CALIFORNIA
OAK MORTALITY TASK FORCE

Sudden Oak Death and *Phytophthora ramorum*

2010

Summary Report

A Compendium of Monthly Newsletters

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2010 *Phytophthora ramorum* and Sudden Oak Death Significant Events

- The EU1 *P. ramorum* strain is now the most common lineage detected in WA state nurseries and non-nursery sites, with a concurrent rise in NA2 and decrease in NA1. This is a major shift in the *P. ramorum* population frequencies in WA.
- The NA2 *P. ramorum* lineage is detected for the first time on native forest vegetation in Washington. The find is made during follow-up analysis of infested salal (*Gaultheria shallon*) plants found in a natural landscape during a 2009 Pierce County *P. ramorum*-positive retail nursery perimeter survey. Positive soil is also recovered from the location during follow-up inspections.
- Ten positive waterways are identified in six states outside of CA and OR forest areas where *P. ramorum* is found (WA [2], AL [4], MS [1], GA [1], FL [1], and NC [1]).
- Ten species are added to the list of federally regulated *P. ramorum* associated host plants: Mexican-o*range (Choisya ternate*), kousa dogwood (*Cornus kousa*), *Daphniphyllum glaucescens*, European holly (*Ilex aquifolium*), Japanese-oak (*Lithocarpus glaber*), *Magnolia cavalieri, Magnolia foveolata*, bayleaf currant (*Ribes laurifolium*), bilberry (*Vaccinium myrtillus*), and lingon berry (*Vaccinium vitis-idaea*).
- Birch (*Betula pendula*) is confirmed as a bole host for the first time. The finding was made in the UK.
- Western hemlock (*Tsuga heterophylla*) is confirmed for the first time as a foliar and bole host. The finding was made in the UK.
- A Northern Humboldt County Redwood Creek watershed is found *P. ramorum* positive. The detection leads to the discovery of a localized infestation centered near Redwood Valley, approximately 50 miles south of uninfested Del Norte County.
- Japanese larch (*Larix kaempferi*) foliage is found to strongly support *P. ramorum* sporulation, with the ability to generate thousands of sporangia on a single infected needle.
- Ireland and Wales are found to have woodlands with *P. ramorum*-positive Japanese larch trees for the first time.
- Approximately 600,000 Japanese larch over 5,931 acres have been affected to date in the UK by *P. ramorum*. This is the first widespread and lethal damage caused by the pathogen to a conifer and the first to a commercial plantation tree.
- A total of 34 US nurseries tested positive for *P. ramorum* in 2010 (not including landscape detections): CA (7); OR (9); WA (6); IA (1); IL (1); AL (1); NC (1); SC (1); VA (1); NY (1-Collection Pond), MS (3); GA (1-irrigation pond); and PA (1). USDA APHIS reported 33 nurseries, 1 greenhouse, and 2 landscape detections.

MONITORING

As part of the perimeter survey conducted at a *P. ramorum*-positive retail nursery in Pierce County, WA last summer, WSDA identified infested salal (*Gaultheria shallon*) plants in the natural landscape (as reported in the COMTF August 2009 Newsletter). Follow-up analysis of the samples by the Chastagner lab at Washington State University has resulted in the isolation of the NA2 lineage from the salal. This is the first detection of the NA2 lineage on native forest vegetation. (2/10)

Findings from the 2009 National *P. ramorum* Early Detection Survey of Forests have resulted in more stream detections outside of nurseries and to the east of the regulated states than in any other year. In 2009, 116 streams were baited in 16 states. (Results from the last round of samples were still pending in February 2010.) To date for the 2009 season, five new streams have been found positive – three in AL, one in OR, and one in GA. Since the inception of the survey in 2006, 15 positive streams have been identified, nine of which have been outside of the regulated areas in CA and OR. No established infection has been detected in streamside plants. (2/10)

The WSU, Puyallup (WSU-P) SOD community-based stream monitoring program was piloted in March in WA's Puget Sound region. The program will be expanded in 2011. No *P. ramorum* has been detected at any of the sites so far. (5/10)

Water draining from an infested nursery in Mecklenburg County, NC has been found *P.* *ramorum* positive as a result of the 2010 National *P. ramorum* Early Detection Survey of Forests. This brings the total number of positive waterways to 10 in six states outside areas where *P. ramorum* is found in California and Oregon forest areas (WA [2], AL [4], MS [1], GA [1], FL [1], and NC [1]). (7/10)

***P. ramorum* has been found in South Wales infecting Japanese larch trees**. **This is the first** time the pathogen has been found in larch outside southwest England. Discovered as a result of aerial flyovers and follow-up ground surveys, widespread infection is occurring on Japanese larch of all ages. (7/10)

The *P. ramorum* watercourse detection in Redwood Creek in northern Humboldt County has been followed with the discovery of an infected bay laurel along the stream. The infected tree is located approximately 20 miles southwest of the area where stream leaf baits that were deployed for initial detection. (7/10)

Britain's Forestry Commission is continuing to try to minimize the spread of *P. ramorum* by felling tens of thousands of Japanese larch (*Larix kaempferi*). Since 2009, thousands of trees have died. Follow-up aerial surveys in southwest England and Wales, and up into western Scotland, have identified 203 suspicious sites. Of these, 42 sites in southwest England and eight in Wales have confirmed infestations. More than 30 hectares (approximately 74 acres) of trees were felled last winter, with an additional 250 hectares (618 acres) planned for removal this summer and fall. (8/10)

***P. ramorum*-infected Japanese larch has been confirmed for the first time in northern** Wales. (9/10)

***P. ramorum*-infected Japanese larch trees have been found in Ireland for the first time**. Three of the infested areas are in Northern Ireland where extensive dieback and mortality are occurring. The Republic of Ireland also confirmed *P. ramorum*-positive Japanese larch in southern Ireland in an area where the pathogen had previously been found on rhododendron. Prior to these finds, *P. ramorum* had only been found on *Rhododendron* and other ornamental species at sites which included plant production/retail premises, private gardens, private estates, and public parks. (9/10)

Washington has identified a Kitsap Peninsula creek *P. ramorum* water positive further downstream than previous detections. This creek is associated with a Peninsula nursery that has been free from the pathogen for several years following implementation of the CNP; however, the brackish creek water continues to be *P. ramorum* positive. (9/10)

A Gig Harbor, Pierce County, WA landscape site adjacent to a previously positive repeat nursery has been found to have *P. ramorum*-positive soil. The confirmed site is along a drainage that had been found positive with infected salal plants in the summer of 2009. Soil sampling has been ongoing since the initial confirmation; however, this is the first time a positive sample has been recovered. The nursery associated with the site closed in August 2010, yet the retention ponds and outlet for the ponds continue to be positive for the pathogen. The nursery site is currently up for sale. The county has volunteered to remove the remaining host plants and material on the drainage banks where the previous salal find was confirmed in an effort to eliminate the pathogen's ability to become established. (12/10)

MANAGEMENT

2009 Summary Report for SOD Activity in Curry County, OR – *P. ramorum* was found in 102 new infected trees in OR in 2009, representing 20 infested acres (fewer than in 2008) on 59 sites. All of the infested sites were within the quarantine area and had relatively few infected trees. Of the 59 detected sites, 56 treatment areas were delimited, totaling 700 acres.

