



## CALIFORNIA OAK MORTALITY TASK FORCE REPORT MAY 2005

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### NURSERIES

**On April 8, the Beltsville USDA Animal and Plant Health Inspection Service** (APHIS) National Plant Germplasm and Biotechnology Lab confirmed the presence of *P. ramorum* from an Oregon jasmine plant sample. Jasmine is not yet on the APHIS *P. ramorum* host or associated host list. The symptomatic plant was identified during a non-host nursery inspection, and then submitted to ODA for testing. DNA samples were forwarded from ODA to Beltsville. The sample is nested and real time PCR-positive and sequencing of the DNA appears to confirm the finding; ODA has not been able to culture *P. ramorum*. As an initial find in a new species, ODA, APHIS, and others are working to determine jasmine's status as a host of *P. ramorum*. ODA will implement regulatory action at the facility.

**Monrovia has implemented a plant replacement program for retail customers whose plants originated from their Azusa facility.** Customers can either obtain home garden camellia testing through their local master gardeners or county officials (with credit or replacement of infected or potentially infected camellias), or they may contact their local garden center for a credit or replacement plant and instructions on the proper disposal of recently purchased camellias. These plants should **NOT** be brought to garden centers. For more information on Monrovia's program, go to the [Monrovia website](http://www.monrovia.com/monroviaweb.nsf/8c104835579b67e18825685f006acdf8/3101d5106a55392688256e7500774e59!OpenDocument) at: <http://www.monrovia.com/monroviaweb.nsf/8c104835579b67e18825685f006acdf8/3101d5106a55392688256e7500774e59!OpenDocument>.

**The Oregon Department of Agriculture (ODA) recently identified 2 *P. ramorum*-positive nurseries** while conducting Federal Order compliance surveys. To date, ODA has inspected more than 1,400 nurseries as part of the compliance survey process. One of the positives was at a small retail nursery in Washington County and the other a production and wholesale facility in Clackamas County. The Washington County site was found to have infected *Pieris japonica*, while the Clackamas County site was found to have infected *Rhododendron* 'Unique.' ODA has taken regulatory action at the sites and has completed delimiting surveys. DNA has been sent to Beltsville for confirmation.

Oregon also reported 4 trace-forward positives in residential settings. The residential finds originated at a nursery found positive in 2004. Delimitation surveys confirmed the disease has apparently not spread to other plants already in the landscapes. Infected plants have been removed and incinerated.

**Investigations continue at the Sacramento retail nursery found *P. ramorum*-positive in March.** The California Department of Food and Agriculture (CDFA) has reported additional positives since the initial find, including rhododendron, camellia, viburnum, and pieris plants. The nursery owners also operate a production and wholesale nursery; to date, it has not been found infested. CDFA has conducted intensive re-sampling at the



wholesale nursery; results are pending. Regulatory action is underway at the positive retail site.

**CDFA has made 32 *P. ramorum*-positive California nursery detections to date in 2005.** Twenty-two of the confirmations were found outside of the 14-county quarantined area, while ten were found within it. Positive detections throughout California, by activity, are as follows: trace-forward investigations - 17; nursery stock cleanliness inspections - 3; compliance agreement inspections - 11, and trace-back investigations - 1. Of those nurseries found to be infested, seven had previously tested positive for the pathogen.

### REGULATIONS

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**The first *P. ramorum*-positive *Acer pseudoplatanus* (Planetree maple) tree has been confirmed** at one of the *P. ramorum* woodland garden sites in Cornwall, UK. All four of the trees in close proximity to the Planetree maple—*Fagus sylvatica*, *Cornus*, *Acer laevigatum*, and *Pieris*—also appear to be symptomatic, although testing has not been completed. *A. pseudoplatanus* had previously been shown in UK laboratory testing to be potentially susceptible to the pathogen; however, this is the first tree found naturally infected in the field. This new host joins six others (see COMTF February 2005 report) that are pending addition to the USDA APHIS host and associated host list. Once included on the US list, these plants will fall under federal *P. ramorum* regulations.

