

Discussion

Pitch Canker Presentation

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INTRODUCTION

About Pitch Canker

Pitch canker is an introduced fungal tree disease first discovered in California in 1986. On June 4, 1997 by resolution the State Board of Forestry established the Coastal Pitch Canker Zone of Infestation (ZOI or Zone) which includes all or portions of 22 coastal counties from Mendocino to San Diego. The resolution is included as Attachment A. Since its discovery, pitch canker has proven to be a serious and lethal disease of Monterey and bishop pines and is known to infect numerous other native California pines. In response to this threat the statewide Pitch Canker Task Force was formed and has since developed recommendations (Attachment B).

Wind, bark beetles and other insects carry the fungus, *Fusarium subglutinans f. sp. pini*, from tree to tree. Long-distance spread of the disease occurs as people transport whole logs, firewood, Christmas trees, yard waste, wood chips, and residential and commercial wood waste infected with pitch canker. Pitch canker has been found in 18 counties within the Zone. An additional 4 counties are included within the Zone because of the high likelihood that the disease will be found in these counties in the near future. There are many areas within the Zone that are still free of the disease.

Because of the devastating nature of pitch canker and because there is no known chemical cure or preventative, a primary effort of the California Department of Forestry and Fire Protection (CDF) is to slow the spread of the disease from infested to uninfested areas within the Zone and to areas outside the Zone. Slowing the spread of pitch canker is dependent on development of programs that will leverage changes in how and where people transport infected pine materials by:

- ◆ Capturing maximum volumes of potentially infected pine materials for handling, processing for use, and disposal in managed systems.
- ◆ Processing pine materials using a method that eliminates the pathogen.
- ◆ Reducing the distances pine materials are transported by processing materials close to the point of generation.
- ◆ Reducing the release of the pathogen via insect vectors during transport by ensuring that pine materials are transported in enclosed vehicles.

The Need for Cooperation and for Assuming Responsibility

Because private business, residents, vacationers, non-governmental organizations, and government agencies all participate in the spread of pitch canker in everyday activities of transporting logs, firewood, chips, branches, needles, cones, and trees that include pine materials, slowing the spread of the disease will require a willingness among all of these entities to cooperate and to assume responsibility. Thousands of Monterey pines and other pines will be killed by pitch canker within the Zone of Infestation. Reducing the impact of the disease and slowing its spread will depend on a cooperative determination to *fund new programs*, to *change daily habits*, to *implement changes to existing systems*, and to *develop new systems* for capturing, handling, utilizing, and disposing of pine materials.

The Purpose of this Report

The purpose of the report is to provide:

- ◆ A recommendation for a self sustaining program for San Luis Obispo county for the capture (separate collection), handling (transporting), utilization, and disposal of pine materials that will slow the spread of pitch canker from infested to uninfested areas within the project area, within the Zone of Infestation, and to areas outside the Zone.
- ◆ A listing of program options for the use of pine materials ranked in order of effectiveness based on specific criteria and on biological, economic, and political considerations.
- ◆ A model policy and ordinance upon which effective programs for slowing the spread of pitch canker can be based.
- ◆ A template for ZOI counties outside of the project area for local application of program options.

Criteria used in the feasibility analysis of program options are listed in order of their ranking in the "Methodologies" section below.

The Project Area

The geographic area covered by this project is the county of San Luis Obispo. The jurisdictions involved include San Luis Obispo County and the seven incorporated cities of Atascadero, Paso Robles, San Luis Obispo, Morro Bay, Pismo Beach, Grover Beach, and Arroyo Grande. All infested counties, along with the jurisdictions within the project area, were involved in an initial survey which provided information on current practices and an understanding of program needs. As mentioned above, the report also includes a template for developing local programs for ZOI counties.

