



## CALIFORNIA OAK MORTALITY TASK FORCE REPORT FEBRUARY 2012

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### MONITORING

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**In January 2012, a *P. ramorum*-positive site was confirmed in Mendocino County** a few miles north of MacKerricher State Park near Inglenook. This location is now the most northern coastal infestation in the county. The site includes a dense patch of tanoak with intermixed grand- fir overstory. Confirmed infections include tanoak boles and twig dieback. There are no bay trees in the immediate area. CAL FIRE will survey surrounding properties to delimit the outbreak once the landowners permit access.

**There were several new *P. ramorum* detections in Humboldt County during 2011**, all of which were discovered during annual stream monitoring conducted by the Rizzo lab at UC Davis, UCCE-Humboldt County, and numerous local collaborators.

Larabee Creek, a tributary to the main stem of the Eel River, tested positive for *P. ramorum* in the spring of 2011. Subsequent aerial surveys by USDA Forest Health Protection identified several small patches of tanoak mortality in forests close to the creek that provided survey crews with potential source locations to investigate. Follow-up ground surveys found only a small number of infected California bay laurel and tanoak. Surveys of several other patches of tanoak mortality on the ridge south of Larabee Creek are pending landowner permission. While the Eel River watershed has long been infested with *P. ramorum*, the detection in Larabee Creek indicates the anticipated northward and eastern spread of the pathogen has begun. The nearest known terrestrial infestation is approximately four miles away at Eel Rock (confirmed since 2008), and may be the source of the infestation.

Grizzly Creek, a tributary to the Van Duzen River, also tested positive for *P. ramorum* in the spring of 2011. This is the first detection of *P. ramorum* in the Van Duzen River watershed, a component of the larger Eel River Basin. Ground crews have not yet determined the source of the stream detection. Follow-up aerial surveys of the surrounding area by USDA Forest Health Protection have identified a few dead tanoak trees, but these trees have not yet been tested for *P. ramorum* as access in the watershed is limited by an impassible road that is expected to be fixed soon.

*P. ramorum* was also detected at four stream monitoring sites within the Mattole River watershed of southern Humboldt County: Mattole Canyon Creek and Crooked Prairie Creek as well as in the Mattole River at Ettersburg Bridge and at Whitethorn. The pathogen was also isolated from California bay laurel along Fire Creek (further up the Blue Slide Creek watershed from Crooked Prairie Creek) in spring 2011. The new positive site in the Mattole River at Whitethorn is the southernmost positive detection in the watershed and indicates that the pathogen may be spreading into the far southwestern corner of Humboldt County. Targeted stream monitoring during the winter/spring of 2012 will help determine the extent of pathogen invasion into this region.



**Washington's 2011 *P. ramorum* early detection survey of forests resulted in the** identification of three new *P. ramorum*-positive locations: a stream that feeds into the Sammamish River (which has been *P. ramorum* positive since 2007); a watershed sub-basin adjoining the Sammamish River; and a Lewis County stream in a forested area. None of the finds were in association with streamside plant infections. In total, there were 16 baiting traps in nine western Washington streams in 2011. All baited streams were associated with nurseries previously identified with *P. ramorum*-positive plant stock.

#### **REGULATIONS**

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**Effective March 1, 2012, the USDA Animal and Plant Health Inspection Service will** add eight plants to the list of *P. ramorum* associated hosts: *Ilex cornuta* (Buford holly, Chinese holly, horned holly); *Illicium parviflorum* (yellow anise); *Larix kaempferi* (Japanese larch); *Magnolia denudate* (lily tree); *Mahonia nervosa* (creeping Oregon grape); *Molinadendron sinaloense*; *Trachelospermum jasminoides* (star jasmine, Confederate jasmine); and *Veronica spicata* Syn. *Pseudolysimachion spicatum* (spiked speedwell). In addition, APHIS is moving *Cinnamomum camphora* from the associated host list to the proven and restricted host list based on new information received from the California Department of Food and Agriculture. These changes bring the official U.S. *P. ramorum* host list to 137 plants. As of March 1, 2012 any nurseries within the regulated and quarantined areas containing these newly listed plants must be properly inspected, sampled, and tested in order to be able to move any plants interstate. For more information, go to:

[http://www.aphis.usda.gov/plant\\_health/plant\\_pest\\_info/pram/downloads/pdf\\_files/SPRO\\_20DA-2012-03.pdf](http://www.aphis.usda.gov/plant_health/plant_pest_info/pram/downloads/pdf_files/SPRO_20DA-2012-03.pdf).

