

Monitoring the Effectiveness of *Phytophthora ramorum* Eradication Treatments in Oregon Tanoak Forests¹

Ellen Michaels Goheen,² Alan Kanaskie,³ Everett Hansen,⁴ Wendy Sutton,⁴
Paul Reeser,⁴ and Nancy Osterbauer⁵

Abstract

Phytophthora ramorum, the cause of sudden oak death, was first discovered in Oregon forests in July 2001. An aggressive eradication treatment program was immediately put into place on all lands where it was found. Eradication treatments have changed over time as we have learned more about pathogen behavior. Treatment prescriptions currently consist of cutting and burning infected and exposed host plants, and where possible, injecting herbicide into tanoaks to prevent sprouting. The effort has slowed, but not stopped, long-distance dispersal of the pathogen.

To monitor the effectiveness of eradication treatments, we are revisiting treated sites and sampling soil and vegetation in fixed plots centered on stumps of known infected trees. All samples are assayed for *P. ramorum* at Oregon State University and Oregon Department of Agriculture laboratories. We established 145 plots in 2008-2009 and 143 plots in 2010; 109 of these plots were visited in both time periods.

In the sample period 2008-2009, *P. ramorum* was not recovered from soil or vegetation on 74 (51 percent) of the 145 plots sampled. Forty-seven plots (32 percent) yielded *P. ramorum* from soils only. The pathogen was present in soil and vegetation on 18 plots (12.5 percent), and on six plots (4.5 percent), *P. ramorum* was recovered from vegetation only. In the 2010 sampling, *P. ramorum* was not recovered from soil or vegetation on 90 (63 percent) of the 143 plots sampled. Thirty-six plots (25 percent) yielded *P. ramorum* from soils only, on ten plots (7 percent) the pathogen was present in soil and vegetation, and on seven plots (5 percent), *P. ramorum* was recovered from vegetation only. All positive vegetation samples were from tanoak (*Notholithocarpus densiflorus* (Hook. & Arn.) Manos, Cannon & S.H. Oh) in the 2008-2009 sampling period; most of the diseased material was collected from tanoak basal sprouts. Two *P. ramorum*-positive samples of Oregon myrtle (*Umbellularia californica* (Hook. & Arn.) Nutt.) were collected in the 2010 monitoring effort, along with infected tanoak sprouts.

Phytophthora ramorum was not detected either year on 42 (39 percent) of the plots visited twice. Soil was *P. ramorum*-positive both years on 24 (22 percent) of these plots. On seven plots sampled twice (6 percent), *P. ramorum*-positive vegetation was collected in both sampling years.

Analysis continues on these data. Of particular interest is how different components of the treatment prescriptions and/or abundance and composition of post-treatment vegetation affect pathogen survival and disease development. These data were used to inform 2012 sampling.

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² USDA Forest Service, Pacific Northwest Region FHP, Southwest Oregon Forest Insect and Disease Service Center, 2606 Old Stage Road, Central Point, OR 97502.

³ Oregon Department of Forestry, 2600 State Street, Salem, OR 97310.

⁴ Oregon State University, Corvallis, OR 97331.

⁵ Oregon Department of Agriculture, Salem, OR 97301.

Corresponding author: egoheen@fs.fed.us.