All Pine Materials Assumed to be Infected

For the purposes of this report *all pine materials are assumed to be infected* because, at the outset, most people are not able to distinguish infected from uninfected pine trees and pine materials. In addition, even if people who work with trees and tree materials could distinguish infected from uninfected pines, setting up an entirely separate system for the collection, transport, use, and disposal of *infected* pines would be unrealistic and inconsistent with the project priority to build on existing programs. Implementing changes to existing systems that already handle wood and yard debris and initiating new systems and facilities to slow the spread of pitch canker by providing needed waste reduction services for collection of *all* wood and yard debris will provide a broader base for program sustainability.

The Importance of Protecting Monterey Pine Forest Ecosystems

Preserving Genetic Resources

A 1995 publication sponsored by the USDA Forest Service and the University of California Genetic Resources Conservation Program, "The Status of Temperate North American Forest Genetic Resources" discusses the potential for losses of the genetic underpinnings of native tree species in North America and calls for *in situ* preservation of forest ecosystems. The report points out that while close to 4 million hectares of Monterey pine are grown in plantations in Australia, New Zealand, and Chile, Monterey pines are managed in their North American native ecosystems only for their aesthetic value, if they are managed at all. This is a precarious situation indeed, when to sustain the genetic essence of a species and the genetic core of a multi-billion dollar industry it may become necessary to draw upon the genetic resources of these dwindling, unmanaged native forests.

In situ protection of Monterey pines is also called for by the Food and Agriculture Organization (FAO) of the United Nations. A 1995 paper by the FAO by William Ciesla entitled "Natural Forests of Monterey Pine: A Global Resource", states that the existing three natural stands of Monterey pine in California and the two small stands on Mexican islands off Baja are the only *in situ* sources of germplasm upon which future tree improvement programs depend. The FAO considers Monterey pine to be the world's most widely planted species of pine and advises that safekeeping of the remaining gene pool through an *in situ* program which affords long term preservation of the remaining native stands of Monterey pine is *critical*.

In the April 1998 Worldwatch Issue Paper 140, "Taking a Stand: Cultivating a New Relationship with the World's Forests", Janet Abramovitz recommends development of *ecosystem reserves* and protection of forest species *in situ* as elements of intact ecosystems. This report focuses on the *necessity* for protecting and (for forest understory dwellers) restoring healthy forest ecosystems based on a *new relationship with forests*.

A first step in building a new relationship with the Cambria Monterey pine forest in San Luis Obispo county will be taken when individuals and organizations make changes to systems and behaviors that will slow the spread of pitch canker.

Keeping Carbon Locked in Wood

In the Worldwatch report cited above, Ms. Abramovitz states that "Sustaining forests for future generations will mean recognizing that their real wealth lies in their healthy ecosystems". She asserts that the "loss of ecosystems is no longer just a local problem" and that the "scale and consequences of their decline reveal that we are all members of a threatened forest community - a global community". This Worldwatch report states that almost half the forests that once blanketed half of the earth are gone with most of the losses occurring during this century. And due to those losses, which emit carbon into the atmosphere, we are left with less forests to absorb the increasing amounts of carbon that are being emitted by expanding industrialization.

However, because of the ability of forests to store vast amounts of carbon (world wide estimated to be 2.14 trillion tons) in trees, in organic matter on the forest floor and in soils, there is the real potential for restored forests once again to become a net carbon sink rather than a source of

increases in atmospheric carbon. Therefore, this report gives value to options of slowing the spread of pitch canker that keep carbon locked in the wood. This can be achieved by using wood to make longer-lasting products such as lumber, furniture and other wood products. The use of wood for fuel has less value since the process involved causes carbon to be released into the atmosphere.

Economic Considerations

The Wood Waste Glut in California

In an unpublished paper entitled "Urban Wood Waste", the California Integrated Waste Management Board (CIWMB) reports that each year in California approximately 3,800,000 tons of urban wood, which includes pruned branches, stumps and whole trees among other forms of discarded wood, is discarded. Of that amount, 3,350,000 tons are landfilled and only 450,000 tons are diverted.

