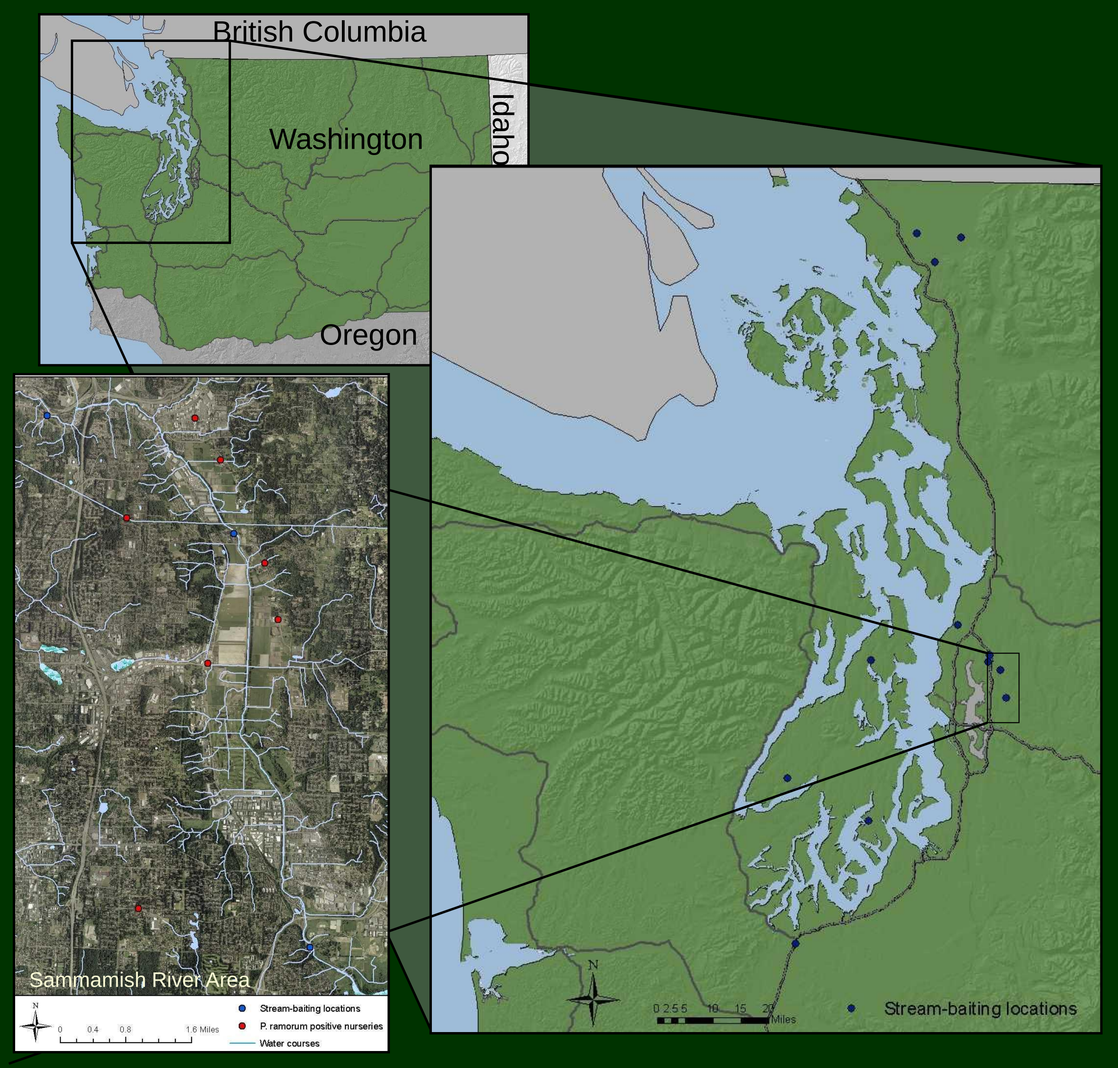
Monitoring *Phytophthora ramorum* in Western Washington Waterways

Daniel Omdal and Amy C. Ramsey,
WA Dept. of Natural Resources, Olympia, WA, dan.omdal@dnr.wa.gov or amy.ramsey@dnr.wa.gov

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 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 only native oak species (Oregon White Oak) is not threatened by *P. ramorum*. The presence of many host species, including evergreen huckleberry, Pacific madrone and Douglas-fir, among others, increases the risk that a nursery introduction will develop into an environmental infestation.

Aquatic monitoring and forest and nursery perimeter surveys have been conducted since 2003, with efforts being focused in aquatic areas near previously reported positive *P. ramorum* nurseries since 2006. Results from the aquatic monitoring sites and land surveys in western Washington indicate that the spread of *P. ramorum* into western Washington primarily occurs through water courses associated with positive *P. ramorum* nursery stock.



Stream-Baiting Methods

12 streams/rivers
- Established in February, 2008
- Nearby previous *P. ramorum* positive nurseries

Two *Rhododendron* leaf traps at each site
5 replicates throughout spring/summer
Samples sent for analysis
- WA Dept. of Agriculture
- Oregon State University

Stream-Baiting Results

63 total aquatic samples collected
Two *P. ramorum* positive samples
One from stream running through positive nursery, Rosedale Creek
One from river with several positive *P. ramorum* nurseries in vicinity, Sammamish River

Upper: stream-baiting trap in stream.
Lower: Paddling the Sammamish River for the vegetation survey.

River Vegetation Survey

Three positive *P. ramorum* samples have been found in the Sammamish River using stream-baiting techniques since April, 2007. The origin of the inoculum has been difficult to determine so the WA Dept. of Agriculture and the WA Dept. of Natural Resources have conducted two separate river edge vegetation surveys.

Methods

Approx. 10 miles of river, upstream from positive sample
All symptomatic vegetation collected on both sides of river
- Included non-*P. ramorum* host material

Vegetation Survey Results

Zero (0) *P. ramorum* positive results

Discussion

The first *P. ramorum* positive sample found in Rosedale Creek occurred in January, 2006. Since that time, multiple positive samples have been found in the creek. The nursery was treated, however, another positive *P. ramorum* sample was found in Rosedale Creek this year. It remains unknown how long the inoculum can reside in the soil and water and what the potential is for spread of the pathogen from water courses onto land.

The first *P. ramorum* positive sample in the Sammamish River was found in April, 2007. Since that time, three more positive samples have been found in the river. In collaborative efforts among the WA Dept. of Natural Resources, the WA Dept. of Agriculture and the US Forest Service, twenty-two stream-baiting traps were placed in the Sammamish River and two separate streamside vegetation surveys were conducted in order to determine the origin of the *P. ramorum* inoculum. It remains unknown where the inoculum is originating, but stream-baiting is continuing, with traps being placed at fifty water course entry points into the Sammamish River in 2009.

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