

Understanding, Recognizing and Keeping Hypoxylon Canker of Oaks at Bay

Part 1. Cause and Biology

Hypoxylon canker is a tree disease appearing as a necrotic (dead) lesion on limbs, branches and trunks of affected trees. The canker develops just under the bark (Figure 1), but in advanced stages causes a white rot type of decay of the sapwood. For this reason, Hypoxylon canker not only contributes to tree mortality, but compromises the structural integrity of a tree making it a danger to life and property.

Fig 1. *Hypoxylon* beneath bark of disease tree.



The disease is caused by a fungus named *Biscogniauxia* (*Hypoxylon*) *atropunctatum*. This fungus is an opportunistic pathogen, meaning it does not affect healthy and vigorous trees. However, *Hypoxylon* can quickly colonize weakened or stressed trees. It has been diagnosed on trees growing in many different habitats, such as forest sites, pastures, parks, green spaces and urban development areas. Hypoxylon canker can affect any type of oak, including; black, blackjack, laurel, live, post, southern red, Texas red, water and white oaks.

Since *Hypoxylon* is a fungus, it spreads from diseased to healthy trees by spores. Opportunistic fungi, however, are usually already present on many trees, causing disease when tree resistance is insufficient to prevent them from infecting. There are many sources of stress capable of decreasing the resistance of trees to opportunistic pathogens.

Stress Factors

Urban development Many factors in urban environments stress trees. Construction damage, for example, wounds roots and causes site disruption that result in tree stress and decline. Constructing swimming pools, sidewalks, patios, and driveways can damage essential roots and root flares that provide necessary water and minerals for a healthy tree. Soil compaction and addition of fill soil cause drainage issues and suffocate roots. All these factors set in motion a chain of events leading to stress, decline and tree death (Figure 2). During decline, *Hypoxylon* attacks the trees and contributes to their mortality.



Fig 2. Typical site disruptions during home construction.

Natural factors Climatic conditions such as heat, drought, ice storms, hail damage, lightning, and flooding are capable of predisposing trees to infection by *Hypoxylon*. Insect attacks and other diseases, such as oak wilt and root rots, induce stress and cause a tree to be susceptible to infection by *Hypoxylon*.

Symptoms and Signs and Control of Hypoxylon canker are covered in **Parts 2** and **3** of these fact sheets.

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