

Environmental Assessment

Gypsy Moth Eradication Program

Lincoln County

March 11, 2003

Joint Lead Agency: Oregon Department of Agriculture
Joint Lead Agency: USDA, Forest Service
Cooperating Agency: USDA, Animal and Plant Health Inspection Service

For further information,
Contact

Plant Division
Oregon Department of Agriculture
635 Capitol St. NE
Salem, OR 97301-2532
(503) 986-4636
TDD (503) 986-4762

USDA, Forest Service
333 SW First Ave.
Portland, OR 97208
(503) 808-2666

USDA, APHIS
Airport Business Center
6135 NE 80th Ave., Suite A-5
Portland, OR 97218-4033
(503) 326-2814

This publication is available in alternative formats upon request

The Oregon Department of Agriculture is an Equal Opportunity Employer, providing services to the public without regard to race, color, national origin, sex, age, or disability.

The United States Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, sex, religion, age, disability, political beliefs, sexual orientation, or marital or family status. (Not all bases apply to all programs). Persons with disabilities who require alternative means for communication of program information (Braille, large print, audio tape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 1400 Independence Avenue SW, Washington, DC 20250-9410 or call (202) 720-5964 (voice or TDD). USDA is an equal opportunity provider and employer.

Comments received in response to this solicitation, including names and addresses of those who comment, will be considered part of the public record on this proposed action and will be available for public inspection. Comments submitted anonymously will be accepted and considered; however, those who only submit anonymous comments will not have standing to appeal the subsequent decision under 36 CFR part 215. Additionally, pursuant to 7 CFR 1.27 (d), any person may request the agency to withhold a submission from the public record by showing how the Freedom of Information Act (FOIA) permits such confidentiality. Person requesting such confidentiality should be aware that, under the FOIA, confidentiality may be granted in only very limited circumstances, such as to protect trade secrets.

TABLE OF CONTENTS

A. PURPOSE AND NEED FOR ACTION.....	5
1. Decisions To Be Made And Scope Of Analysis.....	5
Decisions.....	5
Tiering.....	5
Biology of Gypsy Moth.....	5
History of Gypsy Moth Infestations in Oregon.....	6
2. Proposed Action.....	7
Proposed Action: Eradication.....	7
Alternatives Considered.....	8
Treatment Options.....	9
3. Need For Action.....	9
Goals and Objectives.....	9
Need for Action.....	9
Economic Impacts.....	10
Ecological Impacts.....	11
4. Authorizing Laws And Policies.....	12
Federal.....	12
State.....	13
5. Environmental Laws And Their Relationship To This Analysis.....	13
B. PUBLIC INVOLVEMENT AND ISSUES.....	14
1. Public Scoping and Public Information Meeting.....	14
2. Some Specific Issues and Concerns Raised.....	17
C. AFFECTED ENVIRONMENT.....	20
Location.....	20
Environmental Factors.....	22
Human Factors.....	23
D. ALTERNATIVES.....	24
1. Treatment Options Under The 1995 EIS.....	24
2. Options Not Considered In Detail.....	24
3. Alternatives Considered In Detail.....	24
4. Preferred Action Alternative.....	25
E. ENVIRONMENTAL CONSEQUENCES.....	25
Preferred Action Alternative.....	26
<i>Bacillus Thuringiensis</i> var. <i>Kurstaki</i>	26
<i>B.t.k.</i> and human health.....	26
<i>B.t.</i> and environment.....	28
Effects on Animal Species.....	30
Federally listed terrestrial species.....	30
Fish species.....	31
Intensive/mass Trapping Using Disparlure.....	32
Disparlure and human health.....	32
Disparlure and environment.....	32
Implementation Costs.....	33
Cumulative Impacts.....	33
No Action Alternative.....	33
Nesting Habitat for the Marbled Murrelet, a Threatened Species.....	34
Habitat for Anadromous Fish, or Isolated Coho Salmon Reaches.....	34
Other Animal Species.....	34
Late- and Old-forest Structure.....	34
Other Plant Species.....	34
Soil Condition and Microclimate.....	35
Douglas-fir Bark Beetle.....	35

Wildland/urban Interface	35
Scenic Values and Recreation.....	35
Human Health and Safety.....	35
Ongoing Projects/economic Values	35
Consistency with Aquatic Conservation Objectives.....	35
Preferred Action Alternative.....	35
No-action Alternative	37
Other Effects	37
Short-term Uses and Long-term Productivity	37
Unavoidable Adverse Effects.....	37
Irreversible Resource Commitments	37
Irretrievable Commitment of Resources.....	37
Environmental Justice	38
Other Disclosures.....	38
Summary	39
Monitoring	39
Mitigation	39
Ground & Aerial Treatments	39
Aerial Treatments.....	40
F. CONSULTATION WITH OTHERS.....	41
G. RECOMMENDATION OF THE OREGON DEPARTMENT OF AGRICULTURE.....	41
H. CONCLUSION.....	41
I. AGENCIES AND PERSONS CONSULTED.....	42
J. LIST OF PREPARERS & REVIEWERS.....	44
K. REFERENCES.....	44
APPENDIX A. USDA FOREST SERVICE PUBLIC SCOPING LETTER	48
APPENDIX B. PRODUCT LABELS.....	50
APPENDIX C. LETTERS CONCERNING THREATENED & ENDANGERED SPECIES.....	52
APPENDIX D. PUBLIC INFORMATION MEETING NOTICE PUBLISHED IN LOCAL NEWSPAPERS.....	61
APPENDIX E. WRITTEN COMMENTS RECEIVED ON THE DRAFT EA	62

A. PURPOSE AND NEED FOR ACTION

1. Decisions To Be Made And Scope Of Analysis

Decisions

The Oregon Department of Agriculture and the USDA, Forest Service, in cooperation with USDA, Animal and Plant Health Inspection Service (APHIS), propose to eradicate the gypsy moth infestation in Lincoln County, Oregon. There is nothing new that we are proposing that has not been analyzed in the 1995 final Environmental Impact Statement (EIS) for Gypsy Moth Management in the United States. Therefore, no new EIS programmatic analysis other than that found in the EIS need be conducted. The proposed action to eradicate isolated gypsy moth infestations in Oregon conforms to integrated pest management principles required by Oregon law, ORS 635.655. The need for this proposed action is based on the potential ecological and economic impacts of gypsy moth infestations on the surrounding areas, the entire state of Oregon, and indeed, the entire western United States.

Tiering

This Environmental Assessment is tiered to the USDA's 1995 final EIS for Gypsy Moth Management in the United States. Copies of the EIS are available for inspection at the Oregon Department of Agriculture in Salem. The preferred alternative in the 1995 EIS is Alternative 6: Suppression, Eradication, and Slow the Spread. Under this alternative, we propose eradication because of the isolated nature of the infestations in Oregon. This site-specific Environmental Assessment is designed to examine the environmental consequences of a range of treatment options under Alternative 6 that may accomplish the program's goals.

This Environmental Assessment also tiers to The Siuslaw Forest Plan (USDA 1990), as amended by the Northwest Forest Plan (USDA, USDI 1994). These plans are intended to provide for healthy forest ecosystems, including protecting riparian areas and waters.

Biology of Gypsy Moth

Gypsy moth, *Lymantria dispar* L., is one of the worst pests of trees and shrubs in the United States. It was originally imported into Massachusetts from Europe in 1869 for silk production experiments. Some moths were accidentally released and became established. This gypsy moth infestation has spread relentlessly and now covers the entire northeastern part of the United States from Maine south to North Carolina and west to Michigan and Wisconsin. Gypsy moth caterpillars alter ecosystems and disrupt people's lives when in high numbers. Heavy infestations cause defoliation and tree mortality. Defoliated trees are also vulnerable to other insects and diseases that may kill them. Heavy defoliation alters wildlife habitat, changes water quality, reduces property and esthetic values, and reduces the recreation value of forested areas. When present in large numbers, gypsy moth caterpillars can be a nuisance, as well as a hazard to health and safety (USDA 1995, EIS pp. 1-4).

Gypsy moths are notorious hitchhikers. Egg masses and pupae can be attached to nursery stock and Christmas trees, and vehicles, camping equipment, and outdoor household articles that people bring with them when they come to Oregon. A wide host range would allow gypsy moth to establish throughout western Oregon and where hosts occur in eastern Oregon. Gypsy moths were first detected in Oregon in 1979 and have been detected every year since in many different isolated locations, primarily in western Oregon.

Two strains of gypsy moth and possibly their hybrids now threaten Oregon. Gypsy moths introduced into Oregon from eastern North America are sometimes referred to as North American gypsy moths. Asian gypsy moths are a strain of the same species that comes from eastern Russia and Asia. Asian gypsy moths have arrived in Oregon as egg masses on ships. Containers and products coming from East Asia pose a consistent risk as trade with these areas expands. Asian gypsy moths could also reach Oregon via Europe. They have recently become established in Germany and other European countries where they are hybridizing with European gypsy moths.

Asian gypsy moths differ from gypsy moths (from North America and Europe) because the females can fly long distances. Gypsy moth females have fully developed wings but they cannot fly. Asian gypsy moths also feed on a wider range of host trees, including some such as larch that are not favored by North American gypsy moths. Asian gypsy moth caterpillars also develop more quickly and grow somewhat larger.

The two strains of gypsy moths look very similar; they can not be reliably separated by visual examination. Scientists developed genetic tests to distinguish one strain from the other. There are now several of these tests but all are undergoing reliability analysis and further refinement. One challenge has been that Asian gene markers used in these tests are present at low frequencies in established gypsy moth populations in eastern North America (Prasher and Mastro 1994). Since the two strains are known to interbreed, these results may indicate that hybridization has occurred.

A sobering example of how easily these pests can be introduced took place in 1993 in North Carolina. A ship carrying military cargo from Germany was found to be infested with large numbers of gypsy moths, including flying female moths typical of the Asian strain. The ship was sent back out to sea and the cargo was fumigated, but not before large numbers of moths were seen headed for shore. Hundreds of male moths were trapped near the port facilities, along the shore and up to 25 miles inland. Genetic testing indicated that both European and Asian strain moths were present as well as some which were apparently hybrids (N.C. Dept. of Agric. 1994).

The Oregon Department of Agriculture and the U.S. Department of Agriculture cooperate to eradicate gypsy moth infestations whenever they are detected in Oregon. A brief history of the major infestations and eradication programs follows.

History of Gypsy Moth Infestations in Oregon

The first gypsy moth in Oregon was trapped in 1979 in Lake Oswego. Follow-up trapping indicated that the infestation did not become established. In the early 1980's, however, detection programs revealed several established infestations of gypsy moth located in Salem, Corvallis, Portland, and Gresham. Effective eradication programs were implemented using various insecticides [acephate, carbaryl and *Bacillus thuringiensis* (*B.t.k.*)].

The largest infestation ever found in the western United States was discovered in the mid-1980's in Lane County. In the summer of 1984, traps in Eugene and Lowell caught large numbers of male moths. Trapping patterns were then expanded and over 19,000 male gypsy moths were collected from an area of 355 square miles. In the spring of 1985, 226,405 acres of Lane County were sprayed with *B.t.k.* in the first phase of an eradication program. In 1986, 189,011 acres were sprayed; 7,135 acres were treated in 1987 and 2,995 in 1988 -- all with *B.t.k.* applied three times by air per year. Following the 1988 treatment, delimitation trapping collected only 1 moth. The total cost of detection, eradication and trapping for Lane County from 1984 to 1989 was estimated to be \$18 million.

After the last eradication sprays in 1988 in Lane County, two moths were caught in the Eugene/Springfield area in both 1989 and 1990 and one moth was caught in 1991. Follow-up delimitation trapping indicated these were new introductions that did not become established. No gypsy moths at all were caught in Lane County in 1992. No eradication treatments were made in Lane County from 1989 through 1994. In 1995, however, a 80 acre aerial spray program using *B.t.k.* was conducted to eradicate a breeding population of gypsy moths at Veneta, Lane County. The program was a success. At another site near Dorena Lake/Schwarz Park, Lane Co., three moths were trapped in 1995 and 34 in 1996. This resulted in the smallest gypsy moth aerial spray program ever conducted in Oregon. In the spring of 1997, 70 acres were sprayed aurally with *B.t.k.* at the Dorena Lake/Schwarz Park site. Delimitation trapping afterwards indicated the infestation had been eradicated.

Several eradication programs have been conducted in the Portland metropolitan area. An infestation of gypsy moths was detected in east Portland in 1985. In 1986 a new eradication technique developed by USDA-APHIS (Induced Inherited Sterility Technique) was implemented to flood the area with sterile insects and disrupt normal mating. Results of post-release monitoring indicated that the program was unsuccessful; a residual gypsy moth population remained. Treatment with *B.t.k.* eliminated the infestation

in 1988. In both 1989 and 1991 small 4-acre areas in Lake Oswego were treated with ground applications of *B.t.k.* No eradication treatments were made in 1990.

The fourth largest eradication program in the state was completed in 1992 on 8,388 acres in North Portland. *B.t.k.*, applied by helicopter, was used to eradicate an infestation of Asian gypsy moth that arrived on ships that had previously visited Russian ports. A second Asian gypsy moth infestation was eradicated in 2001 in Portland's Forest Park by aerial application of *B.t.k.* over 910 acres .

Eradication programs were carried out at eight sites in 1993, 1994, 1996, 1998 and 1999 in the Portland metropolitan area. The 1996 eradication program was conducted on a 10-acre area in Gresham/SE Portland. In 1998, two eradication programs were conducted in suburbs of Portland, one in Beaverton on a 22-acre area and the other in Lake Oswego on a 13-acre area. The Beaverton site was retreated in 1999 although the eradication boundary was shifted slightly. This was because 19 gypsy moths were trapped on both sides of the eastern spray treatment boundary after the eradication effort there in the spring of 1998. All these programs combined use of *B.t.k.* treatments with mass trapping. Because of the small eradication blocks and good accessibility, *B.t.k.* sprays were applied from the ground.

Elsewhere in the state, small infestations in Josephine County were eradicated in 1988 and 1992. *B.t.k.* was applied by helicopter to rural residential areas of Philomath (Benton County, 440 acres) in 1993 and Carver (Clackamas County, 270 acres) in 1994 to eradicate infestations at these two sites. Another small infestation was ground sprayed using *B.t.k.* in Jackson County in 1995. The latest eradication in Jackson County occurred in 2001 when *B.t.k.* was applied by air over 160 acres in Ashland to control a North American gypsy moth infestation.

For a review of gypsy moth detection and eradication programs in Oregon through 1988, see Oregon Dept. of Agriculture (1989) and annual reports for 1989 through 2002. Hitchhiking gypsy moths will continue to arrive in Oregon and other non-infested states. At some time in the future, gypsy moths may become permanently established in the West and if that happens, gypsy moths will spread naturally into Oregon. Until that happens, it is expected that eradication of all isolated infestations that result from accidental introductions will continue to be the goal of the U.S. Department of Agriculture, Oregon Department of Agriculture and comparable agencies in non-infested states.

2. Proposed Action

Proposed Action: Eradication

Under the EIS, geography determines the proposed actions from among eradication, slow-the-spread, suppression, and no action. The EIS recommends eradicating isolated infestations of gypsy moth found in the western United States. Therefore, the proposed action is to eradicate the breeding gypsy moth population in the Fisher area of Lincoln County. The proposed action includes three aerial (by helicopter) applications of the *Bacillus thuringiensis* var. *kurstaki* (*B.t.k.*) bacterium in late April to mid May, beginning in 2003. It is anticipated that about 706 acres (198 acres of National Forest lands and 508 acres of private lands) in the infestation site will be treated. Intensive trapping will follow in the summer of 2003 to determine effectiveness of treatments. *B.t.k.* will be applied at a rate of 24 Billion International Units (BIU) with applications 7 to 14 days apart.

Additional treatments may be needed in 2004 if the gypsy moth has spread into a larger area than expected, or in 2004 and beyond if treatments cannot be successfully implemented in 2003 due to weather or other factors. Thus, a total of about 3,820 acres are included in the eradication analysis area in the event that the population spreads beyond the current eradication area. The proposed project area is in T14S, R10W, sections 34, 35, and 36; T14S, R9W, section 31; T15S, R10W, sections 1, 2, and 3; and T15S, R9W, section 6 (see attached map).

The following is a description of geography in U.S. with regard to gypsy moth. The area of the United States where the European strain of the gypsy moth is established is called the **generally infested area**. Next to this area is a band 50 to 100 miles wide, called the **transition area**, where the gypsy moth is spreading from the generally infested area. The area where the gypsy moth is not established, is called the **uninfested area**. Isolated infestations resulting from accidental spread of the gypsy moth by people

are found in this area. Different management strategies apply in these areas: suppression in the generally infested area, slow the spread in the transition area, and eradication of isolated infestations of the European strain in the uninfested area. In addition, the Asian strain may be eradicated wherever possible, including the generally infested area.

Our proposed action for Lincoln County in 2003 is based on trapping results during 2002. About 16,200 gypsy moth traps were placed statewide in 2002. Traps were concentrated in western Oregon where most population centers and gypsy moth host plants are located. However, all cities and towns statewide are considered at risk and are trapped each year. The standard detection trap density is two to four traps/mi² in cities and one to two traps/mi² in rural areas. Special high-risk sites such as national parks, public and private campgrounds and RV parks are trapped each year. Traps were also placed around major ports and waterways at risk of travel by ships carrying Asian gypsy moth egg masses. Major ports including the ports of Portland, Astoria and Coos Bay in Oregon, were trapped at a high density for a radius of five miles. Along the Columbia River waterway from Astoria to Portland, traps were placed at a density of 16 traps/mi² for three miles inland, followed by 4 traps/mi² for another two miles inland. At sites where gypsy moths are caught, delimitation traps are placed at densities of 16-49 traps/mi² for four or more square miles. Where Asian gypsy moth are detected, delimitation traps are placed over a wider area. Delimitation traps are placed as soon as possible following initial detection to delimit new infestations the same year if possible. Delimitation traps are also placed to monitor the success of eradication programs.

