United States Department of Agriculture

Animal and Plant Health Inspection Service

Pine Shoot Beetle Compliance Management Program

Environmental Assessment, May 1997

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Table of Contents

I. Need for the Proposal

A. Introduction

The pine shoot beetle (*Tomicus piniperda*) is native to Europe and Asia, where it is a destructive pest of pine and related species. Heavy infestations of pine shoot beetle typically kill most of the lateral shoots near the tops of trees. In rare cases, whole trees may be killed either by direct damage or by pathogenic fungi introduced by the beetle. Managed and natural stands of pine are at risk from infestations of pine shoot beetle.

After its detection on a Christmas tree farm near Strongsville, Ohio, in July 1992, the U.S. Department of Agriculture (USDA) conducted and coordinated an extensive detection and delimiting survey effort. Following the survey, the USDA's Animal and Plant Health Inspection Service (APHIS) established a quarantine for the pest. That quarantine, 7 Code of Federal Regulations (CFR) Part 301, Part 301.50 (Domestic Quarantines, Pine Shoot Beetle), provides for quarantines of infested areas, designates regulated items, provides protocols for the movement of regulated items, and specifies regulatory control methods.

Eradication and suppression have not been considered viable alternatives in preventing human-assisted spread of this pest because no reliable methods are available and the current infestation is so widespread (in the following eight States: Illinois, Indiana, Maryland, Michigan, New York, Ohio, Pennsylvania, and West Virginia). Although natural dispersal of pine shoot beetle is quite slow, transport of infested host material by humans probably accounts for its widespread dispersion.

B. Purpose and Need

APHIS is proposing the "Pine Shoot Beetle Compliance Management Program" (CMP) as an improved way of reducing the spread of pine shoot beetle. The management program provides an array of compliance and monitoring practices, designed to reduce the risk of the pest's spread. Under the CMP, regulatory enforcement will be conducted by the State plant regulatory agencies. This shift of regulatory responsibilities (endorsed by the National Plant Board) is necessary because of APHIS' diminishing resources for domestic programs such as pine shoot beetle. The program applies to Christmas tree and nursery stock species (pines) that are hosts of the pine shoot beetle. To protect uninfested States and negate those States' needs to implement exterior quarantines, the Federal quarantine will remain in place.

The USDA has the authority to establish quarantine areas under the Plant Quarantine Act, as amended (7 United States Code (U.S.C.) 151 *et seq.*), which regulates the importation of nursery stock, plants, and plant products. The Act provides for establishment of quarantine districts to regulate movement of plants for various purposes, including interstate shipments. The Federal Plant Pest Act, as amended (7 U.S.C. 150aa *et seq.*), enables the USDA to use emergency measures to inspect and seize regulated articles and regulate the movement of articles by requiring general or specific permits in accordance with certain conditions.

II. Alternatives

APHIS considered three alternatives for this program: (1) the "Pine Shoot Beetle Compliance Management Program," (2) no action (no change in the current program), and (3) rescission of the quarantine (elimination of the current program). Each of the alternatives is characterized briefly in this section.

A. Pine Shoot Beetle Compliance Management Program (CMP)

The proposed Pine Shoot Beetle Compliance Management Program (CMP) is an integrated pest management program designed to reduce the potential for spread of the pine shoot beetle. The "Pine Shoot Beetle Compliance Management Program, March 1997—Revised," sponsored by the National Plant Board and APHIS, provides further detail on the operational aspects of the program and is incorporated by reference in this document. The CMP involves the productive interaction of industry groups, government regulatory agencies, and research and education institutions. It is based upon an array of compliance and monitoring practices, uses compliance agreements between regulatory agencies and industry, and reduces dependency upon regulatory treatments by promoting cultural and production practices that reduce the presence and reproduction of the pest, thereby lowering its risk of spread. Certification for movement of regulated articles will be made on the basis of compliance with all applicable components of the management program.

B. No Action

Under the no action alternative, there would be no change in the current program or in the regulations currently being implemented by APHIS to limit the spread of the pine shoot beetle.

C. Rescission of the Quarantine

Under this alternative, the Federal quarantine and its associated restrictions on interstate movement of potentially infested pine shoot beetle host material would be eliminated, possibly subject to reinstatement if funding and/or improved techniques for preventing spread of pine shoot beetle become available. At their discretion, individual States could examine the problem and implement quarantines and/or programs to serve their own needs.