**The Oregon Department of Agriculture (ODA) has proposed amendments to** Oregon's *P. ramorum* quarantine in response to confirmation of the pathogen north of the current quarantine boundary near Cape Sebastian in Curry County. If approved, the boundary for the quarantine would adjust northward to include the new site and a buffer area of approximately three miles. With the expansion of the quarantine, ODA proposed to define disease-free (more than 1/4 mile from known infections) and generally-infested areas within the quarantine. Provisions were proposed that would allow use of tanoak logs and firewood from disease-free areas as it is believed that encouraging use of tanoak should help slow the spread of the disease and lessen the impact on residents. A public hearing was held in Gold Beach on January 24, 2012. The public comment period closed January 31, 2012. ODA is awaiting the decision of the Hearings Officer.

**Porter, R.D. and Robertson, N.C. 2011 [Tracking Implementation of the Special Need Request Process Under the Plant Protection Act](#).** Environmental Law Reporter. Pages 11000 – 11019.

#### **FEATURED RESEARCH**

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**Ireland, K. 2012. “*Phytophthora ramorum*: susceptibility of Australian plants, potential geographic range and science into policy and management.”** PhD thesis. Murdoch University, Western Australia.



A transdisciplinary approach was taken to understanding the potential threat of an incursion of the exotic plant pathogen, *Phytophthora ramorum*, into Australia. The study aimed to: (a) provide an understanding of the foliar, branch, and bole susceptibility to *P. ramorum* and sporangia producing potential of a broad range of Australian plant species; (b) develop a climate-based model of the potential geographic range of the pathogen; and (c) analyze the effectiveness of integration of scientific knowledge between European and North American policy and management responses to *P. ramorum*.

The study extended the known potential host range for *P. ramorum*, with nine out of the 70 native Australian species tested identified as being highly susceptible in foliar and/or branch/bole inoculations (Ireland *et al.* 2012a, b). The study also defined the pathogen's potential geographic range, confirming it as a potential threat to Australian plant industries and ecosystems. Analysis of 'boundary arrangements' in current use to communicate *P. ramorum* science into policy indicated that a number of arrangements are in place, many of which may be applicable to the Australian situation, although it was identified that further research is needed to properly ascertain the relative benefits of these arrangements. These results will allow regulators to more effectively target high risk areas for early detection surveillance and assist in development of appropriate quarantine policies and protocols globally.

Journal papers on the susceptibility component of the thesis study have been published recently online (see below; Ireland *et al.* 2012a, b) and another manuscript outlining the CLIMEX risk model for *P. ramorum* has been prepared and will be submitted for review in the near future. Contact Kylie Ireland, k.b.ireland@gmail.com, for any further information.

The project was supported by the Australian Government's Cooperative Research Centers Program, through the Cooperative Research Centre for National Plant Biosecurity, with additional funding from the Department of Sustainability, Environment, Water, Population and Communities. All inoculation studies were conducted at the laboratory of David Rizzo, University of California, Davis, and plant material was kindly provided by the Midpeninsula Regional Open Space District, UC Davis Arboretum, UC Berkeley Botanical Gardens, UC Santa Cruz Arboretum and the San Francisco Strybing Arboretum.

Thesis Publications:

- Ireland, K.B.; Hüberli, D.; Dell, B.; Smith, I.W.; Rizzo, D.M.; and Hardy, G.E. St J. (Online; 2012a). "[Potential susceptibility of Australian native flora to NA2 isolate of \*Phytophthora ramorum\* and pathogen sporulation potential.](https://doi.org/10.1111/j.1439-0329.2011.00755.x)" *Forest Pathology*. DOI: 10.1111/j.1439-0329.2011.00755.x.
- Ireland, K.B.; Hüberli, D.; Dell, B.; Smith, I.W.; Rizzo, D.M.; and Hardy, G.E. St J. (Online; 2012b). "Potential susceptibility of Australian native plant species to branch dieback and bole canker diseases of *Phytophthora ramorum*." *Plant Pathology*. DOI: 10.1111/j.1365-3059.2011.02513.x

**RESEARCH**

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**Cobb, R.C.; Chan, M.N.; Meentemeyer, R.K.; and Rizzo, D.M. 2011. Common Factors Drive Disease and Coarse Woody Debris Dynamics in Forests Impacted by Sudden Oak Death. Ecosystems. DOI: 10.1007/s10021-011-9506-y.**