Ten gypsy moths were detected in 2002 at five new and two old sites. All were in western Oregon. All 10 moths were confirmed as North American gypsy moths by the USDA Otis Methods Development Lab using DNA tests. Five of the sites (four new and one old) had single detections, including two RV parks (2 sites) and three suburban areas (3 sites). Two gypsy moths were caught in separate traps in a parking lot near the center of a delimitation grid at an industrial site in Gresham (an old site). A new rural site in Fisher (Lincoln Co.) in Oregon's coast range was the only site that caught three moths in a single trap in 2002. Distribution of a Gypsy Moth Alert flyer, and information gathering regarding move-ins from the generally infested eastern U.S. were conducted in the vicinity of the Fisher trap catches. An old egg mass was found on a tire rim of a van that a family brought to Fisher when it moved from New York in 2000. Further searching found several old and live egg masses, larval and pupal skins on the house, a pump house and apple trees at the home of the move-in from New York. Additional egg mass searching on all adjacent properties and in the immediate area failed to produce any further life stages. The information available so far indicates that the Fisher site in Lincoln County now has a breeding population of gypsy moths.

Alternatives Considered

Six alternatives were considered in detail in the 1995 EIS:

- 1) No action. The U.S. Department of Agriculture would do nothing to reduce the adverse effects of the gypsy moth in the United States. No suppression, no eradication and no slow-the-spread would occur.
- 2) Suppression. The U.S. Department of Agriculture would reduce the adverse effects of the gypsy moth only in the generally infested area.
- 3) Eradication. The U.S. Department of Agriculture would reduce the potential adverse effects of the gypsy moth only in the uninfested area, and of the Asian strain anywhere in the United States.
- 4) Suppression and Eradication. This combines alternatives 2 and 3. The U.S. Department of Agriculture would reduce the potential adverse effects of the gypsy moth in both the generally infested and uninfested areas, and of the Asian strain anywhere in the United States.
- 5) Eradication and Slow the Spread. The U.S. Department of Agriculture would reduce the potential adverse effects of the gypsy moth in both the uninfested and transition areas, and of the Asian strain anywhere in the United States.
- 6) Suppression, Eradication, and Slow the Spread. The U.S. Department of Agriculture would fully pursue its goal of reducing adverse effects of the gypsy moth (including the Asian strain) anywhere in the United States. A full range of strategies would be available nationwide to manage affected ecosystems. This is the preferred alternative.

Treatment Options

Treatment options available under the 1995 EIS are:

- 1) *B.t.k.* This biological insecticide contains a bacterium, *Bacillus thuringiensis var. kurstaki*. The insecticide is specifically effective against caterpillars of many species of moths and butterflies, and is without significant risk to healthy humans, wildlife and the environment.
- 2) Diflubenzuron (Dimilin). This insect growth regulator interferes with the growth of some immature insects.
- 3) Gypsy moth virus. The nucleopolyhedrosis virus, which occurs naturally, is specific to the gypsy moth. Gypchek is an insecticide product made from the gypsy moth nucleopolyhedrosis virus.
- 4) Mass trapping. Large numbers of pheromone traps are used to attract male gypsy moths and prevent them from mating with females, thereby causing a population reduction. Density of traps is nine or more traps per acre.
- 5) Mating disruption. Aerially-applied tiny plastic flakes or beads contain synthetic gypsy moth sex pheromone. The pheromone may confuse male moths and prevent them from locating and mating with females.
- 6) Sterile insect releases. Large numbers of radiation-sterilized gypsy moth eggs or pupae are released in a treatment area and develop into adults. The sterile adults mate with fertile adults but viable offspring are not produced. If successful, the effect is population reduction and eventual elimination of the infestation.

The preferred option proposed for this eradication project is option 1) *B.t.k.* Option 4) Intensive/ Mass trapping at a density of up to 3-9 traps/acre will be employed after the eradication to determine the effectiveness of the *B.t.k.* treatment. Intensive/Mass trapping can also remove any remnant populations of gypsy moths that were not killed by the *B.t.k.* treatment.

3. Need For Action

Goals and Objectives

Goal: Eradicate the gypsy moth infestation from Fisher, Lincoln County in 2003 in order to avoid the impacts detailed below.

Objective 1: Apply *B.t.k.* to 706 acre eradication area centered on the Fisher site where three male gypsy moths were trapped and several egg masses were found (see the enclosed Fisher map for eradication area). *B.t.k.* will be applied three times by air at a rate of 24 B.I.U. per acre about 7-14 days apart in late April and early May; exact timing depends on weather. Ideally, the *B.t.k.* application should target early instars of gypsy moth. It is likely that a small buffer area surrounding the eradication area will receive some *B.t.k.* but in quantities much less than in the eradication area.

Objective 2: Delimit and intensively trap treated and surrounding areas using gypsy moth pheromone traps to determine the effectiveness of the *B.t.k.* treatment and to pinpoint any remnant populations of gypsy moths. This targets the adult stage of the gypsy moth. Trap densities in the core area will be 3 to 9 traps per acre. If more moths are caught, additional egg mass searches and treatments will be considered. Two years of negative trapping results following the *B.t.k.* treatments would indicate the infestation has been eradicated.

Need for Action

Gypsy moth has been a non-native destructive insect pest of trees and shrubs in the eastern United States and its native Eurasia for many years. Overwintering eggs hatch from their egg masses during spring. Larvae feed on leaves of more than 500 species of trees and shrubs in forest, agriculture and urban plantings. On average, about four million acres are defoliated in the eastern United States annually (EIS 1995). In Oregon, larvae in new infestations pupate and emerge as adults, typically from mid July through August. Detection and delimitation trapping is conducted during these peak flight times. Adults mate and females lay overwintering egg masses each containing up to 1000 eggs. Host plants in Oregon

include major forestry, agricultural and urban species of trees and shrubs. Oregon's economy, natural resources, environmental quality and human health would be negatively affected by the establishment of gypsy moths. Details follow.

Economic Impacts

An established population of any gypsy moth strain in Oregon would have very serious economic impacts for some residents and industries in the State. Because their females are strong flyers, the Asian strain would be expected to spread much more quickly than the North American strain. In addition, their ability to survive well on a broader range of host trees puts additional Oregon natural resources at increased risk.

The potential impacts of Asian gypsy moth on the Pacific Northwest were summarized by USDA Forest Service (1992). The Forest Service estimated direct resource losses for Asian gypsy moth for the time period between 1992 and 2040 as follows: commercial timber, (larch only) \$0.8 - 1.4 billion, (hardwood) \$0.7-\$1.2 billion; recreation, travel, and tourism, \$2 billion. Suppression costs were estimated to be: developed commercial, residential, and recreation properties, \$735 million; commercial timber, \$77 million; and Christmas tree plantations, \$9 million. Full impact of gypsy moth establishment in the West would be expected to be more delayed than for Asian gypsy moth. However, impacts of quarantines resulting from a non-suppressed gypsy moth population are expected to be immediate as discussed below.

Quarantines. Eradication of gypsy moth infestations in Oregon is essential to the health of agricultural, horticultural and forestry enterprises of the State. These Oregon industries are economically viable only when their products can be marketed in other states and countries. As an exporter of plant products, Oregon must comply with plant pest and disease regulations of market states and countries.

In 1984, the first response of Oregon's most important market state, California, to the discovery of the Lane County gypsy moth infestation was to place an embargo on all forest products and live plant material originating from all of Lane County. While this embargo was soon replaced with a more reasonable USDA "high hazard" gypsy moth quarantine, the disruption of normal marketing relationships caused by the embargo remained. Those Christmas tree growers near the heavier infestation sites were subject to loss of export markets due to quarantine fumigation requirements for interstate movement of the trees. Individual growers claimed losses as high as 80 percent to the fumigation process with some loss claims as high as \$200,000. Until 1989, all Christmas tree growers inside the quarantine area were required to apply chemical insecticides to obtain certification for interstate movement, thus, increasing their production costs and pesticide usage in the area. Failure to eradicate the current infestation would have had a progressively greater adverse impact on the Christmas tree industry, which exports 90% of its production and claimed an annual value of more than \$131 million to the state of Oregon during 2001. Similarly, the \$696 million annual sales of production nursery stock grown in Oregon in 2001, are generated almost entirely from export markets in other states and countries. Our most lucrative markets are those located closest to Oregon in states not yet infested with gypsy moth, and from which we can expect serious quarantine restrictions on nursery stock originating from infested areas.

State and federal quarantines imposed on wood products industries during the Lane County infestation did not seriously affect these businesses. Nevertheless, their product movements and handling procedures were subject to limitations imposed by compliance agreements with the Oregon Department of Agriculture. If the new gypsy moth infestation in Lincoln County is allowed to spread, similar embargoes and quarantines would be implemented and would become increasingly restrictive and expensive to comply with. Greenhouse and nursery products have been Oregon's largest agricultural industry (with highest cash value) since 1994. The Christmas tree industry has also increased steadily during the last several years.

The potential impact of gypsy moth quarantines on Oregon would be similar to those outlined in a Risk Assessment for British Columbia (Carlson et. al. 1994). It concludes: "The commitment by western States to preserve their export markets by excluding gypsy moth compels B.C. to follow suit. If B.C. were to allow gypsy moth to become established, trade and quarantine sanctions would be imposed by all the western States." "...costs [of trade sanctions] would likely exceed the current detection and eradication strategy costs by a factor of at least ten to one." "The threat of trade barriers through quarantine restrictions in the

western States ... presents a significant incentive for continued detection and eradication. B.C. could conceivably be denied access to its most important markets. The social and economic impacts resulting from these barriers to trade would likely be unacceptable for most British Columbians." In fact, both the USDA and Canadian Food Inspection Agency erected a quarantine in response to a large gypsy moth infestation in Vancouver Island in B.C. in 1998-1999. Oregonians would also face disruptive and expensive trade barriers if gypsy moth became established in Oregon.

Reforestation. The immediate threat to forest products industries is quarantine, but the long term impact of gypsy moth infestations on reforestation of major timber species may be just as important. Douglas-fir and western hemlock have proven to be good hosts for gypsy moth caterpillars in laboratory studies. Some defoliation of Douglas-fir was observed in heavily infested areas of Lane County in 1984. In places where there is a favorable mix of broadleaf and conifer hosts of gypsy moth, defoliation of young conifers may result in serious growth loss or tree mortality of important timber species. Hardwood hosts of gypsy moth, not now considered economic timber species, are receiving greater scrutiny from researchers and foresters. The continued presence of gypsy moth infestations in Oregon would decrease the economic potential of this undeveloped resource which presently covers some 2-3 million acres in western Oregon. In fact, hardwoods are becoming economically valuable in the western US. There are some companies that deal specifically with hardwoods.

Tourism. While the native hardwood species are not now important economic wood product species, they are very important components of the watershed species complex and contribute significantly to the scenic beauty of the Oregon environment. If the gypsy moth defoliates these species as it does similar hardwood species in the Northeast, Oregon would lose full use of parks, campgrounds and residential yards during the larval stage of the insect. This, along with the loss of watershed value and scenic beauty, could have a serious impact on the environment and tourist use of facilities located in gypsy moth-affected areas. May and June are important tourism months in Oregon. The value of tourism to Oregon in 2001 was \$6.1 billion. A significant proportion of the tourists comes from states which would be expected to impose serious limitations on the return of recreational vehicles into their states from a gypsy moth-infested Oregon.

Ecological Impacts

Eradication of gypsy moth infestations in Oregon is also essential to protect Oregon from the adverse ecological effects of gypsy moth establishment. These ecological effects are expected to be similar to those of Asian gypsy moth, which were examined by the Forest Service (1992). Oaks, alder, willow, hazelnut and other deciduous hosts are especially preferred by gypsy moths. About 50,000 acres were defoliated by gypsy moth in eastern states in 1997, 362,210 acres defoliated in 1998, 475,153 acres defoliated in 1999, 1.4 million acres in 2000, 1.9 million acres in 2001 and 177,832 acres in 2002 (GMDigest 2002). The reduction of gypsy moth defoliation in mid 1990's was at least partially due to the dramatic increase of the pathogenic fungus, *Entomophaga maimaiga* in the field (Schneeberger 1996). The worst year on record was 1981 when over twelve million acres (18,750 square miles) were defoliated.

Gypsy moth feeding can lead to changes in forest stand composition. Oak trees in the East have been killed by repeated defoliation and are usually replaced by other vegetation. If this occurred in Oregon, animals feeding on acorns would be directly affected. Nesting sites and cover would be reduced. Defoliation of riparian areas would cause increased short-term, but reduced long-term water output and increased air and water temperatures. Salmon, trout, and other aquatic species might leave affected areas or die. A study of stream water quality in gypsy moth-defoliated watersheds in the East found increased nitrate levels and decreased acid neutralizing capacity; thus, gypsy moth defoliation of trees and shrubs in riparian areas could exacerbate the effects of acid rain (Downey 1991). Defoliation of riparian, watershed, and other critical areas and of specific plant species could jeopardize concerned, threatened or endangered species (plant, insect, fish or other wildlife species). Sample *et al.* (1993) found that gypsy moth defoliation reduced both the abundance and species richness of Lepidoptera (butterflies and moths) in the affected area. In short, the ecological effects of gypsy moth becoming established in the West are expected to be substantial.

Defoliation of riparian, watershed, and other critical areas by gypsy moth in the Fisher area could jeopardize the Siuslaw Forest Plan (USDA 1990), as amended by the Northwest Forest Plan (USDA, USDI

1994). Defoliation exposes watershed to direct sunlight and can increase the water temperature, which negatively impacts the threatened salmon and other fish species in the area. Other concerned, threatened or endangered species (birds, reptiles, mammals, plant, insect and others) may also be impacted due to gypsy moth defoliation and its resulting habitat modification.

Specifically, the Siuslaw Forest Plan (USDA 1990), as amended by the Northwest Forest Plan (USDA, USDI 1994), is intended to provide for healthy forest ecosystems, including protecting riparian areas and water. Late-successional reserves were designed into the Northwest Forest Plan to protect and enhance these forest ecosystems, which are required habitat for many species. Riparian reserves were included to protect and enhance habitat for terrestrial plants and animals, as well as to provide connectivity corridors between late-successional reserves. The Northwest Forest Plan's Aquatic Conservation Strategy is intended to restore and maintain the health of watersheds and the aquatic ecosystems they contain.

The Assessment Report for Federal Lands in and Adjacent to the Oregon Coast Province (USDA 1995) shows the Five Rivers watershed in the central interior block (block 6). The Report recommends managing to accelerate successional development and to aggregate small patches into larger ones. The Report describes the in-stream fish habitat on federal lands throughout the Province as being in marginal to poor condition. It recommends actions that will improve fish habitat on federal land.

The Northwest Forest Plan sets the framework to develop watershed analyses to determine how proposed land management activities meet Aquatic Conservation Strategy objectives. The Lobster-Five Rivers Watershed Analysis (USDA 1997) reported the need to maintain or accelerate the development of late-successional forest habitat and to maintain stream shading within the Lobster-Five Rivers watershed. The watershed analysis and the Five Rivers Landscape Management Project Final Environmental Impact Statement (USDA 2002) identified four streams in the planning area—Buck Creek, Five Rivers, Crab Creek, and Green River—as temperature impaired because they exceed the 64-degree temperature standard established by the Oregon Department of Environmental Quality.

Environmental quality. While the extent of environmental damage which the gypsy moth can do by way of host plant defoliation is difficult to predict, the increased use of pesticides associated with living with gypsy moth is not. Even at relatively low levels of infestation, pressure is increased for use of chemical sprays to certify certain plant products, including Christmas trees, for interstate marketing. This would apply to nursery stock and forest products at mill storage areas. These application sites would likely receive more pesticide treatments, as would residential sites within urban and suburban settings. Natural areas, such as parks and campgrounds, would also require treatments to make forested areas fully usable. Every year, thousands of acres of trees are treated to control gypsy moth in the East; over 861,000 acres were treated in 2002 (GMDigest 2002).

Human health. Some people are allergic to the tiny hairs on gypsy moth caterpillars (Tuthill et al. 1984). These people could suffer minor allergic reactions, primarily rashes, if gypsy moths were allowed to become established in Oregon. During outbreaks, gypsy moth caterpillars crawl over sidewalks, patios, lawn furniture, etc. They may even invade houses. In heavily infested areas, large numbers of caterpillars limit some people's enjoyment of the outdoors.

4. Authorizing Laws And Policies

The US Department of Agriculture has broad discretionary statutory authority to conduct gypsy moth management activities. The following is a list of authorizing laws and policies.

Federal

The Plant Protection Act of 2000 (7 CFR 401-442) and Cooperative Forestry Assistance Act of 1978 as amended (16 USC 2101-2105). These statutes authorize, among other things, the development of USDA activities for the regulation of the artificial spread of the gypsy moth from the quarantined area, and the eradication of isolated gypsy moth infestations outside this area.

7CFR 301.45. This regulation establishes a federal gypsy moth quarantine covering infested areas of the US.

1988 Memorandum of Understanding between the USDA Forest Service and USDA Animal and Plant Health Inspection Service for Management of the Gypsy Moth.

State

ORS 570.305. This statute gives broad enabling authority to eradicate dangerous insect pests and plant diseases. It states that "the director [State Department of Agriculture], and the chief of the division of plant industry, are authorized and directed to use such methods as may be necessary to prevent the introduction into the state of dangerous insect pests and plant diseases, and to apply methods necessary to prevent the spread, and to establish control and accomplish the eradication of such pests and diseases, which may seriously endanger agricultural and horticultural interests of the state, which may be established or may be introduced, whenever in their opinion such control or eradication is possible and practicable."