III. Environmental Consequences

A. Pine Shoot Beetle Compliance Management Program (CMP)

Implementation of the CMP would result in beneficial and adverse impacts. The proposed changes in the program would impede the spread of pine shoot beetle, resulting in beneficial environmental impact (minimization of ecological disruption in natural ecosystems and minimization of losses in commercially managed agricultural systems). Those beneficial impacts are difficult to quantify because they are related to host distribution and diversity. It is safe to say, however, that the use of pine and related tree stands for commercial purposes, aesthetic purposes, recreation, and wildlife cover would be enhanced if the spread of pine shoot beetle is impeded. The quarantines placed on newly infested areas limit the ability of pine shoot beetles to spread and damage pine trees. In some cases, where those natural ecosystems provide habitat for endangered and threatened species, the survivability of those species also would be enhanced by this quarantine.

Adherence to the pine shoot beetle compliance management program would substantially reduce the artificial spread of the pine shoot beetle to uninfested areas. In addition, this limitation on the artificial spread of the beetle would make it more feasible to benefit from the introduction of biological control agents, which are anticipated to limit natural spread (Chawkat, 1994). This management plan continues the Federal quarantine, but it also requires intensive efforts on the part of cooperating State plant regulatory agencies to enforce the provisions.

Several existing compliance actions have minimal adverse impacts. There would be no significant impacts from the sanitation practices and pest monitoring activities of the plan. The trapping of pine shoot beetles through trap logs or pheromone traps would only affect populations of the beetle itself. Minimal adverse impact may be anticipated from the disposal of some regulated items, such as cut Christmas trees.

The continuing limited treatments of logs with methyl bromide (as in the no action and proposed program) poses no significant risks to the human or physical environment. Although methyl bromide is an acutely toxic vapor that can produce systemic and cumulative effects on humans that are excessively exposed, its use in this program presents minimal potential for environmental impact. The anticipated lack of environmental impact is a result of (1) the carefully controlled manner in which it is used, (2) its short half-life and quick dispersal, (3) the relatively small increase in use that would result from this rule, and (4) the minimal contribution of the agricultural use of methyl bromide to the ozone depletion phenomenon. These impacts have been described in greater detail in the environmental assessment (EA) for the previous interim rule (USDA, 1995) and in the environmental impact statement for certification of imported logs, lumber, and other unmanufactured wood products (USDA, 1994). The findings of both of these documents are incorporated by reference in this EA.

Some requirements of the compliance agreement with growers may have greater potential for adverse effects. The compliance agreement requires chemical control treatments of pine stumps that are not physically removed or covered. It may also require growers to apply foliar cover sprays and trunk sprays with approved pesticides if the local infestation is determined to be above predetermined threshold levels. These regulatory compliance treatments are designed to eliminate pest risk and have minimal adverse impact to the environment. The applications of these other pesticides are, however, likely to have greater impacts than the actions taken under the no action or proposed rule alternatives, but the limited treatments are still anticipated to have no significant adverse effects. Also, certain program stipulations for these pesticide applications ensure that adverse impacts are minimized. These compliance pesticide treatments are expected to be fewer and of less intensity than the treatments made by commercial growers and private landowners if the pine shoot beetle were allowed to spread, as with rescission of the quarantine or the no action alternative.

A thorough risk assessment was completed for program use of pesticides to control pine shoot beetle (USDA, 1997). The analysis and findings of that document are incorporated by reference into this EA. The pesticides proposed for application as foliar sprays are bifenthrin, carbaryl, chlorpyrifos, and cyfluthrin. The pesticides proposed for application as log sprays and trunk sprays are bifenthrin, chlorpyrifos, cyfluthrin, lambda cyhalothrin, lindane, and permethrin. A brief summary of the findings of the risk assessment follows.

