United States Department of Agriculture

Animal and Plant Health Inspection Service

Proposed Interim Rule for Pine Shoot Beetle Quarantine

Environmental Assessment, November 1998

Proposed Interim Rule for Pine Shoot Beetle Quarantine

Environmental Assessment, November 1998

Agency Contact:

Christine K. Markham
Regional Program Manager
Plant Protection and Quarantine
Animal and Plant Health Inspection Service
U.S. Department of Agriculture
505 South Lenola Road, Suite 210
Moorestown, NJ 08057-1549
Telephone: 609-757-5073

Table of Contents

I. Need for the Proposed Action

A. Introduction

The U.S. Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), is proposing an interim rule for changes in 7 CFR Part 301, Part 301.50 (Domestic Quarantines, Pine Shoot Beetle). The changes amend the quarantine by expanding the quarantined area (section 301.50-3) to include additional counties found to be infested with pine shoot beetle. The expansion of the quarantined area does not appreciably increase environmental impacts which relate primarily to pest risk and risk from regulatory pesticide applications. This environmental assessment (EA) analyzes the potential environmental effects of the proposed interim rule and its alternatives.

The proposed interim rule changes comprise a Federal action under the National Environmental Policy Act (NEPA) (42 U.S.C. 4321 et seq.). Under the Council on Environmental Quality's NEPA implementing regulations (40 CFR § 1501.4(b)(1992), an EA must be prepared for such an action. An EA is a concise public document" that must include brief discussions for the need of the proposed action, of alternatives as required by section 102(2)(E), of the environmental impacts of the proposed action and alternatives, and a listing of agencies and persons consulted." In this EA, APHIS considered three alternatives: (1) the proposed action, (2) no action (no change in the current quarantine program), and (3) termination of the quarantine program.

1. Pine Shoot Beetle Biology and Control

The pine shoot beetle (*Tomicus piniperda*) is native to Europe and Asia (Långström, 1980; Speight and Wainhouse, 1989), where it is a destructive pest of pine and related species. In July 1992, pine shoot beetle was detected on a Christmas tree farm near Strongsville, Ohio. The initial detection led to surveys in surrounding areas to delimit the infestation. As of November 1998, the pest has been found in pine tree plantings and nurseries in Illinois, Indiana, Maryland, Michigan, New York, Ohio, Pennsylvania, West Virginia, and Wisconsin. Pine shoot beetle was probably introduced into the United States with dunnage (roughcut timber with attached bark used to stabilize cargo in the hulls of ships).

Adult beetles lay eggs in freshly cut logs. During heavy infestations they may also lay eggs in the trunks of trees that are already weakened by other factors. When eggs hatch, the young feed on the inner bark and surface of the wood (Speight and Wainhouse, 1989). This damage is often cosmetic and does not seriously degrade the quality of wood products. Most damage to living trees results from feeding by adults. When juvenile development is complete, the adult flies to the tops of trees where it bores into the center of a healthy new shoot and proceeds to hollow it out by feeding on the pith. Each beetle may kill four or more of these shoots during the adult phase of its life. After overwintering under bark at the base of host trees, adults fly back to recently cut logs where they mate and lay eggs. Adults may subsequently continue feeding on shoots in preparation for further egg laying.

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. So far, economic impacts and damage associated with pine shoot beetle in the United States have been minimal. The proposed interim rule establishes a quarantine around those additional areas recently demonstrated to be infested with pine shoot beetle. Infested areas require inspection and/or treatment of regulated articles (potential pine shoot beetle host material) before movement from the infested area to areas outside the quarantine.

