



CALIFORNIA OAK MORTALITY TASK FORCE REPORT NOVEMBER 2008

RESEARCH

[Daniel Hüberli](#) of Murdoch University, Australia, has implemented a **[“Fishing for *Phytophthora*”](#)** project in Western Australia, from the northeast to the southwest, covering more than 1300 miles. The intent of the project is to catalog which *Phytophthora* species are present in Western Australia’s northern to southwestern waterways. To date, fifteen volunteers have deployed 111 **[“fishing kits”](#)** in 100 locations and submitted 107 leaf samples. Of those samples submitted, there have been 12 positive *Phytophthora* confirmations, with some sites having up to 8 different species. The project began in September 2008. Due to funding limitations, it is scheduled to continue until early January 2009.

Tjosvold, S.A.; Chambers, D.L.; Koike, S.T.; and Mori, S.R. 2008. Disease on nursery stock as affected by environmental factors and seasonal inoculum levels of *Phytophthora ramorum* in stream water used for irrigation. Plant Dis. 92:1566-1573.

Abstract: A pear bait monitoring system was used to detect and quantify *Phytophthora ramorum* propagules in streams that flow through woodland areas with sudden oak death in Santa Cruz County, CA from 2001 to 2007. Stream propagules were detected most frequently or occurred in highest concentrations in winter and spring. The stream propagule concentration was characterized with statistical models using temperature and rainfall variables from 2004 to 2007. The highest concentrations of propagules occurred when stream sampling was preceded by about 2 months with low maximum daily temperatures and by 4 days with high rainfall. The occurrence of propagules in streams in the summer was mostly associated with infected leaves from the native host *Umbellaria californica* that prematurely abscised and fell into the water. When the stream water was used for irrigating rhododendron nursery stock from 2004 to 2007, disease occurred only three times in the two wettest springs (2005 and 2006) on plants sprinkler irrigated with stream water with relatively high concentrations of propagules. Disease incidence was described with a statistical model using the concentration of infective propagules as measured by pear baiting and consecutive hours of leaf wetness measured by electronic sensors at rhododendron height. The concentration of infective propagules was significantly reduced after water was pumped from the stream and applied through sprinklers.

RELATED RESEARCH

Ahrens, G.R. and Newton, M. 2008. Root dynamics in sprouting tanoak forests of southwestern Oregon. Can. J. For. Res. 38: 1855-1866. DOI: 10.1139/X08-022.

Abstract: Root and shoot biomass were measured across an 8 year chronosequence in mature and regenerating stands of tanoak (*Lithocarpus densiflorus* (Hook. & Arn.) Rehd.), following cutting and burning in mature tanoak forests. Tanoak stump sprouts rapidly replaced leaf biomass but did not maintain preexisting root systems. Rather, root biomass declined for several years, with the largest proportional decline in extra-fine roots. Four years after harvest, live root biomasses in diameter classes 0.25-2.00 and



0.25-5.00 mm were 25% and 30% of values in mature tanoak forests, respectively. The proportion of dead roots was strongly correlated with maximum summer soil temperature. Root/shoot ratios recovered to preharvest values by age 3-4 years, at which time the live biomass of fine roots and leaf biomass was approximately 30%-40% of values in mature forest. From age 4 to 8 years, stable root/shoot ratios were associated with a three- to four-fold reduction in growth rate of leaf biomass and a proportional increase in growth of fine roots. These findings support the general theory of a functional root-shoot balance in tanoak and suggest a possible role for soil temperature in post-harvest root dynamics. Improved understanding of postdisturbance root and shoot dynamics in tanoak will help identify competitive interactions and priorities for vegetation management decisions in establishment of conifers following harvest of mixed conifer-hardwood forests of southwestern Oregon and northern California.

Balci, Y.; Balci, S.; MacDonald, W.L.; and Gottschalk, K.W. 2008. Foliar susceptibility of eastern oak species to *Phytophthora* infection. For. Path. 38:320-331. DOI: 10.1111/j.1439-0329.2008.00548.x.

Summary: Seven different *Phytophthora* species were used to test the foliar susceptibility of the common eastern US oak species and understory plants to *Phytophthora* infection. The *Phytophthora* species employed were *Phytophthora cambivora*, *Phytophthora cinnamomi*, *Phytophthora citricola*, *Phytophthora europaea*, *Phytophthora quercetorum*, *Phytophthora quercina*-like and *Phytophthora* sp1. Inoculation of detached-leaves with agar plugs containing mycelia of *Phytophthora* provided an estimate of their relative susceptibility. Lesions were always greater when foliage was wounded and young. On deciduous plants, lesion sizes were considerably reduced with the increasing foliar age, although with evergreen plants lesion sizes remained similar regardless of foliar age when more aggressive isolates were tested. Infections seldom resulted when foliage was not wounded. With young and mature foliage, *P. citricola* usually produced the largest lesions. Young foliage of *Quercus rubra* was the most susceptible to infection followed by *Castanea dentata* for both wounded and non-wounded inoculations. Mature foliage of *Hamamelis virginiana*, *Kalmia latifolia*, and *Quercus alba* were the most susceptible to wound and non-wound inoculations.

