



REPORT TO THE CALIFORNIA OAK MORTALITY TASK FORCE JANUARY 2002

CONTACTING THE TASK FORCE

California Oak Mortality Task Force (COMTF) Coordinator Nicole Palkovsky has gone on maternity leave. In her absence, please direct all general inquiries to the most appropriate committee chairperson. To sign up on the list server or to join COMTF, please contact Rick Standiford. Key contact information is noted below.

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REDWOOD

Redwood is not a confirmed host of Sudden Oak Death (SOD) at this time.

On January 8, 2002, several newspapers, television stations, and radio stations picked up a story that *Phytophthora ramorum* (the cause of SOD) may be killing redwoods. The story was given to the media by Ken Bovero, owner of Marin County Arborists. He took reporters to two sites in Marin County where dying redwoods are adjacent to areas with symptomatic toyon, tanoak, coast live oak, and rhododendron.

The private laboratory Mr. Bovero used was able to identify the presence of a *Phytophthora* on the redwood samples provided; the specific species was not determined.

In response to the story, Matteo Garbelotto, UC-Berkeley researcher, and David Rizzo, UC-Davis researcher, reported that they have identified *Phytophthora ramorum* DNA on redwood sprouts (not killing trees) in Pfeiffer Big Sur State Park in Monterey County and on the UC Berkeley campus.

The California Department of Food and Agriculture (CDFA) and the Rizzo/Garbelotto Laboratories are sampling the trees and doing the scientific studies necessary to determine whether the pathogen that causes SOD is affecting redwoods. The original report of dead redwoods is based on a lot of circumstantial evidence. Laboratory confirmation is necessary before redwood can be considered an official host by CDFA.



QUARANTINE

The Canadian Food Inspection Agency has made significant changes to the Canadian quarantine. The regulations now cover the entire states of Oregon and California, with no distinction between infested and non-infested counties.

All species of the following genera: *Quercus* (oak), *Lithocarpus* (tanoak), *Rhododendron* (rhododendron and azalea), *Aesculus* (horsechestnut, California buckeye), *Arbutus* (madrone), *Viburnum* (arrowwood), *Arctostaphylos* (kinnikinnick or manzanita), *Lonicera* (honeysuckle), *Acer* (maple), *Rhamnus* (buckthorn), and the following specific species: *Umbellularia californica* (California bay or Oregon myrtle), *Vaccinium ovatum* (California huckleberry), and *Heteromeles arbutifolia* (Christmas berry, toyon, California holly) are regulated.

Link to quarantine:

<http://inspection.gc.ca/english/plaveg/protect/dir/d-01-01e.pdf>

Link to list of regulated areas:

<http://inspection.gc.ca/english/plaveg/protect/dir/sodmsce.shtml>

Link to list of regulated species:

<http://inspection.gc.ca/english/plaveg/protect/dir/sodspe.shtml>

BIOMASS

In a three-part collaborative study, Sonoma County and Matteo Garbelotto's lab at UC Berkeley, have found that composting *Phytophthora ramorum* infested host material may serve as an effective sanitation tool for Sudden Oak Death biomass.

Researchers found that composting materials for two weeks at 55 degrees centigrade effectively eliminates *Phytophthora* from the resulting compost. Results indicated that bay laurel leaves were most resistant to decontamination efforts. Based on these findings, researchers predict that greenwaste recycling centers may be able to compost materials to achieve effective sanitization.

Although this study offers great promise in addressing the challenges of increased biomass due to the SOD epidemic, researchers caution that more research needs to be done before an effective treatment can be put in place. During the course of the study, a significant amount of variation was detected among different plant substrates, post treatment environmental conditions, and composting parameters (specifically temperature). It is also possible that time of year may play an important role in the final outcome of the sanitation process.

EDUCATION

The Education Committee participated in this year's Fungus Fair, hosted by the Mycological Society of San Francisco, at the Oakland Museum. The event was very well attended and participants showed great interest in the *Phytophthora ramorum*: Sudden



Oak Death booth. Thanks to all that volunteered and to Bruce Hagen, Pavel Svihra, and Maggi Kelly for providing us with excellent posters.

FUNDING

The San Francisco-based Gordon and Betty Moore Foundation have awarded a \$1 million grant to researchers Dave Rizzo and Matteo Garbelotto. The money was provided to UC Berkeley and UC Davis for research needs surrounding the study of the aggressive pathogen *Phytophthora ramorum*, known to cause Sudden Oak Death. “We are very excited about this money. With it we will be able to acquire infrastructure necessary to conduct key experiments in furthering our understanding of this pathogen,” said Dave Rizzo, professor and leading researcher at UC Davis.

“A lot of baseline research needs to be done for us to fully understand this disease as well as its potential impacts on California’s landscape. Our focus fits in with the Moore Foundation’s biodiversity and environmental interests as well as the larger impacts faced with an introduced microorganism into an ecosystem. The foundation’s investment in our research is a positive step in the right direction,” said Matteo Garbelotto, an extension forest pathology specialist and adjunct professor of plant pathology at UC Berkeley.

