CALIFORNIA OAK MORTALITY TASK FORCE REPORT
JUNE 2012

MONITORING

A new *Phytophthora ramorum* wildland infection has been identified on the Rogue River in the Siskiyou National Forest. It is the first infection site in the Winchuck River drainage, approximately 6 miles southeast of previously identified infection sites and about one half-mile outside the current Oregon Sudden Oak Death quarantine boundary. Additional surveys are underway to determine the extent of the infestation. The Oregon Department of Agriculture has enacted an emergency quarantine around the site. The USDA Forest Service is preparing for an eradication treatment.

Seventeen states with a history of *P. ramorum* introduction on ornamental nursery stock are participating in the USDA Forest Service National *P. ramorum* Wildland Survey, despite a moderate reduction in 2012 funding. While Ohio and West Virginia withdrew from the survey this year after several years of negative results, Iowa and Illinois joined it as a result of trace-forward positives found in 2010. To date this year, pathogen detections have been reported from previously positive streams draining woody ornamental nurseries in Alabama, Florida, and North Carolina, and infested forests in Oregon. No new positive sites have been reported; however, final diagnostics are pending on most samples.

Comparisons of an in vitro method for pathogen detection (bottle of bait) against the current in situ (submerged bags of leaves) protocol underway in 14 positive eastern sites are continuing for a second year, and have expanded to 11 additional positive sites in Oregon and Washington. The 2011 work found the in vitro assay compared favorably with, and holds several advantages over, the in situ protocol. This work will be reported at the upcoming Fifth SOD Science Symposium in Petaluma, CA.

In Galloway, southwest Scotland, a cluster of suspected new *P. ramorum*-positive larch sites totaling more than 247 acres has been found. The site is distant from the nearest previously infected site. Follow-up ground surveys are underway. The find is the result of the British Forestry Commission's larch aerial survey program which is still underway in the UK. All other suspected sites to date that have been identified for follow-up ground inspection are contiguous with, or in close proximity to, previous infection sites, including extensive areas in south Wales. Only three confirmed sites have been previously recorded in Scotland. For more information, go to www.forestry.gov.uk/pramorum.

NURSERIES

Two California nurseries in regulated counties have been found *P. ramorum* positive. On April 27, 2012, a San Joaquin County production nursery was found to have 5-gallon *P. ramorum*-positive *Camellia sasanqua* 'Cleopatra,' *Camellia japonica* 'Mathotiana Supreme,' and *Camellia japonica* 'Bella Rose' during a compliance agreement inspection. The nursery was previously positive in 2011 and has not made any

interstate shipments since. On May 3, 2012, a 5-gallon *Loropetalum chinense* 'Rubrum' was confirmed *P. ramorum* positive at a retail nursery in Sacramento County as a result of a follow-up inspection for a 2011 confirmation. The nursery is not under compliance and does not ship interstate. The Confirmed Nursery Protocol (CNP) will be implemented at both facilities.

The Oregon Department of Agriculture 2012 Federal Order survey has identified six *P. ramorum*-positive nurseries so far this year in Lincoln, Marion, Washington, Tillamook, Polk, and Lane Counties. Three of the positive nurseries are wholesalers and three are retailers. Two of the six ship nursery stock out of state and four are repeat positives. Nursery stock found infected includes *Camellia japonica*, *C. japonica* 'Grand Prix', *Kalmia latifolia*, *Pieris* sp., *Rhododendron* sp., *Rhododendron* cultivars 'Baden Baden' and 'Holden,' *Viburnum* sp., *V. davidii*, and *V. tinus*. The CNP is underway at all six nurseries.

Three Washington nurseries were confirmed positive for *P. ramorum* in May during interstate shipper annual compliance inspections. One was a wholesale producer with an attached retail yard in King County. This facility was previously positive in 2003, 2004, and 2010. The second was a Clallam County retail nursery with a separate production site. The owner recently acquired the retail site, but his production site has been tested for many years and has never been found *P. ramorum* positive. The third confirmation was from a mail-order retail nursery in Lewis County which had a positive potentially actionable suspect sample in 2010 and tested negative in 2011. The CNP is being implemented at all three sites with trace-back and trace-forward information still forthcoming.

In addition, holding pond water was found positive at two wholesale landscape nurseries – one in Clark County and the other in Thurston County. Both ponds have been positive in past years; clean up has been difficult. Neither site uses the ponds for irrigation. Positive rhododendrons were also found in a commercial landscape in Pierce County. These plants were traced forward from the *P. ramorum*-positive wholesale landscape nursery in Thurston County (found positive 3/30/12). The infected plants have been removed and soil testing is underway.

