

Controlling the Spread of SOD

Regulations are in place to control potential spread through the movement of infested soil and plant material outside of the 14-county quarantined area. In infested areas where burning is not possible, the best option is to leave the material on site, chipping the small

If I have an infected oak tree cut down, what should be done with the wood?

The simplest and best way to deal with infected wood is to leave it on site, chipping the smaller pieces for mulch, and splitting the larger pieces for firewood. Do not stack oak firewood next to living oak trees since this can lead to insect attack on the living trees. If the stack must be next to living trees, consider covering with a tightly sealed, clear plastic tarp to prevent the buildup of destructive insects. If infected wood is removed from your property, make sure it is utilized or disposed of in a way that does not spread the disease. Avoid leaving wood next to roads where it could be picked up and transported off-site by unauthorized parties. Regulations prohibit the movement of host plants and plant parts out of the quarantined area.

(COMTF, *A Homeowner's Guide to Sudden Oak Death*, 2/08)

material for ground cover and using larger pieces for firewood. Composting can kill the pathogen, but the compost must reach temperatures that are probably not possible in a home composting site. Since inoculum levels are already thought to be high in an infested site, leaving the additional material on site will not significantly worsen the local conditions. *P. ramorum* host plant material is regulated by the California Department of Food & Agriculture (CDFA) and the U.S. Department of Agriculture, Animal & Plant Health Inspection Service (USDA APHIS).

Helping you protect your home & trees

My commitment to helping you protect your trees and the safety of your home starts with a thorough consultation and discussion of objectives. As a tree care professional, I continue to attend regular seminars on Sudden Oak Death in order to keep my knowledge and skills up to date. I will examine your trees for signs of infection and we will carefully consider what is the best solution in the long as well as the short term.

Avoid spreading SOD in the rainy season!

The rainy season is the time when the pathogen is actively producing spores and spreading naturally, and the time when you are most likely to become contaminated with it. Detached leaves, organic material and soil, which may harbor spores of the pathogen, are more likely to stick to you, your pet, your vehicle and equipment when they are wet, especially in settings where native hosts of *P. ramorum* are common, such as wildlands and developed areas adjacent to areas of native vegetation. Take precautions after walking and driving during wet conditions; on muddy roads, check yourself, your shoes, your pets, vehicle and equipment & remove accumulated mud, soil, organic material, and detached leaves.

(COMTF, *A Homeowner's Guide to Sudden Oak Death*, 2/08)

For more information visit the California Oak Mortality Task Force website at www.suddenoakdeath.org.



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THE TREE CLIMBER CLIENT EDUCATION SERIES



A PLANT DISEASE COMMONLY CALLED Sudden Oak Death has profoundly impacted coastal forests in California and Oregon. Currently found in 14 California counties from Monterey to Humboldt, the disease is caused by the pathogen *Phytophthora ramorum* (Fie-TOFF-thor-ra ra-MORE-um). Over a million tanoak and coast live oak trees have died, as of early 2009, and countless more are infected. In addition, more than 100 other known plant species are susceptible to the pathogen, yet most of these species suffer only minor damage such as leaf spots or twig dieback.

THOUGH SUDDEN OAK DEATH is a forest disease, it is common in urban-wildland interface areas, so it presents many challenges for homeowners, such as diagnosing infected trees, disposing of contaminated material, avoiding spreading the pathogen, and understanding the treatment options that are available.

Symptoms & Diagnosis

“Sudden Oak Death” was originally so called because of the rapid (2 to 4 weeks) browning of leaves without an apparent prolonged period of visible decline. The death of the tree due to *P. ramorum* infection, however, usually takes place after an extended period, and perhaps more than two years from onset of infection.