Lang, J.M.; Rebits, B.; Newman, S.E.; and Tisserat, N. 2008. Monitoring mortality of *Pythium* zoospores in chlorinated water using oxidation reduction potential. Online. Plant Health Progress DOI: 10.1094/PHP-2008-0922-01-RS.

Abstract: *Pythium* species are frequently recovered from recycled irrigation water in greenhouse production systems and may cause damping off and root rot if the water is not disinfested properly. Chlorination is often employed as a disinfesting agent, but can be difficult to monitor accurately because its activity is pH dependent. Oxidation reduction potential (ORP) is a reliable, real-time measurement of the oxidizing potential of a chlorine solution. We exposed zoospores of *Pythium aphanidermatum* and *P. dissotocum* municipal water where the ORP was increased by adding 0.125, 0.5, and 2



mg/liter chlorine (pH 7.6 to 8.1) or to the same water source where the pH was lowered to 6.0 prior to the addition of chlorine, resulting in a final pH of 6 to 7.3. Some zoospores of *P. aphanidermatum* and *P. dissotocum* survived treatment to the highest chlorine concentration for 4 min in water where pH was not lowered. When the water pH was lowered to 6.0 prior to chlorine addition, 100% of the *P. aphanidermatum* zoospores were killed after 0.5 min exposure to 0.5 mg/liter chlorine, where ORP ranged from 748 to 790 mV and pH 6.3. Lowering the initial water pH improved disinfestation of *P. dissotocum* zoospores at the highest chlorine concentration tested and a mean ORP of 790 mV.

REGULATIONS

As of November 24th, states will be able to submit special needs requests to USDA APHIS if they need greater interstate restrictions than APHIS rules require on items that pose plant health risks. Requests must be based on sound scientific data and must include a thorough risk assessment proving that the biological control organism, noxious weed, or plant pest does not currently exist in the state, and could cause economic or environmental harm. For more information, go to <http://www.aphis.usda.gov/newsroom/content/2008/10/specneed.shtml>.

The Animal and Plant Health Inspection (APHIS) Select Agents final rule was published 10/16/08. *Phytophthora kernoviae*, while initially proposed to be listed as a select agent, is not included in the final rule as a result of the comments received and further consideration. While it was initially included on the list due to its perceived potential threat to the nursery industry and woodland areas, it has since been concluded that current regulatory systems and surveys for *P. ramorum* could be effectively applied toward the surveillance for *P. kernoviae*. APHIS believes that this consideration, along with a clearer understanding of the epidemiology of *P. kernoviae*, supports the decision not to add this pathogen to the select agent list. However, it will remain a reportable and actionable pest; therefore, if it is detected in an import shipment, entry of the shipment will be refused, and either returned, treated (if it can effectively eliminate the pathogen), or destroyed. The APHIS PPQ Select Agent designation requires government agencies, universities, research institutions, and commercial entities that possess, use, or transfer the listed pathogen to register with APHIS, facilitating PPQ oversight of activities pertaining to the select agent.

NURSERIES

Oregon's 2008 Annual Nursery Certification and high risk surveys are nearing completion. Sample results are still pending for 13 nurseries. To date this year, *P. ramorum* has been detected at five Oregon nurseries and in one landscape. All five nursery detections were made during Annual Certification surveys. The pathogen was detected 11 times on *Rhododendron*, once on *Pieris*, and once on *Corylopsis*. During delimitation surveys, additional positives were found in soil, potting media, and neighboring blocks of plants (*Arctostaphylos uva-ursi* and *Rhododendron*). Only one of the five positive nurseries did not have additional positives found during delimitation. The landscape site was a trace forward from a positive Oregon nursery. No additional



positives were found during delimitation of the landscape site. The USDA Confirmed Nursery Protocol has been completed at two of the positive nurseries and the USDA Residential and Landscape Protocol has been completed at the landscape site. For more information, contact Nancy Osterbauer at nosterba@oda.state.or.us.