Abstract: Disease ecology has made important steps in describing how epidemiological processes control the impact of pathogens on populations and communities but fewer field or theoretical studies address disease effects at the ecosystem level. We demonstrate that the same epidemiological mechanisms drive disease intensity and coarse woody debris (CWD) dynamics in natural forest ecosystems impacted by an emerging disease. Sudden oak death (causal agent, *Phytophthora ramorum*) has caused mortality of tanoak (*Notholithocarpus densiflorus*) on a spatial scale and rate comparable to other major North American forest diseases caused by invasive pathogens. In pathogen invaded stands, mean CWD masses were 22.4 Mg ha<sup>-1</sup> of standing dead tanoak (snags) and 11.5 Mg ha<sup>-1</sup> in logs compared to 0.27 and 1.16 Mg ha<sup>-1</sup> of snags and logs in an uninvaded stand. Within invaded stands variation in CWD mass and accumulation rates were largely driven by the distribution of pre-disease tanoak biomass and the densities of infected tanoak and California bay laurel (*Umbellularia californica*) which jointly determine *P. ramorum* sporulation and disease emergence rates. In a narrow range of community and host characteristics sudden oak death can result in woody debris dynamics similar to discrete disturbances such as fire and forest harvest but it is more common to have lower maximum amounts with slower rates of accumulation than these better studied disturbances. Our results indicate that models of CWD dynamics need to integrate epidemiological processes to predict realistic ecosystem impacts and lead to management applications for forest pathogens.

**Filipe, J.A.N.; Cobb, R.C.; Meentemeyer, R.K.; Lee, C.A.; Valachovic, Y.S.; Cook, A.R.; Rizzo, D.M.; and Gilligan, C.A. 2012. Landscape Epidemiology and Control of Pathogens with Cryptic and Long-Distance Dispersal: Sudden Oak Death in Northern Californian Forests. PLoS Comput Biol 8(1): e1002328. DOI: 10.1371/journal.pcbi.1002328.**

Abstract: Exotic pathogens and pests threaten ecosystem service, biodiversity, and crop security globally. If an invasive agent can disperse asymptotically over long distances, multiple spatial and temporal scales interplay, making identification of effective strategies to regulate, monitor, and control disease extremely difficult. The management of outbreaks is also challenged by limited data on the actual area infested and the dynamics of spatial spread, due to financial, technological, or social constraints. We examine principles of landscape epidemiology important in designing policy to prevent or slow invasion by such organisms, and use *Phytophthora ramorum*, the cause of sudden oak death, to illustrate how shortfalls in their understanding can render management applications inappropriate. This pathogen has invaded forests in coastal California, USA, and an isolated but fast-growing epidemic focus in northern California (Humboldt County) has the potential for extensive spread. The risk of spread is enhanced by the



pathogen's generalist nature and survival. Additionally, the extent of cryptic infection is unknown due to limited surveying resources and access to private land. Here, we use an epidemiological model for transmission in heterogeneous landscapes and Bayesian Markov-chain-Monte-Carlo inference to estimate dispersal and life-cycle parameters of *P. ramorum* and forecast the distribution of infection and speed of the epidemic front in Humboldt County. We assess the viability of management options for containing the pathogen's northern spread and local impacts. Implementing a stand-alone host-free "barrier" had limited efficacy due to long-distance dispersal, but combining curative with preventive treatments ahead of the front reduced local damage and contained spread. While the large size of this focus makes effective control expensive, early synchronous treatment in newly-identified disease foci should be more cost-effective. We show how the successful management of forest ecosystems depends on estimating the spatial scales of invasion and treatment of pathogens and pests with cryptic long-distance dispersal.

**Garbelotto, M and Pautasso, M. 2011. Impacts of exotic forest pathogens on Mediterranean ecosystems: four case studies.** *European Journal of Plant Pathology*. DOI 10.1007/s10658-011-9928-6.

