

Evaluating Riparian Alder (*Alnus* spp.) Ecosystems in Western Oregon for the Presence of the Alder Phytophthora (*Phytophthora alni* Brasier & S.A. Kirk). FHM PROJECT: WCFHM-10-02

Alan Kanaskie¹, Ellen Goheen², Everett Hansen³, Laura Sims³, Wendy Sutton³, Jon Laine¹, Michael Thompson¹

1 = Oregon Department of Forestry, 2 = U.S. Forest Service, 3 = Oregon State University

Background

The alder *Phytophthora* is well documented as a lethal root and collar disease of alder in many countries including the UK, France, Germany, Austria, Hungary, Italy, and The Netherlands.

It is considered an emergent hybrid pathogen of alder with three variants which differ in their virulence and pathogenicity on European alders.

Phytophthora alni subsp. *alni* appears to be the most aggressive and pathogenic to European alder species; *P. alni* subsp. *uniformis* and *P. alni* subsp. *multiformis* appear to be significantly less aggressive but are still considered pathogenic.

Damage in alder-dominated riparian ecosystems, alder-dominated shelterbelts, upland plantings, and nurseries in Europe from the alder *Phytophthora* has been substantial.

Similar damage in alder habitats of the western US would be devastating.

Methods

Thirty stream systems were selected throughout western Oregon.

In each of these, three 100 X 10 m streamside transects were installed in areas that represented varying intensities of human influence on the riparian environment.

Alders (*Alnus* spp.) were tallied by species, diameter, and crown condition. Other damages were described, including stem or root collar cankers, bleeding lesions, insect attacks, defoliation, leaf rust, etc.

Two one-liter soil samples were collected at each transect, transported back to the laboratory and baited using standard baiting techniques for the presence of *Phytophthora* spp.

Two one liter water samples were collected from the streams as near as possible to soil sample locations, transported to the lab, filtered, and filters were plated onto *Phytophthora*-selective media.

Fine roots were collected from five alders on each transect, targeting alders showing symptoms of dieback, decline, or cankers. Fine roots were returned to the lab and isolations were attempted from symptomatic root segments.

Alders with symptoms commonly associated with *Phytophthora*-caused infection were sampled by collecting leaves, stems, or inner bark samples, transporting them to the lab, and attempting isolation onto *Phytophthora*-selective media and performing PCR analysis.



Canker on red alder (*Alnus rubra*).

Typical stand of alder in urban setting

Preliminary Results

Phytophthora alni was not recovered from any of the samples.

Numerous *Phytophthora* species, some of them very interesting, were recovered.

Data analysis is underway and will be completed in 2011.



Location of *P. alni* sampling transects in western Oregon, 2010

Acknowledgements

This project was funded by the U.S. Department of Agriculture, Forest Service, Forest Health Monitoring Program

Corresponding authors:

Alan Kanaskie: akanaskie@odf.stte.or.us

Ellen Goheen: egoheen@fs.fed.us

Everett Hansen: hansene@science.oregonstate.edu