



FOREST and SHADE TREE PESTS

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Tree Diseases in Context: Bane, Boon, or Both? Some Things to Think About

Tree disease ... The very term conjures up images of ugly, rotting, deformed and/or dying trees. Truth or falsehood? A matter of perception or of reality? Well, it all depends. The fact is that a perfectly healthy disease-free tree is something of a rarity. Oh sure, we've all seen examples of "the perfect tree". But, truth be known, even these individuals were (are) likely infected by one or more disease-causing organisms, those things we call **pathogens**. Say what? That's right, at various times in their lives, or at certain locations within their frames those "healthy" trees are frequently attacked by pathogenic microorganisms and are infected or diseased. So what's the point?

The point is that dendro pathology (the study of tree disease, after W.A. Sinclair, Cornell University) is a complex and often poorly understood subject. Many have the impression that (or act as if) "pathogens" are innately foreign and sinister, volitionally attacking trees with intent to kill, or to use a Biblical analogy, "seeking whom *they* may devour." Well, it ain't necessarily so. In fact, most of the organisms we have classified as pathogens on trees have coexisted with their host tree (victim?) species for eons in tremendously complex and dynamic ecosystems. Some, like certain members of the fungal genera *Botryosphaeria* and *Biscogniauxia* (formerly *Hypoxylon*), apparently reside in tree bark tissues, *causing* diseases (cankers and/or decay) only when their host trees are subjected to injury or environmental stress. Certain decays (heartrots, root rots, etc.) are quite simply old age/senescence phenomena; natural ecological processes. Still other so-called pathogenic fungi apparently reside in leaf tissues as "endophytes" *causing* disease symptoms only following certain triggering conditions such as leaf maturation or senescence. Indeed in many situations, trees and their associated **endemic or native pathogens** have arrived in a sense at truces wherein they peacefully coexist unless disturbed by outside forces. Such outside forces may include severe weather events, fire, insect activity, and unnatural (?) manipulations of the system (including irrigation and fertilization) by humans. Trees injured or stressed by such influences often become the susceptible victims to which native opportunistic pathogens respond. And, believe it or not, some tree diseases are actually harmless to their hosts, resulting in nothing more than ephemeral blemishes or sometimes "flowers" to be admired.

To be sure, some pathogens cause substantial economic, biological, and/or aesthetic damage to their host tree species, and they don't require environmental or physical stresses to do so. Perhaps two of the best-known and most damaging tree diseases resulting from such primary, aggressive pathogens are **chestnut blight** and **Dutch elm disease**. To this pair of historically famous tree disease epidemics, we may now add **laurel wilt** and **Sudden Oak Death** (S.O.D.). Interestingly, however, these diseases, like many other damaging plant pests and diseases, are the result of the purposeful or accidental introduction of **non-native organisms** into ecosystems with hosts lacking natural defenses ... perhaps a response to outside forces after all.

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But are tree diseases good (boon) or bad (bane)? It all depends. Tree diseases, like so many other things, need to be evaluated in context. What may be undesirable to forest managers emphasizing timber production, or homeowners or landscapers interested in blemish-free trees, may be beneficial to others interested primarily in wildlife habitat or biodiversity. Is heartrot that creates nesting habitat for an endangered bird species good or bad? Are senescence-related foliage diseases, perhaps initiating or playing a role in nutrient cycling good or bad? Are decay fungi, certainly involved in carbon recycling (among other things), good or bad? When a flower blossom naturally wilts and fades away, aided and abetted by senescence-related secondary fungal infections (disease?), do we say it's diseased? Do we say it's bad? Do we attempt to control the *problem*? Why do we feel like we need to *control* tree "diseases" that are natural, cyclic, sometimes beneficial, and often senescence-related? Could it be that we have been misinformed? Or could it be that we, like stress-predisposed trees, have fallen victim to entrepreneurial opportunists for which indeed tree diseases are a boon? Some tree diseases simply don't warrant "*control*", and others are simply beyond our control. Beware of "*tree experts*" peddling quick fixes for sick trees. In most cases, quick fixes are neither.

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