Monitoring of treatment effectiveness has been examined at 119 OR sites from 2001 and 2007. The overall rate of pathogen recovery has been 3 percent of all samples, with 38 percent of sites found to have positive soil and 10 percent of sites with positive plant material. Assessments of aerially applied Agri-Fos® have shown that the chemical does get into the trees, but evidence is inconclusive as to its impact on disease spread. (3/10)

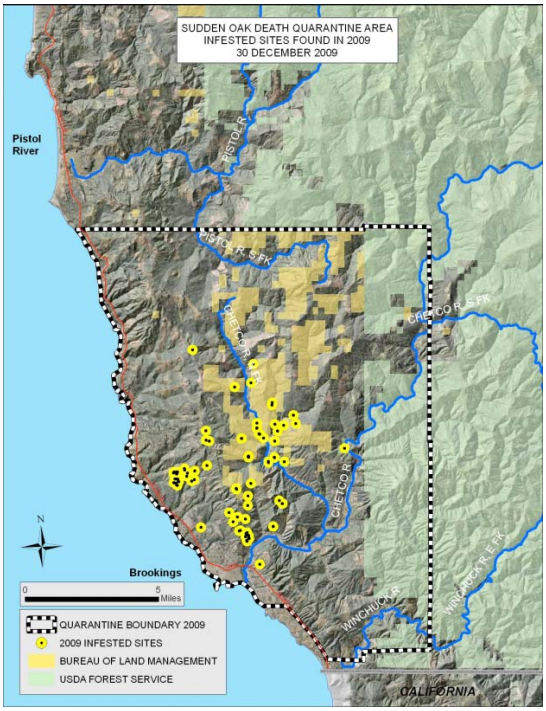

Figure 1. Location of sites infested with *P. ramorum* in southwest OR discovered in 2009. Sites enlarged by a 1000 ft radius yellow halo for visibility. White dashed line indicates quarantine area.

Figure 2. Number of Infected trees and Area Infested
2001-2009

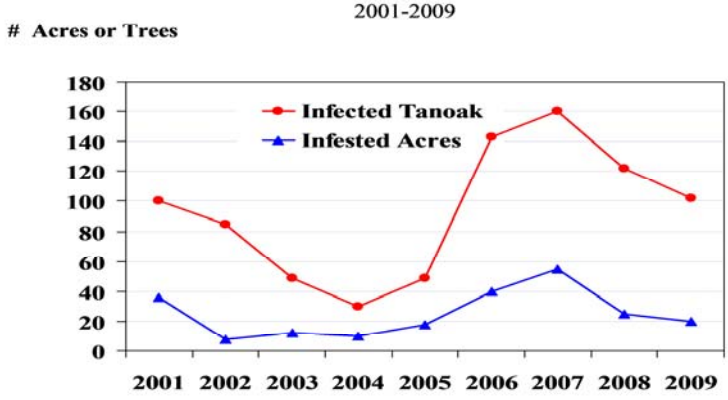

Figure 2. Trend in number of new infected trees and area of new infestations in southern Curry County, Oregon, 2001-2009.

Figure 3. Number of Infested Sites
2001-2009

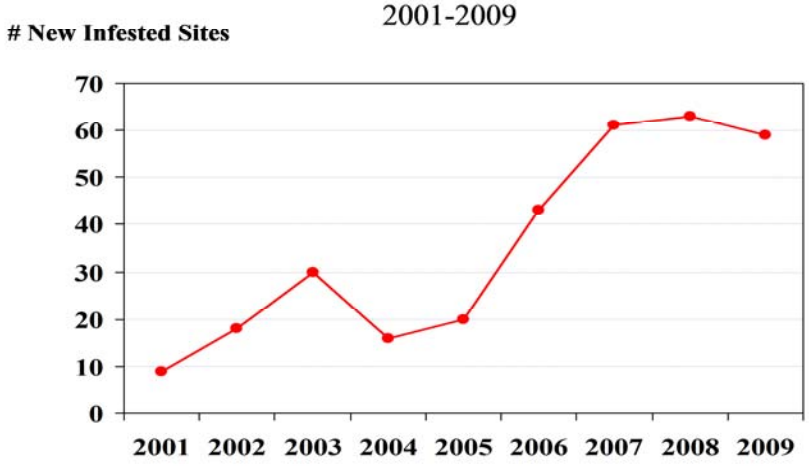

Figure 3. Trend in number of new infested sites detected each year.

Figure 4. Area of Eradication Treatments
2001-2009

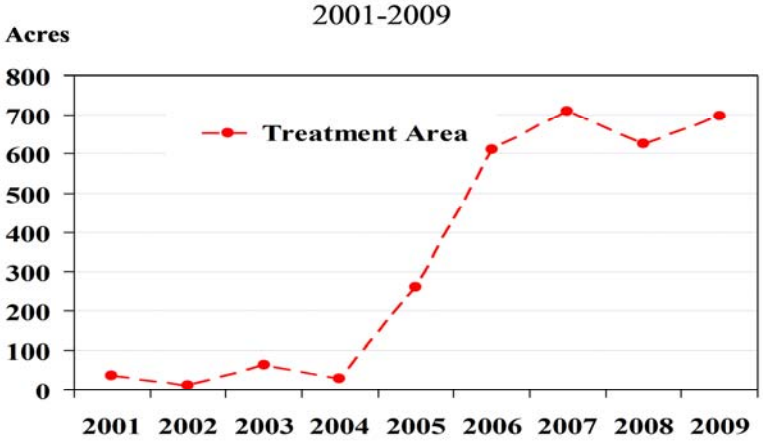

Figure 4. Area identified for treatment each year; includes hack & squirt, cut, and burn. Many 2009 sites untreated as of 12-31-09 due to funding delays.

