CALIFORNIA OAK MORTALITY TASK FORCE REPORT
OCTOBER 2011

MONITORING

A new *P. ramorum*-positive site six miles north of the quarantine boundary has been found in Curry County, OR infecting two tanoak trees. Identified by the Oregon Department of Forestry during aerial detection surveys in Cape Sebastian State Park, the infestation is over 12 miles from the nearest known infected tree. Other tanoak trees in the immediate vicinity also show signs of lower tree crown browning. Once the extent of the infestation is determined, a treatment plan will be developed and implemented in hopes of completing the work before the rainy season.

As required by the state, the Cape Sebastian State Park infection site and a three mile buffer zone are now included in the Sudden Oak Death (SOD) quarantine area. Plants species susceptible to *P. ramorum* and soil associated with the infected trees cannot be moved out of the area, unless heat treated to required specifications.

From 2001 to 2009, eradication treatments were completed on approximately 2,900 forested acres at an estimated cost of $5 million. From 2007 to 2009, approximately 60 new infested sites were found each of the two years, and in 2010, 83 new sites were found. To date in 2011, more than 100 new SOD sites have been found. It is believed that disease spread is occurring at such a rate due to consecutive years of wet weather, slow development of recognizable symptoms, and detection and resource constraints resulting in treatment delays. For more information, contact Alan Kanaskie at (503) 945-7397.

SOD has increased dramatically in areas surveyed during the spring 2011 fourth annual SOD Blitz, with increases up to three-fold of infection levels compared to 2010 data. Approximately 500 participants gathered nearly 10,000 samples from 2,000 trees covering at least 50,000 acres of California woodlands and parks. While not a scientific sample, it indicates that a higher than expected infection level is present in the San Francisco Peninsula as well as in the densely populated western hill slopes of the San Francisco East Bay. It also confirmed for the first time that the pathogen is now present in Carmel Valley Village as well as the valley floor of Napa Valley.

Sixteen different 2011 spring SOD Blitzes were organized by local communities in cooperation with UC Berkeley (and supported by the US Forest Service and the National Science Foundation) in Humboldt, Sonoma, Napa, Alameda, Contra Costa, San Francisco, San Mateo, Santa Clara, and Monterey Counties. Participants were trained to identify SOD symptoms on California bay laurel and tanoak leaves and to record sample locations during the 2-day long surveys. Samples were processed by the Garbelotto lab. Results, including maps showing the distribution of the disease, are available online at: http://nature.berkeley.edu/garbelotto/english/sodblitzresults2011.php (red indicates positive trees, while green indicates trees negative for the pathogen). A variety of follow-up activities, including local meetings, hands-on training sessions, and workshops are

being held by UC Berkeley to help people interpret the results and understand recommended management options (see Calendar of Events below).

NURSERIES

The USDA APHIS *P. ramorum* Program 2011, 3rd Quarter Summary (posted at: http://www.aphis.usda.gov/plant_health/plant_pest_info/pram/downloads/updates/2011/3rdqtr-Sept2011.pdf) reported 25 nursery-related *P. ramorum* confirmations from January to September 30, 2011 in the following states: CA(12)**,** OR (6), WA (5); SC (1); and CT (1 residential). Fourteen of the nurseries were interstate shippers and nine were retail. Positive plant detections were from the following plant species: *Camellia* (**31%);** *Rhododendron* (**34%);** *Pieris* **(5%);** *Viburnum* **(5%);** *Magnolia* **(5%);** *Osmanthus* (**3%);** *Gaultheria* **(3%);** *Cinnamonum* (**3%**); and 7 other species (11%).

RESEARCH

The USDA Forest Service, Pacific Southwest Research Station Sudden Oak Death/*P. ramorum* research program list of 2011 funded projects is now available at: http://www.fs.fed.us/psw/programs/sod/funding/FY2011PSWSODFunding.pdf. Eleven continuing projects were funded, for a total of $407,154. For more information, contact Susan Frankel at sfrankel@fs.fed.us.

Ramage, B.S.; Forrestel, A.B.; Moritz, M.A.; and O'Hara, K.L. 2011. Sudden oak death disease progression across two forest types and spatial scales. Journal of Vegetation Science. DOI: 10.1111/j.1654-1103.2011.01340.x.

Abstract: Questions: How is sudden oak death disease progression affected by forest type? Which specific factors influence mortality rates and patterns? How do these trends vary across spatial scales? Location: Point Reyes National Seashore, California, USA.

Methods: Sudden oak death, caused by the exotic pathogen *Phytophthora ramorum*, is affecting forests throughout coastal California. We investigated disease progression in tanoak (*Notholithocarpus densiflorus* syn. *Lithocarpus densiflorus*), the most susceptible species, in two distinct forest types: coast redwood (*Sequoia sempervirens*) and Douglas-fir (*Pseudotsuga menziesii* var. menziesii). Within each forest type, we used a variant of a split-plot design to sample proximate areas at two different stages of disease progression (relatively unaffected vs severely impacted), and used generalized linear mixed effects models to analyze these data.

Results: Annual mortality rates were much higher in Douglas-fir (10.1–26.2%) than in redwood (3.2–8.2%) forest, and data suggested that similarly divergent rates will continue into the future (proportions of surviving trees with disease symptoms remained constant from the beginning to the end of the study period). Across both forest types, survival probabilities were lower for tanoaks with larger diameters and tanoaks in plots (1/20 ha) and neighborhoods (3-m radius) with greater basal area of previously killed tanoak. All variables were significant when included in the same model, suggesting that

disease spread is occurring simultaneously at two local spatial scales. Several other biotic and abiotic variables were unrelated to tanoak survival probability.