The human health risks were determined for typical, extreme, and accident scenarios in the risk assessment. Determination of exposure and potential risk were analyzed for workers and the general public in these scenarios. The risks determined for each scenario assume that pesticide applications are made in compliance with label application rates, but no special protective measures are taken and no special protective clothing are worn. The results, therefore, tend to overestimate the actual risks. The highest human health risk for all pesticide applications is for workers in the accident scenario where there is a broken hose or spill of concentrated pesticide. Immediately cleansing exposed skin and adhering to the required mitigation measures (appendix A) decrease the risk considerably for this unexpected scenario. The typical scenarios are those that would most likely occur from program pesticide applications. Although ground applicators have substantial risk under some scenarios, adherence to the program mitigation measures and proper use of protective clothing ensure that risks to all workers (including applicators) are within acceptable limits, even for extreme scenarios. Typical exposures pose negligible risk to the public. Extreme exposures pose negligible risks to the public for the synthetic pyrethroids (bifenthrin, cyfluthrin, lambda cyhalothrin, and permethrin), but pose moderate risks to the public for the other pesticides (carbaryl, chlorpyrifos, and lindane). Adherence to program mitigation measures decreases exposure to these pesticides and ensures that there are no significant risks to the public from any exposure scenario. Although bifenthrin and lindane have been classified by the U.S. Environmental Protection Agency (EPA) as possible human carcinogens (Class C oncogens), the exposure from program applications is low and risks are less than 1 in a million of carcinogenic effects from the program use.

The risks to terrestrial wildlife were determined for typical and extreme exposure scenarios in the risk assessment. Risks to terrestrial wildlife (except insects) for typical scenarios were low for all chemicals except lindane. The potential risks to mammals are moderate for program use of lindane, but the restricted use of lindane to only log and trunk sprays limits the actual exposure. Adherence to program mitigation measures (appendix A) helps restrict the residues of pesticides to the treatment areas and prevent exposure of nontarget mammals. Risks to terrestrial insects from program use of chemicals vary. Lindane and permethrin pose high risk to honey bees, but lambda cyhalothrin poses low risk. Bifenthrin, carbaryl, chlorpyrifos, and cyfluthrin pose moderate risks to honey bees. Apiarists should be notified of program applications of pesticides in the area, so they can protect their hives during the program treatments.

The risks to aquatic wildlife from program use of chemicals have the potential to be more severe than the risks to terrestrial wildlife. All program pesticides except carbaryl are very highly toxic to fish and aquatic invertebrates. Carbaryl is moderately toxic to fish and highly to very highly toxic to aquatic invertebrates. The risks were determined to be high for all pesticides to aquatic organisms in ponds and high for bifenthrin and chlorpyrifos in creeks. The risks for the other pesticides in creeks were lower. This risk does not take into account the decrease in exposure from use of several program mitigation measures. The 25-foot buffer around water bodies, applications restricted to ground treatments, and the mitigations (appendix A) to minimize drift all decrease the likelihood that program pesticides will enter water. Adherence to these mitigations ensures that adverse effects of program chemicals on aquatic organisms will be minimal.

The Endangered Species Act (ESA) and its implementing regulations require Federal agencies to consult with the U.S. Department of the Interior's Fish and Wildlife Service (FWS) and/or the U.S. Department of Commerce's National Marine Fisheries Service (NMFS) to ensure their actions are not likely to jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of critical habitat. Federal agencies must determine if their actions “may affect” an endangered or threatened species or its habitat; if that determination is positive, they must initiate consultation with the FWS and/or the NMFS. According to the regulations, the Federal agency need not initiate formal consultation if it obtains the concurrence of the FWS and/or the NMFS, through informal consultation, with its determination that the action “is not likely to adversely affect” the endangered or threatened species or its habitat. APHIS is consulting with FWS regarding endangered and threatened species and will comply with all protection measures stipulated in that consultation and mutually agreed on with FWS.

The risk of adverse effects to the physical environment was also considered in the risk assessment. The half-life of most program chemicals is relatively short in air, water, soil, and vegetation. There are two exceptions. Lindane binds strongly to soil particles and remains active on foliage for extended periods of time. Bifenthrin also binds strongly to soil particles. The bound pesticides in soil are not a problem as long as the particles are not carried away in runoff. This is further reason for the buffers around water bodies. The program applications of lindane are not made to foliage, so lindane residues on foliage would occur only through drift of pesticide residues. There

are mitigations designed specifically to minimize drift and runoff (appendix A). Adherence to these mitigations ensures that residual lindane on foliage will not be a significant environmental concern.