FUNDING

Of the $15.5 million allocated to California in 2012 via the 2008 Farm Bill - Section 10201, $978,745 has been awarded for *P. ramorum* projects related to safeguarding nursery production and enhancing mitigation capabilities. In total, the USDA provided $50 million in funding to implement 321 projects in all 50 states, as well as American Samoa and Guam. For more information, go to http://www.aphis.usda.gov/plant_health/plant_pest_info/pest_detection/downloads/farmbill/FY12-ProjectList.pdf.

MANAGEMENT

With the first treatment phase of the Redwood Creek (near Orick), Humboldt County *P. ramorum* outbreak nearly complete, University of California, Cooperative Extension personnel will begin to monitor project efficacy and watch for pathogen spread to adjacent lands. Water samples near the mouth of Redwood Creek first tested positive for the pathogen in spring 2010, signifying that the pathogen had become established somewhere in the 200,000-acre watershed, more than 50 miles from the nearest known infestation and farther north than previously detected in California. Federal and state agencies, including the USDA Forest Service, CAL FIRE, and the Natural Resources Conservation Service (NRCS), joined forces with UC Cooperative Extension and local landowners to address the problem.

To date, much of the on-the-ground response to the outbreak has been completed by contractors and CAL FIRE hand crews who have created 100-meter buffers around infected trees by removing California bay laurel and tanoak. Infected plant material has been trucked offsite and donated for co-generation to a nearby power company, piled and burned, or lopped and scattered onsite. Funding for the project has come from the American Recovery and Reinvestment Act, the USDA Forest Service, and NRCS.

RESEARCH

There is still time to submit your thoughts regarding the 2012 *P. ramorum* Research Needs Assessment being conducted by the California Oak Mortality Task Force (COMTF) in cooperation with the USDA Forest Service, Pacific Southwest Research Station. Participating will insure that you are part of the solution by helping to prioritize current research needs. Replies are due no later than June 10, 2012. Go to http://ucanr.org/2012wildlandrna for the wildland survey or http://ucanr.org/2012nursery_rna for the nursery survey.

Cobb, R.C. and Rizzo, D.M. 2012. Decomposition and N cycling changes in redwood forests caused by sudden oak death. In Standiford, Richard B.; Weller, Theodore J.; Piirto, Douglas D.; Stuart, John D, technical coordinators. 2012. Proceedings of coast redwood forests in a changing California: A symposium for scientists and managers. Gen. Tech. Rep. PSW-GTR-238. Albany, CA: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture. 2 parts – total 675 pages.

Metz, M.R.; Frangioso, K.M.; Meentemeyer, R.K.; and Rizzo, D.M. 2012. The effects of sudden oak death and wildfire on forest composition and dynamics in the Big Sur ecoregion of coastal California. In Standiford, Richard B.; Weller, Theodore J.; Piirto, Douglas D.; Stuart, John D, technical coordinators. 2012. Proceedings of coast redwood forests in a changing California: A symposium for scientists and managers. Gen. Tech. Rep. PSW-GTR-238. Albany, CA: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture. 2 parts – total 675 pages.

Parke, J.L. and Grünwald, N.J. 2012. A Systems Approach for Management of Pests and Pathogens of Nursery Crops. Plant Disease. Available online at http://dx.doi.org/10.1094/PDIS-11-11-0986-FE.

Ramage, B.S.; O'Hara, K.L.; and Forrestel, A.B. 2012. Regeneration and Tanoak Mortality in Coast Redwood Stands Affected by Sudden Oak Death. In Standiford, Richard B.; Weller, Theodore J.; Piirto, Douglas D.; Stuart, John D, technical coordinators. 2012. Proceedings of coast redwood forests in a changing California: A symposium for scientists and managers. Gen. Tech. Rep. PSW-GTR-238. Albany, CA: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture. 2 parts – total 675 pages.

Abstract: Sudden oak death, an emerging disease caused by the exotic pathogen *Phytophthora ramorum*, is impacting coast redwood (*Sequoia sempervirens*) forests throughout coastal California. The most severely affected species, tanoak (*Notholithocarpus densiflorus*), is currently widespread and abundant in the redwood ecosystem, but diseased areas have begun to experience considerable mortality. Tanoak, which is extremely valuable as a food source to numerous wildlife species, is unlikely to successfully regenerate in these areas, and thus affected redwood forests are transitioning to a novel state. In this study, to predict which species might replace tanoak, we investigated regeneration patterns in heavily impacted stands in Marin County, California. Our main findings were: (1) despite reductions in canopy cover, there is no evidence that any species other than tanoak has exhibited a regenerative response to tanoak mortality, (2) the regeneration stratum was dominated by redwood and tanoak (other tree species were patchy and/or scarce), and (3) some severely affected areas lacked sufficient regeneration to fully re-occupy available growing space. Our results indicate that redwood is likely to initially re-occupy the majority of the ground relinquished by tanoak, but also provide evidence that longer-term trajectories have yet to be determined and may be highly responsive to management interventions.

