

Efficacy of Local Eradication Treatments against the Sudden Oak Death Epidemic in Oregon Tanoak Forests

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The sudden oak death pathogen (*Phytophthora ramorum*, SOD) has inadvertently been distributed widely across the United States but is not established in forests outside of California and Oregon. Here, it has triggered widespread concern, and, especially in Oregon, an intensive disease management program. Now we provide the first systematic evaluation of the efficacy of that effort.

In 2001, when *P. ramorum* was first discovered in Oregon, a 23 km² quarantine area was established and attempted eradication was initiated. As SOD continued to spread, the quarantine area was expanded and treatments continued. The optimum treatment calls for early detection, primarily through aerial and stream survey, with follow up ground survey and confirmation of the pathogen. Infected trees plus a surrounding 100 m or 200 m buffer of visibly healthy but susceptible trees are killed. Infected and buffer trees and other host plants are cut. In 2012 the goal of the program was restated from “eradication” to “slow the spread.”

This paper evaluates four measures of the efficacy of SOD local eradication treatments: Inoculum availability; Inoculum from tree species other than tanoak; Disease spread from treated areas; and Cumulative infested area with and without treatment. We conclude that eradication of SOD from infested sites is difficult but not impossible. The disease usually does not persist after cutting infected trees. Spread on the landscape continues because the pathogen may be present on new infections for a year or two before whole tree symptoms are visible. This limits early detection, and coupled with delays in completing eradication treatments, prolongs the chances for long distance aerial dispersal.

Local treatments demonstrably reduce local inoculum levels. The economic and ecological benefits of slowing the spread of SOD, in contrast to eliminating it, require careful cost–benefit analysis if the program is to continue.