**The UK has completed Koch's postulates on the following associated hosts:** sweet chestnut (*Castanea sativa*), Holm oak (*Quercus ilex*), and European ash (*Fraxinus excelsior*). Following USDA APHIS review and approval, these associated hosts will be moved to the USDA *P. ramorum* host list.

**The Canadian Food Inspection Agency (CFIA) issued an updated *P. ramorum* directive** March 1, 2005, superseding the 9/25/03 order. The new “Phytosanitary Requirements to Prevent the Entry of *Phytophthora ramorum*” policy was revised based on the USDA APHIS 12/21/04 emergency order. As a result, Canada has dropped its emergency border lookout for propagative and non-propagative material that was not permitted into Canada from California. Under the new directive, non-propagative material, including cut flowers from non-quarantined counties are free to move into Canada. Additionally, propagative material from non-quarantine counties in California, Oregon, and Washington are allowed entry into Canada. In the new CFIA directive, Canada will still regulate for hosts at the genus level. Soil and related matter or growing media either alone or in association with plant material, as well as all non-manufactured wood products with bark of the regulated genera, including logs, bark, bark chips, bark mulch, pulpwood, and firewood are also still regulated. To access the new CFIA directive, go to: <http://www.inspection.gc.ca/english/plaveg/protect/dir/d-01-01e.shtml>. For more information on the directive, contact Rob Ormrod, CFIA, at: [ormrodr@inspection.gc.ca](mailto:ormrodr@inspection.gc.ca), or via phone at (250) 470-4893. For more information on *P. ramorum* regulatory compliance issues, contact your local regulatory official.



The APHIS Plant Protection and Quarantine (PPQ) Center for Plant Health Science and Technology (CPHST) has provisionally approved a second lab to conduct nested PCR testing on *P. ramorum* samples. The laboratory of the USDA Agriculture Marketing Service in Gastonia, North Carolina joins the Washington State Department of Agriculture as the two facilities currently approved. CPHST has begun the approval process at 13 other labs, with 9 additional labs applying to the program for consideration.

#### FUNDING

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USDA APHIS has been provided \$9.5 million in emergency funds through the USDA Commodity Credit Corporation to help support *P. ramorum* activities in 2005. The majority of the funding will be used to support the national nursery survey in all 50 states, as well as the required regulatory inspections in California, Oregon, and Washington. It will also be used to fund educational outreach efforts and short-term methods development in support of program activities.

#### RESOURCES

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***Phytophthora ramorum*: Integrative Research and Management of an Emerging Pathogen in California and Oregon Forests.** David Rizzo, Matteo Garbelotto, Everett Hansen. Annual Reviews, Phytopathology. 2005. 43: (in press).

*Phytophthora ramorum*, causal agent of sudden oak death, is an emerging plant pathogen first observed in North America associated with mortality of tanoak (*Lithocarpus densiflorus*) and coast live oak (*Quercus agrifolia*) in coastal forests of California during the mid-1990s. The pathogen is now known to occur in North America and Europe and have a host range of over 40 plant genera. Sudden oak death has become an example of unintended linkages between the horticultural industry and potential impacts on forest ecosystems. This paper examines the biology and ecology of *P. ramorum* in California and Oregon forests as well as discusses research on the pathogen in a broader management context.

**Transmission of *Phytophthora ramorum* in Mixed-Evergreen Forest in California.** Davidson, J. M., Wickland, A. C., Patterson, H. A., Falk, K. R., and Rizzo, D. M. 2005. Phytopathology 95:587-596.