A monitoring plan is being prepared to analyze effectiveness of the mitigations for these compliance treatments. The program will conduct some monitoring of pesticide drift, runoff, and human health effects from pesticide applications. This will help to ascertain the extent to which program mitigations are adequate to protect against adverse environmental impacts. The U.S. Department of the Interior's Fish and Wildlife Service may also require the program to do some monitoring as part of interagency cooperation related to protection of endangered and threatened species and their critical habitat.

Consistent with Executive Order No. 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," APHIS considered the potential for disproportionately high and adverse human health or environmental effects on any minority populations and low-income populations. No disproportionate effects on such populations are anticipated as a consequence of implementing the preferred action.

B. No Action

Impacts from this alternative would be similar to those for the proposed rule. The lack of flexibility in regulatory treatments under the compliance management program would make it more difficult for growers to move their Christmas trees and related commodities. The lack of field treatment would also allow the beetle populations to increase locally and the infestation to spread more readily than would be expected if those regulations covering the field treatments were enacted as part of the proposed rule. Although there would be less regulatory use of pesticides under the no action alternative than under the proposed alternative, the resulting increase in infested trees would be expected to result in increased overall use of pesticides by the growers to minimize beetle damage and by landowners to protect their ornamental trees. There would be little difference in the amount of fumigation with methyl bromide. Other quarantine and regulatory actions would continue as in previous years. There would continue to be no significant impacts for the actions taken to control pine shoot beetle.

C. Rescission of the Quarantine

In the absence of any Federal action to regulate movement of pine shoot beetle host material from newly infested areas, natural pine ecosystems and pine timber industries could be at considerable risk. In addition to allowing the spread of pine shoot beetle to natural and agricultural ecosystems to go unchecked, this alternative could also lead to increased use of chemical insecticides as individual growers or local communities attempt to suppress or eradicate pine shoot beetle infestations.

Detailed consideration of such an alternative may be appropriate in the future, but does not appear to be warranted at present, based on existing information. It has yet to be determined that the documentation of "new" infestations represents movement of pine

shoot beetle from previously documented infestations, rather than representing previously established infestations that have been newly detected. The pathway for human-assisted spread of pine shoot beetle has yet to be fully documented. Although human-assisted spread may contribute to the movement of pine shoot beetle, it is uncertain if this spread is primarily through movement of host plant commodities or by other means, such as beetles that "hitchhike" to new destinations in cars or other modes of transportation. Although methyl bromide fumigation is quite effective in killing pine shoot beetle, its contributing role in preventing the spread of pine shoot beetle is unquantified. The effectiveness of field treatments at limiting infestation size and preventing spread is also unclear.

IV. Agencies, Organizations, and Individuals Consulted

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Appendix A

Mitigation Measures for Pesticide Applications of Pine Shoot Beetle Compliance Management Program

1. All growers will be required to follow applicable Federal, State, and local environmental laws and regulations related to pesticide application.

2. All chemicals will be applied in strict accordance with the EPA- and State-approved label instructions.

3. All pesticides will be applied by hand-operated or motorized ground equipment—not aerial. This will decrease the potential for drift of pesticide residues.

4. All pesticides will be applied only to the regulated commodity. There will be no applications to adjacent areas or unplanted borders of the pine groves. This reduces potential for drift and runoff to areas adjacent to the treated commodity.

5. Applicators and persons within the treatment area are required to wear protective clothing or remain inside a closed vehicle with recirculating air during pesticide applications.

6. Workers will be advised of the respective reentry periods following pesticide treatments and will not reenter without protective clothing prior to the completion of this period of time.

7. Applicators will cease treatments if unprotected members of the public are observed in the treatment area. Treatments may continue when such persons are no longer present.

8. Pesticide applications will not be made within 25 feet of any body of water. This 25-foot buffer prevents potential adverse effects to water quality, human health, and aquatic wildlife from drift and runoff of chemical residues.

9. To minimize drift and runoff (and increase efficacy), pesticide applications will not be made when any of the following conditions exist in the treatment area: wind velocity exceeding 10 miles per hour (or less if required by State law), rainfall or imminent rainfall within 48 hours, air turbulence that could seriously affect the normal spray pattern, or temperature inversions that could lead to off-site movement of spray.