ORS 634.655. This law requires that state agencies with pest control responsibilities follow the principles of integrated pest management (IPM). IPM is defined as "a coordinated decision-making and action process that uses the most appropriate pest control methods and strategy in an environmentally and economically sound manner to meet agency pest management objectives."

ORS 634, State Pesticide Control Act. This law regulates the formulation, distribution, storage, transportation, application and use of pesticides in Oregon.

5. Environmental Laws And Their Relationship To This Analysis

Federal Insecticide, Fungicide, and Rodenticide Act of 1947 (7 USC 136). This Act requires that all insecticides used in suppression or eradication projects be registered with the Environmental Protection Agency and that application requirements be followed.

National Environmental Policy Act of 1969 (P. L. 91-190 42 USC 4321 et. seq.). This Act requires detailed and documented environmental analysis of proposed federal actions that may affect the quality of the human environment. The courts regard as federal actions any state actions for which federal funds are granted.

Endangered Species Act of 1973 (16 USC 1531 et. seq.). This Act prohibits federal actions from jeopardizing the existence of federally listed threatened or endangered species or adversely affecting designated critical habitat. Federal agencies must consult with the U.S. Fish and Wildlife Service to determine the potential for adverse effects from any federal action. Federal agencies are also responsible for improving the status of listed species.

Federal Water Pollution Control Act (also referred to as the Clean Water Act, 33 USCA §§1251 to 1387). This Act intends to restore and maintain the chemical, physical and biological integrity of the nation's waters. The Ninth Circuit Court of Appeals decision in *League of Wilderness Defenders v. Forsgren* (November 4, 2002) requires the U.S. Forest Service to obtain a National Pollutant Discharge Elimination System (NPDES) permit for aerial spraying of pesticides over forest lands in Oregon and Washington. The NPDES permit program is administered under the Federal Water Pollution Control Act.

B. PUBLIC INVOLVEMENT AND ISSUES

Note to Readers: The public involvement processes used by the Oregon Department of Agriculture (ODA) and the USDA Forest Service (FS) are different. When doing cooperative gypsy moth eradication programs, ODA solicits public comment on a draft EA (the FS does not prepare draft EAs) that is mailed to its stakeholders. The ODA may also use a public information meeting to inform the public about the proposal, to make the draft EA available, and to answer questions. Comments received are then used to prepare the EA.

The FS solicits public comment through a proposed action that is mailed to its stakeholders. Comments on the proposed action are then used to prepare the EA. The FS then mails the EA to those who have commented on the proposed action and to those who have requested a copy of the EA. Public comments on the EA are then considered by the FS decision maker before a decision is made.

Because the ODA and FS are joint lead agencies for this project, copies of the draft EA were also mailed to FS stakeholders who commented on the proposed action.

1. Public Scoping and Public Information Meeting

Efforts were made to obtain and address issues and concerns among individuals and organizations that will be affected by the proposed gypsy moth eradication project. Starting in September 2002 and continuing during the fall, residents near the sites where gypsy moths were caught and egg masses and other life stages were found were informally contacted in person by ODA staff to alert them to the presence of the gypsy moth infestation. Staff also provided interested residents with the Oregon Health Division *B.t.k.* Fact Sheet from 2001 gypsy moth eradication programs. Public scoping letters (example copy included in Appendix A) describing the proposed project and soliciting public comments were prepared and mailed by the USDA Forest Service to property residents and landowners within and adjacent to the proposed eradication analysis area. Letters were also mailed to other interested citizens, organizations, and government agencies. News releases describing the proposed project and soliciting public comment were published in local newspapers. Public scoping began on December 10, 2002; comments on the proposed project were due on January 8, 2003.

A total of 14 individuals and organizations responded to these scoping efforts. Their comments helped guide the preparation of the Environmental Assessment (EA). Copies of the comments received during scoping process are included in the project file. Concerns have been summarized below and are organized into the following categories:

Human health and safety—What are the effects of aerial spraying on domestic water systems, organic produce certification, food crops, gardens, lawns, and people with chemical sensitivities such as those who have immune deficiencies and asthma?

Forest resources—What are the effects of gypsy moth damage to forests, watersheds, and timber values?

Domestic animals—What are the effects of aerial spraying on pastures, locally farmed livestock, and pets?

Fish and wildlife—What are the effects of aerial spraying on fish and wildlife, including deer with immune deficiencies, the aquatic food chain, birds, and non-target moths and butterflies?

Effectiveness and costs—What are the success rates associated with this type of treatment, how much will it cost, and how will it be funded?

Other—What are the ingredients of Foray 48B? Is eradication necessary? Need for prior notification of dates of spraying. Is this insect the European gypsy moth or the Asian gypsy moth? Will this project

require an NPDES permit? Don't eliminate areas that should be treated in an effort to reduce costs or public objection. Low level of risk to public health is vastly overshadowed by health risks that will result from destruction of our forests and watersheds across the state. Health and environmental costs are greater than costs associated with infestation. Don't spray undisclosed chemicals on private and public property. Who is assessing the potential effects of aerial spraying? Consider other types of treatment other than aerial spraying.

A public information meeting notice was prepared and sent by ODA to property residents and landowners within and adjacent to the proposed eradication analysis area, to the 14 respondents who commented on the proposed project described in the USDA Forest Service scoping letter, and to Lincoln County government offices on January 31, 2003. Notice of the meeting was also published in three local newspapers before the meeting (Appendix D). The public information meeting notice also included information on the gypsy moth situation, the eradication proposal by ODA and USDA Forest Service, and the availability of the draft Environmental Assessment. Letters indicating the ODA-USDA eradication proposal and enclosing a draft copy of the Environmental Assessment were also mailed to interested individuals and organizations on January 31, 2003.

ODA scheduled the public information meeting on February 13, 2003 at the Waldport Senior Center, 265 Alesa Highway, Waldport, OR 97394, at 7:00 pm. Sixteen people from the public and thirteen people from various government agencies attended the public information meeting. ODA presented the information at the meeting. Representatives from other agencies and organizations present at the meeting included: USDA Forest Service, USDA APHIS, Lincoln County Health and Human Services, Oregon Department of Human Services - Health Services Division, Oregon Department of Forestry.

The following questions were raised by the audience at the public information meeting. Some of these questions were related to the environmental assessment, but some were not. All of these questions were addressed orally by staff from ODA at the meeting. In addition, about six electronic mails were received regarding the proposed eradication project; some were related to the environmental assessment (Appendix E). All were responded to by ODA staff via emails or phone calls. Two letters were received through mail. Both are concerned about the issues in the environmental assessment (Appendix E). All questions relevant to the environmental assessment were addressed in the 1995 EIS or the environmental assessment. None of the questions, from the scoping, meeting, emails and mails, raised issues that were not addressed in the 1995 EIS or the environmental assessment. Readers are recommended to consult both documents.

Questions from the public information meeting in Waldport:

- What is the difference in cost between ground application and aerial application?
- How is the spray boundary determined?
- My house is not shown on this map.
- Why is the positive site not in the center of the spray area?
- Why can't you use a product that is organically approved?
- Why is the shape of the spray area so bizarre?
- Should the shape of the spray area be a circle rather than a rectangle?
- Do you know what the inert ingredients of *B.t.k.* are?
- How many years do you have to go without catching moths before considering the eradication successful?
- How can you propose using *B.t.k.* without telling us what's in it?
- What about those of us who can't afford health insurance and don't have a health care provider?
- Why does the product label say 97% inert and not tell what's in it?
- Why does our government choose to use a product if they don't know what's in it?
- Is *B.t.k.* approved by Oregon Tilth?
- Is Oregon Tilth a government agency?
- Why should I disregard that we should not use it on ground water?
- There is someone in this target area that has severe immune disorder. What do you recommend that this person do?
- Would you consider extensive trapping instead of spray?
- Is there a time element for putting out traps?

- How often are traps checked?
- Why hasn't the ODA addressed the direct conflict between the precautions given by the manufacturer and the information that ODA has provided, such as "do not apply to surface water", "do not enter", and "not to be applied to plants for resale"?
- Why didn't you give us the entire label?
- What is the difference in ingredients between forestry use Bt and agricultural use Bt?
- Why should we not pay attention to the label and instead listen to what you tell us?
- Why shouldn't we pay attention to this label warning?
- We would be more comfortable with something certified by Oregon Tilth. Is this feasible?
- Is there a reasonable alternative to a chemical that we can't ascertain the ingredients of?
- Do we have any options, or is this going to be forced on us? I'm not sure what the purpose of this meeting is other than tell us what you are going to do.
- How do you know that the gypsy moth has spread from the point of entry?
- Why didn't you remove all the egg masses?
- Is someone going to monitor the sentinel egg-mass?
- How far from that yard did you actually search for additional egg-masses?
- Why can't you use a ground spray?
- What would be the possibility of the Health Department to divulging the properties of the inert ingredients?
- How do you propose to stop the infestations from re-occurring?
- Real Estate Agents should educate people from infested areas about transporting the gypsy moth.
- Why should we disregard the warnings on the label?
- Are my neighbors that are selling plants violating the law if they sell their plants?
- Could the five miles south of Buck Creek on Five Rivers Road be included in the trapping area?
- Is the *B.t.k.* product for agricultural use the same as the forestry *B.t.k.* product?
- Why are there two labels for the same product?

General concerns that have been brought up in previous gypsy moth eradication programs in Oregon include:

1. Human Health. Concern has been expressed about direct or indirect human exposure to insecticides (especially for children, pregnant women, and people with severe immune disorders). Monitoring of human health during the application process is an additional concern. Concerns have been expressed regarding the aerial application of biological insecticides (*B.t.k.*) to urban and rural areas, especially in relation to direct or indirect contamination of drinking water, watersheds, wells and garden crops. That inert ingredients are not disclosed to the public has caused concern. Some of the inert ingredients are approved for use in foods. Concern has also been expressed about human allergic reactions to caterpillars if gypsy moth infestations are not eradicated.
2. Public Education. A need for increased public education about the gypsy moth problem and a need for public education on the possible effects of eradication measures have been expressed.
3. Public Involvement and Notification. Concern has been expressed about adequate public involvement in the decision-making process concerning eradication procedures and methods, and about adequate notification of treatment dates, areas, cancellation and reschedule dates and plans to ensure public safety.
4. Environmental Effects. Concern has been expressed about the possible effects of insecticides, including biological insecticides, on non-target organisms, such as gypsy moths' natural enemies, wildlife, honeybees, fish pond on private properties, aquatic insects and other Lepidoptera (moths and butterflies). Concern has also been expressed about the possible adverse effects of gypsy moth defoliation on wildlife and water quality in affected areas.
5. Alternatives to Eradication Programs. Concern has been expressed about a need for research on the behavior of the gypsy moth in Oregon to determine which natural enemies might maintain populations at low levels. Concern has been expressed about the viability of an eradication approach and the need for long range planning and research for an integrated pest management approach to suppression.

6. Gypsy Moth Quarantine. During the earlier Lane County infestation, a need was expressed for a rapid reduction in the population of gypsy moths to reduce or eliminate the gypsy moth quarantines imposed on the infested portions of that county.

7. Economic Effect. Concern has been expressed about the possible negative impact of the gypsy moth on the forest and nursery industries if infestations are allowed to expand unchecked. Concern has been expressed by Christmas tree growers in particular about the negative impact of the gypsy moth on their markets. Concern has been expressed by land owners about the possible negative effects of a continued gypsy moth infestation on property values.

8. Compliance with State Law. Concern has been expressed about ODA's authority in eradicating gypsy moth. State laws (ORS 570.305 & ORS 634.655) apply to gypsy moth eradication projects (see previous section A 4).

Similar concerns were documented in the 1995 final EIS Appendix C, page C4-C10. All of these issues and concerns were considered when reviewing the range of treatment options available to accomplish the goal of eradication of the current gypsy moth infestation in Oregon. The 1995 EIS addressed three principal issues in detail:

- 1) How does the presence of gypsy moth affect people and the environment?
- 2) How do insecticidal treatments applied affect people and the environment?
- 3) How do noninsecticidal treatments applied affect people and the environment?

Most of the concerns and issues raised in gypsy moth eradication programs in Oregon falls into one of the three categories addressed in the 1995 EIS. Readers are encouraged to consult the 1995 final EIS for details.

Citizens and organizations were urged to write to the Insect Pest Prevention and Management Program Supervisor of the Plant Division of the Oregon Department of Agriculture, or to the USDA Forest Service, Siuslaw National Forest, South Zone District Ranger, with their concerns about the gypsy moth problems and the proposal to employ an eradication IPM program. Postal address, email address and telephone numbers were provided to the public and concerned parties and individuals in all mailings. Areas of concern expressed will be summarized and presented to the Director of the Oregon Department of Agriculture and to the South Zone District Ranger, Siuslaw National Forest, for evaluation prior to their decisions regarding implementation of the proposal or another alternative. Written comments from concerned parties and individuals on the draft EA are included in Appendix E.

2. Some Specific Issues and Concerns Raised

Organic vs Foray 48B Formulation

At the public information meeting and in subsequent letters, some residents in the Fisher (Five Rivers) area indicated that their values include the organic production of food. They have requested the use of a certified organic *B.t.k.* pesticide formulation to eradicate the gypsy moth infestation. Others owning land in the area stressed the importance of using an effective *B.t.k.* or chemical treatment.

The list of *B.t.k.* formulations certified by the Organic Materials Review Institute (OMRI) as organic was evaluated for effectiveness and suitability of the labels for an eradication program in the eradication analysis area as well as the timely availability of information needed by the Oregon Department of Environmental Quality (DEQ) as part of its NPDES permitting process. Labels for an organic product with appropriate sites listed were available. However, documentation was not available for the effectiveness of these products in a forestry situation. The currently certified organic formulations are wettable powders or other dry formulations designed specifically for agricultural uses with some limited applicability on non-agricultural crops (such as shade trees), typically peripheral to agricultural applications. Specifically designed for ground application, although aerial application is an option, lack of adequate coverage and variable effectiveness of the dry formulations experienced in forested situations is a major concern. For aerial applications these dry formulations require the addition of at least one to five gallons of water per acre. Even with that added volume, adequate coverage is not expected due to a variety of factors,

e.g., tree canopy and evaporation during the distance the spray must travel to reach the target. With increased weight/volume of the mixed product and the need for adding adjuvants such as spreader stickers, application cost and time would also increase without expectation of adequate control. Drift and weather-related factors would also pose increased operational concerns. Conversely, forestry formulations are designed to penetrate the canopy and stick to surfaces with dosages of *B.t.k.* adequate to control gypsy moth larvae. In addition, the information needed by the DEQ for the NPDES permitting process on the presence or absence of toxics in the organic formulations was not made available upon request by the manufacturers. The deadlines required for the NPDES permitting and other processes to be complete in time for the proposed applications in late April did not allow for additional exploration of whether the information needed for the NPDES permit could be obtained. With renewed vigor, both the ODA and the USDA FS are in the process of encouraging the manufacturers of reliable forestry products to produce an effective organic forestry product for gypsy moth eradication and other moth control programs. For 2003, Foray 48B is the suitable formulation available.

Inert Ingredients / Area Drinking Water Sources

Some residents in the Fisher (Five Rivers) area expressed concern about the lack of public disclosure by the manufacturer of the inert ingredients in Foray 48B. The manufacturers consider the identity of their inert ingredients to be a trade secret, which they are legally allowed to do. They have stated they will “not provide public access to our intellectual property.” As part of the NPDES permitting process, however, the manufacturer of Foray 48B has certified that to the best of their knowledge none of the substances listed in Table 20 are present in Foray 48B. Table 20 (Oregon Administrative Rules 340-041) includes pollutants that have associated instream water quality criteria or standards. This list contains 126 substances including arsenic, chlorine, cyanide, dioxin, PCB's, mercury, lots of pesticides, and some elements such as iron, nickel, copper and lead. Additionally the manufacturer has disclosed the active and inert ingredients to the Oregon Health Services under a confidentiality agreement. From this and other information, Oregon Health Services has prepared an *B.t.k.* Fact Sheet for residents and other interested persons (Oregon Health Services 2003). Oregon Health Services has agreed to consult with health care providers for residents who have serious allergies to foods or food preservatives. Oregon Health Services has developed additional summary information for residents about Foray 48B ingredients. This information follows and has been or will be provided to area residents prior to any proposed spray treatments:

“What is Foray® 48B?”

Foray® 48B is a water-based product containing 2.1% *B.t.k.* At the manufacturing plant, samples of the material are checked to make sure no harmful bacteria or toxins are present in the formulation. In addition to the bacterial ingredient, Foray® 48B contains a number of “inert” ingredients, including stickers and binders that help the spray remain on vegetation after it is applied. No petroleum products are used as carriers. Foray® 48B contains water, carbohydrates, proteins from corn or soybeans, *B.t.k.* spores and crystalline proteins, stabilizers for acid control, several preservatives and wetting agents. The preservatives and wetting agents (less than 5% of the formula) are chemicals found on EPA's list 3 or list 4. The EPA categorizes inert ingredients which might be used in pesticides. Please refer to the EPA website for more information, <http://www.epa.gov/opprd001/inerts/lists.htm>.

List 3- Inerts of unknown toxicity. Inert ingredients on this list have not yet been determined to be of known potential toxicological concern nor have they been determined to be of minimal concern. These substances will continue to be evaluated to determine if they merit reclassification to List 1, 2 or 4.

List 4- In 1989, List 4 "Inerts of Minimal Concern" was subdivided into List 4A (now referred to minimal risk inert ingredients) and List 4B (inerts which have sufficient data to substantiate they can be used safely in pesticide products). Please review the 54 FR 48314, Inert Ingredients in Pesticide Products; Policy Statement; Revision and Modification List (11/22/89) on the EPA website <http://www.epa.gov/opprd001/inerts/fr54.htm>.