(3/10)

The USDA FS, Forest Health Protection hosted a SOD wildland framework technical working group meeting in Denver, CO, 4/19 – 4/21. The group worked to develop a management protocol for state foresters and agricultural officials should *P. ramorum* become established in a forest outside of the current West Coast quarantine area. *P. ramorum* management recommendations were also reviewed and updated using the best available science to more accurately reflect current treatment options. (5/10)

The new fungicide Adorn™ has been registered for use in California against *P. ramorum*. The product is intended for ornamental use only and can be applied to foliage or as a soil drench. (9/10)

The UK's Pro-Art Signs Swansea Bay Rally has been postponed due to the presence of *P. ramorum* along sections of the raceway. (9/10)

The northern Humboldt County Redwood Creek watershed *P. ramorum* infestation appears to be restricted to one discrete location centered near the community of Redwood Valley. Surveying efforts since the end of June have consisted of (1) numerous rhododendron leaf baits placed in the 67-mile-long river (~200,000 acre watershed) and several of its tributaries from locations high in the watershed all the way downstream; (2) two aerial survey flights conducted by the USDA Forest Service, State and Private Forestry, Forest Health Protection, in July and September; and (3) ground surveys of vegetation along nearly the entire lower 40 miles of river. The pathogen has been detected on symptomatic tanoak, California bay laurel, huckleberry, and Douglas-fir. Its effects on the latter three appear to be negligible; however, it is killing tanoaks in all size classes. Genetic work has confirmed that the pathogen is of the North American (NA1) lineage. (10/10)

***P. ramorum*-infested Japanese larch (*Larix kaempferi*) has been confirmed at 68 southwest** England plantations. Larch plantations with similar symptoms were also discovered in south Wales where *P. ramorum* was also isolated at multiple sites. Overall an estimated 600,000 mature larch over 2400 ha (5,931 acres) have been affected to date in the UK. A large area of juvenile larch is also affected. This is the first widespread and lethal damage caused by *P. ramorum* to a conifer and the first to a commercial plantation tree. Adjacent to some affected Japanese larch sites in southwest England, infection of European beech (*Fagus sylvatica*), roble beech (*Nothofagus obliqua*), European chestnut (*Castanea sativa)*, European white birch (*Betula pendula*), *Rhododendron ponticum*, western hemlock (*Tsuga heterophylla*), and Douglas-fir (*Pseudotsuga menziesii*) is also occurring, apparently a result of the high levels of *P. ramorum* inoculum produced from larch foliage. (10/10)

2010 SOD Blitz results are now available. 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 I-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). (11/10)

***P. ramorum*'s threat to the East Coast was discussed at the Address *P. ramorum* Initiative** breakout session held at Brandeis University, 10/6, as part of the sixth meeting of the Continental Dialogue of Non-native Insects and Diseases. A poster 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. (11/10)

As of mid-November, Northern Ireland has confirmed seven *P. ramorum*-infected Japanese larch sites in woodlands on the southern half of the Antrim plateau and one in Mid Down. Approximately 268 hectares (662 acres) of public land and six hectares of private land are affected. Aerial and ground surveys have confirmed that the infected Japanese larch is confined to a cluster of sites in south Antrim and an isolated site in County Down. (12/10)

All *P. ramorum*-related Japanese larch felling in Wales is now on hold until late May 2011. With needles from the trees dropping, it is difficult to identify which trees are actually infected. If such trees were felled unknowingly, infected material could circumvent biosecurity measures, risking the unintentional spread of a disease which threatens large swathes of Welsh forests. (12/10)

REGULATIONS

Ten species have been added to the list of federally regulated *P. ramorum* associated host plants. The USDA APHIS issued the Federal Domestic Quarantine Order on 2/22, adding Mexican-orange (*Choisya ternate*), kousa dogwood (*Cornus kousa*), *Daphniphyllum glaucescens*, European holly (*Ilex aquifolium*), Japanese-oak (*Lithocarpus glaber*), *Magnolia cavalieri*, *Magnolia foveolata*, bayleaf currant (*Ribes laurifolium*), bilberry (*Vaccinium myrtillus*), and lingon berry (*Vaccinium vitis-idaea*). These species were identified as susceptible by the Canadian Food Inspection Agency (CFIA) and the United Kingdom's Food and Environment Research Agency (FERA).

Nurseries currently operating under an APHIS *P. ramorum* compliance agreement are able to continue shipping hosts and associated plants, including the newly listed plants; however, any nurseries not currently under a compliance agreement that contain these new species must be placed under a Compliance Agreement by 3/31 in order to be able to move any plants interstate. (3/10)

A lawsuit was filed on 3/8 in Columbia, SC by CANGC and OAN, seeking to overturn a new SC regulation that requires CA and OR growers shipping plants to SC to comply with additional inspection, documentation, and advance notice requirements which are more restrictive than the federal *P. ramorum* rules. (4/10)

The USDA APHIS PPQ program conducted a National Review of the *P. ramorum* regulatory program 12/15 – 12/16/09. The meeting was attended by approximately 50 invited representatives. The primary goal of the meeting was to develop a clear program vision, goals, and action plans as well as to gather feedback on program successes and those areas that need improvement. (4/10)

On 4/20, SC rescinded its *P. ramorum* rule that required CA and OR growers importing plants to the state to comply with additional guidelines which were more restrictive than the federal regulations. (5/10)

Australia has adopted emergency measures on 4/12/10 prohibiting the importation of *P. ramorum* host species nursery stock (other than tissue cultures) from Canada in an effort to minimize the risk of pathogen introduction into the country. (5/10)

Korea updated its list of *P. ramorum*-regulated hosts to include: *Choisya ternate*, *Cornus* *kousa, Daphniphyllum glaucescens, Lithocarpus glaber, Magnolia cavalieri, Magnolia foveolata, Ribes laurifolium, Vaccinium myrtillus,* and *Vaccinium vitis-idaea*. (5/10)

USDA APHIS announced that as of 6/21 it will require written pre-notification to destination states of all interstate shipments that include *P. ramorum* host plants from quarantine or regulated areas. The new rule is intended to allow states receiving *P. ramorum* host nursery stock to assign and prioritize resources, assure rapid response, and provide direct traceability for any nursery stock known to be positive for the pathogen. (6/10) The date of implementation for the rule was changed from 6/21 to 7/19 (7/10), then delayed until further notice. (8/10)

The 2010 National Plant Board (NPB) meeting was held in Indianapolis, IN from 7/25 – 7/29. The *P. ramorum* NPB/PPQ regulatory topics were divided into seven categories reflecting the work groups set up last December at the APHIS *P. ramorum* stakeholders' meeting. *P. ramorum* discussions at the meeting included the Farm Bill 10201 Project Update for FY10 and 11 and USDA Forest Service activities on *P. ramorum* and firewood policies. (8/10)

APHIS is soliciting public comments under the paper work reduction act of 1995. The APHIS Notice is to Request for Extension of Information Collection for *P. ramorum* Quarantine and Regulations for an additional 3 years. (9/10)

FL has implemented a new rule regulating firewood. The intent of the rules is to prevent the introduction of wood boring pests, wood inhabiting pests, and plant pathogens (including *P. ramorum*) into the state, and to prevent the spread of pests within the state by regulating the movement of firewood and unprocessed wood products that can harbor wood boring and wood inhabiting pests and pathogens. (9/10)

CFIA *P. ramorum* program leadership is transferring from Shane Sela to John McDonald in the Horticulture Division. Shane will continue to participate in *P. ramorum* issues as they relate to the CFIA Forestry Division. (9/10)

