

Jack O' Lantern Fungus: A Trick Pathogen?

By Christopher J. Luley, Ph.D.

Several mushroom species that are known as the Jack O' Lantern fungus are very common on and around oaks and other species in the late summer and fall (Photos 1 & 2). Knowing this fungus (Photo 3) is important to arborists, as it looks very similar to the well-known, root-killing and decay pathogen *Armillaria* (Photo 3A). The fungus also can produce an abundant number of mushrooms on and around urban trees, creating concern from tree owners about the tree stability and identity of the fungus. Fruiting of the Jack O' Lantern fungus is probably more common than *Armillaria* in urban landscapes. But as far as is known, the Jack O' Lantern is a saprophyte, living on dead roots, stumps, buried wood or deadwood in trees that have been killed by other agents (Photo 4).

Jack O' Lantern gets its name from the orange color of the cluster of mushrooms that develop starting in the late summer. The mushrooms are about the color of a ripe pumpkin when fresh (Photo 5) but fade to dull orange as they age. There are several species of Jack O' Lantern fungi, but they are all in the genus *Omphalotus* (see species descriptions later in this article). The fungus appears as clusters or

Photo 1, at right: A cluster of Jack O' Lantern mushrooms at the base of an otherwise healthy white oak. The fungus appears in late summer through the fall. Photo 2, below: A close-up view of the Jack O' Lantern fungus in Photo 1 at the base of the white oak in late summer. The fungus grows from dead roots that have been killed or damaged by other agents. Unless otherwise noted, photos courtesy of the author.





Photo 3: Large cluster of Jack O' Lantern mushrooms fruiting from buried wood and showing distinct orange color. Jack O' Lantern may fruit from buried roots or stumps where trees were removed previously (Photo by Harold H. Burdsall, Jr., Ph.D.).



Photo 3A: Cluster of *Armillaria tabescens* (ringless *Armillaria*) showing honey-brown color.

groups of mushrooms on the lower trunk or buttress roots, and also on the ground where it is attached to dead roots (Photo 6). Single mushrooms also may occur, but they are usually near larger clusters. The fungus lacks a ring around the stem, is orange colored when fresh and sometimes has a lateral stem (attached off-center of the cap or sometimes at the edge of the mushroom). The gills of the Jack O' Lantern are decurrent, meaning they run a short way down the stem (Photos 5 & 6).

Jack O' Lantern looks very similar to *Armillaria*, and for arborists the distinction is very important. *Armillaria mellea* and related species all have a ring around

the stem and are honey colored or light brown (Photos 7 and 7A). *Armillaria tabescens* (ringless *Armillaria*) is probably the closest to *Omphalotus* in appearance and was classified in the same genus (*Clitocybe*) in the past (Photo 6A). However, *A. tabescens* – which is a known root killer of oaks and a wide range of other species and can contribute to the decline and death of landscape trees – is also honey colored and has a central stem. Both *Armillaria* and *Omphalotus* have white spore prints.

The Jack O' Lantern mushroom has been known in eastern North America under several names since it was described as *Agaricus illudens* in the early



Photo 4: Jack O' Lantern fungus fruiting at the base of a large bur oak. The fungus is not known to decay healthy wood. However, trees with fruiting should be inspected for decay.

1800s. However, continuing mycological research resulted in different opinions regarding the appropriate name for the species. Thus, in mushroom literature and even tree-pathology publications, it can be found in several genera, most commonly *Clitocybe* and *Omphalotus*.

In the mid-1900s, the species was



Photo 5: Jack O' Lantern mushroom showing orange color and decurrent gills, or gills that run slightly down the stem, which are typical of this species.



Photo 6: Cluster of Jack O' Lantern fungus showing orange color and cluster that was attached to buried wood. **Photo 6A (right):** Armillaria also occurs in clusters attached to buried roots, but the color of *A. tabescens* (ringless *Armillaria*) shown here is distinctly different.

thought to be the same as *Omphalotus olearius* of Europe, and reference to this fungus in North America was frequently by that name. Current research shows the eastern North American species is distinct and should be called *Omphalotus illudens*. Two other species of Jack O' Lanterns

occur in North America, *Omphalotus olivascens*, in the coastal Southwest, and *O. subilludens*, reported to be found in Florida and Texas. However, the most common *Omphalotus* species by far is *O. illudens*, which can be found east of the Mississippi River, north to south.

It is common for Jack O' Lantern to fruit on trees that also have other decay pathogens present. The presence of Jack O' Lantern on or around a tree can be reason for some concern, because it at least indicates that the tree has an adequate number of dead roots or wood present in the butt



Photo 7: Cluster of Armillaria mushrooms at the base of a dead red oak. Note the honey-colored caps from which the fungus gets one of its common names, the honey mushroom.

Photo 7A: Mushroom from the same cluster as in Photo 7 showing the ring around the stem (arrow) characteristic of some Armillaria species, including *A. mellea*.

that it can support fruiting of this fungus. However, there is no evidence that Jack O' Lantern has the ability to kill or decay living roots or attack healthy, undamaged wood in the base of trees. Arborists should follow through on making sure they have the right identity of the fungus present and do basic common decay inspection of trees with Jack O' Lantern, such as sounding with a mallet and probing.


The Jack O' Lantern has a number of other features arborists should take note of. The fungus is reported to be a common cause of gastrointestinal upset if eaten. So do not attempt to eat Jack O' Lantern. It also has the potential to be confused with the common and well-known edible chanterelle mushroom that has a similar color and appearance. Knowing the difference between these two fungi is obviously important if you are considering a meal. To add to the Halloween aura of the Jack O' Lantern, the fungus is reported to have bioluminescent gills that glow at night (Photo 8). However, this seems to be a rarely seen phenomenon despite being commonly cited as a feature of the fungus.



Photo 8: Gills of the Jack O' Lantern fungus are reported as having bioluminescence, or to glow at night. One has to turn over the mushroom and expose gills to observe this rarely seen phenomenon (Photo by Harold H. Burdsall, Jr., Ph.D.).

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