The preservatives, sticking agents, and acid regulators used in Foray® 48B are registered for use in cosmetics, medicines, and/or foods. Exposure tests have been conducted with animals and humans using product formulations. These exposure tests indicate that the inert ingredients and/or the *B.t.k.* can be irritating to the eyes and skin. The exposure tests used a much greater dose than one can expect from being present in the spray area.”

Note that Oregon Health Services has also provided guidance for area residents concerned about their drinking water:

“If your drinking water source is from open surface water (e.g., creeks, streams, springs) and you are concerned about potential exposure, you may wish to shut off the intake during the spray and until you are satisfied that any water exposed to the spray has moved downstream of your intake. Alternative water sources in the interim might include previously stored and covered water on site, bottled water, or water from a neighbor outside the sprayed area.”

Organic Status for Home Gardens and Certified Organic Farms

While *B.t.k.* is present in several certified organic pesticides, the forestry *B.t.k.* formulation proposed for use to eradicate the Fisher (Five Rivers) area gypsy moth infestation is Foray 48 B. Foray 48 B is not certified organic and organic gardeners within the eradication area and a surrounding buffer area may not be able to represent their produce as "organic." Pete Gonzalves, Executive Director, Oregon Tilth, indicated in his letter (Appendix E) "Part 205.672(a) (and(b)) state that any harvested crop (or livestock) that has contact with a prohibited substance applied as the result of a Federal or State emergency pest treatment program cannot be represented as organically produced." This may have negative social and possibly economic impacts on affected organic gardeners. However, residents and landowners will be notified prior to spray applications and can take some steps to reduce the potential impacts, should they have a concern. For example, garden plants may be covered prior to the application and uncovered afterwards. Also, some people may feel more comfortable if they wash off their garden plants (e.g., peas, onions) after the spray application. If grazing animals are present, they could be temporarily removed from the pastures until the concern is past. Alternate unsprayed food sources could also be used. The current crop of any treated organic farms would be impacted. Pete Gonzalves also indicated that "Although the land would retain its organic status according to Part 205.672, treated crops could not be marketed as organic, perhaps resulting severe financial hardship for the affected producer." (sic) However, losses would be limited to the current crop. Garth Kahl, who owns the nearest Oregon Tilth-certified organic farm, indicated he is about 1 to 1.5 miles outside the eradication area on Lobster Valley Road. Thus no impact is expected to certified organic farms in the area if we are successful in eradicating the gypsy moth infestation this year before its population can expand further from its epicenter. The ODA and USDA FS are willing to work with local growers to address other specific concerns.

Agricultural vs Forestry Labels (area wide public pest control program)

Concerns have been raised about special restrictions found on the agricultural use label for Foray 48B. These special requirements on the agricultural label are due to Worker Protection Standard, 40 CFR Part 170. According to 40 CFR Part 170.103 and 170.203, an exemption from these restrictions for workers and handlers has been made for "mosquito abatement, Mediterranean fruitfly eradication, or similar wide-area public pest control programs sponsored by governmental entities." The Foray 48B forestry label chosen for this application includes such an exemption.

Cost of Project; Who Pays

The cost estimate for treating the 706-acre area in 2003 could range from \$300,000 to \$400,000. If follow-up treatments are needed in 2004, the additional cost would be about the same. If the proposed action is delayed until 2004, the cost estimate for treating up to a 3,800-acre area (a worst-case scenario) could range from \$1,500,000 to \$2,000,000. The USDA Forest Service is paying the entire cost of this project due to inclusion of and close proximity of National Forest land.

Size of Eradication Area; Ground vs Aerial Application

The location and boundary of the eradication area and environmental analysis area are based on gypsy moth trapping and life stage evidence and the expected spread of the gypsy moth due to factors such as gypsy moth biology, topography, host plants, weather conditions, and wind patterns since 2000, when it was introduced into the area.

Because of restricted access, the large area needing to be treated and terrain characteristics, aerial sprays applied by helicopter are the only feasible way to apply the pesticide.

C. AFFECTED ENVIRONMENT

An extensive general description of the physical and biological environment was prepared for the 1986 Oregon Environmental Assessment Gypsy Moth Eradication Spray Program: Lane and Douglas Counties. Much of the information is applicable to western Oregon and is therefore incorporated by reference in this environmental assessment.

Location

Fisher, Lincoln County. The proposed eradication analysis area (3,820 acres) is in a rural forested area by the town of Fisher, Lincoln County. It is the area for which the environmental analysis will be conducted. It may become an eradication area in later years if the gypsy moth population has expanded more than expected. It includes a portion of the Siuslaw National Forest (Five Rivers Area) and some private wood lots and properties. The exact location is centered nearby the intersection of Five Rivers Rd and E Buck Creek Rd within T14 S R10W, Sections 34, 35, and 36; T14S R9W, Section 31; T15S R10W, Sections 1, 2, and 3; and T 15S R 9W, Section 6 (see attached map for the large rectangular block). The boundary begins at a point 1,334 feet west of the NW corner of Section 35, T14S R10W, at N 44° 18' 54.69", W 123° 52' 52.12" (GPS readings of the latitude and longitude). It then proceeds east along the northern section lines of sections 34, 35 and 36, for 15,668 feet to a point 3,913 feet east of the NE corner of Section 36, T14S R10W at N 44° 18' 56.19", W123° 49' 14.31". It then turns 90 degree south and proceeds for 10,573 feet to a point 3,913 feet east of the SE corner of Section 1, T15S R10W at N 44° 17' 11.90", W 123° 49' 15.52". It then turns 90 degree west and proceeds along the southern section lines of Section 6, T15S R9W and Sections 1, 2 and 3, T15S R10W for 15,668 feet to a point 1,334 feet west of the SW corner of Section 2, T15S R10W, at N 44° 17' 10.95", W 123° 52' 52.12". From here it turns 90 degree north and proceed for 10,573 feet to the point of beginning (see attached map).

The eradication area (2003) is the area proposed to receive *B.t.k.* treatment sufficient to eradicate the gypsy moth. It is likely that a small buffer area surrounding the eradication area will receive some *B.t.k.* but in quantities much less than inside the eradication area. The eradication area lies within the proposed eradication analysis area. Based on a number of factors (e.g., time of day, wind speed and direction, topography, distance of the eradication area from the eradication analysis area boundary), we expect that the *B.t.k.* (Foray 48 B) will be deposited within the eradication analysis area. This eradication analysis area is the same area evaluated for this cooperative Environmental Assessment, the USDA FS Biological Assessment and Biological Evaluation, the USDI Fish and Wildlife Biological Opinion and for the Oregon Department of Environmental Quality NPDES permitting process.

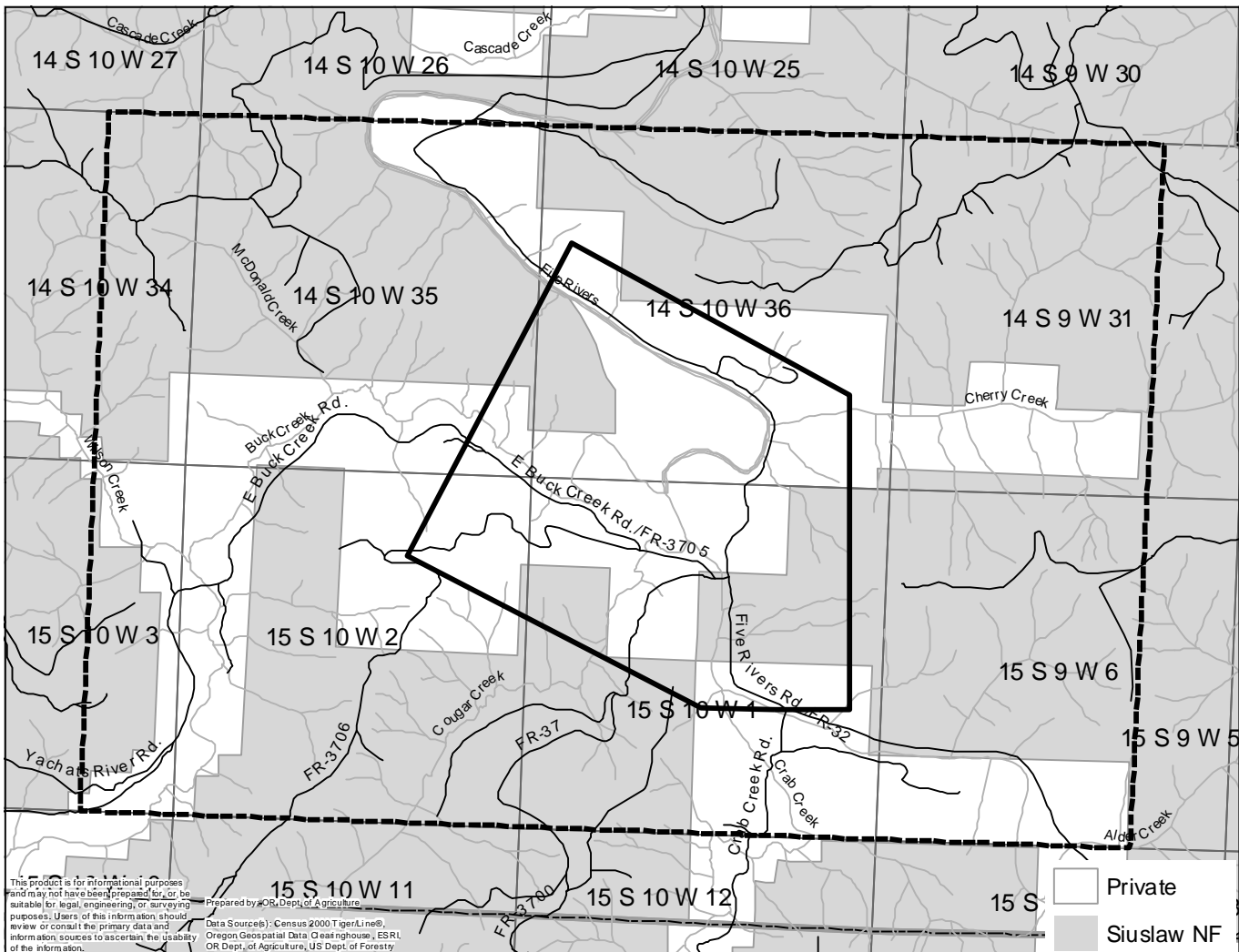
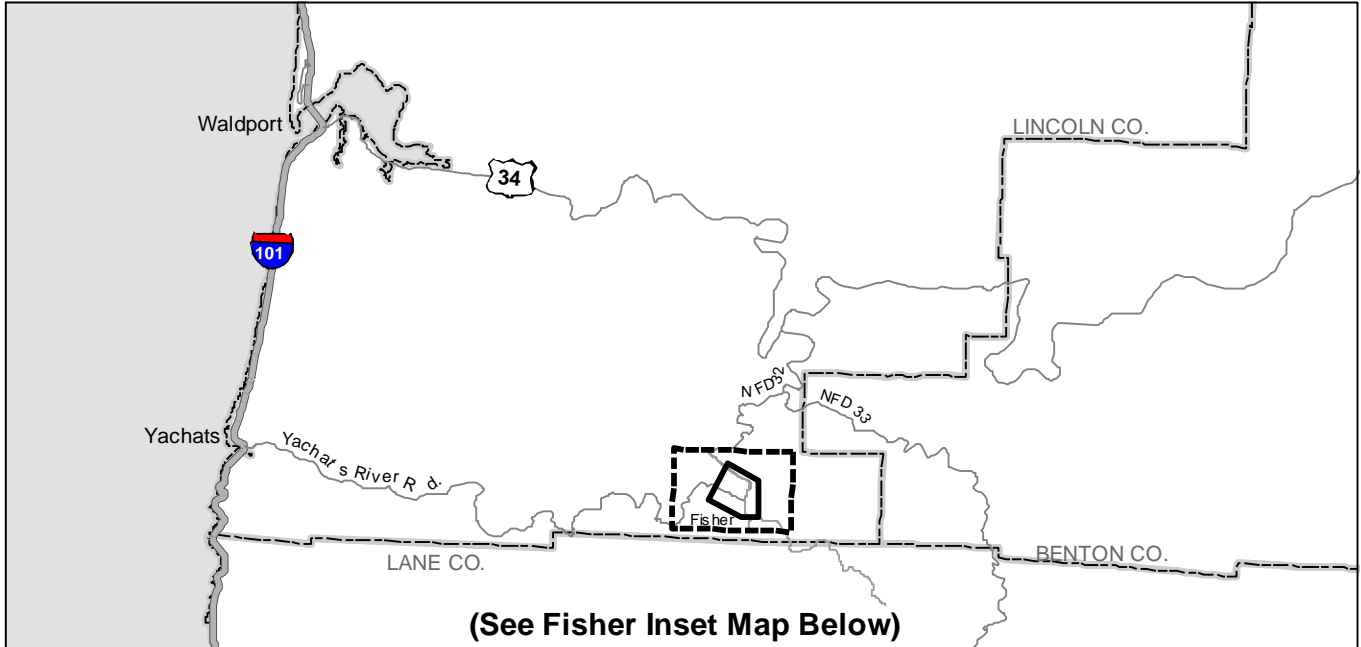
The proposed eradication area is within T14S R10W, Sections 35 & 36 and T15S R10W, Sections 1 & 2. The eradication area boundary begins at a point 667 feet north of Five Rivers Rd in Section 36, T14S R10W, at N 44° 18' 38.15", W 123° 51' 15.59". It proceeds at 117° for 4,669 feet to N 44° 18' 17.15", W 123° 50' 17.12". It then proceeds at 178° for 4,669 feet to a point in Section 1, T15S R10W at N 44° 17' 30.71", W 123° 50' 14.47". From here it then proceeds at 269° for 2,168 feet to N 44° 17' 29.89", W 123° 50' 45.18". It then proceeds at 296° for 4,836 feet to a point in Section 2, T15S R10W at N 44° 17' 50.84", W 123° 51' 46.95", then further proceeds at 25° for 5,253 feet to the point of beginning (see attached map for the small pentagonal block). This pentagonal eradication area totals about 706 acres. If follow-up monitoring determines that the gypsy moth infestation has spread to areas outside this eradication area but still within the large rectangular eradication analysis boundary, additional eradication area sprays could occur anywhere within the eradication analysis area without doing another environmental assessment.

Private land inside the proposed eradication area totals about 508 acres and includes 10 rural-residential properties and 2 properties managed by forest products companies. Private property outside the 2003 eradication area, but within the 3,820-acre eradication analysis area, totals about 950 acres and includes 11 rural-residential properties and 2 properties managed by forest products companies. The rest of the area is managed by the Siuslaw National Forest. Therefore, a total of 25 properties are within the 3,820-

Proposed Gypsy Moth Eradication Program Fisher (Five Rivers), Lincoln County

706 acres within solid eradication area (2003)/3,820 acres within dashed eradication analysis area

It is likely that a small buffer area surrounding the eradication area will receive some B.t.k. but in quantities much less than inside the eradication area.



acre block. Most are single-family residences. No schools, churches, hospitals, day care centers or other sensitive areas exist within the proposed eradication analysis area. However, some private properties contain farms for raising livestock or organic produce either inside the proposed eradication area, or inside the larger 3,820-acre eradication analysis area.

This is a forested, rural area that is covered densely with trees and shrubs. Trees present include a mixture of hardwoods and softwoods, primarily alder, maple, willow, cascara, wild cherry, Douglas fir, western hemlock and western red cedar. Common shrubs and low level vegetation in the area include blackberry, salmonberry, salal, elderberry and huckleberry. Some noxious weeds such as tansy ragwort are also present. Some conifer trees on National Forest land are in plantations that will be commercially thinned and may be over 100 feet tall. Seven Class 1 and 2 streams, including Five Rivers, Crab Creek, Cougar Creek, Buck Creek, Cherry Creek, Wilson Creek and McDonald Creek are inside the proposed eradication analysis area. These streams contain anadromous fish habitat—up to 4 miles of habitat in the proposed eradication area, and up to 12 miles of habitat in the larger analysis area. The two main roads in the area are the Five Rivers Road and East Buck Creek Road along the respective river and creek. This is also where most residences are located. Terrain in the river and creek bottoms is generally flat, but the surrounding area is hilly and mountainous, and slopes uphill towards areas away from the intersection of Five Rivers Road and East Buck Creek Road. Elevation in the area varies between 200 feet and 800 feet. The lowest point is in the area around the intersection of Five Rivers and Buck Creek, about 200 ft above the sea level. Deciduous trees and shrubs are primarily adjacent to streams whereas conifers dominate the upland forested area.

Environmental Factors

Four threatened or endangered species may occur within or around the proposed eradication analysis area in Fisher, Lincoln County. These include three birds (marbled murrelet *Brachyramphus marmoratus*, bald eagle *Haliaeetus leucocephalus*, northern spotted owl *Strix occidentalis caurina*) and one fish (Oregon coast coho salmon *Oncorhynchus kisutch*). One candidate species (Oregon coast steelhead *Oncorhynchus mykiss*) and many species of concern may also be present in the area (Appendix C). Species of concern are those taxa whose conservation status is of concern to the US Fish and Wildlife Service, but for which further information is needed.

The bald eagle (*Haliaeetus leucocephalus*), northern spotted owl (*Strix occidentalis caurina*) and marbled murrelet (*Brachyramphus marmoratus*) can all occur in the forested areas inside the proposed eradication area because of the suitable habitat. Ground inspection and consultation with the Siuslaw National Forest indicate that there is one territorial single record (last verified in 1991) of northern spotted owl inside the southeastern corner of the environmental analysis area. But no known spotted owl nest sites are within the eradication analysis area. There are two occupied sites of marbled murrelet just outside the northeastern corner of the environmental analysis area. Two additional occupied sites of marbled murrelet are found near the mid section of the southern environmental analysis area, one inside the boundary and the other outside. Although these occupied sites of marbled murrelet and the territorial single record of spotted owl are found near the borders of the environmental analysis area, none is found within the smaller 2003 eradication area. Ground inspection did not indicate any nesting sites of bald eagle within or close by the proposed eradication analysis area. Marbled murrelets feed on fish from the Pacific Ocean. Their critical nesting period is between April 1 and August 5. The main food sources for northern spotted owls are rodents including red tree vole, northern flying squirrels in the forest. The owls' critical nesting period is between March 1 and July 7.