The APHIS *P. ramorum* Regulatory Working Group met 10/25 – 10/28 in Salem, OR. The three-day facilitated meeting included regulatory discussions and visits to local nurseries implementing the US Nursery Certification and Grower Assisted Inspection Programs as well as meeting with nursery industry representatives. (12/10)

NURSERIES

A Placer County, CA retail nursery was confirmed *P. ramorum* positive on 12/23/09. The positive sample was found on a 1-gallon coast redwood. The site was previously found positive in 2005 as a result of a positive trace-forward plant. (2/10)

WA had two *P. ramorum*-positive locations in January. Both sites have previously been found positive for the pathogen. One find was in retention pond water at a Pierce County retail nursery (treatment is optional as it is not used for irrigation or fire suppression). The second site was in a Mason County church landscape where an assumed-positive *Viburnum tinus* was identified as part of a trace-forward investigation. It is unknown where the plant potentially became infested. (2/10)

A Lancaster County, PA production nursery was found to have *P. ramorum*-positive *Laurus nobilis* on 3/15. Trace-forward investigations found that five western and 21 eastern states received *Laurus nobilis* (bay laurel) plants from the nursery. This nursery has never previously been positive for the pathogen. (4/10)

A retail nursery in Mecklenburg County, NC was found to have *P. ramorum*-positive soil on 3/26. This nursery was previously positive in 2008 and 2009. (4/10)

A Greenville County, SC retail nursery was confirmed to have *P. ramorum*-positive *Kalmia* *latifolia* on 4/2. This nursery was also positive in 2008. The detection was the result of an unrelated incoming nursery shipment inspection. (4/10)

A Clackamas County, OR wholesale nursery that occasionally ships interstate was found to have a *P. ramorum*-positive *Camellia* 'Colonel Frey' on 3/26. This is the first time this nursery has been found positive for the pathogen.

The USDA CNP carried over into 2010 for two OR nurseries in which *P. ramorum* was detected in 2009. One of the nurseries has since completed CNP requirements and has been released. The other location, a recurrent nursery that was positive four years in a row, remains under an OR Administrator's Directive that requires the nursery to take extra precautions to prevent the introduction and potential spread of *P. ramorum.* (4/10)

A Clark County, WA production nursery was found to have *P. ramorum* infested soil on 3/10. This nursery was also found *P. ramorum* positive in 2008 and 2009. (4/10)

OR has completed testing for the 2010 *P. ramorum* Federal Order Survey on 6,190 samples collected from 153 nursery grower locations. This year, OR had three nurseries operating under a Federal EAN or the State equivalent because of *P. ramorum* detections. In late March, *P. ramorum* was discovered infecting *Camellia* plants in a nursery that has been operating under a State Administrative Directive since 2009 because of recurrent detections. On 4/21/10, *P. ramorum* was confirmed on two *Rhododendron* plants at a Clackamas County, OR wholesale nursery that does some interstate shipping. This nursery was also found positive for the pathogen in 2005 and 2008. (5/10)

WA has surveyed 30 host and non-host nurseries to date this year for *P. ramorum*, all of which have been negative for the pathogen. Some WA shippers have reduced their high-risk genera inventory in an effort to reduce the risk of *P. ramorum*. Two nurseries continue to yield positive water samples - one in Pierce County and one in King County. February and April surveys of plants downstream from the Pierce County positive nursery perimeter salal find in

2009 found no positive plants, and the Rosedale Stream has been continuously baited since January 2010, with no positive water finds. (5/10)

CA has had five *P. ramorum*-positive nurseries identified since 4/30/10, and found *Trachelospermum jasminoides* (star jasmine) *P. ramorum* positive for the first time. (1) A Santa Clara County production nursery was found to have *P. ramorum*-positive *Camellia sasanqua* 'Cleopatra' and 'White Purity' on 4/30. The nursery is an interstate shipper and has not previously been positive the pathogen. (2) A Sonoma County wholesale nursery was found to have infected *Camellia japonica* 'Bella Rosa' on 5/20 during an inspection not related to *P. ramorum*. The nursery was previously positive in 2003 and 2006. (3) A Stanislaus County production nursery was determined to have *P. ramorum*-positive *Camellia sasanqua* 'Cleopatra' and *Magnolia* sp. on 5/21. The nursery has not been previously positive for the pathogen. (4) A San Joaquin County production nursery was found to have *P. ramorum*-positive *Camellia japonica* 'White Purity' and *Camellia sasanqua* 'Cleopatra' on 6/1. The nursery is an interstate shipper and has not previously been positive for the pathogen. (5) A Sacramento County production nursery was found to have *P. ramorum*-positive *Osmanthus fragrans* and *Trachelospermum jasminoides* on 6/1. The nursery is an interstate shipper, and was previously positive in 2009. *Trachelospernum jasminoides* (star jasmine) is a new host report. (6/10)

Two OR nurseries were found *P. ramorum* positive in May. (1) A Marion County, OR wholesale/retail nursery was found to have *P. ramorum*-positive *Rhododendron* 'Molalla Red' and 'Dora Ameteis' on 5/14. This nursery ships interstate and was previously positive in 2008 and 2009. (2) A Washington County, OR production nursery was found to have *P. ramorum*-positive *Rhododendron* sp. 'English Roseum,' 'Skookum,' and 'Vulcan' on 5/20. The nursery ships interstate and was previously found positive in 2004. (6/10)

WA was found to have two *P. ramorum*-positive nurseries in May. (1) On 5/3 a Thurston County wholesale/production nursery was found to have *P. ramorum*-positive *Mahonia nervosa* and *Viburnum tinus*. This nursery ships interstate and was previously positive in 2008. (2) A Snohomish County wholesale nursery was determined to have *P. ramorum*-positive *Rhododendron* sp. on 5/6. This nursery ships interstate and was previously positive in 2008. (6/10)

As of 6/18, OR has completed testing for the 2010 *P. ramorum* Federal Order Survey on 12,101 samples collected from 299 nursery grower locations, and has detected six positive nurseries. During delimitation surveys at one of the Washington County nurseries, foliar samples were collected from a *Trachelospermum jasminoides* (star jasmine) plant exhibiting suspicious symptoms. The foliage was confirmed *P. ramorum* positive on 6/10. Star jasmine was also found positive in 6/10 at a Sacramento County, CA production nursery. As there have been two independent confirmations of infected star jasmine, it is anticipated that APHIS will be adding this host to the *P. ramorum* list of regulated species. (7/10)

A Johnson County, IA retail nursery was confirmed to have *P. ramorum*-positive *Rhododendron* sp. 'Skookum' on 6/22 as a result of a trace-forward inspection from a positive production nursery in Washington County, OR. The nursery has not been previously positive for the pathogen. (7/10)