At the time of the writing of the report, December of 1995, an additional 1,300,000 tons were being consumed annually by the biomass industry in co-generation facilities as boiler fuel. Since the writing of this report, the biomass industry's demand for wood waste has decreased dramatically due to closures of public and private plants. Once economically feasible because of guaranteed higher energy prices provided by the Public Utilities Regulatory Policies Act of 1978, most biomass facilities have closed after the expiration and non-renewal of this legislation.

The state of California is glutted with wood waste. In addition to this glut, the loss of biomass plants, low landfill tip fees (in this county all tip fees are \$45 or less), and the locally accepted practice of "road-siding" logs and wood chips, present formidable barriers to finding markets for increasing volumes of wood waste produced in San Luis Obispo county.

The Costs of Tree Removal

In their April 1997 Fremontia article "Economic Damages of Pitch Canker", Templeton, Wood, Storer, and Gordon discuss the costs of removing pitch canker diseased Monterey Pine trees from private and public lands in Carmel-by-the-Sea. Given an average tree removal cost of \$800 and a projected loss of 80% of the community's 7,488 Monterey pines, the authors project that homeowners will spend about \$2,000,000 and the that city will spend about \$2,800,000 for tree removal costs alone.

Based on interviews with managers of tree removal services that operate in Cambria, 2 tree removal services cumulatively remove about 600 trees per year. This total includes trees removed on private property for development and due to disease. At an average of \$800 per tree, conservative annual tree removal costs for Cambria residents and builders (based on the activities of 2 tree removal services) can be projected to be \$480,000. If the number of trees dying of pitch canker doubles the number of trees cut down, future costs to homeowners would be nearly \$1,000,000 annually. These calculations do not include the costs of tree removals incurred by the County, the State, and by Pacific Gas and Electric.

Pine Materials as a Resource

It is very important to realize that the pine materials being produced in this county have one consequential quality that distinguishes them from the huge volumes of essentially valueless wood waste flooding California's waste stream. While most wood waste comes from construction, demolition, renovation, packaging and shipping, and waste from woody crops, the pine trees which are the subject of this report are *new* wood.

Perceived as waste, pine trees will join the millions of tons of wood waste produced annually in the state and the high cost of collecting, transporting, and landfilling waste will be added to the costs of tree removal. *Recognized as a local resource* and linked with local needs, value can be added to pine logs and pine branches, bark, needles and cones. Initial investments in developing the local systems and facilities that will add value to pine trees before they leave the area will reduce the costs for public services, provide local economic benefits and will add practicality and sustainability to programs designed to slow the spread of pitch canker.

The potential for programs to be self-sustaining is a high priority (see list of ranked criteria). Since program sustainability rests ultimately on the soundness of private sector businesses that add value to collected pine materials, leveraging that sustainability will mean adoption of policies, ordinances, and grant programs that encourage and support new and existing local businesses.

Support of Local Markets by Local Government Agencies

While local private sector markets exist for pine lumber, interviews with local millers and one northern California mill indicate a reluctance among retailers to carry Monterey pine lumber. This reluctance is, according to these millers, primarily due to a lack of familiarity with the product, not because of any shortcoming of Monterey pine.

Since local governments will benefit from the processing of pine materials that will kill the pitch canker pathogen *and* will contribute to achieving mandated solid waste diversion goals, local government agencies may want to consider supporting sustainable markets for these enterprises by providing a price preference for the use of locally produced Monterey pine products for in-house and contracted work.

Avoided Disposal Costs

Avoided disposal costs are the total costs of disposal (curbside collection, transport, and landfilling) which are avoided and saved when materials are diverted from disposal systems. These avoided costs represent significant per ton savings, funds which can be shifted from disposal services (which no longer collect, transport, or landfill the diverted materials) to development and maintenance of systems and facilities for recycling tree materials. The "Funding Options" section contains more information on avoided disposal costs.

