CALIFORNIA OAK MORTALITY TASK FORCE REPORT
NOVEMBER 2010

MANAGEMENT

2010 SOD Blitz results are now available online. Sponsored by the USDA Forest Service, State and Private Forestry, approximately 1,000 trees were sampled this year as a result of the blitzes, the most since the community-based outreach event first began in 2008. Key outcomes from this year's efforts included the identification of a few positive samples in Atherton and the return of the pathogen to the UC Berkeley campus. Findings also suggest southward movement of the pathogen in the Orinda area. Woodside and Portola Valley had more positive samples east of the 280 Freeway, the Marin County Tamalpais Valley neighborhood had increased pathogen activity, and there were several hotspots west of Healdsburg, Windsor, and east of Cotati (Sonoma County).

Results can be viewed in Google Earth (you will need to download the software if you do not have it), Google Maps, and Excel. When reviewing the maps, be sure to zoom in at low resolution. Sampled trees are often stacked, so positive trees may be hidden under negative trees. Note that while the presence of a *P. ramorum*-positive tree is significant, the absence of a positive tree does not necessarily mean the pathogen was not present; however, the larger the number of negative samples, the greater the likelihood that *P. ramorum* may not be in the area surveyed.

Blitz locations for the 2011 season are already being identified. If you are interested in organizing a SOD Blitz for your area in 2011, contact Matteo Garbelotto at matteog@berkeley.edu as soon as possible as available dates are limited.

Phytophthora ramorum*'s threat to the East Coast was discussed at the Address *P. ramorum Initiative breakout session held at Brandeis University, October 6, 2010, as part of the sixth meeting of the Continental Dialogue of Non-native Insects and Diseases. A poster and handout summarized what is known: The Sudden Oak Death pathogen has been detected in eight rivers in Mississippi, Alabama, Georgia, Florida, and North Carolina. These contaminated waterways are near *P. ramorum*-positive nurseries. Several of the streams are in areas identified by the USDA Forest Service as "high risk" for infestation due to the presence of susceptible vegetation and suitable climate. The group discussed preliminary plans for 2011, which may include a meeting for interested parties to learn more about the Forest Service "Sudden Oak Death Framework" and recommendations to the USDA Animal and Plant Health Inspection Service from interagency work groups on current *P. ramorum* regulations. The Address *P. ramorum* Initiative's goal is to prevent the spread of *P. ramorum* and work in a collaborative, proactive, cooperative manner. For more information, contact the Initiative co-leads: Ken Raucher, rauscherk@michigan.gov; Jerry Lee, JLee@monrovia.com; or Susan Frankel, sfrankel@fs.fed.us.

RESEARCH

Kliejunas, John T. 2010. Sudden oak death and *Phytophthora ramorum*: a summary of the literature. Gen. Tech. Rep. PSW-GTR-234. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 181 p. View and Print this Publication (3.5 MB)

Summary: Sudden oak death and *Phytophthora ramorum*, both first recognized about a decade ago, have been the subject of hundreds of scientific and popular press articles. This document presents a comprehensive, concise summary of sudden oak death and *P. ramorum* research findings and management activities. Topics covered include introduction and background, identification and distribution, the disease cycle, epidemiology and modeling, management and control, and economic and environmental impacts.

This publication is currently downloadable, or a free hardcopy can be ordered from the Forest Service (see instructions at http://www.fs.fed.us/psw/publications/documents/psw_gtr234/). A free CD version will be available in a few weeks.

Metz, M.; Frangioso, K.; Meentemeyer, R.; and Rizzo, D. *In press.* Interacting disturbances: Wildfire severity affected by stage of forest disease invasion. Ecological Applications. DOI: 10.1890/10-0419.1.

Abstract: Sudden oak death (SOD) is an emerging forest disease causing extensive tree mortality in coastal California forests. Recent California wildfires provided an opportunity to test a major assumption underlying discussions of SOD and land management: SOD mortality will increase fire severity. We examined pre-fire fuels from host species in a forest monitoring plot network in Big Sur, CA to understand the interactions between disease-caused mortality and wildfire severity during the 2008 Basin Complex wildfire. Detailed measurements of standing dead woody stems and downed woody debris one to two years prior to the Basin Fire provided a rare picture of the increased fuels attributable to SOD mortality. Despite great differences in host fuel abundance, we found no significant difference in burn severity between infested and uninfested plots. Instead, the relationship between SOD and fire reflected the changing nature of the disease impacts over time. Increased SOD mortality contributed to overstory burn severity only in areas where the pathogen had recently invaded. Where longer-term disease establishment allowed dead material to fall and accumulate, increasing log volumes led to increased substrate burn severity. These patterns help inform forest management decisions regarding fire, both in Big Sur and in other areas of California as the pathogen continues to expand throughout coastal forests.