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 (nine states). Natural dispersal of pine shoot beetle is quite slow because females lay their eggs within approximately 1 kilometer of the area where they feed and larvae have poor dispersal capabilities. This protracted dispersal could lend itself to an eradication and suppression protocol, except for two factors: (1) during the brief time newly metamorphosed adults require to move between larval and adult feeding habitats, all life stages of pine shoot beetle are sheltered from insecticides and other control agents by living within plant tissues; and (2) currently, there are no reliable means of directly attacking pine shoot beetle with biological control agents or attracting it with lures. In Scandinavia where pine shoot beetle occurs naturally, damage caused by pine shoot beetle is minimized through management of its host material. The

primary potential for dispersal of pine shoot beetle is via transport of infested host material by humans.

2. Current Regulatory Status

The present quarantine area includes specific counties in nine states: Illinois, Indiana, Maryland, Michigan, New York, Ohio, Pennsylvania, West Virginia, and Wisconsin. Movement of regulated articles interstate from any quarantined county is prohibited except in accordance with prescribed conditions. Regulated articles include pine Christmas trees; pine wreaths and garlands; pine nursery stock; pine stumps and pine bark nuggets, including bark chips; and pine logs and lumber with bark attached.

Interstate movement of regulated articles is allowed subject to inspection and associated issuance of Limited Permits or Certificates. Interstate movement of pine seedlings less than 36 inches tall is allowed if these have been certified as pest-free by visual examination. Greenhouse-grown ornamental pines can also be moved interstate if the premises are certified pest-free and protected to prevent pest entry. Interstate movement of pine stumps, bark nuggets, and bark chips is allowed if the articles are fumigated with methyl bromide. Interstate movement of pine logs and lumber, depending on the origin and destination of the articles (quarantine versus nonquarantine areas) and the season of the year, may be allowed after fumigation with methyl bromide and/or in closed containers and/or without stopping in a quarantine area. Cut Christmas trees may be moved interstate, depending on the origin and destination of the articles, without stopping in a quarantine area or after inspection and certification as pest-free or after cold treatment or fumigation with methyl bromide. Cut and unsold Christmas trees after December 25 must be either fumigated, burned, or chipped before disposal by January 1.

B. Need

The interim rule is needed to introduce changes in the quarantine to impede the spread of the pine shoot beetle from newly infested areas and reduce its potential for environmental and economic damage. The interim rule accomplishes this by adding new counties to the quarantine area.

The USDA has the authority to establish quarantine areas under the Plant Quarantine Act, as amended (7 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 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. The purpose and need of the proposed interim rule change is to prevent human-assisted dispersal of pine shoot beetle from infested (quarantine) areas to uninfested areas.

II. Alternatives

APHIS considered three alternatives for this program: (1) the proposed interim rule, (2) no action (no change in the current program, (3) elimination of the quarantine. Each of the alternatives is characterized briefly in this section.

A. Proposed Interim Rule

The proposed interim rule adds 19 new counties that have been newly determined to be infested with pine shoot beetle to the quarantine area. Refer to the appendix for a list of states and counties now quarantined for pine shoot beetle.

Federal coordination appears to be the most effective approach for prevention of human-assisted spread of pine shoot beetle. The proposed interim rule would ensure that the quarantine is consistent for all states. It represents a cooperative effort between APHIS and the governments of states with pine shoot beetle infestations. Quarantines are specified on a county-wide basis, with the states continuing to regulate the intrastate movement of host materials from infested counties. APHIS would continue to regulate movement of host materials across state boundaries.

B. No Action

Under the no action alternative, there would be no change in the regulations currently being implemented by APHIS to limit spread of pine shoot beetle. Counties newly determined to be infested with pine shoot beetle would not be included in the Federal quarantine area and thus would not be restricted regarding the interstate movement of infested materials.

C. Elimination of 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, subject to reinstatement when 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 Effects

A. Proposed Interim Rule

Beneficial and adverse environmental impacts would result from the changes incurred through the proposed interim rule.

The changes sought in the quarantine 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 use of pine and related tree stands for commercial purposes, esthetic purposes, recreation, and wildlife cover would be enhanced if the spread of pine shoot beetle is impeded. In some cases, where those natural ecosystems provide habitat for endangered and threatened species, the survivability of those species also would be enhanced.