Abstract: During 2001 to 2003, the transmission biology of *P. ramorum*, the causal agent of sudden oak death, was studied in mixed-evergreen forest, a common forest type in northern, coastal California. Investigation of the sources of spore production focused on coast live oak (*Quercus agrifolia*) and bay laurel (*Umbellularia californica*), dominant hosts that comprised 39.7 and 46.2 % of the individuals at the study site, respectively. All tests for inoculum production from the surface of infected coast live oak bark or exudates from cankers were negative. In contrast, sporangia and chlamydospores were produced on the surface of infected bay laurel leaves. Mean number of zoospores produced from infected bay laurel leaves under natural field conditions during rainstorms was  $1,173.0 \pm \text{SE } 301.48$ , and ranged as high as 5,200 spores/leaf. *P. ramorum* was recovered from rainwater, soil, litter, and streamwater during the mid- to late rainy season



in all 3 years of the study. *P. ramorum* was not recovered from sporadic summer rains or soil and litter during the hot, dry summer months. Concentrations of inoculum in rainwater varied significantly from year to year and increased as the rainy season progressed for the two complete seasons that were studied. Potential dispersal distances were investigated for rainwater, soil, and streamwater. In rainwater, inoculum moved 5 and 10 m from the inoculum source. For soil, transmission of inoculum was demonstrated from infested soil to bay laurel green leaf litter, and from bay laurel green leaf litter to aerial leaves of bay laurel seedlings. One-third to one-half of the hikers tested at the study site during the rainy season also were carrying infested soil on their shoes. In streamwater, *P. ramorum* was recovered from an unforested site in pasture  $\approx$  1 km downstream of forest with inoculum sources. In total, these studies provide details on the production and spread of *P. ramorum* inoculum in mixed-evergreen forest to aid forecasting and managing disease transmission of this environmentally destructive pathogen.

**The COMTF now has a [Spanish translation of Sudden Oak Death guidelines for tree care professionals](#), as well as a [Spanish version of the general Sudden Oak Death fact sheet](#). Both documents are available as PDFs on the COMTF website.**

#### **EDUCATION**

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**The COMTF is offering a free all day *Phytophthora ramorum*/Sudden Oak Death** training session on Tuesday, May 24, 2005 at City Team Camp May-Mac in Felton. The morning classroom portion of the training includes a disease update and overview, the latest information on pathogen diagnosis and sampling in both wildland and nursery settings, updated wildland and nursery management information, and a panel discussion. The afternoon field component will provide attendees with an opportunity to see symptoms, diagnosis, and sampling, as well as treatments, sanitation, and best management practices in a field setting. For more information on the training session, or to register, go to the COMTF website at: [www.suddenoakdeath.org](http://www.suddenoakdeath.org) or contact Katie Palmieri at [palmieri@nature.berkeley.edu](mailto:palmieri@nature.berkeley.edu).

**Native Americans are among the groups most affected by the impacts of *P. ramorum*.** Tanoak, a heavily impacted host of *P. ramorum*, provides food and medicine, and is a source of spirituality for many of California's Tribes. Other host plants, such as California bay laurel, huckleberry, and salmonberry, are also important food sources, as well as used in cultural practices. To address the needs of California Tribes dealing with *P. ramorum*, the COMTF has been working in cooperation with Tribal members and a number of groups and agencies on outreach efforts.

This spring the COMTF has been assisting the North Coast Resource Conservation and Development Council (RC&D) in their Tribal outreach efforts in Marin, Sonoma, Mendocino, and Lake Counties. A "Tribal Toolkit," comprised of hardcopy and electronic versions of outreach materials, has been developed and presented to interested Tribes. Additionally, the Sudden Oak Death Tribal outreach team has focused on developing and providing small training sessions for key Tribal members and department



officials, providing them with the information and resources necessary to train and update Tribe members, as well as act as a resource for support and information. So far, the team has met with Northern California Tribal representatives at a Tribal environmental meeting in Santa Rosa. The team also conducted the first "train the trainer" workshop with Round Valley Tribal members in Mendocino County, and they participated in a workshop hosted by the Kashia Band of Pomo Indians at the Stewarts Point Rancheria. As a result of the Kashia workshop, the Tribe received a toolkit and the Kashia Tribal Environmental Department will be working with surrounding landowners, UC Davis researchers, and USDA Forest Service representatives to develop a management plan for dealing with the *P. ramorum* infestation on their land.