Two CA retail nurseries were confirmed *P. ramorum* positive on 7/2. A Mendocino County nursery was found to have a *P. ramorum*-positive *Rhododendron sp.* The nursery does ship interstate (trace-forward investigations include three interstate shipments) and was also found positive for the pathogen in 2008. The second nursery was a Humboldt County retail nursery with *P. ramorum*-positive *Pieris sp.* 'Forest Flame.' It was also found positive in 2004, 2006, 2007, and 2008. (8/10)

A King County, WA retail nursery was found to have *P. ramorum*-positive rhododendrons in July. This nursery was also found positive in 2004, 2005, and 2006. (8/10)

A Washington County, OR retail nursery was found to have *P. ramorum*-positive *Rhododendron* in July. The nursery requested a survey after identifying a potential out-of-state customer. Prior to the confirmation, the nursery had not shipped interstate. This is the first time *P. ramorum* has been detected in this nursery. (8/10)

The California Association of Nurseries and Garden Centers (CANGC) has moved their leadership under the umbrella of the California Grain and Feed Association (CGFA). The CGFA Executive Vice President will serve as CANGC's new president. (9/10)

A *P. ramorum*-positive planted *Camellia sasanqua* was confirmed in a Stanislaus County, CA residential subdivision on 8/31 following a trace-forward investigation from a Stanislaus nursery (confirmed 6/10). (9/10)

A Pierce County, WA retail nursery was found to have three *P. ramorum*-positive rhododendron plants on 8/27 during a follow-up inspection. The nursery has elected to destroy all affected host plants. They are going out of business at the end of September. This site has been positive in previous years. (9/10)

In August, OR began conducting high-risk surveys within those nurseries that ship *Rhododendron* and/or *Camellia* interstate. So far, nine nurseries have been surveyed with 157 samples collected for testing. No *P. ramorum* has been detected. (9/10)

CFIA has almost completed its 2010 national survey for *P. ramorum*. Of the 133 nurseries sampled throughout Canada, *P. ramorum* has been detected at five retail nurseries and two propagation nurseries in urban areas of southwest BC. Five of the nurseries also tested positive for the pathogen in 2008 or 2009. The infected plants included *Rhododendron, Pieris, Camellia, Kalmia,* hybrid witch hazel (*Hammemalis* x *intermedia*), and drooping leucothoe (*Leucothoe fontanesiana*). (9/10)

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, 10/5-10/7. (11/10)

RESEARCH

The fifth meeting of the IUFRO *Phytophthora* Diseases in Forests and Natural Ecosystems Book of Abstracts is now online at http://www.phyto2010.com/Abstracts%2012%20Feb%2010.pdf. (3/10)

The 2009 UK sites where Japanese larch (*Larix kaempferi*) were found with *P. ramorum* foliar and stem infections, yet not in close proximity to *Rhododendron ponticum*, have more recently been found to have a range of other woodland and commercial plantation species affected by the pathogen (primarily bole canker infections). Tests conducted by UK Forest Research have shown that the Japanese larch foliage strongly supports *P. ramorum* sporulation. This inoculum load high in the crowns of affected Japanese larch has likely lead to widespread local infection on the foliage and boles of nearby susceptible tree and understory species, as well as caused bole infections on the larch.

Affected species of the larch understory include beech (*Fagus sylvatica*), sweet chestnut (*Castanea sativa*), and oak species (*Quercus spp*), all of which are known to suffer from bole cankers, as well as birch (*Betula pendula*), which has not previously been found as a bole host. Over the past 6 months a number of conifer species have also emerged as bole hosts, including western hemlock (*Tsuga heterophylla*), Port Orford cedar (*Chamaecyparis lawsoniana*), and Douglas-fir (*Pseudotsuga menziesii*). Western hemlock has also been confirmed as a foliar host of the pathogen. (4/10)

2010 Research Needs Assessment (RNA) for *P. ramorum* in Nursery and Forest Environments - The COMTF is partnering with the USDA Forest Service Pacific Southwest Research Station to solicit research needs for *P. ramorum*. The RNA is a two-phase process being conducted through online surveys. Presentation of the findings and solicitation of feedback will occur at the June 2010 COMTF meeting. (4/10)

Norway has developed a *P. ramorum* Pest Risk Assessment. Findings of the assessment were adopted on 6/24/09. While it is believed that the pathogen is not widely distributed, a thorough survey of the country has not been completed, so current distribution is not totally known. The assessment did determine that the overall probability of *P. ramorum* entry into Norway and the probability of its becoming established are high. (4/10)

2010 Research Needs Assessment (RNA) Participation Request - The first phase of the 2010 *P. ramorum* in Nursery and Forest Environments RNA was completed in April. The responses were used to compile a list of general research categories. The second phase of the survey is now underway, and involves prioritization of the categories developed in phase one. (5/10)

The Proceedings for the Sudden Oak Death Fourth Science Symposium are now available. The Symposium provided a forum for current *P. ramorum* research. Ninety submissions describing papers or posters on the following sudden oak death/*P. ramorum* topics are included in the Proceedings: biology, genetics, nursery and wildland management, monitoring, ecology, and diagnostics**.** The Proceedings are free and may be accessed online at http://www.fs.fed.us/psw/publications/documents/psw_gtr229/ or ordered using the following citation information: Frankel, S.J.; Kliejunas, J.T.; Palmieri, K.M., tech. coords. 2010.

Proceedings of the Sudden Oak Death Fourth Science Symposium. Gen. Tech. Rep. PSW-GTR-229. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. 378 p. (6/10)

***P. ramorum* has recently been isolated from a bole canker on a mature canyon live oak** (*Quercus chrysolepis)*. This first culture isolation complements previously reported PCR detections, lab inoculations, and epidemiological data showing that canyon live oak is susceptible to lethal bole cankers. The isolation was obtained from a canyon live oak in San Mateo County located on one of the Midpeninsula Regional Open Space District (MROSD) preserves. Although the positive isolation was obtained from a small canker with little bleeding, field observations suggest that many *P. ramorum*-infected canyon live oak may not bleed, or that bleeding may only occur for a short time. (9/10)

A 2010 Research Needs Assessment for Sudden Oak Death/*Phytophthora ramorum* in Wildland and Nursery Environments" has been posted at http://www.fs.fed.us/psw/programs/sod/documents/P.ram.Res.Needs.Assmt.09.10.10.pdf. Top wildland research needs include evaluation of management approaches, spread in forests, eradication and remediation, detection and diagnostics, and ecological impacts. Nursery research needs include best management practices, eradication and remediation, diagnostics and detection, and pathogen characterization and spread. Understanding pathogen behavior in potting media, soils under pots, and water were also ranked high for nurseries. (10/10)

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Bilodeau, G.; Martin, F.N.; Coffey, M.D.; and Blomquist, C.L. 2010. Development of a multiplex assay for genus and species-specific detection of *Phytophthora* based on differences in mitochondrial gene order. Phytopathology 100:S14.

