



A guide for collecting in forests: Simple precautions to prevent the spread of Sudden Oak Death

A new plant disease known as Sudden Oak Death is threatening coastal forests in California and Oregon. Currently found in 16 coastal counties in California, and in part of Oregon, the disease is caused by the pathogen *Phytophthora ramorum* (pronounced Fi-TOFF-thor-ra ra-MOR-um). To date, millions of tanoak and oak have been killed by this disease. In addition, more than 40 other native tree and shrub species are susceptible to the organism, yet most of these species suffer only minor damage, limited to leaf spots or twig dieback.

Phytophthora ramorum may be transported to new areas when infected plant material or infested soil is moved. Many common plants may be carriers, such as California bay laurel (also called pepperwood or Oregon myrtle), camellia, and rhododendron. This guide provides simple, practical information on how to collect plant material from the regulated areas without unintentionally moving the organism from one area to another. These suggested practices may be useful to people that live, work, or recreate in areas that are infested by this damaging disease.

To collect wood and plants without accidentally spreading this organism, it is important to understand its preferred environment. *Phytophthora ramorum* likes wet or moist climates, cool temperatures, and living plants. Its spores can be found in soil and water as well as plant material. The risk of movement and spread of the organism is greatest in muddy areas and during rainy weather.

Regulations

The following California counties have confirmations of *P. ramorum* in nature and are under State and federal quarantine: Alameda, Contra Costa, Del Norte, Humboldt, Trinity, Lake, Marin, Mendocino, Monterey, Napa, San Francisco, San Mateo, Santa Clara, Santa Cruz, Solano, and Sonoma. The organism has also been found in forests of Curry Co., southwestern Oregon. These quarantined areas are subject to special rules (regulations) regarding the movement and use of susceptible plants. County Ag. Commissioners are responsible for enforcement of both California and federal regulations. Before moving susceptible plant material in a regulated area off-site you must contact your Commissioner for a permit (certificate). When moving firewood, agency firewood permits may serve as your certificate. Current California regulations require a permit unless the site is: (1) outside the regulated area; (2) on lands not under Ag. Commissioner jurisdiction, such as Tribal

lands; or (3) if bark is removed prior to transport. Current federal regulations require a permit, or treatment, before moving any regulated plant material from the 16 infested counties out of the state. Federal rules regulate soil movement from infested counties out of the state, but California does not currently regulate soil movement within the state.



Symptoms

The symptoms of Sudden Oak Death can be dramatic (Photo 1), killing several large and small tanoaks, or fairly subtle (Photo 2), where a few California bay laurel leaves only show signs of the disease through leaf spots. Symptoms on the various plant species range greatly, from leaf spots to the death of mature trees. (Plants known to be susceptible to *Phytophthora ramorum* are listed in the table at the end of this document.)

If you see several symptomatic host plants (Photos 3 & 4) next to bleeding oaks and tanoaks (Photos 5 & 6), you may be in an infested area. California bay laurel is a good indicator plant to check for symptoms. Although damage is limited to leaf spots, these trees are often the first plants to show symptoms in a newly infested area. Note that on California bay laurel, leaf spots are typically near the leaf tip, they are not on every leaf, and they may be hard to see from far away. While inspecting for leaf spots, focus on lower branches, as this is where the disease is commonly found and leaves are more accessible. When working in the forest, avoid collecting plants or firewood from areas where you see any symptomatic plants. By avoiding these areas, you will avoid spreading any disease-causing organisms that may be present.

For the most current list of affected plants, see suddenoakdeath.org.

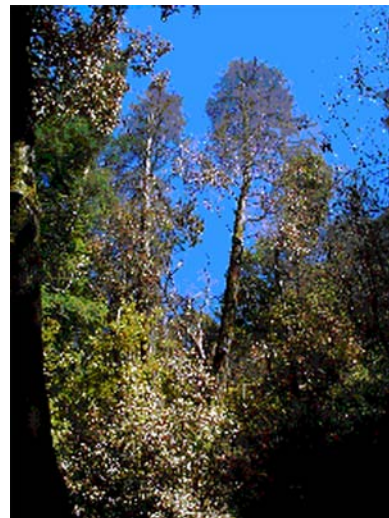


Photo 1. Forest in Marin County with tanoak trees killed by *Phytophthora ramorum*. (Photo by B. Tkacz, USDA Forest Service.)