Schornack, S.; van Damme, M.; Bozkurt, T.O.; Cano, L.M.; Smoker, M.; Thines, M.; Gaulin, E.; Kamoun, S.; and Huitema, E. 2010. Ancient class of translocated oomycete effectors targets the host nucleus. Proceedings of the National Academy of Sciences of the United States of America Vol. 107 No. 40. 17421–17426.

Abstract: Pathogens use specialized secretion systems and targeting signals to translocate effector proteins inside host cells, a process that is essential for promoting disease and parasitism. However, the amino acid sequences that determine host delivery of eukaryotic pathogen effectors remain mostly unknown. The Crinkler (CRN) proteins of oomycete plant pathogens, such as the Irish potato famine organism *Phytophthora infestans*, are modular proteins with predicted secretion signals and conserved N-terminal sequence motifs. Here, we provide direct evidence that CRN N termini mediate protein transport into plant cells. CRN host translocation requires a conserved motif that is present in all examined plant pathogenic oomycetes, including the phylogenetically divergent species *Aphanomyces euteiches* that does not form haustoria, specialized infection structures that have been implicated previously in delivery of effectors. Several distinct CRN C termini localized to plant nuclei and, in the case of CRN8, required nuclear accumulation to induce plant cell death. These results reveal a large family of ubiquitous oomycete effector proteins that target the host nucleus. Oomycetes appear to have acquired the ability to translocate effector proteins inside plant cells relatively early in their evolution and before the emergence of haustoria. Finally, this work further implicates the host nucleus as an important cellular compartment where the fate of plant–microbe interactions is determined.

NURSERIES

A workshop on *P. ramorum* soil and water detection for nursery inspectors and others was held at the Virginia Department of Agriculture and Consumer Services Plant Pathology Laboratory in Richmond, VA, October 5-7. Participants visited a local nursery and took soil and water samples, which were then taken to the lab and processed. Procedures for soil and water baiting, water filtration, and examination of cultures in the microscope were covered. Presentations included identification of *Phytophthora*, the *Phytophthora* life cycle, using soil and water monitoring to detect the spread of *P. ramorum* from nurseries, USDA APHIS protocols for soil and water surveys, and an update on the National Ornamental Research Site at Dominican University of California. Sponsored by USDA APHIS PPQ Eastern Region and the Virginia Department of Agriculture and Consumer Services, participants from Georgia, Maryland, North Carolina, Pennsylvania, and West Virginia were in attendance. For more information, contact Norm Dart at Norman.Dart@vdacs.virginia.gov.

RELATED RESEARCH

Balci, Y.; Long, R.P.; Mansfield, M.; Balser, D.; and MacDonald, W.L. 2010. Involvement of *Phytophthora* species in white oak (*Quercus alba*) decline in southern Ohio. Forest Pathology 40: 430–442. DOI: 10.1111/j.1439-0329.2009.00617.x.

Bezuidenhout, C.M.; Denman, S.; Kirk, S.A.; Botha, W.J.; Mostert, L.; McLeod, A. 2010. *Phytophthora* taxa associated with cultivated *Agathosma*, with emphasis on the *P. citricola* complex and *P. capensis* sp. nov. Persoonia 25: 32– 49. DOI: 10.3767/003158510X538371.

Elegbede, C.F.; Pierrat, J.C.; Aguayo, J.; Husson, C.; Halkett, F.; and Marçais, B. 2010. A statistical model to detect asymptomatic infectious individuals with an application in the *Phytophthora alni*-induced alder decline. Phytopathology 100:1262-1269.

Hong, C.; Gallegly, M.E.; Richardson, P. and Kong, P. 2010. *Phytophthora pini* Leonian resurrected to distinct species status. Mycologia. DOI: 10.3852/10-058.