The avoided disposal cost method of determining the costs of waste processing alternatives provides a more accurate method of assessing those costs and provides a source of revenue for implementation of processing alternatives.

Local Funds for Implementation of Regional Recycling and Composting Programs

Through a joint powers agreement, the County of San Luis Obispo and 6 of the 7 cities in the county formed the Integrated Waste Management Authority (IWMA) as a method of implementing regional waste reduction, recycling and composting programs. Since its inception, the IWMA has collected a \$3.00 fee for each ton of waste disposed at landfills within the County's jurisdiction (Cold Canyon and Chicago Grade) which is reserved for implementation of regional recycling and composting programs.

Support for Project Objectives by State Legislation and Local Policies

AB 939

The California Integrated Waste Management Act of 1989, Assembly Bill (AB) 939, requires that each county and city reduce 1990 landfilled tonnages by 50% by 2000. This legislation also requires that each jurisdiction generate a plan called a Source Reduction and Recycling Element (SRRE) which describes adopted policies and the programs which will be implemented to reach this waste reduction goal, and which identifies the costs of the programs along with funding sources.

Local Policies

The SRRE adopted by the jurisdictions in San Luis Obispo county was developed jointly by the 7 cities and the County, after which the County Integrated Waste Management Authority was formed to implement county-wide programs. The jointly adopted SRREs include policies to:

- ◆ Work cooperatively with other jurisdictions in establishing and operating programs and systems.
- ◆ Provide convenient recycling opportunities for all residences and business.
- ◆ Encourage and support recyclable materials being "source separated" from other wastes.
- ◆ Encourage and support establishment and operation of business enterprises utilizing recycled materials in the manufacture of goods.
- ◆ Encourage production of usable compost in a cost effective manner.
- ◆ Development of markets for compost.
- ◆ Provide economic incentives and technical assistance to attract recycling and manufacturing businesses.

In addition to these solid waste and recycling policies, the Cambria Monterey pine forest is designated as a "sensitive resource area" in the County's General Plan and in the County's Coastal Zone Land Use Ordinance.

Cities behind in garbage fight

HUNDREDS, INCLUDING SLO, NOT MEETING 50-PERCENT GOAL

By MARTHA BELLISLE
Associated Press

LOS ANGELES — Hundreds of California cities and counties are falling short of an ambitious goal to halve the amount of garbage they dump in landfills by 2000 and could be fined up to \$10,000 a day, state officials and environmental groups say.

Of 451 jurisdictions that reported to the state, only 104, or 23 percent, had met the goal at the end of 1997, an Associated Press review of the reports found. Reports filed for 1998, although incomplete, indicate the percentage has remained roughly the same, with only a year left before the deadline.

"We know it's doable and folks have gotten there, but the bottom line is the majority of jurisdictions are going to fail," said Mark Murray, executive director of Sacramento-based Californians Against Waste, a leading watchdog group.

The Integrated Waste Management Act is the nation's most comprehensive recycling law. It covers all garbage, not just bottles and cans, and emphasizes changes in packaging or business practices that will lower the amount of rubbish produced.

Passed in 1989, the act aims to ease the burden on landfills while reducing pollution, saving energy and protecting trees. It required cities and counties cut by 25 percent the amount of waste going to landfills by 1995. They must divert 50 percent by Jan. 1, 2000.

Cities and counties that fail to meet the deadline face fines that could top

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\$3.6 million annually, about \$10,000 a day. Fines will not be levied until 2001.

those expected to fail are several cities in fast-growing San Diego, Orange, San Bernardino Angeles counties, including Lynwood, San Gabriel, Laguna Beach and Coronado. Los Angeles, Sacramento and San Diego, among the state's biggest cities, are close to the 50 percent goal.

John Moss, utilities director for the city of San Luis Obispo, said he estimates that the city has reduced its waste stream by 34 percent to 39 percent, short of the 50-percent goal.