Four other bird species of concern (band-tailed pigeon *Columba fasciata*, olive-sided flycatcher *Contopus cooperi* (= *borealis*), mountain quail *Oreortyx pictus* and purple martin *Progne subis*), may occur in or near the eradication analysis area. Band-tailed pigeons usually forage on trees whereas mountain quail forages mostly on ground. The food source for both of these birds includes plant seeds (such as berries) and other vegetation materials. These birds eat insects occasionally but insects are not their main food source. Flycatchers and purple martins are insectivorous and can prey on a variety of insect orders including mosquitoes and lepidopteran caterpillars. They are more frequently found in riparian habitats. The literature indicates that many insectivorous birds can prey on other insects if a particular diet group is not available (e.g., Gaddis 1987). The eradication analysis area (especially the 2003 eradication area) is small. Any local lepidopteran species affected are likely to re-invade the area from neighboring habitats.

Two rare frogs (tailed frog *Ascaphus truei* and northern red-legged frog *Rana aurora aurora*) and one salamander (southern torrent salamander *Rhyacotriton variegatus*) may also occur in the proposed eradication analysis area. All are species of concern. The frogs and salamander require aquatic or semiaquatic habitats and are omnivorous with a preference for invertebrates. Their main food source is probably aquatic insects and other invertebrates in streams or rivers.

Four species of fish, Oregon coast coho salmon *Oncorhynchus kisutch*, Oregon coast steelhead *Oncorhynchus mykiss*, Pacific lamprey *Lampetra tridentata* and coastal cutthroat trout *Oncorhynchus clarki clarki*, may be found in the creeks and Five Rivers inside the proposed eradication analysis area. The first species of fish is a threatened species while the second species a candidate species. The third and fourth species are species of concern. The main food sources of these fish include aquatic invertebrates or other fish species.

One sensitive mammal (Pacific fisher *Martes pennanti pacifica*), two sensitive rodents (white-footed vole *Arborimus albipes* and red tree vole *Arborimus longicaudus*) and six sensitive species of bats may occur in the proposed eradication analysis area. These bats include Pacific western big-eared bat (*Corynorhinus* (= *Plecotus*) *townsendii townsendii*), silver-haired bat (*Lasionycteris noctivagans*), long-eared myotis (*Myotis evotis*), fringed myotis (*Myotis thysanodes*), long-legged myotis (*Myotis volans*) and Yuma myotis (*Myotis yumanensis*). All nine are species of concern. The mammal and rodents both live in the mountains and forests. The two rodents are omnivorous and eat mostly plant seeds and other vegetation materials. They also eat invertebrates sometimes. The Pacific fisher is carnivorous. Its main food source includes voles, squirrels, mice etc. The bats are mostly insectivorous and will forage for moths and other insects at night. The Pacific western big-eared bat is a cave dweller. Its main diet is moths. However, this species is not present in or near the proposed eradication analysis area because there are no caves nearby. The remaining five bat species are tree dwellers, and can possibly be present in or near the proposed eradication analysis area. These bats eat mostly other species of insects (non-moths) and forage a much larger area. Females won't reach their breeding stage (peak feeding period) until June or July in Oregon.

Two sensitive species of invertebrates may also occur in or around the proposed eradication analysis area. They include caddisfly *Lepania cascada* and Roth's blind ground beetle *Pterostichus rothi*. Both are insects and both are species of concern. The caddisfly is likely present near the creeks and the river whereas the ground beetle could be anywhere in the forest ground.

Two rare plants (Queen-of-the-forest *Filipendula occidentalis* and a moss *Limbella frye*) may be found in the vicinity of the proposed eradication analysis area. Both are species of concern. Queen-of-the-forest is a native perennial shrub that can be found growing in the understory of coniferous forests. The plant is strongly rhizomatous, and probably reproduces mostly through asexual growth.

Human Factors

No unusual hazards are known in the proposed eradication analysis area. There are no schools, churches, daycare centers or hospitals within the proposed eradication analysis area. A school bus travels through the proposed 2003 eradication area on Five Rivers Rd. in the morning at about 7:15 am and in the afternoon at 4:15 pm. This is a rural forested area in the Oregon's coast range. There are no tall power posts or power lines in the area. However, elevation changes and tall trees may pose a hazard to low flying application aircraft. Siuslaw National Forest is a popular public forest. People use it for hiking, fishing, hunting and other recreation activities.

Tourism, recreation, forestry and agriculture are probably among the most important industries affecting humans around Fisher. The Fisher area has many streams and a river. This provides opportunities for recreational fishing, hiking, hunting and other activities. Siuslaw National Forest, the Oregon coast range mountains and the Oregon coast in the vicinity provide many tourism and recreation attractions. Some local residents raise cattle in the area and others have organic gardens or farms. Broadleaf trees are important components of the local flora, especially along the streams and rivers where they provide shade, and are preferred hosts by gypsy moth.

McGinnis et al. (1996) found that the average per capita income in Lincoln County is slightly below the average for the state of Oregon. Weber and Bowman (1999) found that Lincoln County has a poverty rate of 9 to 13.6%. These rates are in the average range for Oregon. Based on local knowledge, some low-income families live in the project area. Some farms exist in the project area. Domestic-use water systems in the area include individual wells and spring-fed systems.

D. ALTERNATIVES

Pesticide application: ground vs. air. If a chosen alternative includes pesticide sprays, the pesticides can be applied from either ground (i.e., truck or trailer mounted sprayers) or air (i.e., helicopter or airplane mounted sprayers). Ground sprays are preferred for small eradication areas if the road system is adequate to allow access to all parts of the area. If access is restricted or if the area is large, then aerial sprays are usually more efficient, practical and economical. Due to restricted access and geographical conditions at the Fisher site, a helicopter will be used to apply the pesticide effectively.

1. Treatment Options Under the 1995 EIS

The treatment options for the proposed eradication program at the Fisher site are analyzed in the 1995 gypsy moth programmatic EIS. These options are considered for any gypsy moth eradication programs in the USA. Six options are available to carry out an eradication program:

- 1) *Bacillus thuringiensis* var. *kurstaki*
- 2) Diflubenzuron (Dimilin)
- 3) Gypsy moth virus
- 4) Mass trapping
- 5) Mating disruption
- 6) Sterile insect release.

2. Options Not Considered In Detail

Treatment options not considered in detail for use in the proposed eradication program this year are:

- 2) Diflubenzuron. This insect growth regulator has a broader non-target host range than *B.t.k.* and can kill many other insects beside larvae of moths and butterflies. Its use may adversely affect populations of other insects including beneficial ones.
- 3) Gypsy moth virus. Gypchek is very host specific but is not widely available in the market and is still somewhat experimental for eradication programs. Results with gypcheck have been variable.
- 5) Mating disruption. This method is still experimental and its effect on gypsy moth infestations is variable. This alternative has been used more frequently in recent years in slow –the-spread programs in eastern states.
- 6) Sterile insect releases. This method is also experimental and its effect on gypsy moth infestations is variable.

These options were not considered in detail because the probability that they would achieve the program goal of eradication was judged to be too low or could not be determined.

3. Alternatives Considered in Detail

Proposed Action

Options considered for use under the proposed action's eradication program are *B.t.k.* and mass/intensive trapping. The two options meet state and federal gypsy moth program goals and adhere to USDA's EIS guidelines. In our opinion, *B.t.k.* is the best option for gypsy moth control because it has proven effective as an eradication treatment. Application of *B.t.k.* poses little risk to human health or the environment. *B.t.k.*'s host range is limited to caterpillars of Lepidoptera (moth and butterflies). There are no threatened or endangered species of Lepidoptera in our proposed eradication analysis area in Fisher. Mass trapping removes male moths from the environment, thus reducing the chance of females attracting mates. It can be an effective control tool when the gypsy moth infestation is low. However, its

effectiveness as a control tool varies, and largely depends on gypsy moth populations. Mass/intensive trapping can be an excellent monitoring tool to detect presence of gypsy moth adult males, and is best used to determine the effectiveness of *B.t.k.* applications after an eradication program.

B.t.k. - The biological pesticide, *B.t.k.*, is now commonly the material of choice for gypsy moth eradication programs in the United States. In the past decade, improved formulations and more concentrated applications of *B.t.k.* have increased gypsy moth larval mortality and have provided more consistent foliage protection where it has been used. Aqueous *B.t.k.* formulations do not affect aquatic organisms and can be applied over open water. *B.t.k.* is relatively expensive because three applications (two in ground programs) are usually required to ensure eradication.

Oregon has had over sixteen years of experience with the use of *B.t.k.* as an eradicator for the gypsy moth. Two applications of *B.t.k.* by ground or three applications by air during late April and May have proven effective in eradicating many gypsy moth infestations in Oregon. Other western states, including California, Idaho, Utah, and Washington, have experienced similar success with the use of *B.t.k.* in their eradication programs (USDA APHIS1994). A review of eradication options for British Columbia also supports the use of *B.t.k.*; it concludes: "multiple applications of *Bacillus thuringiensis* var. *kurstaki* (*B.T.K.*) should be the primary choice for eradication (Surgeoner 1994).

Trapping - Mass/intensive trapping involves setting gypsy moth pheromone traps at very high densities (up to 9 traps/acre). These traps attract male gypsy moths and are the same ones used for annual state-wide detection surveys. Mass trapping has been attempted as an eradication tool, but results have been unreliable. This technique, however, is very useful when used in combination with other techniques. Any captured male moths are removed from the breeding population. More importantly, the number and pattern of catches help evaluate treatments and pin-point any residual infestations.

No Action

The no-action alternative is required by Council of Environmental Quality regulations (40 CFR 1502.14(d)). The no-action alternative forms the basis for a comparison between meeting the project needs and not meeting the project needs. This alternative provides baseline information for understanding changes associated with the action alternative and expected environmental responses to an introduced species. Selecting this alternative would allow existing environmental conditions, including those associated with an established gypsy moth population, to continue on a natural course.

4. Preferred Action Alternative

The proposed action is our preferred alternative. The preferred alternative uses the biological pesticide *B.t.k.* in conjunction with mass/intensive trapping. The Fisher site is suitable for aerial applications because of the large areas and limited accessibility. Three aerial applications of *B.t.k.* at a rate of 24 B.I.U.s per acre would be applied (a 706 acre eradication area in 2003). The three treatments will occur in late April or early May, about 7-14 days apart. Exact timing depends on weather. It is likely that a small buffer area surrounding the eradication area will receive some *B.t.k.* but in quantities much less than in the eradication area. Based on a number of factors (e.g., time of day, wind speed and direction, topography, distance of the eradication area from the eradication analysis area boundary), we expect that the *B.t.k.* (Foray 48 B) will be deposited within the eradication analysis area.

Following *B.t.k.* treatments, intensive/mass trapping programs will be used to monitor the effectiveness of the *B.t.k.* applications and to pinpoint the location of any remaining populations in the area. Trap densities in the core areas may be up to 3 to 9 traps per acre.

E. ENVIRONMENTAL CONSEQUENCES

This section will address the effects of the preferred action and no-action alternatives on the affected environment for the proposed eradication site. Two areas of effects, human health and environment, were analyzed in detail in the 1995 gypsy moth programmatic EIS and are hereby incorporated by reference.

Preferred Action Alternative

Bacillus Thuringiensis var. Kurstaki

B.t.k. is a naturally occurring soil bacterium. When sprayed on foliage and ingested, it is toxic to most caterpillars (larvae of butterflies and moths). Other insects and vertebrates are not affected by this bacterium. Human health risks from use of *B.t.k.* in a gypsy moth eradication program are believed to be extremely low. Modern aqueous formulations of *B.t.k.* contain no organic solvents. None of the inert ingredients in these formulations are on EPA list 1 (Inerts of Toxicological Concern) or list 2 (Potentially Toxic Inerts). In addition, all of the inert ingredients are FDA approved for use in foods or in food processing. *B.t.k.* products are designated by EPA as exempt from residue tolerances. This means that no limitations on the amount of material are allowed on food items. *B.t.k.* can be used on food crops up to and including the day these products are harvested, as well as on stored food products. Some genetically modified crops such as corns now have *B.t.k.* genes permanently incorporated in them. The World Health Organization (WHO) reviewed and established environmental health criteria for *Bacillus thuringiensis* and published a book on the topic (WHO, 1999). The book concluded "owing to their specific mode of action, *Bt* products are unlikely to pose any hazard to humans or other vertebrates or to the great majority of non-target invertebrates." Glare & O'Callaghan (2000) did an exhaustive world literature review on *Bt* and authored a book – *Bacillus thuringiensis: Biology, Ecology and Safety*. After examining the literature, they concluded "the wealth of data currently available and experience of many years of broad-scale applications would suggest that *Bt* is one of the safest pesticides currently available..... We view *Bt*-based products used at recommended field rates as safe to use, in terms of minimal non-target impacts, little residual activity and lack of mammalian toxicity." A review of the environmental impacts of the *Bacillus thuringiensis* by Canadian scientists (Joung & Cote, 2000) produced similar conclusions.

***B.t.k.* and human health**

If directly exposed to *B.t.k.* spray, some individuals (most likely project workers) may develop minor irritation of the skin, eyes, or respiratory tract. These effects are relatively mild and transient. Pathogenic effects are not likely, even in individuals with impaired immune systems. Allergic responses to *B.t.k.* are conceivable, but have not been documented. The most thorough human health studies of *B.t.k.* applications in populated areas have been reported by Green *et al.* (1990), Noble *et al.* (1992), USDA (1993), Aer'aqua Medicine Limited (2000) and Capital Health Region (1999). All five studies were carried out during large-scale gypsy moth eradication programs. No significant health effects attributable to the *B.t.k.* treatments were found. Table 9-4 and figure 9-1 from appendix F of the 1995 EIS (USDA, 1995) clearly and concisely show human risks due to gypsy moth and all treatment alternatives including *B.t.k.*.

Green *et al.* (1990) monitored human health in Lane County, Oregon in 1985 & 86 when *B.t.k.* was sprayed by helicopter over areas with a population of approximately 120,000 people. Three applications of Dipel® 8L were made in 1985. In 1986, three applications of either Dipel® 8L or Dipel® 6AF were used. Their conclusions were:

1. Telephone complaints to the Lane County Health Department from members of the public did not reveal any pattern of predominance of any one symptom complex or of involvement of any single organ system. Symptoms were those common to any community, e.g., nausea, headache/dysphoria, rash, angioedema.
2. Fifty-five cultures from patients, obtained for routine clinical purposes, were positive for *B.t.k.* Of these, 52 were assessed to be probable contaminants. The other three patients had preexisting medical problems, but *B.t.k.* could neither be ruled in nor out as a pathogen.
3. The level of risk for *B.t.k.* and other existing or future microbial pesticides in immunocompromised hosts deserves further study.

Noble *et al.* (1992) studied the human health effects of a 44,478 acre Asian gypsy moth eradication program using *B.t.k.* in Vancouver, British Columbia. Three applications of Foray® 48B were made with large airplanes, helicopters, and trucks. They found no significant effect of *B.t.k.* on human health.

USDA (1993) reported on health monitoring programs in Washington and Oregon during large *B.t.k.* eradication programs for Asian gypsy moth in 1992. Combined, these eradication programs covered approximately 124,000 acres; mostly urban residential neighborhoods of Tacoma, Washington and Portland, Oregon. Between the two states over 300 complaints of human illness were received mostly via telephone "hotlines". No cases of infection were confirmed though many people did report symptoms including allergic rhinitis ("hayfever"), viral gastroenteritis ("intestinal flu"), and skin rashes. The occurrence, frequency and type of symptoms were indistinguishable from background illnesses which occurred in both *B.t.k.*-treated and non-treated areas.

Aer'aqua Medicine Ltd (2000) reported on methods and results of a health surveillance program during a two year eradication spray program against the white-spotted tussock moth (*Orgyia thyellina*) in Auckland, New Zealand. The eradication program in which *B.t.k.* was sprayed aerially and by ground, was carried out in the eastern suburbs of Auckland. The report concluded that there was no evidence of a causal association between *B.t.k.* spray and health effects or significant health problems that occurred among the population of the sprayed area during or following sprays.

In 1999, The Capital Health Region of Victoria, British Columbia, coordinated a human health study of possible short term health effects of aerial spraying of the biological pesticide, Foray[®] 48B, on southern Vancouver Island. The study was performed as a condition necessary for the spraying to take place under a provincial order-in-council. The study included a survey of the health of asthmatic children in the region; a survey of the general health of the population; monitoring and analysis of visits to doctors' offices and hospital emergency departments; laboratory surveillance of clinical samples which contained *B.t.k.*; measurement of environmental levels of *B.t.k.*; and a review of self-reported complaints of health symptoms made to telephone information and support hotlines. The study's conclusions were:

"The results of this project did not show a relationship between aerial spraying of Foray 48B and short-term human health effects. Although some people self-reported health problems that they attributed to the spray program, the research and surveillance methods used in this project did not detect any change in health status that could be linked to the spray program. Our results showed that many of the health complaints people reported during the spray were as common in people before the spray as they were shortly after the spray. This conclusion is consistent with those of previous studies of the possible health effects of *B.t.k.*-based pesticide spray programs."

