

Sudden Oak Death (SOD) Survey and Monitoring in Western Washington

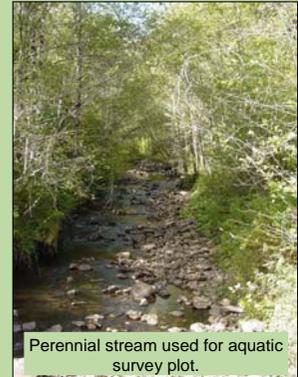
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These sites illustrate examples of the general forest areas surveyed for *P. ramorum*.

Introduction

Phytophthora ramorum, the causal agent of Sudden Oak Death (SOD), ramorum leaf blight, and ramorum dieback, is responsible for killing native oak and tanoak trees in California and Oregon. Western Washington is at high risk for SOD due to the presence of known *P. ramorum* hosts in the natural environment, suitable climatic conditions (extended periods of moist weather and mild temperatures), and the presence of nurseries receiving positively identified *P. ramorum* host stock. While Washington's native oak species (Oregon White Oak) is not threatened by *P. ramorum*, Pacific madrone, big leaf maple, vine maple, huckleberry, salmonberry, poison oak, rhododendron, Pacific yew, grand fir, and Douglas-fir are susceptible native hosts. Nursery perimeter, general forest, and aquatic surveys were conducted in 2003, 2004, and 2005 to detect *P. ramorum* in western Washington.



Perennial stream used for aquatic survey plot.

Methods: Nursery Perimeter and General Forest Surveys

- ◆ Sampling protocol developed by FHM, USDA Forest Service
- ◆ Nursery perimeters containing known hosts surveyed
 - four 100-m long transects
 - distributed along perimeter
 - all available aspects sampled
- ◆ High-risk general forest environments surveyed
 - four 100-m long transects
 - cardinal azimuths from plot center
- ◆ Known and potential hosts examined for *P. ramorum* symptoms along each transect
- ◆ Symptomatic tissues (leaves and twigs) collected
- ◆ Samples sent to labs in either WA and/or OR
 - molecularly screened for *P. ramorum*

Results

- ◆ Areas surveyed (Table 1, Figure 1)
 - 94 nursery perimeters
 - 55 general forested
 - 10 aquatic
- ◆ 728 total foliage samples
- ◆ *P. ramorum* not isolated from any of collected samples

Months of Survey	Year	Number of Survey Locations			Number of Samples Collected
		Nursery Perimeter	General Forest	Aquatic	
June - July	2003	33	5	0	108
March - June	2004	42	7	0	144
Sept. - Oct.	2004	18	14	0	167
March - Oct.	2005	1	29	10	309
Totals		94	55	10	728

Table 1. *P. ramorum* survey areas and number of samples collected.

Methods: Aquatic Surveys

- ◆ Ten aquatic survey plots
 - perennial streams
 - established in March, 2005
- ◆ Two *Rhododendron* leaf traps at each plot (Figure 1)
 - 5 leaves in each trap
- ◆ New *Rhododendron macrophyllum* leaves collected every two weeks
 - old leaves removed from traps
 - new leaves inserted in traps
- ◆ Samples sent to WA Dept. of Agriculture
 - culturally and molecularly screened for *P. ramorum*



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Two leaf traps¹, each containing five *Rhododendron* leaves², were installed at each survey plot.

Discussion

While *Phytophthora ramorum* has been found in 25 nurseries in western Washington, there is no evidence that the pathogen has spread beyond the confines of those nurseries. The organism was brought to the Washington nurseries on plants (mostly camellia, rhododendron, pieris, and viburnum) shipped from other states. The infected plants within the nurseries were destroyed to prevent further spread of the pathogen. There is no evidence of *P. ramorum* spreading naturally in the environment from California or Oregon to Washington.

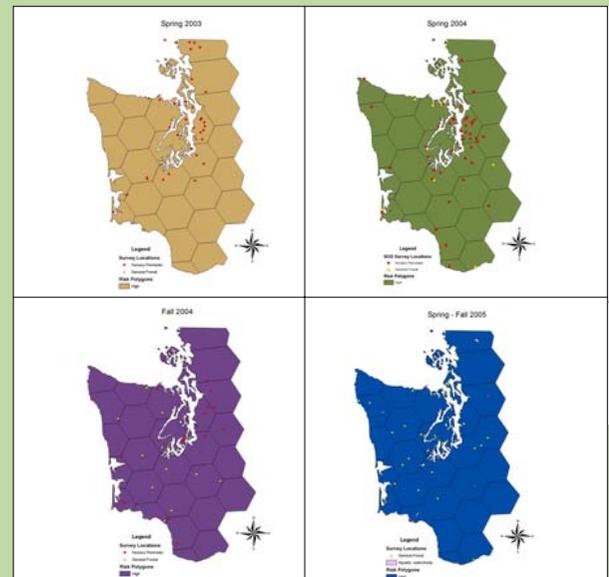


Figure 1. Season, year, *P. ramorum* risk level, and areas surveyed