (Buyck, Hofstetter, et al. 2016; Thorn et al. 2017). The diversity of chanterelles in Florida is still unknown but here we provide a synopsis of the most common species in the state (Figure 3).

For a long time, many orange or yellow chanterelles were called *Cantharellus cibarius* (commonly known as “golden chanterelles”), but molecular studies have recently shown that *C. cibarius* is only found in Europe. As a result, many of these North American species that were called *C. cibarius* have been given new taxonomic names (Buyck and Hofstetter 2011). For example, the three species *C. tabernensis*,

C. altipes, and *C. tenuithrix* are all golden chanterelles that closely resemble *C. cibarius* but only occur in North America. Molecular data have shown that *C. tenuithrix* is found in Florida and is very closely related to *C. cibarius*, despite the fact that they occur on different continents (Buyck and Hofstetter 2011). *Cantharellus tabernensis* was described from Mississippi and can also be found in Florida. The mushrooms of *C. tabernensis* are yellow and become whiter towards the base of the stipe. Their caps have a brown spot at the center that lightens with age.

In the past, many pinkish-orange or reddish-orange chanterelles have been called by the species name *C. cinnabarinus*. Although *C. cinnabarinus* is present in North America, there are also several other reddish-orange species that make up a species complex, which may include undescribed species. Other North American species that look similar to *C. cinnabarinus* and were previously called by this name include *C. coccolobae*, *C. texensis*, and *C. corallinus*. *Cantharellus texensis* was described from Texas and may occur in Florida, but this species has not yet been officially documented in the state. *Cantharellus coccolobae* is found in Florida but is only found in southern Florida in association with species of *Coccoloba*, including both *Coccoloba uvifera* (sea grape) and *Coccoloba diversifolia* (pigeon plum) (Buyck, Moreau, et al. 2016). Given the prior misidentification of these species, more research must be done using DNA sequencing to examine the diversity and distribution of both *Cantharellus* and *Craterellus* species in Florida and elsewhere in North America.



Figure 3. Photos of fresh specimens of Florida chanterelle mushrooms: (A) *Craterellus fallax*; (B) *Cantharellus lateritius*; (C) *Cantharellus corallinus*; (D) *Cantharellus altipes*; (E) *Craterellus odoratus*; (F) *Cantharellus tenuithrix*; (G) *Cantharellus quercophilus*.
Credits: Matthew E. Smith, UF/IFAS

Edibility

Chanterelles are generally considered to be edible, and no chanterelles have been shown to be toxic to humans. However, misidentification of fungi can lead to serious health consequences and wild mushrooms should be eaten only with extreme caution. Some look-alike fungi, such as *Omphalotus subilludens* (discussed above), can cause serious gastrointestinal symptoms if consumed (Vanden Hoek et al. 1991). Additionally, rotten or undercooked mushrooms can cause stomach problems or illness even if the specimens are from an “edible” species of mushroom. Members of the public should never consume wild mushrooms that they cannot positively identify as edible. When in doubt, throw it out!

For more information on mushroom identification, please see “Guidelines for Submitting Fungi and Fungi Photos for Identification” for more assistance.

Preliminary Key to the Most Common Species of Florida Chanterelles

1. Fresh mushroom dark in color (black, purplish black, gray, blackish blue), hymenium (the surface where spores are produced) is smooth, lacking false gills.....2
1. Fresh mushroom some other color (whitish, orange, yellow, pinkish, reddish, etc.) but never dark black, blue, or purple.....3

2. Grayish mushroom with distinct stipe and cap, cap margins slightly wavy and lighter in color than the rest of the mushroom, mushrooms small (typically 2.5–10 cm tall).....*Craterellus carolinensis*

2. Dark gray to black mushroom, no clear distinction between the cap and the stipe, with thin flesh, resembling a funnel, larger in size (typically 7.5–15 cm tall).....*Craterellus fallax*

3. Brightly colored fruiting body of red, pink, coral, reddish-orange, or pinkish tones.....4

3. Yellowish orange, yellow, pale creamy yellow or white (sometimes with dull purple or brown tones on the cap).....5

4. Only found near sea grape (*Coccoloba uvifera*) or pigeon plum (*C. diversifolia*), in sandy soil near the beach, rockland hammocks, or under planted trees, in Florida and the Caribbean, pinkish to coral or reddish-orange color
Cantharellus coccolobae

4. Found with oaks and other broadleaf trees in the forest or in wooded lawns, mushrooms bright reddish orange but always with some faint white coloration at the base
Cantharellus corallinus

5. Smooth hymenium or occasionally with very shallow false gills.....6

5. Hymenium forming notable false gills.....7

6. Mushroom strongly vase-shaped with thin flesh and a deeply depressed cap, cap apricot with pale creamy hymenium that is always completely smooth, up to 6 mushrooms sometimes fused at the base, typically shorter than 7 cm.....
Craterellus odoratus

6. Mushroom has typical chanterelle shape with notable stipe and thick, meaty flesh, hymenium smooth, sometimes with shallow and inconspicuous false gills, ranging in height from 6–10 cm..... *Cantharellus lateritius*

7. Mushrooms quite small, almost always less than 5 cm, with a very thin elongated stipe, typically brilliant lemon yellow but sometimes with tinges of orange.....*Cantharellus minor*

7. Mushrooms larger than 5 cm with thick, meaty flesh.....8

8. Top of the mushroom cap often purplish brown when young, becoming dull and light brown with age, hymenium cream colored with orange or peach undertones.....
Cantharellus quercophilus

8. Mushroom is bright yellow or orangish yellow, lacking purplish brown tones on the cap.....9

9. Mushroom has a distinct edge between false gills and the stipe, fruiting body with a relatively long stipe compared to the width of the cap, when the flesh of the stalk is sliced lengthwise obvious white inclusions are visible inside the tissue.....*Cantharellus altipes*

9. Mushroom does not have a distinct edge between false gills and the stipe, fruiting body lacking an obviously long stipe, lacking obvious white inclusions in the flesh of the stipe when cut10

10. Mushrooms often more orange in color, spores long and narrow with a length-to-width ratio of approximately 1.8.....*Cantharellus tenuithrix*

10. Mushrooms often more yellowish to yellow-tan, spores less elongated with a length-to-width ratio of approximately 1.5.....*Cantharellus appalachiensis* or *C. tabernensis**

*Note that *Cantharellus appalachiensis* and *C. tabernensis* are nearly identical in appearance and are almost impossible to distinguish based on morphology alone, even with microscopic analysis. Both species occur in Florida.

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