

May 25, 2011, Webinar Questions and Answers

Question: Has there been any detection of *P. ramorum* in San Diego Co. yet?

Answer: No, there has been no detection of *P. ramorum* in San Diego County yet. Chances of the pathogen becoming established outside of a nursery setting in a county such as San Diego are very slim as environmental conditions are not really conducive to it doing so. For information on those areas at greatest risk of pathogen establishment in California, please see http://www.suddenoakdeath.org/wp-content/uploads/2010/03/2005.GuoKellyGraham.EM_.pdf.

Question: Are there any surveys going on outside of quarantine areas and nurseries?

Answer: Yes, *P. ramorum* wildland surveys are being conducted in California as well as in other areas of the nation considered to be at risk for establishment of the pathogen. To date, California's surveys outside of the quarantine forested area have resulted in the identification of the pathogen in San Francisco's Golden Gate Park, adding San Francisco County to the list of counties under quarantine, and one positive in Placer County, which was never repeatable or recovered again, so the county was not labeled as having the pathogen.

Aside from California's quarantine counties and Curry County, Oregon (also a county with infested forests), to date this year, survey work in participating states has resulted in the detection of 10 repeat *P. ramorum*-positive waterway detections (MS-1, GA-1, FL-1, NC-1, WA-2, and AL-4 sites). Survey work for this year is still underway.

Answered by Katie Palmieri, COMTF

Question: How susceptible is Douglas-fir in OR and WA in the field? Do you know what is going on in Washington re spread or finding of infections?

Answer: Except for the salal, there has not been any indication that *P. ramorum* has spread to any other hosts in WA forests. There are a number of Douglas-firs grown in nurseries in OR and WA, but I do not believe that it has ever been detected on this host in a nursery situation either. It has also never been detected on Douglas-fir in Christmas tree plantations in either state. You might check with Alan to confirm what the situation is with Douglas-fir in Curry Co., but my recollection is that they have not seen infection in their infested sites, except for 1 or 2 instances where a small seedling was growing right under an infected tanoak. Based on the work I have done in Los Gatos, I suspect that the inoculum levels are just not high enough to get infection on Douglas-fir.

Answered by Gary Chastagner, Washington State University

Question: Which methods and frequency of surveillance have been employed?

Answer:

Aerial survey and ground checks

Four aerial surveys are flown annually in February, May, July, and October, covering a combined area of 400 km². A fixed wing aircraft (Partenavia twin engine observer) with two observers flies 500-600 m above the forest canopy on parallel flight lines spaced 3 km apart. Observers record the approximate location of recently dead tanoak trees (red-brown foliage) on paper maps or a digital sketch-mapper. Maps produced for the fixed wing surveys are used to guide a second survey using a helicopter to precisely locate the dead trees. While the helicopter hovers over the target trees the observer makes notes on the number and condition of the trees and both pilot and observer records the geographic coordinates using hand-held GPS units. The coordinates are used to produce a shape file that is overlaid onto topographic and ortho-photo images using ArcMap and printed on 1:10,000 scale maps. Field crews use the maps, GPS unit and compass to find their way to the dead trees. Once dead trees are located, trees and plants in the general area are checked for symptoms of sudden oak death or other causes of mortality. If any symptoms of *P. ramorum* are present we collect two samples: one is direct plated in the field onto *Phytophthora* selective agar and the other is returned to the lab where it is plated on selective agar and subjected to PCR (DNA) analysis.

Ground-based surveys

Ground-based surveys provide additional early detection power because observers can detect dead trees that are hidden from aerial detection by topography or adjacent large trees. They also allow detection of sudden oak death symptoms on understory plants and on trees that have not died. These symptoms include bleeding, stem lesions, wilting shoots, leaf spots, and branch dieback. Two types of ground-based survey are used: scouting for recently dead trees from roads and other vantage points, and; transect-based surveys in small patches of forest (10-30 ha each). Transect surveys are located in areas where we suspect the disease might be present based on risk maps or proximity to known infested sites, or in areas where landowners request a survey. In the transect surveys a 2 or 3 person crew walks transect lines spaced 50 m apart looking for symptoms of infection by *P. ramorum*. Symptomatic plants are sampled as described for aerial surveys. These surveys are conducted year-round as workload and funding permit.

Stream baiting

Stream baiting with native rhododendron and tanoak leaves offers the possibility of detecting *P. ramorum* infestations before dead trees are present or visible, with considerably less effort than ground-surveys. Rhododendron and tanoak leaves (baits) are placed in mesh bags and suspended in 64 streams from March through December. Every two weeks the baits are collected and replaced with fresh ones. Leaves are taken to the lab and analyzed for *P. ramorum*. Monitoring streams were chosen in areas considered to be at high risk of future infestation or at the periphery of the quarantine area. Streams draining known infested sites are sampled as positive controls. The drainage area upstream of the 64 bait stations ranges in size from 8 to 3,634 ha with a combined area of

32,192 ha and an average of 503 ha. If a bait tests positive for *P. ramorum* we then conduct ground surveys until we find the source of inoculum.

Question: Alan, How susceptible is Douglas-fir in OR and WA in the field?

I know of no Douglas-fir infection in Washington. In Oregon, Douglas-fir infection is extremely rare, even though Douglas-fir is very common on many of our infested sites. When we have found it, the infection was only on sapling trees growing directly beneath infected tanoak trees. Infection on these trees was confined to the succulent new shoots soon after they emerged in June. Several years ago we planted Douglas-fir seedlings around stumps of infected tanoak that had been cut during eradication treatments. Even though the pathogen was present in soil at some of these sites, the Douglas-fir seedlings never became infected during the five-year period. It seems that Douglas-fir foliage and shoots get infected only when there is abundant inoculum present.

Gary Chastagner has information on Douglas-fir infection in California. Joan Webber can address Douglas-fir in the UK.

Answered by Alan Kanaskie, Oregon Department of Forestry