

## Wood Decay Fungi (WDF)

Virtually any type of wound that exposes inner tree tissue can predispose a tree to attack and colonization by WDF causing wood rot. Consequently, minimizing mechanical wounds that may serve as a potential infection point is **essential** to limit the introduction of these fungi.

Initially, identification of the specific fungus is **paramount** as that determines how it associates with the tree, what type of rot (decay) it causes, and where it typically attacks (see below). In addition, some species of WDF are known to be more aggressive than others. When visual identification cannot be made by RTS, DNA analysis and/or sample submission to a professional mycologist can also be utilized.

### How it associates with the tree

- Saprophytic – feeds on dead tissue
- Parasitic – feeds on living tissue, often the killing the tree, then becoming saprophytic
- Symbiotic – mutually beneficial relationship with the tree; often mycorrhizal in nature

### What type of rot (decay) it causes

- White rot – primarily **lignin** decay in hardwoods, leaving the lighter-colored (white) cellulose behind
- Brown rot – primarily **cellulose** decay in conifers, leaving the darker-colored (brown) lignin behind
- Soft rot – primarily **cellulose** decay, but the causal fungi are able to colonize more extreme conditions than brown and/or white rot fungi

### Where it typically attacks

- Root rot – decay in a root
- Butt rot – decay in the lower part of the trunk
- Trunk rot – decay in the main part of the trunk
- Sap rot – decay in the outer part (sapwood) of the trunk and/or branch
- Heart rot – decay in the central part (heartwood) of the trunk and/or branch

Signs/symptoms of a tree colonized by WDF include visible fruiting bodies (mushrooms and/or conks), progressive crown dieback, butt swelling, open cavities, carpenter ants, cracks with resin flow, and/or a gradual decline in overall vigor. However, sometimes the **only** indication of a rot occurs when a major branch and/or the tree itself fails during a storm.

Notably, since WDF are often **hidden internally and/or underground**, additional exploration to better characterize the extent of the rot and structural risk is usually required. With root and/or butt rots, this typically takes the form of [pneumatic excavation](#) via a supersonic air jet ([air spade](#)), whereas with aboveground rots, core resistance drilling and/or tomography are used.

In some cases, when the rot is extensive, removal is the only option due to the high risk of structural failure. In other cases, when the extent of the rot and the tree's health are acceptable, several cultural, chemical, and/or biological treatment options are available (see below). However, as is the case with most tree-based fungal infections, reduction/suppression (vs. eradication) is the best that can be hoped for.

#### Cultural treatment options

- [Supplemental watering](#), [fertilization](#), [mulch & compost](#)

#### Chemical treatment options

- [TGR](#), fungicides: primarily phosphonates

#### Biological treatment options

- Mycoparasites: "good" fungi that destroy WDF without causing decay themselves



Artist's conk (*Ganoderma applanatum*), pictured above, is a saprophytic (and sometimes parasitic) fungus that causes a white heart rot. Like an iceberg, oftentimes a large portion of the decay is **hidden from view**.