Due to advances in scientific knowledge, the law requires that pesticides registered before November 1, 1984 be reregistered to ensure that they meet current standards. In 1998 the United States Environmental Protection Agency (EPA) published Reregistration Eligibility Decision *Bacillus thuringiensis* (EPA 1998) in which the agency concluded:

"Based on the reviews of the generic data for the active ingredient *Bacillus thuringiensis*, the Agency has sufficient information on the health effects of *Bacillus thuringiensis* and on its potential for causing adverse effects in fish and wildlife and the environment. The Agency has determined that *Bacillus thuringiensis* products, manufactured, labeled and used as specified in this Reregistration Eligibility Decision, will not pose unreasonable risks or adverse effects to humans or the environment. Therefore, the Agency concludes that products containing *Bacillus thuringiensis* for all uses are eligible for reregistration".

The Oregon Health Services (2003) has developed its recommendations for people impacted by the proposed spray program. These recommendations are:

"Even though the spray is considered safe for humans, we recommend that people stay indoors during spraying, unless it is essential to be outdoors. You should be advised in advance by the Department of Agriculture when spraying will occur, so you may plan accordingly. This is general advice for the public. If you or someone in your home has a medical problem that they believe may be made worse by the spraying, talk to your health care provider.

If your drinking water source is from open surface water (e.g., creeks, streams, springs) and you are concerned about potential exposure, you may wish to shut off the intake

during the spray and until you are satisfied that any water exposed to the spray has moved downstream of your intake. Alternative water sources in the interim might include previously stored and covered water on site, bottled water, or water from a neighbor outside the sprayed area.

To avoid exposure, we recommend:

- Staying indoors during and for at least 30 minutes after spraying to allow droplets to settle.
- Waiting until the spray has dried before touching grass or shrubs. Cover playground equipment, sandboxes, benches, and lawn chairs before the spray or hose them off afterward.
- Washing exposed skin with soap and water if direct contact with the spray droplets occurs. If the material should get into your eyes, flush with water for 15 minutes.

Although we don't have evidence that *B.t.k.* will affect any given group of people, individuals with leukemia, AIDS, or any other physician-diagnosed causes of severe immune disorders, may consider leaving the spray area during the actual spraying. If you or someone in your home has one of these conditions, ask your doctor for advice about avoiding exposure before the spray project begins.

The *B.t.k.* product contains residues of grains and other foods used to help the bacteria grow. If you have serious allergies to foods or food preservatives, your health care provider may consult with the manufacturer of Foray[®] 48B, about the exact ingredients (Valent Biosciences—847-968-4700, after hours 877-315-9819).

This information will be sent to residents in the proposed eradication area in spray notices. Included in the spray notices are two Oregon Poison Center phone numbers for residents who are exposed to *B.t.k.* and have health-related questions. A phone number for the Health Division is also provided for physicians with questions about specific patients. Oregon State University's National Pesticide Telecommunications Network website address and toll-free phone numbers are also listed. The Health Division will be available to consult with physicians about *B.t.k.*, inert ingredients, and any possible health effects.

***B.t.k.* and environment**

***B.t.k.* and non-target Lepidoptera.** Some non-target Lepidoptera larvae (caterpillars) present in the proposed spray area would likely be killed by the application of *B.t.k.* In turn, those animals dependent on caterpillars for food theoretically may be affected. However, depressions in caterpillar populations are expected to be temporary due to recolonization from adjacent areas and the high reproductive capacity of most insects. There have been several studies conducted to examine these impacts.

During the 1986-87 gypsy moth program in Oregon, a study assessed the direct impact of *B.t.k.* on non-target Lepidoptera larvae in the canopy of Oregon white oak. The study found a significant reduction in the number of caterpillars collected in *B.t.k.* treated areas in the spring and early summer following treatment. By mid-August, no significant differences in numbers of caterpillars could be detected, but species richness was reduced in the treated blocks. Sampling conducted in the study areas a year after application (1987) revealed that Lepidoptera populations were continuing to recover. Two years after the spray (1988), there were no significant differences between the number of caterpillars collected in treated and untreated plots and the number of species collected in treated blocks was not significantly different from prespray levels in those blocks. A comparison of treated and untreated plots, however, indicated that the number of species was still significantly less in treated plots (Miller 1990). Recovery of non-target Lepidoptera populations begins the same season after *B.t.k.* application, but some effects may linger for at least three years. Another study (Severns 2002) on the effects of *B.t.k.* on non-target butterfly community in western Oregon showed similar impacts. The species richness and density was negatively impacted during the first two years following the *B.t.k.* sprays of a gypsy moth eradication program. However, in the third year, both indexes rebounded to the pre-spray levels.

Results from a study in West Virginia confirm that *B.t.k.*'s immediate effects are limited to immature Lepidoptera. Other insects, including most beneficial types, are not affected by *B.t.k.* applications (Sample *et al.* 1992). While the effects of *B.t.k.* application are most evident among larval Lepidoptera in the same year as the treatment, some effects on adults may not be observed until the year following treatment. Lepidopteran species with early season larvae experience the greatest impacts (Sample *et al.* 1993).

***B.t.k.* and aquatic species.** Some aquatic insects are susceptible to other strains of *B.t.* (e.g., *B.t.* var. *israelensis* is used to control mosquitoes and black flies), but *B.t.* var. *kurstaki*, the strain used for gypsy moth control, is harmless to aquatic insects at concentrations that would be expected to result from aerial sprays (Edit 1985, Kreutzweiser *et. al.* 1992). There are six creeks and one river in the proposed 2003 eradication area in the Fisher area. When *B.t.k.* is used for gypsy moth suppression in areas with open water, fish and other animals dependent on aquatic insects for food should not be affected by the *B.t.k.* treatments.

Because *B.t.k.* is toxic only to larvae of lepidopterans, the caddisfly *Lepania cascada* and Roth's blind ground beetle *Pterostichus rothi* (insect species of concern) should not be affected in any way by the proposed eradication treatment using *B.t.k.*, even if they are present in or near the eradication analysis area.

The proposed action should not affect the frogs and salamanders, including the tailed and red-legged frog and southern torrent salamander, because as used in this program, *B.t.k.* will not affect aquatic invertebrates.

***B.t.k.* and birds.** A study from Oregon examined the indirect effect of *B.t.k.* on the reproductive success of insectivorous birds through a possible reduction in food supply for their nestlings. The study reported no significant differences between treated and untreated areas in numbers of eggs hatched and in nestling growth and development. When caterpillars weren't available, the birds switched to other available prey (Gaddis and Corkran 1986, Gaddis 1987). Preliminary results from a study in Arkansas are similar: *B.t.k.* treatments did not have a significant effect on the breeding success of the Hooded Warbler (Lih *et. al.* 1994).

***B.t.k.* and bats.** Some bats, including those species of concern listed in the section of Environmental Factors, feed primarily on moths. These bats might be affected by a decrease in available food in *B.t.k.* treated areas. Perkins and Peterson (1994), however, failed to find any significant differences in total bat activity or species diversity at *B.t.k.*-treated sites within a small aerial spray block when compared to non-treated control sites. The eradication analysis area is relatively small and is not expected to have a significant impact on the food supply of these bats. Furthermore, moths and butterflies are expected to move into the treated area from surrounding areas. If the bats are affected due to the decline in food supply, the effects will be temporary and localized, with no long-term impact to any bat species.

***B.t.k.* and mammals and rodents.** Eradication sprays with *B.t.k.* will not affect mammals and rodents, including those species of concern listed in the section of Environmental Factors, or their food source.

***B.t.k.* and natural enemies.** Field studies suggest that the predominant effect of *B.t.k.* on gypsy moth parasitoids is indirect, through effects on its host species. At least two parasitoid species, *Cotesia melanoscelus* and *Rogas lymantriae*, have increased rates of parasitism in areas sprayed with *B.t.k.* (Wallner *et. al.* 1983, Webb *et. al.* 1989). Field studies on insects other than lepidopterans and their parasitoids and predators have found few other species or groups that are affected.

***B.t.k.* and plants (species of concern).** The plant, Queen-of-the-forest *Filipendula occidentalis*, may be pollinated by lepidopterans, but its primary pollinators are native bees. Pollinators also include wasps and flies. Therefore, temporary loss of lepidopterans due to *B.t.k.* sprays would be inconsequential to the species fitness, especially since it also relies on asexual reproduction for population maintenance. The moss *Limbella fryei* does not even have a "pollination" system because it reproduces through spores. The spores are released and dispersed by water and wind. Therefore, the proposed action should not adversely affect and these plants.

The proposed project is not expected to affect federally listed, sensitive, and survey-and-manage plants. The proposed project will have no effect on noxious and undesirable weeds.

***B.t.k.* and water quality, soil condition and microclimate.** Water quality and soil condition should not be directly affected by *B.t.k.* as *B.t.k.* is not likely to affect most aquatic organisms and is naturally present in soils worldwide (USDA 1995). *B.t.k.* reduces the amount of defoliation by leaf-eating caterpillars. Therefore, changes in microclimate due to defoliation are not expected after *B.t.k.* application.

***B.t.k.* and recreation and agriculture.** Potential positive effects on tourism, recreation, forestry and agriculture are expected because *B.t.k.* as applied in the proposed action will eradicate the gypsy moth infestation and eliminate the negative effects due to gypsy moth defoliation.

***B.t.k.* and domestic/farm animals.** Domestic animals such as dogs, cats and farm animals such as cattle and horses, are not expected to be affected by the *B.t.k.* applications as proposed in this program. Although there are no known studies of the effect of direct exposure of these animals to *B.t.k.*, other studies where *B.t.k.* were injected or ingested by laboratory or wild animals including mice, rabbit, sheep, rodents and shrew, indicated that *B.t.k.* did not affect these animals more than the untreated checks (WHO 1999).

***B.t.k.* and noise associated with aerial applications**

Sensitive species - In addition to the endangered and threatened species list maintained by the US Fish and Wildlife Service, the Siuslaw National Forest also maintains a list of sensitive species that are present in the local forest. Sensitive species identified for the Siuslaw National Forest include species such as the bufflehead and Harlequin duck, Pacific shrew and Pacific fringe-tailed bat, southern torrent salamander and Northwestern pond turtle, and a variety of vascular and non-vascular plants. All of the sensitive animals are not expected to be directly affected by the *B.t.k.* spray. They are not expected to be adversely impacted due to the possible temporary loss of a portion of their food resources as a result of *B.t.k.* spraying. However, these animals may be affected in the short-term by aircraft noise disturbance. The proposed project will not remove or modify sensitive species habitat, and there are no sensitive species of lepidoptera in the analysis area; therefore, there will be no impact to any sensitive species. Sensitive plant species are not expected to be impacted at all by the proposed action.

Land birds - Land birds, including migrant and resident species, are those that generally use terrestrial and wetland habitats. Since this project does not change existing habitat conditions, and *B.t.k.* has no direct effect on these birds, there will be no effect on the population viability or breeding behavior of landbirds. However, these birds may be affected by short-term noise disturbance and by the possible temporary loss of a portion of their food resources due to the results of spraying.

Survey-and-manage and management-indicator species - Outside of temporary noise disturbance, the proposed project is not expected to affect USDA Forest Service survey-and-manage animal species such as the red tree vole. Except for temporary noise disturbance, and the possible short-term temporary loss of a portion of their food supply, the proposed project is not expected to affect adversely USDA Forest Service management-indicator species, including martens, spotted owls, pileated woodpeckers, primary cavity nesters, and ruffed grouse.

Effects on Animal Species

Federally listed terrestrial species (USDA 2003a)

B.t.k. will have no effect on bald eagles, northern spotted owls, or marbled murrelets, including their food sources. However, the low flying helicopter may affect these birds through noise disturbance:

Proposed activities occurring between January 1 and August 31 may affect, but are not likely to adversely affect, bald eagles because no action will occur within one mile of a major river, but aircraft operations will occur within 0.5 miles of an un-surveyed potential bald eagle habitat adjacent to a major tributary (Five Rivers).

Since helicopter operations will occur over un-surveyed suitable habitat between March 1 and July 7th the project may affect and is likely to adversely affect spotted owls. The project will adversely affect about 323 acres in 2003 and 2,205 acres in 2004.

Since helicopter operations will occur over un-surveyed suitable habitat between April 1 and August 5 and during the first two hours after sunrise, the project may affect and is likely to adversely affect marbled murrelets. About 323 acres will be affected in 2003 and about 2,205 acres will be affected in 2004. Additionally, in 2004, the project will be within 0.5 miles of two known occupied marbled murrelet nest sites.

Noise disturbance can result in birds temporarily abandoning their nests until the activity is completed. Three applications in one season may cause some to permanently abandon their nests for the current nesting season. A minimum of a quarter mile buffer zone will be maintained around known nest sites during aerial applications in 2003 to minimize the potential impact on these birds. ODA will work closely with the USDA Forest Service to design a work plan that can achieve this. These buffer zones are not expected to diminish the effectiveness of treatments.

Thus, the proposed action may have some adverse impact only on marbled murrelets and northern spotted owls through short-term noise disturbance, but not on any other threatened or endangered species, nor on any candidate species or species of concern in the Fisher area. The no-action alternative, however, may adversely affect coho salmon, bald eagles, marbled murrelets, and other threatened or sensitive species due to tree defoliation and subsequent modification to the forest habitat.

Because the project area is outside the range of the Oregon silverspot butterfly, the application of *B.t.k.* will have no effect on the butterfly.

Based on the location, activities proposed, and that no suitable habitat or critical habitat will be removed, we have determined that the proposed activities will have no effect on any federally proposed or listed terrestrial species habitat.

Fish species (USDA 2003b)

Bacillus thuringiensis var. *kurstaki* is practically nontoxic to fish species (Ag. Canada 1982). Rainbow trout, and bluegills *Lepomis macrochirus* exposed for 96 hours to *B.t.k.* at concentrations of 560 and 1000 mg/l (ppm) showed no adverse effects. In addition, *B.t.k.* does not bioaccumulate in fish. Field observations of populations of brook trout *Salvelinus fontinalis*, white suckers *Catostomus commersoni*, and smallmouth bass *Micropterus dolomieu* did not reveal adverse effects after aerial application (Abbott Laboratories 1982). Field studies by Buckner et al. (1974) concluded that *B.t.k.* contaminated water has no observable effects on resident fish behavior or reproduction. There is no evidence that *B.t.k.* treated insects consumed by fish have had any noticeable adverse effects. At field application rates, a water-based formulation of *B.t.k.* is not expected to have any direct effect on fish residing in the analysis area. This includes coho salmon, steelhead trout, cutthroat trout, Pacific lamprey, and various species of sculpins.

The primary source of food for salmonid fish in streams is aquatic insects. Insecticides have the potential to indirectly affect fish by affecting their sources of food. The insecticide *B.t.k.* primarily affects species in the order Lepidoptera (moths and butterflies). Only about 50 of the over 10,000 species of insects in the order Lepidoptera found in North America are aquatic. Most of these are aquatic moths that inhabit lentic (standing) water, an environment not found in the project area. In lotic waters (streams) lepidopteran numbers are low and do not contribute meaningfully to the diet of salmon and trout. A decrease in their numbers, therefore, would not affect the supply of food or the growth rates of fish in the project area.

Bacillus thuringiensis var. *kurstaki* has been found to affect some black flies (order Diptera) (Eidt 1985) and stoneflies (order Plecoptera) (Kreutzweiser et al. 1992). True flies and stoneflies are common insects found in streams of the Pacific Northwest and do inhabit streams in the project area. The potential exists for an effect to this food source of salmon and trout. However, studies of aquatic insects conducted at field application rates for *B.t.k.* showed no change in biomass or species composition (Eidt 1985, Kreutzweiser et al. 1992, Otvos and Vanderveen 1993). The spray project would, therefore, not affect the aquatic food supply for fish present in the project area.

Terrestrial insects, of which Lepidoptera are only a part, do contribute to the food supply of trout and salmon. The application of *B.t.k.* will kill many of the moths and butterflies present at the proper larval stage at the time of application. Because Lepidopterans make up only a portion of the terrestrial insects available to feed trout and salmon, and because terrestrial insects contribute only a small portion to the diet of salmonids, there will be no change in the growth rates of fish in the project area.

Much of the bottomlands in the Five Rivers area are under private ownership and consists of small farms and rural residences. Streams have been simplified during settlement and development of the area. These streams have less woody material, less shade, and reduced connectivity to floodplains than historically occurred. Streams under Forest Service management have also been simplified by stream cleanout and have a reduced capacity to produce future large wood due to past timber harvest. The spray project would maintain current shade levels for streams and allow for future increases in shade and large wood as recovery occurs under the Northwest Forest Plan. In addition, the gypsy moth infestation would not spread to other drainages up and down the coast.

Summary Implementation of the action alternative would have no effect on Oregon coast coho salmon which is currently federally listed as threatened. Implementation of the no action alternative may lead to adverse effects on this species.

Implementation of the action or no action alternative would have no impact on Oregon coast chinook salmon, Umpqua dace, and Pacific coast chum salmon which are currently listed as "sensitive" by the USDA Forest Service Regional Forester.

Implementation of the action alternative would have no impact on Oregon coast steelhead trout and Oregon coast coastal cutthroat trout. Implementation of the no action alternative may lead to impacts to individuals or habitat, but is not likely to contribute to a trend towards federal listing or cause a loss of viability to the population or species.

Essential fish habitat for chinook and coho salmon exists within the planning area. Implementation of the action alternative would have no effect on chinook and coho salmon essential fish habitat. Implementation of the no action alternative may affect chinook and coho salmon essential fish habitat.

Essential fish habitat for Pacific coast groundfish exists downstream of the project area. Implementation of either alternative, action or no action, would have no effect on Pacific coast groundfish essential fish habitat.

Intensive/mass Trapping Using Disparlure

Disparlure is a chemical sex attractant that attracts male gypsy moths. Intensive/mass trapping involves use of large numbers of disparlure-baited pheromone traps -- up to nine traps per acre. Section 5 from appendix G of the 1995 EIS thoroughly discussed the ecological effects of disparlure, *B.t.k.* and other treatment options on the environment.