RELATED RESEARCH

Grünwald, N.J. 2012. Genome sequences of *Phytophthora* enable translational plant disease management and accelerate research. Canadian Journal of Plant Pathology, 34(1): 13-19.

Hughes, M.A.; Shin, K.; Eickwort, J.; and Smith, J.A. 2012. First report of laurel wilt disease caused by *Raffaelea lauricola* on silk bay in Florida. Plant Disease, 96(6): 910.

Koch, F.H.; Yemshanov, D.; Magarey, R.D.; and Smith, W.D. 2012. Dispersal of invasive forest insects via recreational firewood: a quantitative analysis. Journal of Economic Entomology. 105(2): 438-450.

Sikora, K.; Verstappen, E.; Mendes, O.; Schoen, C.; Ristaino, J.; and Bonants, P. 2012. A universal microarray detection method for identification of multiple *Phytophthora* spp. using padlock probes. Phytopathology, 102(6): 635-645.

Yang, X.; Richardson, P.A.; Ghimire, S.R.; Kong, P.; and Hong, C.X. 2012. *Phytophthora hedraiandra* detected from irrigation water at a perennial ornamental plant nursery in Virginia. Plant Disease, 96(6): 915.

Yemshanov, D.; Koch, F.H.; Ducey, M.; and Koehler, K. 2012. Trade-associated pathways of alien forest insect entries in Canada. Biological Invasions. 14: 797-812.

RELATED ISSUES

The British Forestry Commission's aerial survey program in the United Kingdom is recording deteriorating pine plantations and native trees. Great Britain is experiencing an increase in Dothistroma needle blight of pine caused by *Dothistroma septosporum*. The Commission has suspended use of Corsican pine (*Pinus nigra*) in its forests in response to the level of risk which the pathogen poses. Infection is now increasingly being found on lodgepole pine (*P. contorta*) and native Scots pine (*P. sylvestris*), raising concerns for the iconic Caledonian pinewoods of the Scottish Highlands. For more information, go to www.forestry.gov.uk/dothistromaneedleblight.

Updated thousand cankers disease (TCD) survey guidelines for 2012 can be found at http://www.aphis.usda.gov/plant_health/plant_pest_info/tcd/downloads/TCDSurveyGuidelines2012.pdf. The main modification to the guidelines is the addition of instructions on how to use the lure that has been developed for walnut twig beetle. TCD results from the combined activity of *Geosmithia morbida* fungus and the walnut twig beetle (*Pityophthorus juglandis*).

MEETINGS

The Fifth Sudden Oak Death Science Symposium will be held this month in Petaluma from June 19 – 22, 2012. All interested parties are encouraged to register and partake in all aspects of the Symposium that are not yet full, including a poster session and a half-day dedicated to "What are we trying to save? Tanoak: history, values and ecology," a mini-fest of all things tanoak. Papers presented during the tanoak session will be published as a journal special issue on tanoak, a compendium of what we have learned about this important host tree. To register, go to http://ucanr.org/sites/sod5/Registration/. For information on the Symposium, go to http://ucanr.org/sites/sod5/. For lodging and travel information, go to http://ucanr.org/sites/sod5/Travel_and_Lodging_Information/.

RESOURCES

"The Past, Present, and Future of Sudden Oak Death" article by Janice Alexander in "Outlooks on Pest Management" provides a summary of *P. ramorum* impacts and issues to date and touches on the challenges we face moving forward.

Two new *Phytophthora* videos have been produced in the United Kingdom to inform professionals and the public about *P. ramorum* and *P. kernoviae*. The films are part of the Department for Environment, Food, and Rural Affairs (DEFRA) and Forestry Commission Tree Health and Plant Biosecurity Action Plan and DEFRA's *P. ramorum* and *P. kernoviae* Disease Management Program. Over 20 public and private organizations worked to produce the videos to help minimize threats posed to nurseries, gardens, woodlands, and countrysides.