Bohannon, R.C. and Russell, P. 2010. Field detection of *Phytophthora ramorum* DNA within 30 minutes. Phytopathology 100:S15.

Brennan, J.; Cummins, D.; Kearney, S.; Cahalane, G.; Nolan, S.; and Choiseul, J. 2010. *Phytophthora ramorum* and *Phytophthora kernoviae* in Ireland: The current situation. Phytopathology 100:S17.

Goss, E.M. 2010. Inference of *Phytophthora ramorum* migration pathways. Phytopathology 100:S157.

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Grunwald, N.J. 2010. Population genetic insights into emergence of oomycete pathogens. Phytopathology 100:S150.

Hwang, J.; Jeffers, S.N.; and Oak, S.W. 2010. Aquatic habitats—A reservoir for population diversity in the genus *Phytophthora.* Phytopathology 100:S150.

Kenney, M.J. 2010. USDA-APHIS plant pest permitting policy pertaining to containment facilities for plant pathogens. Phytopathology 100:S61.

Leonberger, A.J.; Speers, C.; Ruhl, G.; Creswell, T.; and Beckerman, J.; 2010. An Indiana survey of *Phytophthora* species in nurseries, greenhouses, and landscape plantings. Phytopathology 100:S69.

Rizzo, D. and Garbelotto, M. 2010. Sudden Oak Death and the future of California coastal forests. Phytopathology 100:S167.

Schmidt, D. and Garbelotto, M. 2010. Efficacy of phosphonate treatments against Sudden Oak Death in tanoaks. Phytopathology 100:S115.

Wang, S. and Garneni, S. 2010. Detection of *Phytophthora* species in retail nurseries and urban forest environments in northern Nevada. Phytopathology 100:S133.

Widmer, T.L.; Shishkoff, N.; and Dodge, S. 2010. Root susceptibility and inoculum production from roots of eastern oak species to *Phytophthora ramorum.* Phytopathology 100:S136. (7/10)

Pending California Department of Pesticide Regulation approval, the following five projects will soon be underway at the National Ornamentals Research Site at Dominican University of California. (10/10)

Bostock, R.M. and Roubtsova, T. Episodic abiotic stress and ramorum blight in nursery ornamentals: impacts on symptom expression and chemical management of *Phytophthora ramorum* in Rhododendron.

Chastagner, G. and Elliott, M. The risk of asymptomatic *Phytophthora ramorum* infection on fungicide treated rhododendrons.

Jeffers, S.; Meadows, I.; Hwang, J.-S. Studies on Soil Mitigation of *Phytophthora ramorum.*

Tjosvold, S.; Chastagner, G.; and Elliott, M. Effect of fungicides and biocontrol agents on inoculum production and persistence of *Phytophthora ramorum* on nursery hosts.

Widmer, T. and Shishkoff, N. Use of *Trichoderma* spp. to remediate *Phytophthora ramorum*-infested soil. (10/10)

FUNDING

The USDA Forest Service, Pacific Southwest Research Station (PSW), has issued their 2010 Request for Proposals (RFP) for Sudden Oak Death/*P. ramorum* research. Approximately $500,000 will be awarded through an international competitive process. (2/10)

The National Ornamental Research Site at Dominican University (NORS-DUC) has issued a 2010 Request for Proposals. Approximately $100,000 is available to be awarded for projects. (3/10)

The USDA Forest Service, Pacific Southwest Research Station Sudden Oak Death/*P. ramorum* research program list of 2010 funded projects is now available at http://www.fs.fed.us/psw/programs/sod/funding/FY2010PSWSODFunding.pdf. Thirteen new projects as well as 14 continuing projects were funded, for a total of $1,401,441. (8/10)

The National Ornamentals Research Site at Dominican University of California has issued their Request for Proposals for fiscal year 2011-2012. Approximately $200,000 is available to fund projects. (9/10)

The CFIA has extended the application deadline for *P. ramorum*-related compensation to December 31, 2012. Reimbursements are intended to cover compliance costs associated with regulatory controls ordered by the CFIA. This includes disposal of infested plant material and soil, and loss of intended use for the plant material. (9/10)

Shift in *P. ramorum* populations in Washington State - The EU1 strain is now the most common *P. ramorum* lineage detected in WA state nurseries and non-nursery sites, with a concurrent rise in NA2 and decrease in NA1. Evaluation of genotypes over the past 5 years shows the reversal in genotype frequency occurred in 2008 and persisted into 2009. EU1 was detected in 99 positive samples at seven locations, NA1 in 17 samples at four sites, and NA2 in 48 samples at three sites in 2009. In contrast, the first year of the study (2005) identified four EU1 samples at one site, 103 NA1 samples at 14 sites, and 12 NA2 samples at five sites.

Of the 46 WA nurseries found positive since 2003, five had infected plant detections in 2009. Twenty nurseries have been confirmed positive at least two years. Two of these sites were found to have positive plants three different years and two sites were positive four years. Genotype analysis has been performed on samples from 31 nurseries since 2005. Of the nurseries with multiple confirmed years, six had various combinations of two lineages for one or two years and one had a year with all three lineages followed by two other years with two lineages present each year.

Nine WA non-nursery sites (landscapes, water, soil or trace-forward landscape plants) have also been identified *P. ramorum* positive since 2005, with seven sites having been positive in 2008 and/or 2009. Of the seven sites, the Rosedale Stream (Pierce County) has been found positive for four years (NA1) and the Sammamish River (King County) has been confirmed positive for three years (several lineages). A Pierce County site with NA2-positive salal plants was also found adjacent to nursery property, and four residential sites have been found in the past two years, all of which have been identified with the EU1 strain (two residences were found with the EU1 strain in 2008 and 2009, one with plants and soil, and one with just soil). These four residential sites were trace-forwards from the same EU1-positive nursery. (3/10)

Characterizing Douglas-fir Tissue Colonization by the 'Sudden Oak Death' Pathogen, *Phytophthora ramorum.* By Kathleen McKeever, M.S. and Dr. Gary Chastagner; Department of Plant Pathology, Washington State University Puyallup Research and Extension Center

In 2001, Koch's Postulates confirmed Douglas-fir as a host for *P. ramorum*. Naturally-infected saplings have been observed in California forests, and studies on artificially inoculated Douglas-fir stems and shoots have established susceptibility parameters. Although naturally occurring stem infections in the U.S. have been limited to smaller diameter seedlings and saplings, *P. ramorum* stem cankers were recently observed on 8-year-old plantation grown Douglas-fir in Great Britain in 2009. All previous research has served to substantiate the importance of performing studies to characterize the behavior of *P. ramorum* in Douglas-fir and assess the potential risk that this pathogen poses to Douglas-fir ecosystems.