Disparlure and human health

Data are not sufficient for a quantitative risk assessment. By analogy to other insect pheromones, risks of toxic effects, if any, are likely to be slight for the general public and workers. Disparlure is very persistent on and in the body. Individuals exposed to disparlure may attract adult male moths for prolonged periods of time (up to 2-3 years). This may be a considerable nuisance in gypsy moth infested areas such as the eastern United States. In uninfested Oregon, however, no impact is expected. The level of exposure required to cause the attractant effect cannot be characterized, although the likelihood of this effect would seem greater for workers than for the general public.

Disparlure and environment

In acute toxicity tests, disparlure was not toxic to mammals (IBT 1972), birds (USDI Fish & Wildlife Service 1975), or fish (USDI Fish & Wildlife Service 1972). One field study showed no effect of disparlure

applications on the degree the wasp *Ooencyrtus kuvanae* parasitizes gypsy moth eggs (Brown & Cameron 1979). No studies were found in the published literature on the effects, if any, of disparlure on aquatic ecosystems. Pheromone traps do catch small numbers of non-target organisms. These incidental catches are unlikely to have significant environmental consequences.

Implementation Costs

The cost estimate for treating a 706-acre area in 2003 could range from \$300,000 to \$400,000. If follow-up treatments are needed in 2004, the additional cost would be about the same. If the proposed action is delayed until 2004, the cost estimate for treating up to a 3,800-acre area (a worst-case scenario) could range from \$1,500,000 to \$2,000,000.

Cumulative Impacts

Cumulative impacts are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agencies (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR 1508.7, p. 28). Cumulative impacts resulting from an eradication program can be caused by 1) multiple treatments of the same area in the same season (e.g., three applications of *B.t.k.* in this program), 2) combining treatment types (e.g., *B.t.k.* and disparlure in this program) within the same project area and 3) retreatment of the same project area in the following season. Cumulative impacts may be additive resulting in a greater effect than the sum of the individual effects. The cumulative impacts in the proposed program in the Fisher area may be the three *B.t.k.* applications which extend the time of potential exposure and risk to a greater number of non-target lepidopterans. However, because the proposed eradication areas are relatively small, the opportunity for recolonization from the surrounding areas is great. Another possible cumulative impact at the Fisher site will be if the treatment needs to be conducted again in 2004 due to the spread of gypsy moth to areas larger than expected. For example, if the gypsy moth infestation spread to areas larger than the 2003 eradication area, i.e., larger than 706 acres, then an enlarged area inside the eradication analysis area may be sprayed in 2004. If that happens, the cumulative impacts may be the *B.t.k.* applications over two consecutive years which extend the time of potential exposure and risk to a greater number of non-target lepidopterans.

Mass trapping and delimitation using disparlure pose little or no risk to non-target organisms and do not produce cumulative effects. The risk of cumulative impacts from using disparlure after *B.t.k.* treatment is none to minimal. Little or no effects on water quality, microclimate and soil productivity are likely due to use of *B.t.k.* or disparlure, and the risk of cumulative effects is none to minimal.

Proposed eradication program activities, coupled with other past, present, and reasonably foreseeable future actions on private and federal lands in the Fisher (Five Rivers) watershed, are not expected to result in substantial adverse cumulative effects on affected species, including non-target lepidopterans. The Siuslaw National Forest has not conducted any aerial applications of herbicides or pesticides since the early 1980s, including the Five Rivers area. Because of the length of time from the early 1980s until now, we do not believe there are any measurable residues of dioxin (from herbicide applications during the late 1970s) contamination in the Five Rivers and Alsea watersheds. Therefore, there would be no cumulative effect of this project upon residual effects of prior Forest Service activities in the same area. Activities on National Forest land that could cause noise disturbance are not expected to occur until after 2004 (USDA 2003a).

No Action Alternative

Over time, tree defoliation and mortality would gradually change late-successional forest conditions in the watershed—and potentially elsewhere—to early-seral conditions.

Previous introductions of the gypsy moth have proved that the population can establish and expand in the western Oregon forest environment, and that delayed treatment will only result in larger, more costly (both in terms of economics and environmental impacts) projects. In 1984, a large established gypsy moth population was discovered in adjacent Lane County; defoliation of oak and Douglas-fir was observed in

one area. The resulting eradication project included over 225,000 acres, cost \$18 million dollars, and resulted in temporary impacts to non-target lepidoptera. An established population can ultimately cause significant defoliation and subsequent impacts. Any delay of this project would ultimately mean more acres adversely affected and higher treatment costs. Also, the larger the area requiring treatment, the greater the likelihood of a multi-year treatment program to accomplish eradication.

Nesting Habitat for the Marbled Murrelet, a Threatened Species

The potential exists for defoliation of Douglas-fir, making some trees unsuitable for nesting. Protection from defoliation is needed to maintain suitable nesting habitat under the Endangered Species Act.

Habitat for Anadromous Fish, or Isolated Coho Salmon Reaches (USDA 2002)

Water temperature has been monitored by the Oregon Department of Fish and Wildlife, Bureau of Land Management, Oregon State University, and the Forest Service for several years. Based on their work, the Oregon Department of Environmental Quality placed Five Rivers on the 303(d) list (water-quality limited) for elevated summer water temperatures in 1996. Buck Creek was added to this list in 1998. These streams contain spawning and rearing habitat for the threatened Coho salmon and have seven-day average maximum water temperatures higher than 64 degrees F., exceeding the water temperature beneficial to Coho and other native fish.

High water temperatures are due to various factors. The principle source of heat for small forest streams is sunlight on the stream surface (Brown 1985). Along Five Rivers and Buck Creek and other streams in the analysis area, hardwoods and Douglas-fir comprise most of the stream shading. Any degree of defoliation of these trees (particularly hardwoods) near the streams would reduce stream shading and could further increase summer water temperatures, limiting Coho salmon (listed as threatened in 1998) and other salmonid rearing capacities in these fish-bearing streams. Protection from defoliation is needed to protect the water quality of Five Rivers and Buck Creek and to maintain Coho salmon habitat under the Endangered Species Act.

There would be no direct effects caused by the implementation of the no action alternative. The primary indirect effect of taking no action on the gypsy moth infestation is a decrease in summer rearing habitat potential for salmonids caused by a decrease in the amount of stream shade and associated increased water temperatures. In one example during a massive gypsy moth outbreak in Rhode Island, light penetration increased from 5-18 percent to 73 percent and stream temperature increased 6.7 degrees Fahrenheit. Increases in water temperature would affect those species that reside in streams in the summer for part of their life cycle. This includes coho salmon and steelhead and cutthroat trout. Fall chinook and chum salmon would not be particularly affected by an increase in summer water temperatures.

As the infestation spreads up and down the coast, more and more streams would be affected. Many of these streams already have elevated water temperatures due to past human activities. It is most likely that the spread of the gypsy moth outside of the analysis area would delay recovery of the listed coho salmon.

Other Animal Species

The no-action alternative may adversely affect habitats of U.S. Fish and Wildlife and Siuslaw National Forest sensitive species, birds (including landbirds), bats, mammals, rodents, survey-and-manage species, and management-indicator species as trees and shrubs become affected by defoliation and mortality because of the gypsy moth.

Late- and Old-forest Structure

About 112 acres of the eradication area and 1,070 acres of the larger analysis area contain late-successional forest habitat that could be degraded by defoliation of Douglas-fir. Protection from defoliation may be warranted to meet the direction in the 1994 Northwest Forest Plan.

Other Plant Species

The no-action alternative is not expected to affect federally listed, sensitive, and survey-and-manage plants. The no-action alternative may increase the spread of noxious and undesirable weeds as tree canopies become defoliated by the gypsy moth.

Soil Condition and Microclimate

Effects on soil condition are expected to be in the range of natural variability. The no-action alternative is expected to reduce humidity and raise temperature in areas where trees become defoliated; effects are expected to be in the range of natural variability.

Douglas-fir Bark Beetle

In addition to the impacts of defoliation and potential tree mortality, there is also the potential for additional tree mortality from bark beetles attracted to trees weakened from defoliation.

Wildland/urban Interface

Private land inside the proposed eradication area totals about 508 acres and includes 10 rural-residential properties and 2 properties managed by forest products companies. Private property outside the eradication area, but within the 3,820-acre analysis area, totals about 950 acres and includes 11 rural-residential properties and 2 properties managed by forest products companies. Tree defoliation and mortality in these lands could lower property and timber values. Tree mortality could increase the fire hazard risk in the area.

Scenic Values and Recreation

Aesthetic or scenic beauty of landscapes could be degraded through tree defoliation. This, in turn, would degrade the recreational experiences of local residents and forest users.

Human Health and Safety

Because gypsy moth caterpillars can cause allergic reactions in people, the presence of large numbers of gypsy moth larvae can adversely affect people who reside or recreate in the area. Tree mortality caused by defoliation can increase public safety risks, particularly in areas adjacent to roads and streams.

Ongoing Projects/economic Values

Over 15,500 acres of National Forest plantations exist in the 37,000-acre Five Rivers watershed. In 1999, the Five Rivers Landscape Management Project FEIS was completed for the watershed that will allow maintenance of these plantations. About 3,230 acres of these plantations have been or will be prepared for commercial thinning to maintain tree health and growth—about 211 acres are located within the proposed 706-acre eradication area, and about 727 acres are located within the larger eradication analysis area. In addition, the FEIS includes a long-term study within the analysis area and the Five Rivers watershed that researches different treatment methods for plantations. Members of the scientific and environmental communities are involved. Tree defoliation in these plantations could result in loss of previous investments, loss of value of timber to be sold, and loss of valuable new information that the long-term study would provide. (USDA 2002)

A separate economic impact would result from the effects of quarantines on an infested area. A quarantine on the county with the gypsy moth infestation could result in restrictions on shipments of nursery stock, wood products, and items such as Christmas trees.

Consistency with Aquatic Conservation Objectives (USDA 2003b)

Preferred Action Alternative

All actions under the preferred alternative have been evaluated with respect to consistency with the nine aquatic conservation strategy objectives of the Northwest Forest Plan. Project activities will not retard or prevent attainment of any of the strategy's objectives. The following conclusions have been made for each objective:

Objective 1--Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features to ensure protection of the aquatic systems to which species, populations, and communities are uniquely adapted.

Eradication of the gypsy moth infestation would maintain the complexity of watershed and landscape-scale features by eliminating the potential for unnatural tree defoliation and mortality.

Objective 2--Maintain and restore spatial and temporal connectivity within and between watersheds. Lateral, longitudinal, and drainage network connections include floodplains, wetlands, upslope areas, headwater tributaries, and intact refugia. These network connections must provide chemically and physically unobstructed routes to areas critical for fulfilling life- history requirements of aquatic and riparian-dependent species.

By eliminating the potential of tree mortality due to defoliation, eradication activities would maintain the spatial and temporal connectivity in and between watersheds. Maintaining connectivity would allow aquatic and riparian-dependent species access to and between refugia to allow diverse life-history types to develop.

Objective 3 --Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.

By eliminating the potential of tree mortality due to defoliation, eradication activities would maintain the physical integrity of the aquatic system.

Objective 4--Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Water quality must remain within the range that maintains the biological, physical, and chemical integrity of the system and benefits survival, growth, reproduction, and migration of individuals composing aquatic and riparian communities.

Water quality (temperature) would be maintained by eradicating the gypsy moth infestation.

Objective 5--Maintain and restore the sediment regime under which aquatic ecosystems evolved. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.

Eradication of the gypsy moth infestation is not expected to affect the sediment regime.

Objective 6--Maintain and restore in-stream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, duration, and spatial distribution of peak, high, and low flows must be protected.

Eradication of the gypsy moth infestation is not expected to change existing in-stream flow.

Objective 7--Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands.

Eradication of the gypsy moth infestation would allow hardwoods and conifers in meadows and wetlands to develop at their natural rate and avoid potential mortality due to defoliation.

Objective 8--Maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of coarse woody debris sufficient to sustain physical complexity and stability.

Eradication of the gypsy moth infestation would maintain a more natural species composition and structural diversity of plant communities in riparian areas. Hardwoods and conifers would continue to provide shade and continue to develop large tree character necessary to produce inputs of large woody material to streams. Instream large wood is needed to develop and restore physically complex fish habitats.

Objective 9--Maintain and restore habitat to support well-distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species.

All activities are designed to maintain natural conditions and processes that develop habitat for native riparian-dependent species.

No-action Alternative

The no action alternative would allow the gypsy moth to defoliate hardwoods and Douglas-fir that provide shade to streams, including those that are water-quality limited due to temperature. Because this alternative would result in expected decreases in current stream shading over time, it is not expected to meet the objectives of the Northwest Forest Plan's aquatic conservation strategy. Defoliation would eventually be followed by an input of small to medium sized woody material as trees killed by the gypsy moth fall into streams. This small to medium sized woody material would not produce the structure necessary to develop needed physically complex fish habitats.

Other Effects

Short-term Uses and Long-term Productivity

The use or protection of natural resources for long-term sustained yield is the legislated basis of management and direction for the Forest Service (USDA, USDI 1994, p. 321). Short-term uses include actions such as eradicating gypsy moth infestations. The proposed eradication project is not expected to create a long-term loss in productivity of forest soils. The eradication of the gypsy moth infestation will allow for the continued long-term development of late-successional habitat and productivity of aquatic ecosystems.

Unavoidable Adverse Effects

Implementing any alternative would result in some adverse environmental effects that cannot be avoided. The mitigation measures, along with Forest standards and guides, are intended to keep the extent and duration of these effects within acceptable rates, but adverse effects cannot be completely eliminated. The following adverse environmental consequences would be associated to some extent:

- Minor, short-term, localized reductions in air quality from aerial spraying emissions resulting from eradication treatments (preferred alternative);
- Minor, short-term disturbance to wildlife when their habitat is disturbed by management actions (preferred alternative);
- Minor, short-term loss of some non-target moths and butterflies; therefore, possible minor, short-term loss of a portion of the food supply for some wildlife species (preferred alternative);
- Major increase in the risk of the gypsy moth spreading to other areas in the western US (no-action alternative);
- Substantial decreases in habitat for some wildlife species dependent on late-successional forest conditions would occur in the long term due to defoliation and mortality of mature conifer trees (no-action alternative); and
- Substantial decreases in shading for some streams would occur in the long term due to defoliation and mortality of hardwood and conifer trees, affecting water quality (no-action alternative).

Irreversible Resource Commitments

Irreversible commitments of resources are actions that disturb either a nonrenewable resource (for example heritage resources) or other resources to the point that they can only be renewed over 100 years or not at all. None of the alternatives are expected to create an irreversible resource commitment.

Irretrievable Commitment of Resources

An irretrievable commitment is the loss of opportunities for producing or using a renewable resource for a period of time. The preferred alternative is not expected to create any irretrievable commitment of resources. The no-action alternative would eventually lead to mortality of trees that would temporarily modify the composition of affected stands.

Environmental Justice

Both the principles and the requirements of Environmental Justice were incorporated into this document. In accordance with Council of Environmental Quality (CEQ) (1997) guidance in Section 3 B I., human health effects, including potential cumulative pesticide exposures both within and outside the control of the agency, were considered in an extensive toxicological analysis in the incorporated document, the USDA Final EIS for Gypsy Moth Management in the United States (1995). Concern was expressed that some residents may not have health insurance and/or may not have access to a health care provider. However, adverse health effects are not anticipated based on this and other analyses. The USDA Final EIS and this environment assessment review the potential for water quality impacts of both the preferred and no action alternatives. Both public health and industry data were considered in this review process.

The agencies also incorporated CEQ guidance (CEQ 1997, Section 3.C) with regard to public participation strategies and in seeking Tribal representation. These strategies include public scoping and public comment periods and making the documents available in alternative formats. Tribal contact is described in a following Section (Consultation with Others) in this document. No comments or issues regarding Environmental Justice, subsistence uses, low income uses or Tribal uses/values/medicinal plants/hunting/gathering were raised during this process.

Based on analysis of the effects of alternatives on the human environment (including minority, subsistence and low-income populations), the preferred alternative is expected to have similar effects for all human populations regardless of nationality, gender, race, income or potential subsistence use. No disproportionately high and adverse human health or environmental effects on minority populations, potential or actual subsistence use, and low-income populations are expected as a result of implementing actions described for the preferred alternative. However, disproportionate effects to subsistence users and/or Tribal users could occur from destruction of habitat in the no-action alternative, if gypsy moth becomes established in the Pacific Northwest. Further explanation of Environmental Justice considerations continues in the following section, ("Other Disclosures").

Other Disclosures

Based on the evaluation of the effects, we concluded:

- None of the alternatives would affect minority groups, women, and consumers differently than other groups. These groups may benefit from employment opportunities that the proposed action will provide; the no-action alternative would have adverse effects on all groups as gypsy moth populations increase and spread. None of the alternatives adversely affects civil rights. All contracts that may be awarded as a result of implementation would meet equal employment opportunity requirements. Federal Agencies in this project will comply with SBA (Small Business Administration) targets in support of civil rights and environmental justice issues.
- None of the proposed actions will affect known prehistoric or historic sites because no new disturbance on previously undisturbed ground is expected. As outlined in the American Indian Religious Freedom Act, no effects are anticipated on American Indian social, economic, or subsistence rights because existing environmental conditions will not be changed. Analysis of these sites and uses supports CEQ guidance to consider interrelated cultural, social or historical factors as potential Environmental Justice issues (CEQ 1997, Section 3.B. 1).
- No adverse effects on wetlands and flood plains are anticipated; and no parkland, farmland, or rangeland will be adversely affected because proposed actions will not alter existing hydrology, *B.t.k.* is not likely to affect most water organisms, and *B.t.k.* is naturally present in soils worldwide.
- This environmental assessment is tiered to the USDA's Final EIS for Gypsy Moth Management in the United States (1995), the Siuslaw Forest Plan (1990), as amended by the Northwest Forest Plan (1994), and is consistent with those plans and their requirements.
- The proposed project is not in or adjacent to an inventoried roadless area.
- The proposed project is consistent with the coastal zone management program.
- None of the proposed actions are expected to substantially affect human health and safety because *B.t.k.* will be applied according to label requirements.
- The proposed project is not expected to measurably affect global warming. The USDA Forest Service will continue an active leadership role in agriculture and forestry regarding the reduction of greenhouse gas emissions.