RESEARCH

Study sites in Marin County were established in March 2000 to monitor disease trends and to develop estimates of the impact of Sudden Oak Death in the forests. Researchers currently have 10 permanent plots in China Camp State Park and 10 on Marin Municipal Water District (MMWD) land. Both the plots and a point-centered-quarter plotless density estimation method have been employed to provide estimates of infection and mortality levels in coast live oak and California black oak. Data in the permanent plots have been collected quarterly. For China Camp State Park, 35.4% of the 293 coast live oaks in the permanent plots exhibited symptoms of SOD in March 2000, increasing to 38.6% in March 2001. The mortality level due to the disease was 7.8% in March 2000, compared to 14.7% in March 2001, representing the death of 17 trees within a year. All trees that were counted as dead prior to the first data collection exhibited the bleeding symptom of the disease. In MMWD, infection levels for coast live oak were 16.3% and 18.9% in 2000 and 2001, respectively. Mortality increased from 5.6% to 8.4%. For black oak, infection levels, pooled for both China Camp and MMWD, were 19.3% and 26.7%, in 2000 and 2001, respectively. The comparable levels of mortality were 3.1% and 6.3% for the two dates. Levels of infection found in tanoak in MMWD plots rose from 40% in March 2000 to 55% by March 2001. Mortality also increased, from 12% in 2000 to 15% in 2001.

Researchers conducted an independent assessment of infection and mortality levels for coast live oak and black oak in China Camp State Park in June-September 2001 to provide unbiased estimates of these parameters. The point-centered-quarter method provided estimates of infection (30%) and mortality (14%) levels for coast live oak that



are broadly consistent with those derived from the permanent plots described above. For black oak, these values were 21% for infection and 16% for mortality. Data collection and monitoring are continuing, as new areas are brought into the study.

Research summary provided by Brice McPherson, David Wood, and Rick Standiford.

HAZARD TREE REMOVAL

On November 20th a meeting was held to discuss a plan for the distribution of funds allocated in the State budget for the purpose of tree removal due to Sudden Oak Death. Assembly Bill 62 (AB62) provided more specific guidelines that were not in the initial allocation of funds.

According to AB62, funding can be used for assessment and removal of hazard trees. The funds are to be administered by CDF with approval of the plan by the Board of Forestry and Fire Protection. The initial plan is to have Marin County act as the sole contractor with CDF to disburse funds to all other affected counties. The contract with CDF will be broadly defined so as to allow for more specific interpretations by each county. Once the contract with CDF is in place, it is up to each individual county to develop a plan for how their funds will be allocated. Those plans will be submitted to Marin County and evaluated by CDF and Marin County. The trees being removed will be selected based on potential failure that would pose a direct life threat.

SONOMA COUNTY

Phytosphere Research recently completed a project funded by the Sonoma County Fish and Wildlife Advisory Committee to establish permanent research/monitoring plots in woodland and forest types at risk from Sudden Oak Death in Sonoma County. Plots were dispersed over 10 to 20 acres at each of 11 locations and are designed to monitor SOD and other diseases in coast live oak, black oak, and tanoak.

Among seven locations with *P. ramorum* symptoms, apparent SOD infection rates ranged from 3% to 45%. *P. ramorum* cankers were most common on tanoak and least common on black oak. For coast live oak, but not tanoak, SOD symptoms were significantly more common among overstory trees rather than understory trees. Among all 11 study locations, the incidence of decline and recent mortality of SOD hosts from agents other than *P. ramorum* ranged from 17% to 33%. In most locations, decline and mortality from these agents, mostly native wood decay fungi, is currently a greater factor than SOD. Relatively little overlap was seen between trees affected by *P. ramorum* and trees declining as a result of other pathogens. Reasonable levels of tanoak and coast live oak regeneration were typically present in the understory beneath these species, but black oak regeneration appeared to be inadequate.

View the full report at http://phytosphere.com/publications/Sonoma_SOD_study.htm.

**CURRY COUNTY, OREGON**

Eradication efforts are under way at the nine infection centers near Brookings, Oregon where *Phytophthora ramorum* was positively identified in fall, 2001. Landowners have cut and piled all host material found within the infection centers and a buffer zone of healthy-appearing hosts. Burning of the host material on the sites has begun; two of the largest sites have already been burned. The United States Department of Agriculture – Forestry Service (USDA-FS) and Oregon Department of Forestry (ODF) have worked together to provide reimbursement funds for landowners' costs. The Oregon Department of Agriculture (ODA) will start monitoring the burned sites for the presence of *P. ramorum* in January. The ODF, USDA-FS, and Oregon State University (OSU) continue to perform surveys in the area.

MEETINGS

Over 150 people attended the fourth California Oak Mortality Task Force meeting in Petaluma on November 15, 2001. The meeting addressed working under Sudden Oak Death regulations implemented by California. Thanks to all of the speakers, moderators, and participants that made this event possible.

WEBSITES FOR MORE INFORMATION AND EDUCATIONAL MATERIALS

Researcher Matteo Garbelotto has begun the design of a comprehensive website on Sudden Oak Death. The site has an excellent identification guide. To view the site, go to <http://www.cnr.berkeley.edu/SOD>.