The city is having trouble reaching the 50-percent mark because construction activity peaked this year, and the landfills have been taking in an unusual amount of construction debris. The city is looking at ways of diverting the stream of construction materials.

If that effort is successful, the city will have no trouble reaching its 50-percent goal, Moss said. All the other recycling programs required by state law are in place, he said.

California sends about 37 million tons of solid waste a year to 15 landfills across the state. On average, those landfills can keep taking garbage for about 25 more years.

The Associated Press review found that dozens of towns have barely started programs, despite the deadline. More than half of jurisdictions were diverting just 40 percent of their trash from landfills, according to 1997 reports.

Even those cities probably won't meet the goal, environmental experts say.

"Getting that last little bit is difficult to do," said Samuel Vigil, an environmental engineering professor at California Polytechnic State University, San Luis Obispo. "Setting up green waste recycling and curbside recycling, those were the easy ones. They've already picked the low-hanging fruit."

San Francisco, for example, was diverting 40 percent of its trash in 1998, but officials doubt it will make that last 10 percent by 2000, said David Assmann, the city's re-

What the law says

California's Integrated Waste Management Act of 1989 established one of the nation's most comprehensive and aggressive recycling policies. Highlights of the law:

- Requires that each city and county in California divert 25 percent of all solid waste from landfills by Jan. 1, 1995, through recycling, conservation and composting. Cities and counties must divert 50 percent by Jan. 1, 2000. It authorizes the Integrated Waste Management Board to fine jurisdictions up to \$10,000 a day for failing to comply.
- Requires each city and county to submit a Source Reduction and Recycling Element plan describing how it will meet the deadlines.
- Establishes an integrated waste management plan for the entire state that promotes reduction of the sources of waste, recycling, reuse, composting and environmentally safe incineration and landfills.

- Associated Press

cycling and hazardous waste program manager. San Francisco has hovered between 35 percent and 40 percent since 1995.

"The closer you get to 50, the harder it gets," he said.

So far, the Integrated Waste Management Board has targeted 64 cities and counties for failing to meet the 1995 deadline. It required them to implement a list of programs and actions that will increase their recycling rates. If those fail, they will face fines.

The board did not sanction about an eighth of the towns that failed to meet the deadline because it felt their efforts satisfied the spirit of the law, said John Frith, a waste management board spokesman.

The agency said money is usually the reason that jurisdictions miss the mark. In some cases, the city councils didn't vote in funds for the programs. In others, the money simply wasn't there, said Chris Schmidle, a waste board spokesman.

Delays also may come from the waste management board. It has only recently finished reviewing the reports filed for the 1995 deadline and has not yet begun to review the hundreds of submissions for 1997 and 1998.

Many cities and counties are behind in filing as well, although there is no fine for being late. Almost half failed to submit their 1998 reports by August 1999, as required.

With the law's deadline looming, the finger pointing has already be-

gun.

Watchdog groups have accused the state of not promoting markets for recycled products aggressively enough, although some are already saturated. Some city waste management officials, meanwhile, say businesses are to blame.

"The bulk of our tonnage comes from the commercial sector: ho' restaurants, produce markets," Assmann, the recycling and waste manager in San Francisco. "We need to increase efforts there."

The law places a seemingly unfair burden on cities and counties, board spokesman Schmidle said. But through an aggressive use of ordinances, cities can force private companies to reduce or recycle their waste, he said.

Some hotels say they have already taken steps to reduce their waste.

Beverly Hills-based Hilton Hotels Corp. is one. Its hotels in the Bay area recycle glass, plastic, aluminum, office paper and cardboard, said Jim Hart, a director with Hilton San Francisco. They donate leftover food to shelters and have shipped old mattresses to Central America for flood relief.

"We give away everything we possibly can just so it won't go to a landfill," Hart said.

Results from the 1995 and 1996 reports can be obtained from the Integrated Waste Management Board's Web site at www.ciwm.ca.gov/igttools/paris/jurpgmsu.asp.