Artificial inoculation experiments were carried out to provide a thorough analysis of the colonization of Douglas-fir by *P. ramorum*. Goals of this research included determining which tissues are colonized by the pathogen, whether woody tissues are able to support sporulation, the likelihood of stem infections occurring on Douglas-fir with intact bark, and the viability of the pathogen in foliage. Methods employed included isolation, ELISA, and histological examination of stem tissues; qPCR and isolation to determine colonization efficacy and viability of the

pathogen in needle tissues; and baiting studies to determine the ability of Douglas-fir bark to inhibit colonization of *Rhododendron* leaves by the pathogen.

ELISA results showed that proteins of the pathogen were detectable in the phloem, cambium, and superficial xylem, with infrequent detection in asymptomatic tissues. The pathogen was able to be isolated from all symptomatic woody tissues tested, but not from non-discolored tissues. ELISA and isolation techniques produced results that were highly positively correlated (r^2=0.62, p=0.78), and histological observations paralleled information derived from these techniques. Douglas-fir bark reduced infection on *Rhododendron* leaf baits by up to 83 percent in the presence of inoculum. Results from foliage inoculations indicated that pathogen DNA is detectable using qPCR methods, but there was an inability to isolate the pathogen from needle tissue. Evidence of spore formation in woody stem tissues has not been observed.

It was concluded that the pathogen may be able to infect into the shallow xylem tissues of Douglas-fir in the presence of wounding, but there was no evidence of sporulation in tissues. The inability to isolate the pathogen from non-discolored tissues suggests that the proteins detected by ELISA outside of the lesion may be elicitins that are secreted in advance of hyphal colonization. The inability to isolate the pathogen from colonized needles may indicate the presence of chemical inhibitors that render the pathogen non-viable subsequent to initial infection. Finally, the ability of Douglas-fir bark to suppress infection of *Rhododendron* leaf baits suggests that the bark is inhibitory to *P. ramorum* and that infection of woody stem tissues through intact bark may be limited. Further research is required to identify the nature of this inhibition.

Characterization of *P. ramorum* colonization of Douglas-fir tissues is relevant to our current understanding of the behavior of the pathogen in different hosts and may enhance our ability to assess risk and create adequate regulations to thwart the spread of this exotic pathogen. (12/10)

MEETINGS

The COMTF will be holding their annual meeting 6/8 – 6/11 at Embassy Suites and Dominican University of California in San Rafael. On 6/9 there will be a field trip to Dominican University's National Ornamental Research Site followed by an indoor nursery session and a wildland SOD field trip as well as an evening Nursery Committee meeting. Presentations on 6/10 will include policy and research updates, a panel discussion on impacts and management of Sudden Oak Death, and a Research Needs Assessment for Forestry and Nursery issues. June 11 there will also be the first meeting of the Continental Dialogue's *Phytophthora ramorum* Initiative working group. (4/10)

The 2010 Annual COMTF Meeting, held at Dominican University of California was attended by over 120 people from 13 states, the United Kingdom, and Canada. (7/10)

EDUCATION AND OUTREACH

Spring 2010 *P. ramorum* Preventative Treatment Training sessions will be offered monthly February through May on the UC Berkeley campus. Each two-hour outdoor session will cover basic SOD information, integrated pest management approaches, how to select candidate trees for treatment, and proper preventative treatment application. (2/10)

Two free May workshops, "Sudden Oak Death Updates for Foresters and Landowners" will be offered by the COMTF in Ukiah and Eureka. The workshops will cover the latest *P. ramorum* regulatory requirements as well as up-to-date pathogen information that land managers need to know to limit disease impacts. The status of California's wildlands affected by SOD will also be discussed, including new infested areas, predicted spread, wildfire risks, and continued SOD impacts on affected forest-product industries. (4/10)

SOD Blitzes will be held in several locations this spring. **Blitzes are intended to engage** people in SOD issues as they relate to their local areas, and to assist communities in identifying locations where the pathogen is present. Participants will be given a two-hour training on identifying symptoms, correctly sampling symptomatic plants, and documenting sample locations. (4/10)

***P. ramorum* Prevention Workshops for Grower Nurseries – In response to increasing** international interest in "clean stock" nursery programs, CDFA and CANGC have kicked off a series of preventive practices and systems approach workshops that focus on minimizing the risk of *P. ramorum* introduction into nurseries as well as movement out of nurseries via infested plant purchases. At the free workshops, nursery owners and staff will work with CDFA's Primary Plant Pathologist as well as Nursery Program Specialists to customize individualized BMP manuals for preventing the entry and spread of *P. ramorum*. (8/10)

Four *P. ramorum* Preventative Treatment Training sessions will be offered this fall on the UC Berkeley campus. Each two-hour outdoor session will cover basic SOD information, integrated pest management approaches, how to select candidate trees for treatment, and proper preventative treatment application. (8/10)

"Turning Over a Clean Leaf," a new poster developed by The National Trust of the UK and WSU, is now available online in English and Spanish at http://www.puyallup.wsu.edu/ppo/sod/extension/publications.htm. The content focuses on how to protect your garden from pest and disease invaders. (8/10)

A "Pest Fest Costume Contest" is being held at the 6th Annual Meeting of the Continental Dialogue, October 5 – 6, 2010 in Waltham, Massachusetts. The contest is intended to be a fun and social evening event, highlighting the importance of outreach and education about the growing threat to North American forests from non-native insects and diseases. All costumes must be of an invasive insect or disease (such as *P. ramorum*) that kills trees. (9/10)

"Predicting Behavior of Forest Diseases as Climate Changes" webinars will be offered 11/3/10 and 12/2/10. The free online workshops 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. (10/10)

"The Mighty Oak Faces Challenges in the Pacific West" USDA Forest Service, Pacific Northwest Research Station's fall Science Update features four serious challenges oaks are facing that may trigger major changes in oak ecosystems. (10/10) http://www.fs.fed.us/pnw/pubs/science-update-20.pdf

"Sudden Oak Death - Integrated Pest Management in the Landscape" (UC Statewide Integrated Pest Management Program Agriculture and Natural Resources Pest Notes Publication 74151) is now available online at http://www.suddenoakdeath.org/wp-content/uploads/2010/09/Sudden-Oak-Death-PN-08_23_2010.pdf**.** The eight-page handout includes information on pathogen biology, identification, diagnosis, damage, management, and online resources. (10/10)

The COMTF website (www.suddenoakdeath.org) has been updated. The new web platform will facilitate easier updating, enhancing, and expanding of future online resources. (11/10)

The COMTF now has a presence on Facebook through a "Sudden Oak Death" group and a "*Phytophthora ramorum*" account. Go to the Task Force homepage to "like" us, and spread the word to friends and colleagues. (12/10)

RESOURCES

The UC IHRMP developed an "Oak Planners' Portal" (http://ucanr.org/sites/oakplanner/) which provides timely, science-based information for use in the development of local or regional conservation plans. The portal offers a "one-stop shop" to existing and future UC-derived sources of information, and includes "A Planner's Guide for Oak Woodlands" as well as "Ask an Oak Expert," which routes inquiries by category to the appropriate UC contact for a timely response.