Additional "train the trainer" sessions are planned for this spring and summer. In addition, a UCCE Humboldt/Del Norte COMTF representative will be working with the Round Valley Tribe on surveying and monitoring their 31,000 acres of land, as well as monitoring streams for *P. ramorum* on both the Hoopa and Yurok reservations. Educational presentations will also be provided to the Yurok forestry staff and at a North Coast Tribal/interagency meeting at the Trinidad Rancheria.

USDA APHIS has also been working on Tribal outreach tools, including *P. ramorum* host data sheets with a listing of traditional uses and Native American languages names, and a directory of Tribes and Tribal member contacts, which will be of great use during any future emergency program work in California. The COMTF will continue to work with APHIS to create and disseminate these educational resources to interested Tribes.

#### **PERSONNEL**

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**COMTF Outreach Coordinator Janice Alexander is on maternity leave. During the months of May, June, and July, all requests and inquiries should be directed to Katie Palmieri, COMTF Public Information Officer, at (510) 847-5482 or [palmieri@nature.berkeley.edu](mailto:palmieri@nature.berkeley.edu).**

#### **CALENDAR OF EVENTS**

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**5/24 – Free all-day COMTF training session on *P. ramorum* diagnosis and management;** CityTeam Camp May-Mac, Felton, from 9:00 a.m. – 3:00 p.m. This training will include a classroom portion and field component. Registration is required. For more information, or to register, go to the COMTF website at: [www.suddenoakdeath.org](http://www.suddenoakdeath.org) or contact Katie Palmieri at [palmieri@nature.berkeley.edu](mailto:palmieri@nature.berkeley.edu).

#### **HOST OF THE MONTH**

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***Acer pseudoplatanus* (Planetree Maple) – This hardy tree is native to Europe and central Asia, and has been cultivated in Europe for centuries. While it prefers cool, sunny environments, it is generally very adaptable, and tolerates salt and seaside locations. It is also a good shade tree for lawns. The Planetree Maple is easily transplanted and established, and has even demonstrated a capability of escaping from cultivation and naturalizing in minimally managed areas.**



Planetree Maple is a deciduous, medium to large tree, growing 40 ft. or more in height and nearly as wide. Its foliage and branching is dense and compact, with upright spreading. Planetree Maple bark is irregularly scaly, and is a steel gray color with orange color showing when bark flakes off. Summer foliage is attractive, with thick, leathery leaves that are 3 – 6 inches across and have impressed veins and coarsely toothed margins. The leaf surface is dark green on the top and greenish white on the underside. Autumn foliage is generally poor and yellowish to greenish brown. This tree blooms yellowish-green flowers in May and produces samaras 1.25 – 2 inches in pendulous clusters. This species is susceptible to necrotic cankers, aphids and sooty mold, stem borers, and twig dieback in cold winters.

*P. ramorum* was found causing characteristic lesions on an infected Planetree Maple found at a known *P. ramorum*-positive woodland garden site in the UK. The 70 cm diameter tree had lesions on two sides of the trunk, extending from ground level to 1.5 and 2.0 meters high. The pathogen was readily isolated from cankers. Additionally, *Armillaria* was identified on the tree as a secondary invader.

#### References:

- Personal email communication  
Clive Brasier, Emeritus Mycologist  
Forest Research, UK Forestry Commission
- Brenzel, Kathleen. *Sunset Western Garden Book*. Menlo Park, CA: Sunset Publishing Corporation, 2001. 169.
- University of Connecticut;  
UConn Plant Database of Trees, Shrubs, and Vines  
*Acer pseudoplatanus*  
<http://www.hort.uconn.edu/plants/a/acepse/acepse1.html>