



California Oak Mortality Task Force

2001/02 Sudden Oak Death Program

November 2001

This document outlines an adaptive management approach to address Sudden Oak Death for California. The California Oak Mortality Task Force (COMTF) is focusing on five issues in 2001-2002:

- hazard reduction
- regulation implementation
- predicting risk
- defining impacts
- planning and administration.

Background information on Sudden Oak Death and the COMTF, a synopsis of accomplishments for 2000 – 2001 and the COMTF's priorities for 2001-2002 are provided below. Sudden Oak Death is a new forest disease; in the next few pages we outline how California governments and organizations are working together to respond to it.

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Background

Sudden Oak Death, a new forest disease, was first reported in 1995 in Marin County. In summer 2000, Dr. David Rizzo, (UC-Davis) and Dr. Matteo Garbelotto (UC-Berkeley), identified the cause of this tree die-off to be a new pathogen, now named *Phytophthora ramorum*. Since identified, *Phytophthora ramorum* has been found in ten coastal counties in California and one in Southern Oregon. It has also been linked to leaf spots and twig

dieback on rhododendrons in Germany and the Netherlands, which were reported around 1994.

In California coastal counties, *Phytophthora ramorum* has killed tens of thousands of tanoak (*Lithocarpus densiflorus*), and coast live oak, (*Quercus agrifolia*). It is also kills California black oak (*Quercus kelloggii*), Shreve oak (*Quercus parvula var. shrevei*), and madrone (*Arbutus menziesii*). It causes leaf spots and/or twig dieback on California bay laurel (*Umbellularia californica*), rhododendron, huckleberry, big leaf maple, manzanita, and other woody plants.

Since this pathogen is new to science, we are learning about it while at the same time making efforts to protect the natural and human environments it has invaded. Sudden Oak Death erupted in the urban wildland interface utilized for living and recreation by over 7 million people. It is killing trees on lands that are owned by federal, state, county, and local governments as well as private individuals and companies. There isn't one large landowner that can determine the best course of action. Sudden Oak Death can only be addressed through the cooperative efforts of many landowners and managers.

About the task force

In August 2000, the California Oak Mortality Task Force was created by the California Department of Forestry and Fire Protection, and the California Forest Pest Council, to bring together public agencies, research organizations, nonprofit organizations and private interests to address the issue of elevated oak mortality. The task force is a consensus group, with the challenge of establishing a cooperative, unified approach to address Sudden Oak Death. This program includes research, education, monitoring, management and public policy. Since its formation COMTF has grown to over 65 agencies and over 800 members.

How should California respond to Sudden Oak Death?

The task force is coordinating California's response to Sudden Oak Death. The task force's founding purpose was to respond to Sudden Oak Death as expressed in the following objectives.

- Assist communities threatened by Sudden Oak Death to maintain a safe and healthy environment
- Develop and maintain an adaptive integrated pest management program for Sudden Oak Death
- Provide information and educational materials for Sudden Oak Death
- Identify sources of funding, staffing and other needed resources for Sudden Oak Death.

Our overall strategy is based on:

- **Research** to acquire knowledge about the disease that will lead towards slowing pathogen spread;

- **Education** so professionals and the public understand what is occurring in the forest;
- **Monitoring** to understand the impact and distribution of Sudden Oak Death and *P. ramorum*;
- **Regulations** to limit human-caused movement of the pathogen.

Management activities are being designed and considered for the future. Work on stand manipulation and resistance programs is underway, but more research is needed to understand the oak forests and woodlands and ways the pathogen spreads before these efforts can be more fully developed. Chemical treatments are being tested but until adequate data is available to evaluate pesticide effectiveness, none are recommended.

During 2000-2001, the COMTF

- Brought together the forestry and agricultural communities to respond to Sudden Oak Death
- Provided information via the website www.suddenoakdeath.org
- Held training sessions and other informal arenas for exchange of information
- Created a GIS database to monitor disease distribution
- Advised organizations on all aspects of the problem.

The COMTF is also working to raise awareness and financial support to address Sudden Oak Death. In fall 2001, Sudden Oak Death funding reached over \$9 million:

- Over \$4 million from the United States Department of Agriculture primarily for research
- \$3.6 million from the State
- \$1 million from a private foundation.

The COMTF is advisory and does not administer any of these funds. The COMTF seeks to coordinate efforts and provide guidance to funders, lawmakers, management agencies, research institutions and other interested parties.

COMTF Priorities for 2001 – 2002

For 2001–2002, the COMTF has identified 5 focus areas in which efforts will be concentrated. The following sections explain these emphasis areas and current priorities.

1. Hazard Reduction

The task force was created to assist communities threatened by SOD to maintain a safe and healthy environment. The hazards created by dead and dying trees include increased fire hazard and physical hazards from falling trunks and branches. To reduce these hazards, the State provided \$1 million to infested counties to pay for removal of trees that pose a life threat, or endanger property and public works. Hazard tree removals are necessary to maintain a safe living space, however, they introduce an additional set of concerns, including:

- Entering infested areas with heavy equipment, transporting and disposing tree parts offsite may spread the pathogen or damage the environment.
- Tree removal may create openings for invasive weeds and expose bare ground, which may accelerate soil erosion.
- The dead and dying trees are a resource that could be used for energy generation, compost or as raw materials for wood products but plans must be in place to collect the raw materials, sort them and ensure they are transported without infesting new areas.

To address these concerns the following projects have been identified.