NEW AND NOTEWORTHY – GOLD SPOTTED OAK BORER

Over the past five years, extensive oak mortality has occurred east of San Diego on the Cleveland National Forest and in other areas of southern California. The cause of the die-off of mature coast live oak (*Quercus agrifolia*), canyon live oak (*Quercus chrysolepis*), and CA black oak (*Quercus kelloggii*) has been attributed to the goldspotted oak borer (*Agrilus coxalis*). Identified by USDA Forest Service entomologist Tom Coleman, *A. coxalis* was found associated with dead and dying trees on federal, state, county, tribal, and private land. The presence of *A. coxalis* in southern California may represent a new introduction or range expansion from Mexico or southeastern Arizona. Damage or mortality from *A. coxalis* has never been reported in its native region, and very little information is known about this new emerging pest in California. Larval galleries are abundant on the sapwood surface of oak species. Larval feeding can patch kill areas of the cambium and result in external staining along the main stem. Thinning crowns, D-shaped exit holes, and woodpecker foraging are also frequently observed on infested oaks. Research is ongoing to fully understand the biology, impact, and movement of *A. coxalis*. Additional studies are assessing the possible link between *A. coxalis* and root pathogens. For additional information, go to: <http://www.fs.fed.us/r5/spf/fhp/> or contact Tom Coleman at twcoleman@fs.fed.us.

EDUCATION

***P. ramorum* preventative treatment training sessions will be offered in November and December.** Both field sessions will be conducted on the Berkeley campus. Each two-hour session will cover basic Sudden Oak Death (SOD) information, integrated pest management approaches for SOD, how to select candidate trees for treatment, and proper preventative treatment application. CEU credits will be offered for DPR, ISA, SAF, and California Urban Forestry Council. For more information, see the “Calendar of Events” below.

The CA Oak Mortality Task Force (COMTF) will be holding SOD Prevention and Management Strategy informational community meetings this fall. Attendees will learn basic information on SOD, preventative and management treatment options, and how to remove and dispose of infested material properly. Locations for the meetings include Humboldt, Sonoma, Santa Cruz, and Monterey Counties. For more information, see the “Calendar of Events” below.

WWW.SUDDENOAKDEATH.ORG

The Task Force website has posted a “[Native Plants and Tribal Resources](#)” page. Information on the page includes gatherer guides and frequently asked questions by Native Americans. There is also a slideshow of symptoms on native plants, and a series of handouts that highlight how *P. ramorum*-host plants are commonly used by tribes in



California. As this information is intended to be a useable resource for tribal members and all those concerned with California's native plant communities, suggested improvements are welcome, and should be directed to Janice Alexander at jalexander@ucdavis.edu.

PERSONNEL

The Oregon Department of Forestry has hired Stacy K. Savona to be their Sudden Oak Death forester in Brookings, Oregon. In her role, Stacy coordinates eradication treatment implementation and contract compliance. She also collects field data, synthesizes information, reports on scientific findings, and provides technical assistance to the public. Prior to working as the SOD forester, Stacy worked as a timber cruiser and a utility forester. Most recently she worked as the office coordinator for Oregon State Parks at the Harris Beach State Park Management Unit. Stacy can be reached at 541/469-5040 (office), 503/689-6905 (cell), or ssavona@odf.state.or.us.

JOB OPENING

A half-time Sudden Oak Death outreach associate position is available with UC Cooperative Extension (UCCE), Marin. The outreach associate will help with the preparation and delivery of the California Oak Mortality Task Force's education and outreach activities, including public speaking, coordinating professional and community-based training sessions and conferences, and designing and developing educational outreach materials. The salary is \$1444.50 per month. Interested applicants should submit a cover letter and resumé to Janice Alexander (UC Cooperative Extension; 1682 Novato Blvd., Suite 150B; Novato, CA 94947) by November 26, 2008. For more information, contact UCCE Marin at (415) 499-4204 or email Janice Alexander at jalexander@ucdavis.edu.

CALENDAR OF EVENTS

- 11/12 - SOD Treatment Workshop; meet at oak outside of Tolman Hall, UC Berkeley Campus; 1 – 3 p.m.;** Pre-registration is required. This class is free and will be held rain or shine. To register, email SODtreatment@nature.berkeley.edu, and provide your name, phone number, affiliation (if applicable), and the date for which you are registering. For more information, go to <http://nature.berkeley.edu/sodtreatment> or contact Katie Palmieri at (510) 847-5482 or Palmieri@nature.berkeley.edu.
- 11/13 - SOD Prevention Strategy Informational Meeting; Carmel Middle School, Hilton Bialek Habitat; 4380 Carmel Valley Rd.; Carmel; 6:00 – 8:00 p.m.** For more information, contact Katie Palmieri at (510) 847-5482.
- 12/10 - SOD Treatment Workshop; oak outside of Tolman Hall, UC Berkeley Campus; 1 – 3 p.m.;** Pre-registration is required. For more information, see the 11/12 listing above.