The shorter film (2 min. 40 sec.) was produced primarily for people with little previous knowledge of plant diseases, but who are interested in the natural environment and what they can do to help. The longer film (18 min. 30 sec.) is intended for professionals who work in environments where the diseases may be present or that could easily become contaminated. It describes the diseases in greater detail and offers advice on appropriate biosecurity measures to prevent spread.

KUDOS

Yana Valachovic, UC Cooperative Extension advisor for Humboldt and Del Norte Counties, and Dave Rizzo, Department of Plant Pathology professor at UC Davis, each accepted Chiefs' Partnership Awards on May 16, 2012 from USDA Deputy Secretary Kathleen Merrigan. The annual award highlights projects from across the country, recognizing exemplary partners who have worked collaboratively to support conservation and forest stewardship. Valachovic and Rizzo accepted the awards on behalf of the federal, state, tribal, and private partners involved in the Redwood Creek Sudden Oak Death project in Humboldt County, including USDA's Natural Resources Conservation Service and Forest Service, Cal Fire, California Department of Corrections, DG Fairhaven Power Company, Able Forestry, Cookson Foundation, tribal partners, UC and UCCE personnel, and others.

CALENDAR OF EVENTS

6/6 - SOD Treatment Workshop; meet at oak outside of Tolman Hall, UC Berkeley Campus; 1:00 – 3:00 p.m.; Pre-registration is required. This class is free and will be held rain or shine. To register, or for questions, email kpalmieri@berkeley.edu, and provide your name, phone number, affiliation and license number (if applicable), and the date for which you are registering. For more information, go to http://nature.berkeley.edu/garbelotto/english/sodtreatmenttraining.php.

6/9 - South Skyline Community SOD Blitz; 10:00 a.m.; Saratoga Fire Station, Skyline Blvd.; For more information, contact Jane Manning at skyline_sod@yahoo.com.

6/16 - Burlingame Hills Community SOD Blitz; 10:00 a.m.; 120 Tiptoe Lane (off Canyon Rd.), Burlingame; For more information, contact Steve Epstein at steveepstein0206@gmail.com.

6/19 – 6/22 - The Fifth Sudden Oak Death Science Symposium (SOD 5); Sheraton Sonoma County; 745 Baywood Drive; Petaluma. For information on the conference, go to http://ucanr.org/sites/sod5/. For additional information

regarding submission of abstracts and conference planning, contact Katie Palmieri at kpalmieri@berkeley.edu. To register, or for or questions regarding registration, go to http://ucanr.org/sites/sod5/ or contact Janice Alexander at jalexander@ucdavis.edu.

7/11 – 7/12 - California Forest Pest Council Weed Tour; Burney, CA; Tour topics include transmission line herbicide treatments, the Fountain fire 20-year anniversary, new forestry herbicides, fuel break creation and maintenance, aerial Velpar® ULW release, a wind farm tour, demonstration of goat vegetation management, a coop cedar stock trial, various insecticide trial updates, Douglas-fir seed orchard insect and weed management, State park Himalayan blackberry control, a Douglas-fir sunscald and frost research trial, and more. CEUs will be offered for PCA, QAL, QAC, and Private Applicator Certificates. For more information, or to register before the July 1, 2012 deadline, go to the California Forest Pest Council website at http://caforestpestcouncil.org/2012/01/cfpc-2012-weed-tour-and-gold-tournament-save-the-date/.

7/24 – California Forest Pest Council Summer Insect and Disease Field Tour, Warner Mountains, Modoc National Forest; Meet in Likely, CA; 9:00 a.m. – 5:00 p.m.; The tour will feature the current mountain pine beetle outbreak in lodgepole and whitebark pine with an emphasis on mountain pine beetle biology, individual tree protection, and stand level management. Other topics include the effects of thinning on fir engraver beetle-caused tree mortality, *Heterobasidion* (Annosus) root disease in white fir, Jeffrey pine beetle outbreak dynamics, and insects and diseases of aspen. CE Credits will be applied for from the Department of Pesticide Regulations. For more information or to sign up, contact Danny Cluck at dcluck@fs.fed.us or (530) 252-6431.

9/9 – 9/14 – Sixth Meeting of the International Union of Forest Research Organizations IUFRO Working Party 7-02-09 "*Phytophthora* in Forests and Natural Ecosystems;" Colegio Mayor Universitario Nuestra Señora de la Asunción, Avd. Menéndez Pidal s/n, 14004 Córdoba, Spain; For more information, contact Mª Pérez Sierra at aperesi@eaf.upv.es or see http://iufrophytophthora2012.org/.