Photo 2. California bay laurel (also called pepperwood, or Oregon Myrtle) showing leaf spots typical of *Phytophthora ramorum*. (Photo by Bruce Moltzan, Missouri Department of Conservation.)



Photo 3 (left). Bay laurel leaf spots. (Photo by Matteo Garbelotto, University of California, Berkeley.)



Photo 4 (right). Rhododendron leaf spots. (Photo by B. Moltzan, Missouri Department of Conservation.)

Photo 5 (left). Bleeding cankers on a coast live oak trunk. (Photo by Matteo Garbelotto, University of California, Berkeley.)

Photo 6 (right). Bleeding cankers on a tanoak trunk. (Photo by Pavel Svihra, UC Cooperative Extension.)



Recommendations

Where to go:

- If possible, avoid collecting firewood and plants or traveling through areas that are, or appear to be, diseased. If you cannot avoid infested areas, follow the sanitation practices listed below when working in, gathering, hiking, biking, or otherwise recreating in known infested areas. If you do not know whether or not the site is infested, play it safe and assume that it is.
- Maps of infested areas are available online at www.suddenoakdeath.org and www.sodmap.org. These maps do not note every diseased area, but can give you a general idea of the infested areas in California. Avoid collecting materials in and near known infested areas.

When to go:

- During wet periods, the organism seems to be most active and therefore most likely to start new infections. If possible, do not work or recreate in infested forests during the wet, rainy, and cool times of the year. Avoid working in muddy conditions whenever possible.

How to prevent spread:

- Familiarize yourself with the symptoms of Sudden Oak Death on oaks and tanoaks and the leaf spot symptoms on California bay laurel and other plants. Learn to recognize the symptoms on the plant parts that you intend to collect and do not collect from plants that are symptomatic.
- If possible, remove all soil from shoes, boots, tires, or other conveyances prior to leaving an infested site. If this is not feasible, stop as soon as possible and wash soil from vehicles. Use Lysol® or a bleach solution to disinfect shoes and boots after cleaning. If you are frequently in and out of infested sites, consider committing footwear for use in that environment only. Remove and clean the footwear before leaving the area. Clean tools in a similar manner.
- In all cases make sure that you remove all plant material (needles and leaves) from your body, vehicles, animals, tools, or other containers before leaving the infested site. This is required under State regulations.
- Do not collect and transport water from streams, lakes or rivers from known infested areas.

When collecting material for personal or commercial uses (firewood, wreaths, etc.):

- You are required to have a permit (certificate) from the County Agricultural Commissioner when transporting host material out of a quarantined area.
- There are treatments, or processing protocols, that can be done to minimize the risk of spreading Sudden Oak Death. Removing the bark of host trees allows the wood to dry and permits movement within the State and out of state with a certificate. Burning leftover bark and other host material is recommended, as *Phytophthora ramorum* is killed by fire, posing no threat to disease spread. Whenever burning, make sure it is done in a safe and approved manner. Kiln drying will also kill the organism.
- Secure loads completely when transporting firewood or other materials. Do not collect oak firewood from infested areas and transport it to other geographic areas not known to be infested, such as the Sierra Nevada. When storing material keep it dry and out of standing water.
- Douglas-fir, grand-fir, and coast redwood are susceptible to infections by *Phytophthora ramorum*. However, the symptoms on these conifers are limited to twig and top dieback and the wood is not known to support the pathogen. If you are cutting firewood, the safest approach is to avoid collecting these species. If you need to cut Douglas-fir, grand fir, or coast redwood, be sure to remove all foliage from the wood.