Minimal adverse impact may be anticipated from the disposal of some regulated items, such as cut Christmas trees, and the use of the chemical fumigant methyl

bromide. 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 interim rule, and (4) the minimal contribution of agricultural use of methyl bromide to the ozone depletion phenomenon. Further explanation follows.

Fumigations of wood products with methyl bromide are conducted in a temporary or permanent exposure chamber following guidelines in the APHIS "Plant Protection and Quarantine Treatment Manual." Adherence to these guidelines protects the applicators, workers, and the general public from exposure and any adverse effects of methyl bromide. There is a 30-foot (10-meter) area around the fumigation chamber where entry is restricted to individuals wearing self-contained breathing apparatus when a fumigation is being conducted. When the prescribed treatment period is over, the chamber is aerated with ventilation fans and the methyl bromide is vented into the atmosphere.

Methyl bromide gas is heavier than air, is highly volatile, and disperses rapidly when released. Exposure and risk of adverse effects to humans and nontarget organisms from fumigations is prevented by routine safety precautions and dispersion and mixing within the 30-foot restricted area. After venting, detectable amounts of methyl bromide may reach adjacent soil or surface water, or accumulate in low areas adjacent to fumigation facilities, but minimal impact is anticipated. The half-life of methyl bromide is less than 7 hours in water (Wegman et al., 1981) and less than 8 days in soil (EPA, 1992).

The U.S. Environmental Protection Agency (EPA) has classified methyl bromide as an ozone-depleting chemical, similar to chlorofluorocarbons (CFC's) and other halogen gases. Under the Montreal Protocol, the United States has agreed to phase out the production and use of methyl bromide except for quarantine uses. Regulatory quarantine uses of methyl bromide such as those in the pine shoot beetle program are exempted from phase out under this international agreement. Halogen gases have been implicated in ozone destruction in the stratosphere, and ozone depletion has been identified as a

contributing factor in the anticipated rise in the incidence of skin and other cancers associated with increased exposure to ultraviolet light.

A number of factors suggest that methyl bromide associated with agricultural fumigation may be of limited importance in ozone depletion. Methyl bromide has a short atmospheric half-life compared to CFC's (1.6 years versus 80–100 years (Mix, 1992)). Also, a large percentage of atmospheric bromine may be generated naturally by marine wave action (Sturges and Harrison, 1986), whereas industrial and agricultural sources contribute from 10% to 35% (Prather et al., 1984). Some industrial sources associated with the manufacture of polyester fibers release into the atmosphere nearly 1 million pounds of methyl bromide in a year (Bonvie and Bonvie, 1992). Thus, the contribution from agricultural methyl bromide would be small relative to natural and industrial

sources of bromine. The total amount of methyl bromide required by APHIS (for all of its programs) in Fiscal Year 1992 contributed less than one-half of one percent of the atmospheric load of methyl bromide from all human uses. For the pine shoot beetle quarantine, the costs associated with fumigation make other regulatory options more desirable; therefore, the number of fumigations that will be done is expected to be minimal. Because far fewer fumigations are required for the pine shoot beetle quarantine than for imports, there should be no significant contribution to ozone depletion.

Because the newly quarantined areas are not major exporters of regulated articles (pine logs, pine lumber with bark, pine stumps, pine bark nuggets, pine chips, and cut Christmas trees), relatively few treatments would be required. In addition, the number of unsold Christmas trees that are fumigated instead of burned or chipped is expected to be very low, owing to the ease and low cost of burning and chipping to dispose of discarded trees. Thus, the number of fumigations is expected to be very low.

B. No Action

Potential environmental impacts from actions taken under the no action alternative would be virtually the same as those under the present program because the control methods which give rise to those impacts would remain the same. The magnitude of those environmental impacts would be only slightly greater because the pest risk and risk of increased rate of dispersion of the pine shoot beetle would be elevated in more recently infested counties which would not be added to the quarantined area under the no action alternative. The increased likelihood for dispersion from these areas would be expected to

increase the generally infested area. Increased damage to pine forests would be anticipated to increase commensurate with that expansion of the area of infestation.