10. Before beginning treatment, growers will notify any apiarists in the immediate vicinity of the date and approximate time of application to provide the apiarists an opportunity to protect their bees from potential adverse effects of pesticide exposure.

11. Before initiating operations, APHIS will obtain concurrence from the U.S. Department of the Interior's Fish and Wildlife Service on protection measures that may be required for endangered and threatened species or their critical habitat.

12. Environmental monitoring of the program for drift, runoff, and human health effects will be conducted in accordance with the current environmental monitoring plans.

Appendix B. References

Chawkat, A.M., 1994. Pest risk assessment (PRA) on pine shoot beetle (PSB). Biological Assessment and Taxonomic Support, Plant Protection and Quarantine, Animal and Plant Health Inspection Service, U.S. Department of Agriculture.

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 1997. Pine Shoot Beetle Compliance Management Program Chemicals Risk Assessment, April 1997.

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 1995. Interim Rule Pine Shoot Beetle Quarantine. Environmental Assessment, September 1995.

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 1994. Importation of logs, lumber, and other unmanufactured wood articles. Environmental Impact Statement, July 1994.

Finding of No Significant Impact
for
Pine Shoot Beetle Compliance Management Program
Environmental Assessment
May 1997

The U.S. Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), is proposing the "Pine Shoot Beetle Compliance Management Program" (CMP) as an improved way of reducing the spread of the pine shoot beetle, *Tomicus piniperda*. The pine shoot beetle is a destructive pest of pine and related species which attacks managed and natural stands of trees. Quarantine and control of the pest is accomplished under the authority of 7 Code of Federal Regulations (CFR) Part 301, Part 301.50 (Domestic Quarantines, Pine Shoot Beetle), which is being revised to include the CMP.

The proposed program is needed to (1) reduce losses caused by the pine shoot beetle, (2) reduce the amount of pesticide that would otherwise be used within uncoordinated control efforts, and (3) maintain a broad program needed to reduce the spread of the pine shoot beetle. The proposed CMP involves cooperation between industry groups, government regulatory agencies, and research and education institutions. It uses an array of compliance activities (including chemical control), monitoring practices, compliance agreements, and cultural and production practices to reduce the pest population, thereby lowering risk of its spread.

For the environmental assessment (EA), incorporated by reference in this document, APHIS analyzed the environmental consequences of (1) the proposed CMP, (2) no action, and (3) rescission of the quarantine. Implementation of the proposed CMP has some potential for adverse environmental impacts arising from the use of chemical pesticides used to control the pine shoot beetle. Potential impacts to the physical environment, human health, and nontarget species have been analyzed within the EA and its incorporated "Pine Shoot Beetle Compliance Management Program Chemicals Risk Assessment, April 1997." Although some environmental risks exist and have been identified, routine program operational safety procedures and recommended mitigation measures serve to ensure that there will be no significant environmental impact. The EA is available from the following offices:

U.S. Department of Agriculture
Animal and Plant Health Inspection Service
Plant Protection and Quarantine
Domestic and Emergency Programs
4700 River Road, Unit 134
Riverdale, MD 20737-1236

or

U.S. Department of Agriculture
Animal and Plant Health Inspection Service
Plant Protection and Quarantine, NRO
Blason II, 1st Floor
505 South Lenola Road
Moorestown, NJ 08057-5073

APHIS is consulting with the U.S. Department of the Interior, Fish and Wildlife Service (FWS), with regard to the protection of endangered and threatened species or their critical habitats. APHIS will adhere to protective measures designed specifically for this program and mutually agreed upon with FWS.

I find that implementation of the proposed CMP will not significantly impact the quality of the human environment. I have considered and base my finding of no significant impact on the quantitative and qualitative risk assessments of the proposed pesticides and on my review of the program's operational

characteristics. In addition, I find that the environmental process undertaken for this program is entirely consistent with the principles of "environmental justice," as expressed in Executive Order No. 12898. Lastly, because I have not found evidence of significant environmental impact associated with this program, I further find that an environmental impact statement does not need to be prepared and that the program may proceed.

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Acting Regional Director
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5-29-97
Date