There are two categories of hosts for *P. ramorum*: bark canker hosts and foliar hosts. The bark canker hosts are tanoaks and oaks that become infected on woody portions. Cankers on the trunk of these trees are the most damaging, and often lead to death. Additionally, diseased oak and tanoak trees are often attacked by other organisms once they are weakened by *P. ramorum*. These secondary invaders can also kill the tree, and include such organisms as *Hypoxylon thourasianum* (a fungus that decays sapwood), and bark beetles. In foliar and



Leaves of California bay laurel (*Umbellularia californica*) showing signs of disease. Bay is a host plant and is not killed by *P. ramorum*, however.

twig hosts, such as California bay laurel (*Umbellularia californica*) and camellia and rhododendron species, symptoms can range from leaf spots to twig dieback, but these hosts rarely die from the infection.

Tanoak (*Lithocarpus densiflorus*) is the most susceptible of the known hosts to *P. ramorum*. All sizes and ages of tanoaks can be infected and killed. *P. ramorum* infects trunks, branches, twigs, leaves, and leaf petioles of adult trees. Experiments on tanoak trees revealed that they could be infected without showing cankers or bleeding symptoms; diagnosis of tanoak can be difficult because of this. Sudden leaf browning and loss, shoot tip dieback in twigs, and leaf flagging are good indicators of disease. Infected tanoaks are also prone to break prematurely and unpredictably.

Treatment & Management

Keeping oaks healthy by creating favorable growing conditions, avoiding disturbances to the root zone such as soil compaction and pavement, avoiding unnecessary pruning, pruning properly, not over-irrigating, and mitigating environmental stress may not prevent Sudden Oak Death. Although native oaks are well-adapted to their local environment, climatic events such as drought or unusually wet springs can also cause stress.

If my oak tree has Sudden Oak Death, what are the chances it will die?

There is no way to determine if an individual tree will live or die after contracting Sudden Oak Death. Each tree responds differently and experience tells us that it is rare for a tree pathogen to kill all of the trees it infects... Some trees may never become infected, some may become infected and survive for some time, and others may become infected and die quickly. Initial observations tell us that once infected, tanoak has the highest probability of being killed by *P. ramorum*; however, some individuals are still likely to survive. Coast live oaks appear to have a lower probability of being killed... At this time there is little mortality information on California black oak, Shreve's oak, and canyon live oak, so it is difficult to predict how they will fare.

(COMTF, *A Homeowner's Guide to Sudden Oak Death*, 2/08)

A systemic fungicide called Agri-fos® was approved in 2003 for preventive treatment of high risk or newly infected oaks and tanoaks, which enhances the trees' resistance. However, Agri-fos® is somewhat effective only in areas that have not been infested.

Should a diseased oak tree be removed?

P. ramorum alone is not justification for removing a tree. An important consideration with respect to any tree is whether or not it presents a hazard to life or property. All trees present some hazard, depending on the tree's



structural integrity and its potential to do harm should it fail and break off or fall down. *P. ramorum* increases the risk of tree failure by allowing sapwood decay fungi to enter the tree. Since heartwood decay is common in

many older trees, sound sapwood is essential to the tree's structural integrity. If both the sapwood and heartwood are decayed, tree failure may be imminent.

The decision to remove a hazardous tree ultimately lies with the property owner. Even dead trees have value, and if there is not a risk to life or property, you might consider leaving it standing. Standing dead trees provide important wildlife habitat and after they fall and decay, are a source of nutrients to be recycled in to the soil.

Will removing a diseased oak tree prevent the disease from spreading to nearby healthy trees?

The threat of spread is generally not a valid reason for removing an oak tree with *P. ramorum*. Current information indicates that non-oak shrubs and trees contribute the most to disease spread. If an oak tree is infected, it will likely be surrounded by many other trees and plants that also harbor the pathogen. Hence, removing one or even a handful of infected trees will probably have little or no impact on local disease levels and spread.

The exception would be if local regulatory officials (County Agricultural Commissioner or Department of Forestry and Fire Protection) determined that an eradication effort was warranted, as in the case of small, newly established and/or isolated infestations.