Abstract: Mediterranean ecosystems are hotspots of biodiversity. Because of a coincidence of high species richness and human presence, Mediterranean biodiversity is particularly threatened by processes such as habitat degradation, fragmentation and loss, pollution, climate change and introduction of invasive species. Invasive tree pathogens are among the problematic exotic species of California, Chile, the Mediterranean, South Africa and Australia. In this review, we provide an update on a selection of non-native tree pathogens currently posing a threat in Mediterranean ecosystems. The impact of exotic forest pathogens range from large-scale tree and shrub mortality in native ecosystems (*Phytophthora ramorum* on the West Coast of the USA) to disruption of plantations of exotic (e.g., *Seiridium cardinale* on planted Monterey cypress in California, *Fusarium circinatum* on Monterey pine worldwide) and native trees (introduction of the North American *Heterobasidion irregulare* in stone pine woodland in Italy). Genetic analyses are instrumental in improving our understanding and management of these outbreaks. There is a need for more empirical data on how novel pathosystems are likely to develop under novel climates, as well as interdisciplinary collaborations among forest pathologists, theoretical modelers and climatologists. The magnitude of the observed effects of some exotic tree diseases makes it important to try and minimize the risk of the inadvertent movement of plant pathogens when planning assisted migration activities to enable plant species to cope with rapid climate change.

**Rizzo, D.M.; Meentemeyer, R.K.; and Garbelotto, M. 2011. The Emergence of *Phytophthora ramorum* in North America and Europe.** National Research Council. *Fungal Diseases: An Emerging Threat to Human, Animal, and Plant Health: Workshop Summary*. Washington, DC: The National Academies Press. Appendix A, pages 312 – 324. The book in its entirety can be accessed for free by going to: [http://www.nap.edu/catalog.php?record\\_id=13147](http://www.nap.edu/catalog.php?record_id=13147).



**Shishkoff, N. 2011. A Test System to Quantify Inoculum in Runoff from *Phytophthora ramorum*-Infected Plant Roots.** *Phytopathology*, Volume 101:12, 1457-1464. Available online at: <http://dx.doi.org/10.1094/PHYTO-09-10-0260>.

Abstract: Foliar hosts of *Phytophthora ramorum* are often susceptible to root infection but the epidemiological significance of such infections is unknown. A standardized test system was developed to quantify inoculum in runoff from root-infected *Viburnum tinus* 'Spring Bouquet' or *Rhododendron* 'Cunningham's White' cuttings. Cuttings of both species gave off a maximum amount of inoculum 1 to 3 weeks after inoculation. The greatest amount of inoculum was recovered from *Viburnum* roots that were 48 to 70 days old at the time of inoculation, or roots incubated at 15 to 20 °C rather than 25 °C. Inoculum in runoff from inoculated *Viburnum* roots was similar for four different isolates of *P. ramorum* representing both the NA1 and EU1 lineages. When *Rhododendron* cuttings were inoculated with *P. ramorum*, *P. citricola*, or *P. cactorum*, inoculum of all three pathogens was recovered from runoff, with the highest amount recovered from plants inoculated with *P. citricola*, followed by the other two. Compared with the other two pathogens, *P. ramorum* colonized root tissue to a smaller extent. The epidemiology of root infection by *P. ramorum* is important in itself but the assay might lend itself for use in risk analysis for root infection of other plant species and evaluation of control measures, and also shed light on other root-infecting *Phytophthora* spp.

#### **2011 NURSERY SUMMARIES**

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**In 2011, the California Department of Food and Agriculture processed 20,443 *P. ramorum* compliance samples from 1,696 nurseries. *P. ramorum* was detected in 12 nurseries as a result of compliance, trace-back, and nursery stock cleanliness inspections. All of the positive nurseries under compliance for interstate shipping underwent the USDA Confirmed Nursery Protocol (CNP). In addition, during an unrelated inspection, *Molinadendron sinaloense* was found to have *P. ramorum* symptoms in August by a county inspector. It was confirmed to be *P. ramorum* positive by USDA and classified as an associated host on January 25, 2012.**

Positive plants in 2011 included: *Camellia sasanqua* 'Jean May,' *Camellia sasanqua* 'Showa No Sakae,' *Camellia japonica* 'Red,' *Camellia japonica* (mixed), *Rhododendron* sp., *Camellia sasanqua* 'Chansonette,' *Prunus laurocerasus*, *Osmanthus heterophyllus*, *Pieris japonica* 'Forest Flame,' *Camellia japonica*, *Cinnamomum camphora*, *Pieris forrestii*, *Rhododendron* sp., *Camellia japonica*, *Camellia japonica* 'Mathotiana,' *Trachelospermum jasminoides*, *Magnolia grandiflora*, *Camellia japonica* 'Debutante,' *Camellia*, *Camellia sasanqua* 'Showa No Sakae,' *Cinnamomum camphora*, *Rhododendron* 'Bruce Brechtville.'

