



## CALIFORNIA OAK MORTALITY TASK FORCE REPORT MAY 2013

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### MONITORING

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**Texas cooperators in the National *Phytophthora ramorum* Early Detection Survey of Forests** identified a new positive waterway outside a Houston nursery after detecting the pathogen from baits deployed in February. This was the first new positive site of the 2013 survey year and the second new site in the Houston area in the past three months. A second, separate positive was also obtained in February from a site first identified positive in December 2012. While there is currently no evidence suggesting recent *P. ramorum* introductions, both nurseries had received suspect positive plants in the past. All three positives were obtained from leaf baits deployed in waterways. Cooperators are now repeating the survey with a water sampling technique called “bottle of bait.”

The 2013 National *P. ramorum* Early Detection Survey of Forests is underway with an estimated 68 streams to be assayed in 12 states nationwide, down from 17 states participating in 2012 due to budget shortfalls. The survey focuses on high-risk waterways near infested forest areas in CA and OR; positive waterways already detected in AL, FL, GA, MS, NC, TX, and WA; and high-risk waterways outside nurseries that may have received infected ornamental plants in these states, plus NY and PA.

**SODMAP mobile is a new app available for free at the Apple App Store.** Developed by the UC Berkeley Forest Pathology and Mycology Lab, the app is intended for field use and allows the user to identify the locations of trees sampled for *P. ramorum* and determine the health of each tree at the time of sampling. The app also can calculate the risk of infection at the location where the user is by using the number of sampled trees in the area and proximity of positive trees. High- or moderate-risk ratings indicate action may be needed to preventively protect oak trees. This tool can assist in helping property owners and managers as well as tree care professionals make management decisions; however, other factors must be taken into consideration, such as host distribution, weather patterns, and land management goals. Funding for development of the app was provided by the Gordon and Betty Moore Foundation.

### NURSERIES

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**A Gilroy nursery (Santa Clara County) was confirmed positive for *P. ramorum* on April 18<sup>th</sup>.** The positive *Loropetalum chinense* (5 g) plant was identified during a compliance agreement inspection. No high-risk host and associated host plants have been shipped interstate in the last six months. This facility was previously positive in 2004 and 2005. The Confirmed Nursery Protocol has been implemented.

**Oregon had three *P. ramorum*-positive nurseries identified in April.** A Clackamas County facility was found to have infected *Camellia*, *Gaultheria*, *Pieris*, *Rhododendron*, *Trachelospermum*, and *Viburnum* on April 11<sup>th</sup>. Soil sample tests are still pending. The nursery has not previously tested positive. Two Washington County nurseries were also found with *P. ramorum*-positive plants on April 16<sup>th</sup>. Both nurseries have been



previously positive, with the first nursery positive annually from 2006 through 2010 and the second positive in 2012. Positive plants at the first nursery included *Rhododendron* sp. and *Magnolia grandiflora*. Positive plants at the second nursery included *Rhododendron* 'Anna Kruschke' and *Viburnum* 'Pink Dawn.' Soil sample testing at both nurseries is in process.

**The Kitsap County, Washington retail garden center found positive in March** (reported in April newsletter) had a positive soil sample confirmed at the nursery on April 11<sup>th</sup>. The nursery has followed USDA direction for treating the affected area, and the retail Confirmed Nursery Protocol is nearly complete.

The Washington Department of Agriculture has conducted recertification sampling at 22 interstate host shipping nurseries this spring, with no *P. ramorum*-positive samples identified.

#### RESEARCH

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**Kelsey, R.G.; Beh, M.M.; Shaw, D.C.; and Manter, D.K. 2013. Ethanol Attracts Scolytid Beetles to *Phytophthora ramorum* Cankers on Coast Live Oak.** Journal of Chemical Ecology. 39: 494-506.