C. Elimination of 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 is not warranted at the present time due to insufficient 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.

IV. Agencies, Organizations, and Individuals Consulted

This environmental assessment was reviewed by the Animal and Plant Health Inspection Service, Plant Protection and Quarantine, Domestic and Emergency Operations:

Charles H. Bare
Senior Operations Officer
Plant Protection and Quarantine
Animal and Plant Health Inspection Service
U.S. Department of Agriculture
Riverdale, MD 20737-1236

Individuals within the following organizations were contacted for information or to review documents during the preparation of this environmental assessment:

Forest Pest Management
Forest Service
U.S. Department of Agriculture
201 14 Street, SW.
Washington, DC 20250

Environmental Analysis and Documentation
Policy and Program Development
Animal and Plant Health Inspection Service
U.S. Department of Agriculture
Riverdale, MD 20737-1238

Technical and Scientific Services
Plant Protection and Quarantine
Animal and Plant Health Inspection Service
U.S. Department of Agriculture
Riverdale, MD 20737-1236

National Christmas Tree Association
Board of Directors Ohio Directorate
111 Pine Knoll Terrace St.
Clairsville, OH 43950

V. References Cited

Bonvie, L., and Bonvie, B., 1992. Methyl bromide: the hole truth. Buzzworm 4:26.

Långström, B., 1980. Life cycles of pine shoot beetles with particular reference to their maturation feeding in the shoots of Scots pine. Doctoral thesis at the Swedish University of Agricultural Sciences, Uppsala, Sweden.

Mix, J., 1992. Methyl bromide producers take firm position. Pest Control (April):42-43.

Prather, M.J., McElroy, M.B., and Wofsy, S.C., 1984. Reductions in ozone at high concentrations of atmospheric halogens. Nature 312:227-231.

Speight, M.R., and Wainhouse, D., 1989. Ecology and management of forest insects. Clarendon Press, Oxford.

Sturges, W.T., and Harrison, R.M., 1986. Bromine in marine aerosols and the origin, nature, and quantity of natural atmospheric bromine. Atmospheric Environ.20:1485-1496.

U.S. Environmental Protection Agency, Environmental Criteria and Assessment Office, 1992. Integrated risk assessment system. Chemical file for methyl bromide. EPA, OHEA, ECAO, Cincinnati, Ohio.

Wegman, R.C.C., Greve, P.A., DeHeer, H., and Hamaker, P.H., 1981. Methyl bromide and bromide-ion in drainage water after leaching of glasshouse soils. Water, Air, and Soil Pollution:16: 3-11.

Appendix A: Counties Quarantined for Pine Shoot Beetle by State

Illinois

Boone County.
Bureau County.
Champaign County.
Cook County.
De Kalb County.
Du Page County.
Grundy County.
Iroquois County.
Kane County.
Kankakee County.
Kendall County.
La Salle County.
Lake County.
Lee County.
Livingston County.
McHenry County.
McLean County.
Ogle County.
Piatt County.
Putnam County.
Stephenson County.
Vermilion County.
Will County.
Winnebago County.

Indiana

Adams County.
Allen County.
Benton County.
Blackford County.
Carroll County.
Cass County.
De Kalb County.
Delaware County.

Elkhart County.
Fountain County.
Fulton County.
Grant County.
Hancock County.
Howard County.
Huntington County.
Jasper County.
Jay County.
Kosciusko County.
Lagrange County.
Lake County.
La Porte County.
Madison County.
Marshall County.
Miami County.
Newton County.
Noble County.
Porter County.
Pulaski County.
Randolph County.
St. Joseph County.
Starke County.
Steuben County.
Tippecanoe County.
Tipton County.
Wabash County.
Warren County.
Wayne County.
Wells County.
White County.
Whitley County.