**The Oregon Department of Agriculture completed testing for the 2011 *P. ramorum* Federal Order Survey on 23,432 samples collected from 588 nursery grower locations. *P. ramorum* was detected in six nurseries in 2011, infecting *Rhododendron*, *Viburnum*, *Camellia*, and *Pieris* plants. The pathogen was also detected in the soil substrate at one nursery, the soil substrate and potting media associated with an infected plant at another**



nursery, and in potting media associated with infected plants at two other nurseries. Four of these six nurseries were positive for *P. ramorum* in previous years. All nurseries have undergone the USDA CNP.

The ODA also completed testing on 5,562 samples collected from 121 Christmas tree growers in 2011. Christmas tree plantations in Benton, Clackamas, Curry, Deschutes, Douglas, Lane, Linn, Marion, Polk, Washington, and Yamhill Counties were surveyed. *P. ramorum* was not detected at any of the sites.

#### **RELATED ISSUES**

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**A group of approximately 70 scientists from 17 countries are asking trade policy makers around the globe to phase out international trade in high-risk plants that put forest health at high risk while offering limited economic benefit.** Called the “Montesclaros Declaration,” the forest scientists developed their proposal following an IUFRO meeting in Spain in 2011. The complete Montesclaros Declaration can be found at:

<http://www.iufro.org/science/divisions/division-7/70000/publications/montesclaros-declaration/>. Individuals who wish to express their endorsement can send an email to [noliveplants@gmail.com](mailto:noliveplants@gmail.com) with their contact information. The Declaration is explained in: Bockerhoff, E. December 2011. IUFRO Spotlight #3, End Trade in Detrimental Ornamentals to Save Forests. IUFRO Deputy Coordinator of Division 7 (SCION, New Zealand). Available online at: <http://www.iufro.org/media/iufro-spotlights/spotlight-3/>.

#### **RELATED RESEARCH**

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**Martin, F.N. and Coffey, M.D. 2012. Mitochondrial Haplotype Analysis for Differentiation of Isolates of *Phytophthora cinnamomi*.** *Phytopathology*, Vol. 102, No. 2: 229-239. <http://dx.doi.org/10.1094/PHYTO-04-11-0115>.

#### **MEETINGS**

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**The Fifth Sudden Oak Death Science Symposium (SOD 5) will be held June 19 – 21, 2012** at the Sheraton Sonoma County, Petaluma. Bringing together scientific and management communities from throughout the world working on *P. ramorum* and SOD, the Symposium will provide an update on the state of our knowledge about this important pathogen and its associated diseases in forest, urban, nursery, and landscape settings. The Call for Papers is currently out with a deadline of February 17<sup>th</sup>. For more information, access the Symposium website at: <http://ucanr.org/sites/sod5/>.

#### **EDUCATION**

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**Fourteen Sudden Oak Death (SOD) Blitzes are planned for coastal California in 2012.** Through the Garbelotto lab at UC Berkeley, and funded by the USDA Forest Service, these community outreach, citizen-science events are intended to educate impacted communities on *P. ramorum* and help identify local areas where SOD is present. Participants will be trained to identify disease symptoms, correctly sample symptomatic plants, and document sample locations. Samples will be taken to the Garbelotto lab for analysis. Laboratory results will be provided to the community for



their use. For more information on SOD Blitz opportunities, see the Calendar of Events below.

**"A Planner's Guide for Oak Woodlands" four-part webinar lecture series (with optional field trips)** will be offered this spring. Based on UC Agriculture and Natural Resources (ANR) Publication 3491, the goal of the series is to create an awareness of the ecological, economic, and social values of California's oak woodlands as well as present general planning strategies to ensure long-term oak woodland conservation. The target audience includes city, county, regional, and statewide planners, environmental consultants, conservation organizations, land trusts, resource professionals, elected officials, and non-governmental organizations. For more information, or to register, go to: [http://ucanr.org/sites/oak\\_range/Planners\\_Guidelines\\_for\\_Oak\\_Woodlands/](http://ucanr.org/sites/oak_range/Planners_Guidelines_for_Oak_Woodlands/).