Abstract: Ethanol in sapwood was analyzed along vertical transects, through small spot cankers and larger basal cankers, of *Phytophthora ramorum*-infected stems of *Quercus agrifolia* at three sites in California. Trees with large basal cankers, known to attract scolytid beetles, had a 4.3 times higher ethanol level than trees with spot cankers that attract fewer beetles. Ethanol concentrations inside cankers, where scolytid beetles preferentially attack, varied by about four orders of magnitude among samples, with a median level of 16.0  $\mu\text{g}\cdot\text{g}^{-1}$  fresh mass. This concentration was 4.3 and 15.5 times greater, respectively, than the concentrations at 1 cm or 15–30 cm outside the canker boundaries. In the laboratory, we demonstrated that ethanol escaped through the bark of a *Q. garryana* log just 3 days after it was added to the sapwood. At the three study sites, traps baited with ethanol captured more *Xyleborinus saxesenii*, *Pseudopityophthorus pubipennis*, and *Monarthrum dentiger* (all Coleoptera: Curculionidae: Scolytinae) than traps baited with ethanol plus (-)- $\alpha$ -pinene, or ethanol plus 4-allylanisole (4AA). Logs of *Q. agrifolia* with a 50 % ethanol solution added to the sapwood were placed at the study sites, with or without additional bark treatments above the ethanol. The number of scolytid beetle gallery holes above the ethanol-infused sapwood was 4.4 times greater than that on the opposite side of the log where no ethanol was added. Attachment of ultra-high release (-)- $\alpha$ -pinene pouches to the bark surface above the 50 % ethanol solution reduced scolytid attacks to a density of 19.1 % that of logs without this treatment. We conclude that ethanol in *P. ramorum* cankers functions as a primary host attractant for scolytid beetles and is an important link in colonization of these cankers and accelerated mortality of *Q. agrifolia*. The results of this research shed light on the chemical ecology behind the focused scolytid attacks on *P. ramorum*-infected coast live oaks, and lay the groundwork for future efforts to prolong the survival of individual trees of this keystone species.



**Purse, B.V.; Graeser, P.; Searle, K.; Edwards, C.; and Harris, C. 2013. Challenges in Predicting Invasive Reservoir Hosts of Emerging Pathogens: Mapping *Rhododendron ponticum* as a Foliar Host for *Phytophthora ramorum* and *Phytophthora kernoviae* in the UK. *Biological Invasions*. 15:529–545.**

**Abstract:** Invasive species can increase the susceptibility of ecosystems to disease by acting as reservoir hosts for pathogens. Invasive hosts are often sparsely recorded and not in equilibrium, so predicting their spatial distributions and overlap with other hosts is problematic. We applied newly developed methods for modeling the distribution of invasive species to the invasive shrub *Rhododendron ponticum*—a foliar reservoir host for the *Phytophthora* oomycete plant pathogens, *P. ramorum* and *P. kernoviae*, that threaten woodland and heathland habitat in Scotland. We compiled eleven datasets of biological records for *R. ponticum* (1,691 points, 8,455 polygons) and developed Maximum Entropy (MaxEnt) models incorporating landscape, soil, and climate predictors. Our models produced accurate predictions of current suitable *R. ponticum* habitat (training AUC = 0.838; test AUC = 0.838) that corresponded well with population performance (areal cover). Continuous broadleaved woodland cover, low elevation (<400 m a.s.l.) and intermediate levels of soil moisture (or Enhanced Vegetation Index) favored presence of *R. ponticum*. The high coincidence of suitable habitat with both core native woodlands (54 % of woodlands) and plantations of another sporulation host, *Larix kaempferi* (64 % of plantations) suggests a high potential for spread of *Phytophthora* infection to woodland mediated by *R. ponticum*. Incorporating non-equilibrium modeling methods did not improve habitat suitability predictions of this invasive host, possibly because, as a longstanding invader, *R. ponticum* has filled more of its available habitat at this national scale than previously suspected.

#### **RELATED RESEARCH**

**Leonberger, A.J.; Speers, C.; Ruhl, G.; Creswell, T.; and Beckerman, J.L. 2013. A Survey of *Phytophthora* spp. in Midwest Nurseries, Greenhouses, and Landscapes. *Plant Disease*. 97(5): 635-640.**

#### **EDUCATION AND OUTREACH**

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**Eleven Spring 2013 SOD Blitz Opportunities Left - Community members living near areas known to be impacted by SOD are encouraged to attend a SOD Blitz and learn how to look for the disease so that they can monitor for it in their community, facilitating early detection of new outbreaks. Participants will be trained to identify and collect symptomatic bay leaves and record sample locations. Samples will be taken to the Garbelotto lab at UC Berkeley to test for the pathogen. Follow-up local sessions in the fall will present the mapped outcomes of the blitzes. Attendees will learn how to correctly use the distribution maps, determine risk of infection for their oaks and tanoaks, and learn science-based recommendations to help prevent and manage SOD. For details on Blitz locations and further information, see the “Calendar of Events” below.**

**RESOURCES**

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The “Sudden Oak Death and *Phytophthora ramorum* 2011 – 2012 Summary Report, A Compendium of 2012 Monthly Newsletters” is now available on the Task Force website at <http://www.suddenoakdeath.org/wp-content/uploads/2013/04/2012-Newsletter-Summary-Report.pdf>.

**Elliott, M. and Chastagner, G.A. 2013. Susceptibility of Rhododendrons to *P. ramorum*.** B&B 65(3): 14-17. Available online at <http://www.bluetoad.com/publication/?i=154930>.

