



CALIFORNIA OAK MORTALITY TASK FORCE

Current Status of Sudden Oak Death/*Phytophthora ramorum* in California

Background

Sudden oak death (SOD) was first noticed in the mid-1990s, when a large number of oaks and tanoaks began dying in Bay Area coastal forests. By the summer of 2000, the invasive, water-loving pathogen causing SOD was identified and named *Phytophthora ramorum*. Over three million trees have been lost to this pathogen in 15 coastal California counties, from Monterey north to Humboldt, as well as in Curry County, Oregon. The pathogen also infects common nursery plants such as rhododendron and camellia; therefore, federal and state quarantines are in place to help prevent long-distance spread via nursery plant shipments. Over 100 plant species are known to be susceptible to *P. ramorum*, including redwoods, huckleberry, herbaceous plants, and ferns, but most do not die from infection.

Current Status

Although *Phytophthora ramorum*/SOD continued to cause mortality in tanoak and susceptible oak species within California's 15 infested coastal counties, the ongoing drought is moderating current impacts, with 60,000 acres of mortality detected in 2015. Where environmental conditions were conducive to the pathogen, high levels of mortality continued to manifest, such as the coastal mountains of Santa Cruz and Sonoma Counties. Where the pathogen is established in drier areas, relatively little new mortality was detected. The wildland infestation is confined to within 50 miles of the Pacific Coast.

In the more conducive (wetter) environmental conditions of coastal Oregon, *P. ramorum* was found in 2015 in the Winchuk River watershed, only 1.5 miles north of the Del Norte County, CA (currently an uninfested county) border. Further north in Curry County, OR another strain of the pathogen, the EU1 lineage, was recovered for the first time in the US from wildland vegetation. The isolate came from a single tanoak and was genetically similar to EU1 isolates from a nearby nursery (now closed) where infected ornamentals were previously found. The discovery of this lineage in the wild raises concerns about genetic recombination between it and the prevalent NA1 lineage in forests, with the resulting possibility of future novel *P. ramorum* characteristics and behaviors. It also demonstrates that quarantine regulations, in place since 2002, are not preventing pathogen movement on nursery plants.

With increased 2016 spring precipitation, it is anticipated that spore levels will increase and spread in wind-blown rain over the next year.



Sudden oak death on tanoak, Eel Rock, Humboldt Co., 2015.
Photo by Dan Stark, UCCE Humboldt/Del Norte Cos.

Impacts

Increased fuels from dead and dying oak and tanoak may change fire behavior in infested areas, and fire in SOD-infested redwood forests may increase redwood mortality.

State and National Parks as well as other recreation areas have lost hundreds of thousands of trees, increasing hazards from falling trees and wildfires as well as management costs, as the removal of trees from recreation areas and campgrounds is well over \$1,000 per tree. As trees die, openings in the forest canopy occur, allowing invasive weeds to become established.

Communities have standing dead trees along highways, utility corridors, and trails as well as near homes and other structures. Local efforts to reduce fire risks and hazardous tree failures have left agencies overwhelmed as needs continue to rise, leaving communities with unsafe conditions. Impacted communities have also experienced aesthetic and property value losses as heritage oaks continue to die.

Current Needs

There currently is no cure for SOD. Additional funding is needed to identify and develop resistant plants; test new treatments, such as thinning and planting non-susceptible species; manage hazards; develop restoration strategies for heavily damaged sites; and prevent the pathogen from infesting the 90 percent of at-risk forests not yet infested. Monitoring, including early detection, is crucial to pathogen containment and local eradication efforts as large infestations become sources for pathogen spread.

Help by joining the California Oak Mortality Task Force (www.suddenoakdeath.org).
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