### **RESOURCES**

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A new [Forest Phytophthoras of the World](#) website and a companion online journal called [Forest Phytophthoras](#) are now available. The website is a place to capture and share the latest information on *Phytophthora* species affecting forests around the globe, and the journal provides a permanent location for publication of peer-reviewed website articles concerning Forest Phytophthoras.

The website was developed, and is being maintained, by Jennifer Parke and Joyce Eberhart of Oregon State University with funding from the US Forest Service, Pacific Southwest Research Station. It currently features profiles of 10 forest *Phytophthora* species and the diseases they cause. Several additional species' profiles will be added each year. Management and educational materials for each species are included, often in multiple languages. Recent publications and news releases pertaining to forest Phytophthoras, upcoming conferences and events, contact information for *Phytophthora* experts worldwide, and access to archived conference proceedings for the IUFRO Working Party on Phytophthoras in Forest and Natural Ecosystem as well as the Sudden Oak Death Science Symposia are also provided. For non-experts, a disease finder, an illustrated glossary, a photo gallery, and a section on *Phytophthora* "basics" are available.

### **PERSONNEL**

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The University California Cooperative Extension office for Humboldt-Del Norte Counties has hired Maia Beh, Brendan Twieg, and Lenya Quinn-Davidsons to work with Yana Valachovic on Sudden Oak Death-related issues. Maia now serves as the new CA Oak Mortality Task Force Northern Outreach Coordinator. She recently completed her Master's Degree in Plant Pathology at UC Davis where she studied with Dave Rizzo and examined the impact of the 2008 wildfires in Big Sur on the survival of *P. ramorum*. Maia may be reached at [mmbeh@ucdavis.edu](mailto:mmbeh@ucdavis.edu) or (707) 445-7351. Brendan is conducting SOD research. His prior work includes research at the University of British Columbia on community ecology and physiology of mycorrhizal fungi in forestry contexts as well as below-ground influences on the success of assisted tree migration with climate change. Brendan may be reached at [bdtwieg@ucdavis.edu](mailto:bdtwieg@ucdavis.edu) or (707) 889-1301. Lenya is working on a range of forest health and management issues, including fire and SOD. She has a





broad background in natural resource management and fire, and is the Coordinator of the Northern California Prescribed Fire Council. She will also serve as the Northern Region Coordinator of the California Fire Science Delivery Consortium. Lenya may be reached at [lquinndavidson@ucdavis.edu](mailto:lquinndavidson@ucdavis.edu) or (707) 445-7351.

#### CALENDAR OF EVENTS

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- 2/8 - 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](mailto: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>.
- 2/17 - Call for Papers Deadline for the Fifth SOD Science Symposium.** For submission details, go to <http://ucanr.org/sites/sod5/files/134908.pdf>. For questions, contact Katie Palmieri at [kpalmieri@berkeley.edu](mailto:kpalmieri@berkeley.edu).
- 3/7 - 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 2/8 listing above.
- 3/8 - "A Planner's Guide for Oak Woodlands;" Part one in a four-part UC ANR** webinar lecture series: Overview of the Hardwood Rangeland Resource; For more information, see the Education section above or go to [http://ucanr.org/sites/oak\\_range/Planners\\_Guidelines\\_for\\_Oak\\_Woodlands/](http://ucanr.org/sites/oak_range/Planners_Guidelines_for_Oak_Woodlands/).
- 3/15 - "A Planner's Guide for Oak Woodlands;" Part two in a four-part UC ANR** webinar lecture series: Land Management Strategies; For more information, see the Education section above or go to [http://ucanr.org/sites/oak\\_range/Planners\\_Guidelines\\_for\\_Oak\\_Woodlands/](http://ucanr.org/sites/oak_range/Planners_Guidelines_for_Oak_Woodlands/).
- 3/22 - "A Planner's Guide for Oak Woodlands;" Part three in a four-part UC ANR** webinar lecture series: Planning Strategies; For more information, see the Education section above or go to [http://ucanr.org/sites/oak\\_range/Planners\\_Guidelines\\_for\\_Oak\\_Woodlands/](http://ucanr.org/sites/oak_range/Planners_Guidelines_for_Oak_Woodlands/).
- 3/29 - "A Planner's Guide for Oak Woodlands;" Part four in a four-part UC ANR** webinar lecture series: Sources of Assistance, Developing Plans; For more information, see the Education section above or go to [http://ucanr.org/sites/oak\\_range/Planners\\_Guidelines\\_for\\_Oak\\_Woodlands/](http://ucanr.org/sites/oak_range/Planners_Guidelines_for_Oak_Woodlands/).
- 4/11 - 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 2/8 listing above.
- 4/21 - "A Planner's Guide for Oak Woodlands" webinar registrant optional field** trip to Hopland Research and Extension Center; For more information, see the Education section above or go to [http://ucanr.org/sites/oak\\_range/Planners\\_Guidelines\\_for\\_Oak\\_Woodlands/](http://ucanr.org/sites/oak_range/Planners_Guidelines_for_Oak_Woodlands/).
- 4/21 – Marin County SOD Blitz; Initial meeting location will be at Dominican** University; For more information, contact Sibdas Ghosh at [Sibdas.ghosh@dominican.edu](mailto:Sibdas.ghosh@dominican.edu).