- Identify best management practices and transportation protocols for tree removals to minimize adverse environmental impacts and prevent pathogen spread.
- Implement a practical, cost-effective system for utilization of wood materials, including concentration yards to assemble and sort materials.
- Determine if composting kills the pathogen and can therefore be used as treatment to sanitize plant debris.
- Provide educational programs for cities, counties and others to explain principles of hazard tree evaluation, employee safety concerns, monitoring and record keeping, best management practices, etc. Information needs for homeowners include advice on hazard tree identification, disposal and fire hazard reduction.
- Determine the risk of tree failure for trees infested with *P. ramorum*, and the effect of initial infection on tree structure.

2. Prevent pathogen spread – regulations

In May 2001 the California Department of Food and Agriculture imposed a regulation to limit movement of infested woody materials and prevent artificial (human-caused) *Phytophthora ramorum* introductions. Oregon, Canada and South Korea imposed similar quarantines and USDA Animal Plant Health Inspection Service (APHIS) is working on a regulation to prevent interstate and international movement of *P. ramorum* via commodities.

The implementation and enforcement of these regulations requires detailed maps and other information. Our priorities include:

- Monitoring.
 - Complete delimitation surveys that are needed to enforce the regulation
 - Survey for early detection in uninfested counties
 - Produce and distribute detailed maps of all infested counties
 - Post maps and other information on the web
 - Define survey, sampling and inspection protocols to ensure the regulations are enforced consistently statewide.

- Educational program.
 - Develop field guides and training sessions in pathogen recognition for inspectors, diagnosticians, foresters, utility line clearance workers, horticulturists, master gardeners, and other affected parties.
 - Provide explanation of regulation enforcement for firewood dealers, arborists, utility arborists and others.

- Research.
 - Practical research is needed to determine risk of pathogen spread on various commodities
 - Sanitation treatments that could be used prior to transport to destroy the pathogen
 - Host range determination
 - Determination of natural and man-caused spread mechanisms.

3. Impacts of Sudden Oak Death

This third priority area focuses on determination, prevention and mitigation of the impacts of Sudden Oak Death. Since it may be relatively early in the disease epidemic, the long-term changes in infested ecosystems can not all be foreseen or understood; however, restoration strategies, economic impact definition, plots to monitor vegetation change, and investigations to define the impacts on wildlife, soils, and water flow are needed.

4. Predicting risk

Phytophthora ramorum may be a recent introduction into oak woodlands in coastal California. It is unclear how the pathogen might respond if introduced into the Sierra Nevada Mountains, other parts of the United States or Canada. The environmental constraints that limit or exacerbate the disease are not clearly understood. Research, analysis and predictive modeling are needed to determine the potential for Sudden Oak Death worldwide. Critical questions that need to be understood are: How dangerous is this pathogen? Over the next 10 years where will *P. ramorum* spread to? How many types of ecosystems will be impacted and how severe will these impacts be?

Research. In the U.S., *P. ramorum* so far, has only been found within 50 miles of the Pacific coast. This suggests that humidity, fog or other coastal influences may favor disease establishment. Determination of environmental constraints for the pathogen could help determine what ecosystems are at risk.

Monitoring. Remote sensing and other intensive mapping efforts can be analyzed to determine if patterns are present in pathogen establishment. Soil type, forest composition, aspect and other factors will be assessed to see if high-risk areas can be identified.

Education. The USDA Forest Service and the European Union have completed risk assessments for *P. ramorum*. Canada's risk assessment is nearing completion. These assessments will be assembled and made available to interested parties at www.suddenoakdeath.org.

5. Planning functions for Sudden Oak Death

The COMTF was created in part to identify needed programs, resources, and staffing to address Sudden Oak Death. How should our society respond to Sudden Oak Death? What could be done and what must be done to protect our oak forests and woodlands? How can what is learned from Sudden Oak Death be used to prevent future exotic pest introductions? Information is needed to guide the answers to these questions and to serve as tools for decision-makers in land management agencies, for lawmakers and others determining funding levels and programs for Sudden Oak Death and forest protection.

Priorities for planning include:

- Detailed budgets and priority project lists need to be formulated and updated continually as new information emerges.
- Spreadsheets to track funding, research results and research needs, monitoring projects and other activities are needed. Accounting of projects and progress will prevent duplication of effort and demonstrate what has been done and what needs to be done. This information could be posted on the web so managers and other interested parties can track what is being done, future plans, etc.

Sudden Oak Death erupted in the urban wildland interface of Marin and Santa Cruz Counties but has been found more recently in oak woodlands in Mendocino County and Southern Oregon. Up until now it has been addressed as an urban forestry problem but are other activities warranted to protect forests and woodlands? When is eradication effective and how could it be carried out? When are road closures, chemical treatments or silvicultural treatments beneficial? Literature searches and reviews of programs to limit the spread of similar pathogens are needed.

Summary

For 2001 – 2002 the COMTF is focusing on five areas: hazard reduction, regulation implementation, predicting risk, defining impacts, and planning and administration. Sudden Oak Death erupted in the urban wildland interface of Marin and Santa Cruz Counties but has been found more recently in oak woodlands in Mendocino County and Southern Oregon. Up until now it has been addressed as an urban forestry problem but are other activities warranted to protect forest lands? What other programs are needed in urban forests? As more is learned about Sudden Oak Death, California's response needs to be tailored to fit the new information. By working together cooperatively, the COMTF aims to limit the spread and impact of Sudden Oak Death and protect California's woodlands from this and other invasive organisms.