**SODMAP has been updated to includes an additional 2,151 data points, including 2012 SOD Blitz results as well as new information from California researchers.** To access the updated map in Google Earth, go to [www.sodmap.com](http://www.sodmap.com).

“Trade in forest commodities and the role of phytosanitary measures,” a free online training course, is now available from the Food and Agriculture Organization of the United Nations and the International Plant Protection Convention Secretariat. The course provides a checklist to help producers comply with phytosanitary requirements in international markets as well as a review of the most common pests. To access the course, go to <http://www.fao.org/forestry/foresthealthguide/82418/en/>.

**PERSONNEL**

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**Dan Stark has been hired as the new SOD Project Coordinator for UCCE Humboldt and Del Norte Counties.** In his new role, Dan will monitor for SOD across public, private, and tribal lands; explore and implement best-available management practices for the control of SOD; and encourage a multi-stakeholder dialogue and participation in the SOD program through outreach and educational opportunities.

Dan received his M.S. from UC Berkeley in May 2012 from the Division of Ecosystem Science in the Department of Environmental Science, Policy, and Management. He has worked extensively on projects pertaining to pathogen, insect, and tree relations, such as insect vectors of pitch canker and the progression of Sudden Oak Death in long-term ecological study plots. Dan can be reached at (707) 445-7351 or [stark@ucdavis.edu](mailto:stark@ucdavis.edu).

**Jack Marshall retired from the California Department of Forestry and Fire Protection (CAL FIRE) as a Forest Pest Specialist on May 1<sup>st</sup>.** Jack covered forest health for California’s northern and central coast and served on the front line of early detection and response to *P. ramorum* in Mendocino, Humboldt, and other counties. We wish Jack a long and happy retirement! He will be missed.

**CALENDAR OF EVENTS**

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**5/11 - Mendocino SOD Blitz; College of the Redwoods; 1211 Del Mar Drive; Fort Bragg; 10:00 a.m. – noon; For more information, contact Lori Hubbard at [lorih@mcn.org](mailto:lorih@mcn.org).**



- 5/13 - 17 - Seventh Western Hazard Tree Workshop; Relics Restaurant and Conference Center; 3235 Arizona 89A, Sedona, Arizona.** For the agenda and lodging information, or to register, go to <http://www.fs.fed.us/foresthealth/technology/htwc/index.htm>. For more information, contact Pete Angwin at (530) 226-2436 or [pangwin@fs.fed.us](mailto:pangwin@fs.fed.us).
- 5/14 - Best Management Practices Programs for CA Nurseries: Review and Outlook Training Session; UC Cooperative Extension Monterey County; 1432 Abbott Street; Salinas, CA 93901;** For more information, go to [http://ucanr.edu/sites/UCNFA/2013\\_Educational\\_Programs/BMPs\\_Workshop\\_Salinas/](http://ucanr.edu/sites/UCNFA/2013_Educational_Programs/BMPs_Workshop_Salinas/).
- 5/18 - South Bay SOD Blitz, Option 1; Montalvo, Location to be determined;** 10:00 a.m. to noon; For more information, contact Kelly Sicat at [KSicat@montalvoarts.org](mailto:KSicat@montalvoarts.org). or Arvind Kumar at [arvind.kumar@cnps.org](mailto:arvind.kumar@cnps.org).
- 5/18 - South Bay SOD Blitz, Option 2; South Skyline, Location to be determined;** 1:00 – 3:00 p.m.; For more information, contact Jane Manning at [skyline\\_sod@yahoo.com](mailto:skyline_sod@yahoo.com).
- 5/18 - Protect the Value of Your Forest: A Workshop for Forest Landowners;** Mendocino County UCCE office; 890 N. Bush Street; Ukiah; 9:30 a.m. - 3:00 p.m.; Registration is \$25 and is available online at <http://ucce.ucdavis.edu/survey/survey.cfm?surveynumber=10294>. For more information, go to <http://ucanr.edu/sites/forestry/Events/?calendar=yes&g=28858> or contact Rick Standiford at [standifo@berkeley.edu](mailto:standifo@berkeley.edu).
- 5/25 - Peninsula SOD Blitz, Option 1; Burlingame Hills; 120 Tiptoe Lane (off Canyon Rd.); Burlingame; 10:00 a.m. – noon;** For more information, contact Steve Epstein at [steve@burlingamehills.org](mailto:steve@burlingamehills.org).
- 5/25 - Peninsula SOD Blitz, Option 2; Woodside/Portola Valley/Emerald Hills;** Woodside Town Hall; 2955 Woodside Road; Woodside; 1:00 – 3:00 p.m.; For more information, contact Debbie Mendelson at [sodblitz@gmail.com](mailto:sodblitz@gmail.com).
- 5/29 - Protect the Value of Your Forest: A Workshop for Forest Landowners; The McConnell Foundation; 800 Shasta View Drive; Redding; Ukiah; 9:30 a.m. - 3:00 p.m.;** Registration is \$25 and can be done online at <http://ucce.ucdavis.edu/survey/survey.cfm?surveynumber=10294>. For more information, go to <http://ucanr.edu/sites/forestry/Events/?calendar=yes&g=28858> or contact Rick Standiford at [standifo@berkeley.edu](mailto:standifo@berkeley.edu).
- 6/1 - Atherton SOD Blitz; Carriage House; Holbrook Palmer Park; 150 Watkins Ave.; Atherton; 10:00 a.m. – noon;** For more information, contact Susan Finocchio at [susanfin@earthlink.net](mailto:susanfin@earthlink.net).
- 6/8 - Los Altos Hills SOD Blitz; Los Altos Hills Town Hall; 26379 Fremont Rd.;** Los Altos Hills; 10:00 a.m. to noon; For more information, contact Sue Welch at [sodblitz09@earthlink.net](mailto:sodblitz09@earthlink.net).
- 6/15 - Sonoma SOD Blitz, Option 1 - Santa Rosa; Location to be determined;** 10:00 a.m. – noon; For more information, contact Phyllis Turrill at [rainbow3@comcast.net](mailto:rainbow3@comcast.net).