- 4/28 – East Bay (Berkeley) SOD Blitz; Initial meeting location will be in Berkeley;**  
For more information, contact Susan Schwartz at [F5creeks@aol.com](mailto:F5creeks@aol.com).
- 4/28 – East Bay (Orinda) SOD Blitz; Initial meeting location will be in Orinda;** For more information, contact Bill Hudson at [wllm@earthlink.net](mailto:wllm@earthlink.net).
- 5/1 - San Francisco SOD Blitz; Initial meeting will be at Golden Gate Park Presidio;** For more information, contact Christa Conforti at [CConforti@presidiotrust.gov](mailto:CConforti@presidiotrust.gov).
- 5/1 - San Francisco SOD Blitz; Initial meeting will be at Golden Gate Park;** For more information, contact Gloria Koch-Gonzalez at [Gloria.Koch-Gonzalez@sfgov.org](mailto:Gloria.Koch-Gonzalez@sfgov.org).
- 5/2 - 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 2/8 listing above.
- 5/5- "A Planner's Guide for Oak Woodlands" webinar registrant optional field trip to Sierra Foothill Research and Extension Center;** For more information, see the Education section above or go to [http://ucanr.org/sites/oak\\_range/Planners\\_Guidelines\\_for\\_Oak\\_Woodlands/](http://ucanr.org/sites/oak_range/Planners_Guidelines_for_Oak_Woodlands/).
- 5/5 - Carmel Valley SOD Blitz;** For more information, contact Tim Jensen at [tjensen@mprpd.org](mailto:tjensen@mprpd.org).
- 5/12 - Mount Tamalpais SOD Blitz;** For more information, contact Andrea Williams at [awilliams@marinwater.org](mailto:awilliams@marinwater.org).
- 5/12 - Napa SOD Blitz;** For more information, contact Bill Pramuk at [info@billpramuk.com](mailto:info@billpramuk.com).
- 5/19 - Sonoma SOD Blitz;** For more information, contact Lisa Bell at [lkbell@ucdavis.edu](mailto:lkbell@ucdavis.edu).
- 5/19 - Santa Cruz SOD Blitz;** For more information, contact Annie Murphie at [PLN400@co.santa-cruz.ca.us](mailto:PLN400@co.santa-cruz.ca.us).
- 5/26 - Los Alto Hills SOD Blitz;** For more information, contact Sue Welch at [sodblitz09@earthlink.net](mailto:sodblitz09@earthlink.net).
- 6/2 - Woodside/Portola Valley SOD Blitz;** For more information, contact Debbie Mendelson at [naturemend@sbcglobal.net](mailto:naturemend@sbcglobal.net).
- 6/2 - Atherton SOD Blitz;** For more information, contact Susan Finocchio at [susanfin@earthlink.net](mailto:susanfin@earthlink.net).
- 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. For more information, see the 2/8 listing above.
- 6/9 - South Skyline SOD Blitz;** For more information, contact Jane Manning at [skyline\\_sod@yahoo.com](mailto:skyline_sod@yahoo.com).
- 6/16 - Burlingame Hills SOD Blitz;** For more information, contact Steve Epstein at [steveepstein0206@gmail.com](mailto:steveepstein0206@gmail.com).
- 6/19 – 6/21/12 – 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](mailto:kpalmieri@berkeley.edu). For questions regarding registration, contact Janice Alexander at [jalexander@ucdavis.edu](mailto:jalexander@ucdavis.edu).

**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 M<sup>a</sup> Pérez Sierra at [aperesi@eaf.upv.es](mailto:aperesi@eaf.upv.es) or see <http://iufrophytophthora2012.org/>.