Maryland

Allegany County.
Garrett County.
Washington County.

Michigan

Alcona County.
Allegan County.
Alpena County.
Antrim County.
Barry County.
Bay County.
Benzie County.
Berrien County.
Branch County.
Calhoun County.
Cass County.
Charlevoix County.
Chippewa County.
Clare County.
Clinton County.
Crawford County.
Delta County.
Eaton County.
Emmet County.
Genesee County.
Gladwin County.
Grand Traverse County.
Gratiot County.
Hillsdale County.
Huron County.
Ingham County.
Ionia County.
Isabella County.
Jackson County.
Kalkasa County.
Kalamazoo County.

Kent County.
Lake County.
Lapeer County.
Leelanau County.
Lenawee County.
Livingston County.
Luce County.
Mackinac County.
Macomb County.
Manistee County.
Marquette County.
Mason County.
Mecosta County.
Midland County.
Missaukee County.
Monroe County.
Montcalm County.
Montmorency County.
Muskegon County.
Newaygo County.
Oakland County.
Oceana County.
Ogemaw County.
Osceola County.
Oscoda County.
Otsego County.
Ottawa County.
Presque Isle County.
Saginaw County.
St. Clair County.
St. Joseph County.
Sanilac County.
Schoolcraft County.
Shiawassee County.
Tuscola County.
Van Buren County.
Washtenaw County.
Wayne County.
Wexford County.

New York

Allegany County.
Cattaraugus County.
Cayuga County.
Chautauqua County.
Chemung County.
Cortland County.
Erie County.
Genesee County.
Livingston County.
Monroe County.
Niagara County.
Onandaga County.
Ontario County.
Orleans County.
Oswego County.
Schuyler County.
Seneca County.
Stuben County.
Tomkins County.
Wayne County.
Wyoming County.
Yates County.

Ohio

Allen County.
Ashland County.
Ashtabula County.
Auglaize County.
Belmont County.
Carroll County.
Columbiana County.
Coshocton County.
Crawford County.
Cuyahoga County.
Defiance County.
Delaware County.
Erie County.
Fulton County.

Geauga County.
Hancock County.
Hardin County.
Harrison County.
Henry County.
Hocking County.
Holmes County.
Huron County.
Jefferson County.
Knox County.
Lake County.
Licking County.
Logan County.
Lorain County.
Lucas County.
Mahoning County.
Marion County.
Medina County.
Mercer County.
Morgan County.
Morrow County.
Noble County.
Ottawa County.
Paulding County.
Perry County.
Portage County.
Putnam County.
Richland County.
Sandusky County.
Seneca County.
Stark County.
Summit County.
Trumbull County.
Tuscarawas County.
Union County.
Van Wert County.
Wayne County.
Williams County.
Wood County.
Wyandot County.

Pennsylvania

Allegheny County.
Armstrong County.
Beaver County.
Blair County.
Butler County.
Cambria County.
Cameron County.
Clarion County.
Clearfield County.
Crawford County.
Elk County.
Erie County.
Forest County.
Greene County.
Indiana County.
Jefferson County.
Lawrence County.
McKean County.
Mercer County.
Potter County.
Somerset County.
Venango County.
Warren County.
Washington County.
Westmoreland County.

West Virginia

Brooke County.
Hancock County.
Ohio County.
Tyler County.

Wisconsin

Grant County.

Finding of No Significant Impact
for
Proposed Interim Rule for Pine Shoot Beetle Quarantine
Environmental Assessment
November 1998

The U.S. Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), is proposing an interim rule to amend the quarantined area to include 19 additional counties found to be infested with 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 additional infested counties.

The proposed interim rule 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 interim rule 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 interim rule, (2) no action, and (3) elimination of the quarantine. Implementation of the proposed rule 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. 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 rule 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.

/s/ 12/14/98

Jim Reynolds
Acting Director
Operational Support
Plant Protection and Quarantine

Date