- 6/15 - Sonoma SOD Blitz, Option 2; Sonoma Community Center; 276 East Napa Street; Sonoma; 10:00 a.m. – noon; For more information, contact Phyllis Turrill at [rainbow3@comcast.net](mailto:rainbow3@comcast.net).**
- 6/15 - Sonoma SOD Blitz, Option 3; Sebastopol; Location to be determined; 10:00 a.m. – noon; For more information, contact Phyllis Turrill at [rainbow3@comcast.net](mailto:rainbow3@comcast.net).**
- 6/15 - Napa SOD Blitz; UC Cooperative Extension Office, 1710 Soscol Avenue, Napa; Time to be determined; For more information, contact Bill Pramuk at [info@billpramuk.com](mailto:info@billpramuk.com) or Henni and Gerrald Cohen at [hennic1044@gmail.com](mailto:hennic1044@gmail.com).**
- 6/15 - Protect the Value of Your Forest: A Workshop for Forest Landowners; UC Berkeley Campus; 159 Mulford Hall at Oxford Ave. and University Ave.; Berkeley; 9:30 a.m. - 3:00 p.m.; Registration is \$25 and is available online at <http://ucce.ucdavis.edu/survey/survey.cfm?surveynumber=10294>. For more information, go to <http://ucanr.edu/sites/forestry/Events/?calendar=yes&g=28858> or contact Rick Standiford at [standifo@berkeley.edu](mailto:standifo@berkeley.edu).**
- 6/22 - Protect the Value of Your Forest: A Workshop for Forest Landowners; Placer County UCCE office, DeWitt Center, Room 306; 11477 E Avenue; Auburn; 9:30 a.m. - 3:00 p.m.; Registration is \$25 and is available online at <http://ucce.ucdavis.edu/survey/survey.cfm?surveynumber=10294>. For more information, go to <http://ucanr.edu/sites/forestry/Events/?calendar=yes&g=28858> or contact Rick Standiford at [standifo@berkeley.edu](mailto:standifo@berkeley.edu).**
- 8/24 - 25 - Fifth *Phytophthora*, *Pythium*, and Related Genera Workshop; Beijing, China; The first day focuses on the methodology for studying Oomycetes (particularly *Phytophthora* and *Pythium* species), while the second day will cover contemporary research topics. The meeting is being held in conjunction with the 10<sup>th</sup> International Congress of Plant Pathology. For abstract submission, registration, and workshop information, go to <http://www.icppbj2013.org/file/workshop/5thInternationalWorkshop.asp>.**
- 9/4 - SOD Treatment Workshop; meet at oak outside of Tolman Hall, UC Berkeley Campus; 1:00 – 3:00 p.m.; Pre-registration is required. For more information, see the 4/10 listing above.**
- 10/2 - SOD Treatment Workshop; meet at oak outside of Tolman Hall, UC Berkeley Campus; 1:00 – 3:00 p.m.; Pre-registration is required. For more information, see the 4/10 listing above.**
- 10/23 - SOD Treatment Workshop; meet at oak outside of Tolman Hall, UC Berkeley Campus; 1:00 – 3:00 p.m.; Pre-registration is required. For more information, see the 4/10 listing above.**
- 11/13 - SOD Treatment Workshop; meet at oak outside of Tolman Hall, UC Berkeley Campus; 1:00 – 3:00 p.m.; Pre-registration is required. For more information, see the 4/10 listing above.**