Lo Giudice, V.; Raudino, F.; Magnano di San Lio, R.; Cacciola, S. O.; Faedda, R.; and Pane, A. 2010. First Report of a Decline and Wilt of Young Olive Trees Caused by Simultaneous Infections of *Verticillium dahliae* and *Phytophthora palmivora* in Sicily. Plant Disease, Disease Notes Volume 94, Number 11: 1372. DOI: 10.1094/PDIS-07-10-0480.

Rea, A.J.; Jung, T.; Burgess, T.I.; Stukely, M.J.C.; and St J. Hardy, G.E. 2010. *Phytophthora elongata* sp. nov., a novel pathogen from the *Eucalyptus marginata* forest of Western Australia. Australasian Plant Pathology 39: 477–491.

WWW.SUDDENOAKDEATH.ORG

The California Oak Mortality Task Force website has undergone a facelift. At the redesigned www.suddenoakdeath.org, you will still find all of the same information, publications, and links, but in an updated and streamlined format. This new web platform will also facilitate easier updating, enhancing, and expanding of future online resources. We welcome your input, so please visit the site, take a look around, and send us any feedback you may have via the "online survey" on the homepage under "News." If you have any questions or comments regarding the website, contact Janice Alexander at jalexander@ucdavis.edu.

KUDOS

Gary Chastagner, **Washington State University's Puyallup Research and Extension** Center plant pathology professor, was granted the 2010 National Christmas Tree Association's Outstanding Service Award. This recognition was given in response to his exceptional service to the Christmas tree industry through research into Christmas tree diseases, including the epidemiology and management of *P. ramorum* in Christmas trees and forests and factors that affect the postharvest quality of Christmas trees.

EDUCATION AND OUTREACH

The second of two "Predicting Behavior of Forest Diseases as Climate Changes" webinars will be offered 12/2/10. The free online workshop will address the potential synergistic effects of climate change and forest diseases on tree and forest health. Speakers will present case studies of sudden aspen decline, Swiss needle cast, Alaska yellow cedar decline, and other diseases. Management options to minimize the undesirable effects of forest diseases as climate changes will also be discussed. The hour will conclude with an open discussion among speakers and participants. For more

information, see the "Calendar of Events" below.

RESOURCES

The online OakMapper mapping tool just got easier! Instead of finding static, pre-made maps for printing, you can create your own PDF map of any area you choose by clicking on the "Service" tab at the top of the www.oakmapper.org homepage and then the "Print Map" button on the right. County and state maps are also still available from OakMapper for printing on an annual basis at http://www.oakmapper.org/services/extents.

The Sudden Oak Death youth education program "Can My Tree Catch the Flu?" is now available online at the UCCE Marin 4-H. This interactive curriculum helps increase youth awareness of Sudden Oak Death by likening it to catching the flu. Through a progressive series of inquiry-based activities, participants learn about diseased trees as well as how their own behavior can impact the health of the forest environment. For additional information on this project, please contact Janice Alexander at jalexander@ucdavis.edu or (415) 499-3041.

CALENDAR OF EVENTS

11/6 – Carmel Valley Community Meeting – Responding to the Threat of Sudden Oak Death; 2:00 – 4:00 p.m.; Hidden Valley Theatre; 88 W Carmel Valley Rd; Carmel Valley; For more information on the meeting, contact Kerri Frangioso at (831) 620-1098 or kfrangioso@ucdavis.edu.

11/16 – 17 – 59th Annual Meeting of the California Forest Pest Council; Wildland Fire Training and Conference Center; 3237 Peacekeeper Way; McClellan; Agenda and registration information can be found at http://caforestpestcouncil.org/2010/08/2010-california-forest-pest-council-59th-annual-meeting/. For more information contact Kim Camilli at (805) 550-8583 or kim.camilli@fire.ca.gov.

11/19 –Coast Redwood Forests in a Changing California: A Symposium for Scientists and Managers paper submission deadline; For more information, go to http://ucanr.org/sites/redwood.

12/2 – Predicting Behavior of Forest Diseases as Climate Changes webinar; 9:30- 10:30 a.m. PST; The toll-free call-in number and webinar link will be provided upon registration. Space is limited, so please register early at http://ucanr.org/wwetac_registration. For more information, contact Janice Alexander at jalexander@ucdavis.edu or (415) 499-3041.

6/21 – 6/23/2011 - Coast Redwood Forests in a Changing California: A Symposium for Scientists and Managers; University of California, Santa Cruz; For more information on the conference, go to http://ucanr.org/sites/redwood.