As part of the ongoing restructuring within the UC Division of Agriculture and Natural Resources, the IHRMP will be phased out as a stand-alone statewide program. As part of this change, the IHRMP website is moving to http://groups.uanr.org/oakrange. (2/10)

In December 2009, the California Oak Foundation (COF) and California Wildlife Foundation (CWF) merged. COF will now be known as California Oaks (CO) and it will work under the CWF federal non-profit tax identification number. CO will continue to be focused on conserving and perpetuating native oak woodlands in order to achieve sustainable wildlife habitat and a stable, livable climate. The CO website will continue to be in operation, offering downloadable free publications and information. (3/10)

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 OakMapper homepage and then the "Print Map" button on the right. County and state maps are also still available for printing on an annual basis. (11/10)

The SOD youth education program "Can My Tree Catch the Flu?" is now available online at the UCCE Marin 4-H website. This interactive curriculum helps increase youth awareness of

SOD 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. (11/10)

RELATED RESEARCH

Amoroso, M.M. and Larson, B.C.2010. Stand development patterns as a consequence of the mortality in *Austrocedrus chilensis* forests. Forest Ecology and Management. In press. DOI: 10.1016/j.foreco.2010.02.009. (4/10)

Anderson, P.; Brundrett, M.; Grierson, P.; and Robinson, R. 2010. Impact of severe forest dieback caused by *Phytophthora cinnamomi* on macrofungal diversity in the northern jarrah forest of Western Australia. Forest Ecology and Management 259: 1033–1040. DOI: 10.1016/j.foreco.2009.12.015. (3/10)

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. (11/10)

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. (11/10)

Brasier, C.M.; Vettraino, A.M.; Chang, T.T.; and Vannini, A. 2010. *Phytophthora lateralis* discovered in an old growth *Chamaecyparis* forest in Taiwan. Plant Pathology. DOI: 10.1111/j.1365-3059.2010.02278.x. (4/10)

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RELATED TOPICS

***Phytophthora lateralis* has been confirmed for the first time in Britain. At least one** Lawson's cypress tree at Balloch Castle Country Park in Scotland has been killed by the pathogen. Many of the other 80 Lawson's cypress in the park also have *P. lateralis* symptoms; laboratory confirmations are pending. Twenty-seven dead and dying yew trees in the park are also being tested. The Forestry Commission is not aware of any records of *P. lateralis* infection of English yew to date. (12/10)

PERSONNEL

Charla Hollingsworth joined the Center for Plant Health Science and Technology (CPHST) team 11/09 as the new National Science Program Leader for Plant Pathogens and Weeds. In her position, Hollingsworth will support research-driven diagnostic and eradication technologies and analyses about plant pathogens and weed issues in an effort to provide the USDA Animal and Plant Health Inspection Service with the necessary information to make informed decisions about pest regulation issues. *P. ramorum* will be one of many diseases with which she will be working. Charla can be reached at (919) 855-7406; (919) 757-4543; or Charla.Hollingsworth@aphis.usda.gov. (2/10)

Don Givens, after 32 ½ years of federal service, will be retiring on July 3, 2010. Don has spent the past eight years in Fort Collins, CO as USDA APHIS PPQ Western Regional Program Manager (RPM). He has been one of the leaders of the *P. ramorum* federal regulations team, and will certainly be missed. (6/10)

Beginning July 4, 2010, Stacy Scott will assume the *P. ramorum* program RPM position until a permanent replacement has been chosen. Stacy Scott is a PPQ Regional Program Manager in Fort Collins, CO for the Biotechnology Inspection Program; Pest and Soil Permitting; the Containment Facility and Imported Fire Ant Programs; and ePermits, and is the

New Pest Advisory Western Region (NPAG**)** Liaison. Her contact information is (970) 494-7577 or stacy.e.scott@aphis.usda.gov. (6/10)

Steve Jones, after working nearly 30 years for the State of California, will be retiring from CAL FIRE as the Deputy Chief of Forestry Assistance Programs. However, he does plan to continue serving as the Treasurer for the COMTF. Steve can be reached at (916) 340-4454 or sjones.forester@gmail.com. (6/10)

Gary Chastagner, **WSU'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. (11/10)

CALENDAR OF EVENTS

2/10 – SOD Treatment Workshop; UC Berkeley Campus
3/7 – 3/12 - 5th IUFRO *Phytophthora* in Forest Trees and Natural Ecosystems Conference; Rotorua, New Zealand
3/10 – SOD Treatment Workshop; UC Berkeley Campus
4/17 – Sonoma Area SOD Blitz Initial Meeting and Training
4/21 – SOD Treatment Workshop; UC Berkeley Campus
4/24 – East Bay Region SOD Blitz Initial Meeting and Training
5/1 – Marin County SOD Blitz Initial Meeting and Training
5/8 – Atherton Area SOD Blitz Initial Meeting and Training
5/12 – SOD Treatment Workshop; UC Berkeley Campus
5/12 – Sudden Oak Death Update for Foresters and Landowners; Ukiah
5/13 – Sudden Oak Death Update for Foresters and Landowners; Eureka
5/15 – Los Altos Area SOD Blitz Initial Meeting and Training
5/22 – Woodside Area SOD Blitz Initial Meeting and Training
6/8 – 6/11 – COMTF-wide meeting; Dominican University; San Rafael
8/16 – *P. ramorum* Prevention Workshop for Grower Nurseries: Developing a Best Management Practices Program for your Nursery; Sacramento
8/18 – *P. ramorum* Prevention Workshop for Grower Nurseries: Developing a Best Management Practices Program for your Nursery; Ventura County
8/26 – *P. ramorum* Prevention Workshop for Grower Nurseries: Developing a Best Management Practices Program for your Nursery; San Diego County
9/9 – *P. ramorum* Prevention Workshop for Grower Nurseries: Developing a Best Management Practices Program for your Nursery; Tulare
9/15 – SOD Treatment Workshop; UC Berkeley Campus
9/28 – *P. ramorum* Prevention Workshop for Grower Nurseries: Developing a Best Management Practices Program for your Nursery; Eureka
10/5 – 10/6 – Continental Dialogue on Non-Native Forest Insects and Diseases Sixth Dialogue Meeting; Waltham, Massachusetts
10/6 – SOD Treatment Workshop; UC Berkeley Campus
10/20– SOD Treatment Workshop; UC Berkeley Campus

11/3 – SOD Treatment Workshop; UC Berkeley Campus
11/3 – Predicting Behavior of Forest Diseases as Climate Changes Webinar
11/6 – Carmel Valley Community Meeting – Responding to the Threat of Sudden Oak Death; Carmel Valley
11/16 – 17 – 59th Annual Meeting of the California Forest Pest Council; McClellan
12/2 – Predicting Behavior of Forest Diseases as Climate Changes Webinar