Conclusions: We detected mortality rates that exceed any rates previously associated with sudden oak death, while demonstrating that these rates can vary substantially between adjacent forest types. However, because the Douglas-fir forests of our study area are adjacent to the ocean, which is somewhat uncommon for this forest type, our findings do not necessarily indicate that all Douglas-fir forests with a substantial tanoak component are at risk of similar impacts. Our data also suggest that, in both forest types, local patchiness in disease presence/severity is an ephemeral condition resulting primarily from stochastic processes (e.g. long-distance dispersal events), while intra-plot spread around infected trees is deterministic and probably inevitable. Our findings should inform scientists and managers throughout the world attempting to understand disease progression in regions recently invaded by *P. ramorum* (e.g. Europe) and/or affected by other exotic forest pathogens.

EDUCATION AND OUTREACH

The COMTF website's Education and Training Resources page has been updated. Reorganized into sections on Youth Activities, Activities for Educators, Handouts & Posters, and Training Resources, the page aims at educating diverse audiences about *P. ramorum* through a variety of avenues. Youth Activities contains a new interactive Flash animation developed from the "Can My Tree Catch the Flu" educational series (teaching school-aged children about SOD and techniques on how to prevent it) as well as a SOD-related word search, crossword, and jigsaw puzzle. Activities for Educators offers interactive and engaging projects for teachers to use, along with background information on *P. ramorum*. Handouts & Posters lists downloadable *P. ramorum*/SOD fact sheets, brochures, and posters in both English and Spanish, and a short course on the introduction, symptom recognition, diagnosis, sampling, regulations, and management of *P. ramorum*, as well as the *P. ramorum* Educate to Detect presentation, are available for download under Training Resources. Check out these new and updated resources and help spread the word about Sudden Oak Death.

CALENDAR OF EVENTS

10/5 - 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, or for questions, email Katie Palmieri, 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.

10/5 – 10/6 – The Seventh Meeting of the Continental Dialogue on Non-Native Forest Insects and Diseases**;** Boulder, Colorado; To register, go to: https://www.energymeetings.com/calendar/register.asp?CalendarID=11333. For more information, contact Debbie Lee by email or at (202) 965-6381, or Beth

Weaver by email or at (202) 965-6211. For more information about the Dialogue, go to: www.continentalforestdialogue.org.

10/10 – 10/14 - The 59th Western International Forest Disease Work Conference; Enzian Hotel, Leavenworth, WA. This meeting is intended for forest pathologists from western North America (and beyond); For more information, go to: www.fs.fed.us/foresthealth/technology/wif/index.htm. For questions, contact Greg Filip at gmfilip@fs.fed.us or (503) 808-2997.

10/15 –Sonoma/Marin SOD Blitz Community Meeting; UCCE Sonoma County; 133 Aviation Blvd., Santa Rosa; 10:00 – 11:00 a.m.; This meeting will discuss local results of the SOD Blitz and provide the latest information and recommendations for local SOD management, treatment options, and strategies. For more information, email Lisa Bell.

10/15 - Sonoma County Field Meeting; Bouverie Preserve; 13935 Sonoma Highway 12, Glen Ellen; 2:00 – 3:00 p.m.; This meeting will be held in the field and will discuss SOD management options and demonstrate treatment techniques. For more information, email Lisa Bell.

10/17 - Sonoma County Field Meeting; Spring Lake Regional Park; 5585 Newanga Avenue, Santa Rosa; 11:00 a.m. – 12:00 p.m.; This meeting will be held in the field and will discuss SOD management options and demonstrate treatment techniques. For more information, email Lisa Bell.

10/21 - Woodside/Portola Valley/South Skyline/Saratoga SOD Blitz Community Meeting; Portola Valley Town Hall; Portola Valley; 7:00 – 8:00 p.m.; This meeting will discuss local results of the SOD Blitz and provide the latest information and recommendations for local SOD management, treatment options, and strategies. For more information, email Debbie Mendelson.

10/26 - 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 Katie Palmieri 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.

10/28 – Napa SOD Blitz Community Meeting; Location TBA; 7:00 – 8:00 p.m.; This meeting will discuss local results of the SOD Blitz and provide the latest information and recommendations for local SOD management, treatment options, and strategies. For more information, email Bill Pramuk.

11/4 - Carmel Valley SOD Blitz Community Meeting; Garland Ranch Regional Park Museum Meeting Room (at the ranger station); 10:00 – 11:00 a.m.; This meeting will discuss local results of the SOD Blitz and provide the latest information and recommendations for local SOD management, treatment options, and strategies. For more information, email Tim Jensen.

11/8 – 11/11 - 2011 IUFRO Forest Protection Joint Meeting, Research Groups 7.02 – 7.03; Colonia del Sacramento, Uruguay; More information will be forthcoming. For questions, email Alina Greslebin.

11/9 - 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 10/26 listing above.

11/16 - Oakland SOD Blitz Community Meeting; Diamond Library; 3565 Fruitvale Avenue, Oakland, 7:00 – 8:00 p.m.; This meeting will discuss local results of the SOD Blitz and provide the latest information and recommendations for local SOD management, treatment options, and strategies. For more information, email Kimra McAfee.

6/18 – 6/22/12 – Sudden Oak Death Fifth Science Symposium; More information will be forthcoming.

9/9 – 9/14/12 – 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.