- These actions do not set a precedent for future actions because they are linked to the 1995 EIS.

Summary

ALTERNATIVE	PREFERRED	HUMAN EFFECT	ENVIRONMENTAL EFFECT	PROGRAM OBJECTIVES
<i>B.t.k</i>	Yes	Short term minor effects are possible, but no long term cumulative effects are anticipated.	Short term effects are likely to nontarget caterpillars. Cumulative effects to nontarget species are not anticipated due to recolonization. No effects to water quality or forest and soil health.	Yes
Gypchek®	No	No effect.	No effect.	No
Diflubenzuron	No	No long or short term effects anticipated at low exposure	Effects are anticipated to nontarget insects and possibly to aquatic arthropods. may affect soil health through impacts on arthropods that alter soil composition and structure	No
Mass Trapping	Yes	No effects.	No effects.	Yes
Mating Disruption	No	No effects.	No effects.	No
Sterile Insect Release	No	No effects.	No effects	No

Monitoring

Programmatic monitoring following the eradication program will be conducted until two years of negative trapping results indicate the gypsy moth infestation has been eradicated. Pheromone traps will be used to monitor the infestation and to determine the success of the eradication program at the Fisher site. This type of programmatic monitoring following *B.t.k.* treatment has been conducted in Oregon during the last 18 years for all the eradication programs.

Adverse effects and any resulting incidental take on threatened and endangered species shall be tracked and reported to the U.S. Fish and Wildlife Service using a Project Implementation & Monitoring Form.

Mitigation

The following standard operating procedures will be observed to safeguard human health and minimize effects on the environment. Procedures pertaining to both ground and aerial treatments are listed. Because we are proposing an aerial eradication project in the Fisher site, the procedures for aerial treatments are applicable for this project.

Ground & Aerial Treatments

-- Oregon Department of Agriculture will work with the Department of Human Services, Health Division, on measures that may be required to safeguard human health. They will provide the public with accurate information on potential risks from *B.t.k.* applications and any recommended personal protection measures.

- The *B.t.k.* insecticide will be applied according to label instructions.
- The public and other selected groups or organizations will be notified by project officials by letter, radio, television, newspaper, or other means of spray dates and places, as appropriate.
- Special emphasis will be placed on avoiding the spraying of areas outside the designated eradication area.
- Transportation of the *B.t.k.* insecticide will be supervised by project personnel to, within, and from the project areas.
- A safety, spill, and emergency response plan will be prepared.
- Concerned species and areas may be buffered as needed.

Aerial Treatments

- No *B.t.k.* will be applied aerially when:
 - a. Wind velocity is zero or exceeds 10 miles per hour.
 - Air temperature exceeds 80° F or is less than 38° F.
 - Rain is predicted (>50% probability) to occur before adequate drying time has elapsed, i.e., within 6 hours of application.
 - Foliage is wet such that drops of water are present on needle or leaf ends or can be shaken from branches. *B.t.k.* will be applied only when the target foliage has dried sufficiently.
 - There is fog or poor visibility on the spray block or helispot.
 - Relative humidity is less than 50%.
 - The air turbulence (thermal updrafts, etc.) is so great as to affect normal application seriously.
 - Temperature inversions are present with no air movement sufficient to interrupt the proper settling and penetration of material through the canopy.
- Aerial *B.t.k.* application will be suspended whenever the *B.t.k.* does not appear to be settling in the target area.
- Aerial *B.t.k.* applications (using a rotary atomizer as a spray device) will be made by helicopter flying at or in excess of 50 feet above the tree canopy. The project pilots and aircraft will adhere to all FAA requirements.
- In order to control aerial *B.t.k.* application in large blocks, application aircraft may be accompanied by observation aircraft staffed with a fully qualified observer. Observers and application pilots will fly each spray block for familiarization prior to spraying. Small aerial projects (such as this year's) may not require an observation aircraft.
- Helispot managers and other contract administrators can exercise shutdown authority when they observe aircraft safety or application violations.
- Spray deposition cards will be utilized to monitor droplet size and coverage.
- To prevent accidental release of insecticide due to faulty emergency release mechanisms, spray systems will be inspected to ensure that a positive locking mechanism is in place which will not trip accidentally, but only in response to pilot activation during an emergency. Application equipment will be monitored for leaks and equipment failures.
- School bus routes will not be directly sprayed when children are present.

F. CONSULTATION WITH OTHERS

In its biological opinion (USDI 2003), the U.S. Fish and Wildlife Service concurs with US Forest Service's determination that the proposed action is not likely to adversely affect the bald eagle.

In its biological opinion (USDI 2003), the U.S. Fish and Wildlife Service determined that the eradication of gypsy moths through spraying *B.t.k.* on the Siuslaw National Forest and associated private lands is not likely to jeopardize the continued existence of northern spotted owls or marbled murrelets.

A finding of no effect on the threatened coho salmon was determined (USDA 2003b). Therefore, consultation with the National Marine Fisheries Service was not necessary.

The Confederated Tribes of Coos, Lower Umpqua, and Siuslaw were informed of the proposed action during scoping. No comments on the proposed action were received.

G. RECOMMENDATION OF THE OREGON DEPARTMENT OF AGRICULTURE

The Oregon Department of Agriculture, Insect Pest Prevention & Management Section recommends that the gypsy moth infestation in the Fisher area be eradicated. The recommended strategy is to use the biological pesticide *Bacillus thuringiensis* var. *kurstaki* (*B.t.k.*) in conjunction with mass/intensive trapping. The *B.t.k.* product used would be Foray[®] 48B, which is an aqueous formulation that has been used in previous gypsy moth eradication and control programs in rural and urban areas of Oregon and other states. We propose three aerial applications of *B.t.k.* at a rate of 24 B.I.U.s per acre (706 acre eradication area in 2003). The three treatments will occur in late April or early May, about 7-14 days apart. Exact timing depends on weather. Mitigation measures described in the 2003 Environmental Assessment for aerial applications will be followed. It is likely that a small buffer area surrounding the eradication will receive some *B.t.k.* but in quantities much less than inside the eradication area. Based on a number of factors (e.g., time of day, wind speed and direction, topography, distance of the eradication area from the eradication analysis area boundary), we expect that the *B.t.k.* (Foray 48 B) will be deposited within the eradication analysis area. This eradication analysis area is the same area evaluated for this cooperative Environmental Assessment, the USDA FS Biological Assessment and Biological Evaluation, the USDI Fish and Wildlife Biological Opinion and for the Oregon Department of Environmental Quality NPDES permitting process.

Following *B.t.k.* treatments, an intensive/mass trapping program will be used to monitor the effectiveness of the *B.t.k.* applications and to pinpoint the location of any remaining populations in the Fisher area. Trap densities in the core area may be up to 3 to 9 traps per acre. If more moths are caught, additional egg mass searches and treatments may be conducted in 2004. Two years of negative trapping results following the treatments would indicate the infestation has been eradicated.

H. CONCLUSION

The environmental analysis conducted by ODA has determined that the proposed gypsy moth eradication program using the bacterial insecticide, *Bacillus thuringiensis* var. *kurstaki* (*B.t.k.*), followed by mass/intensive trapping, will have minimal impact on humans and the environment. This finding is based on the following facts.

1.) *B.t.k.* is a naturally occurring soil bacterium. *B.t.k.* has been used extensively for gypsy moth suppression and eradication programs throughout the United States. In Oregon, *B.t.k.* has been used in gypsy moth eradication programs since 1984.

2.) *B.t.k.* is not harmful to healthy humans, pets, domestic animals, birds, wildlife, or aquatic organisms. Beneficial insects including predators, parasites, and honeybees are not harmed by *B.t.k.* Some non-target butterfly and moth larvae (caterpillars) will be killed by the proposed eradication, but these species should recolonize the eradication block from the surrounding untreated areas. No long-term, irreversible effects to non-target butterflies or moths are expected.

- 3.) Human health studies during five large eradication programs using *B.t.k.* in populated areas have found no significant health problems attributable to the treatments.
- 4.) Aqueous formulations of *B.t.k.* contain no organic solvents. None of the inert ingredients of the formulations being considered are on EPA list 1 (Inerts of Toxicological Concern) or list 2 (Potentially Toxic Inerts). The inert ingredients in the *B.t.k.* products being considered have been reviewed by State health professionals and do not present a health risk as used in this program.
- 5.) There are four federally listed threatened or endangered species in or near the proposed eradication analysis area in Fisher (Five Rivers). Only two listed species, marbled murrelet and northern spotted owl, are likely to be impacted by noise associated with the low flying application aircraft. A buffer zone of 1320 feet (.25 mile) will be followed according to recommendations from USDA Forest Service to minimize the disturbance effect on the two birds. The disturbance buffer is not expected to diminish the effectiveness of treatments. Other threatened and endangered species in or near the site should not be adversely affected by the proposed actions.
- 6.) Minor, short-term noise disturbances are expected to impact species of concern and Siuslaw National Forest sensitive species, management-indicator species, survey-and-manage species, and landbirds in or near the site. Minor, short-term indirect effects would be limited to the possible temporary reduction of a portion of the food supply for some of these species.

I. AGENCIES AND PERSONS CONSULTED

<p>Audubon Society of Portland (Bob Salinger) 5151 NW Cornell Rd. Portland, OR 97210 (503) 292-9501 ext 122</p>	<p>For information on sensitive bird species.</p>
<p>Lincoln Co. Health and Human Services (Gail Stater) 36 SW Nye Street Newport, OR 97365 (541) 265-4179</p>	<p>For assistance on measures to safeguard human health, and for review and comment.</p>
<p>National Marine Fisheries Service (Robert Markle) 525 NE Oregon Street, Suite 500 Portland, OR 97232 (503) 230-5419</p>	<p>For information on threatened and endangered fish species</p>
<p>Nature Conservancy -- Natural Heritage Program (Sue Vrilakas, Cliff Alton) 821 SE 14th Ave Portland, OR 97214 (503) 731-3070 ext 331</p>	<p>For information on threatened and endangered species.</p>
<p>Northwest Coalition for Alternatives to Pesticides (Caroline Cox) P.O. Box 1393 Eugene, OR 97440 (541) 344-5044</p>	<p>For review and comment.</p>
<p>Oregon Dept. of Agriculture (Steve Gisler) 635 Capitol St. NE Salem, OR 97301</p>	<p>For information on concerned plant species.</p>

(541) 737-2346

Oregon Dept. of Agriculture
(Dale Mitchell, Janet Fults)
635 Capitol St. NE
Salem, OR 97301
(503) 986-4635

For information on pesticide use regulations, pesticide labels.

Oregon Dept. of Environmental Quality
(Ranei Nomura, Barbara Burton)
811 SW 6th Ave.
Portland, OR 97204
(503) 229-6035 or (503) 378-8240

For acquisition of a National Pollutant Discharge Elimination System (or Waste Discharge) permit and for information related to NPDES permitting process

Oregon Dept. of Fish and Wildlife
(Doug Cottam, Holly Michael)
Newport Field Office
2040 SE Marine Sciences Dr.
Newport, OR 97365
(541) 867-0300 X250

For assistance on threatened and endangered species. For review and comment.

Oregon Department of Forestry
(Dave Overhulser)
2600 State St.
Salem, OR 97310
(503) 945-7396

For review and comment.

Oregon Department of Human Resources, Health Division
(Michael Heumann, Deborah Profant, David Leland)
800 NE Oregon Street, Suite 772
Portland, OR 97232-2162
(503) 731-4573

For assistance on measures to safeguard human health, and for review and comment.

Oregon Environmental Council
(John Charles)
520 SW 6th Ave., Suite 940
Portland, OR 97204
(503) 222-1963

For review and comment.

Oregon Health Sciences University/Oregon Poison Center
(Zane Horowitz, M.D.)
Mail Code CB550
3181 SW Sam Jackson Park Rd.
Portland, OR 97201
(503) 494-8968

For assistance on measures to safeguard human health, and for review and comment.

Oregon State University
(Paul Jepson)
Dept. of Entomology, Cordley Hall
Corvallis, OR 97331

For review and comment.

Paul Hammond
2435 E. Applegate
Philomath, OR 97370
(541) 929-3894

For information on threatened or endangered Lepidoptera.

U.S.D.A. Forest Service
(Dave Bridgwater, Iral Ragenovich, Erin Black, Roger Ogden)

For review and comment.

P.O. Box 3623
333 SW First Ave
Portland, OR 97208
(503) 808-2666

U.S.D.A. Forest Service
Willamette/Siuslaw National Forests
(Wade Sims)
211 E.7th Ave.
Eugene, OR 97401
(541) 225-6447

For review and comment
on information pertaining to
threatened and endangered
fish species

U.S.D.A. Forest Service
Siuslaw National Forest
(Carl Frounfelker)
4077 SW Research Way
Corvallis, OR 97339
(541) 750-7054

For information on threatened
and endangered wildlife species

U.S. Fish & Wildlife Service
2600 S.E. 98th Ave., Suite 100
Portland, OR 97266
(503) 231-6179

For information on threatened
and endangered species, and
to ensure compliance with
the Endangered Species Act.

J. LIST OF PREPARERS & REVIEWERS

- Preparers:** Barry Bai and Kathleen Johnson, Oregon Department of Agriculture, Salem, OR 97301.
Bruce Buckley, USDA Forest Service, Waldport, OR 97394
Paul Thomas, USDA Forest Service, Waldport, OR 97394
Mike Northrop, USDA Forest Service, Florence, OR 97439
- Reviewers:** Dan Hilburn and Alan Mudge, Oregon Department of Agriculture, Salem, OR 97301.
Charles Divan and Charles Bare, USDA, APHIS, 4700 River Road, Riverdale, MD 20737.
Carl Frounfelker, USDA Forest Service, Corvallis, OR 97333
Roger Ogden, USDA Forest Service, Portland, OR 97208
Dave Bridgwater, USDA Forest Service, Portland, OR 97208
Iral Ragenovich, USDA Forest Service, Portland, OR 97208
Erin Black, USDA Forest Service, Portland, OR 97208
Dick Carkin, USDA Forest Service, Portland, OR 97208

K. REFERENCES

Allen-Reid, D. 1995. Gypsy moth status report. Gypsy Moth News. USDA, Forest Service, Northeastern Area, State and Private Forestry. Jan. 1995. 37:1-2.

Aer'aqua Medicine Limited 2000. Health surveillance following operation ever green: a program to eradicate the white-spotted tussock moth from the eastern suburbs of Auckland; report to the Ministry of Agriculture and Forestry. 60pp.

Brown, M.W. and E.A. Cameron. 1979. Effects of disparlure and egg mass size on parasitism by the gypsy moth egg parasite, *Ooencyrtus kuwanai*. Environmental Entomology. 8: 77-80.

Capital Health Region. 1999. Human health surveillance during the aerial spraying for control of north American gypsy moth on southern Vancouver Island, British Columbia, 1999 – a report to the administrator, Pesticide Control Act, Ministry of Environment, Lands and Parks, Province of British Columbia. 36 pp.

Carlson, J., M. Stemeroff, S. Lindgren, A. Hunter, G. Cushon, R. Setter, L. Charleson, and R. Hawe. 1994. A Risk Assessment of European Gypsy Moth in British Columbia. Phero Tech Inc. and Deloitte & Touche Management Consultants. Available from: Agriculture Canada, #202 - 620 Royal Ave., P.O. Box 2523, New Westminster, B.C., Canada V3L 5A8. 73 pp.

Downey, D.M. 1991. Do gypsy moths impact stream water chemistry? Demonstration Project News. Appalachian Integrated Pest Management Project. Vol. 4 (9): 1-3.

Edit, D.C. 1985. Toxicity of *Bacillus thuringiensis* var. *kurstaki* to aquatic insects. Canadian Entomologist. 117:829-837.

Council of Environmental Quality. 1997. Environmental Justice, Guidance under the National Environmental Policy Act, Dec. 10, 1997.

Forest Service. 1994. Gypsy Moth News. USDA, Forest Service, Northeastern Area, State and Private Forestry. June, 1994. 35:1-2.

Gaddis, P.K. and C.C. Corkran. 1986. Secondary effects of *B.t.k.* spray on avian predators; the reproductive success of chestnut-backed chickadees. Final Report, on file: Oregon Department of Agriculture, Plant Division, Salem, Oregon. 20 pp.

Gaddis, P.K. 1987. Secondary effects of *B.t.k.* spray on avian predators; the reproductive success of chickadees. Final report, on file: Oregon Department of Agriculture, Plant Division, Salem, Oregon. 21 pp.

Glare, T. R. and O'Callaghan M. 2000. *Bacillus thuringiensis*: Biology, Ecology and Safety. John Wiley & Sons, Ltd, Chichester, UK. 350 pp.

GMDigest. 2002. an historical database containing information (acres and dollars) associated with the USDA cooperative gypsy moth suppression, eradication, and defoliation surveys. On line web page address: <http://fhpr8.srs.fs.fed.us/wv/gmdigest/gmdigest.html>.

Green, M., M. Heumann, R. Sokolow, L.R. Foster, R. Bryant, M. Skeels. 1990. Public health implications of the microbial pesticide, *Bacillus thuringiensis*: an epidemiological study, Oregon, 1985--86. American Journal of Public Health. 80(7):848-852.

IBT (Industrial Bio-Test Laboratories, Inc). 1972. Acute toxicity studies with Disparlure. IBT No. A 1958. Northbrook, IL; 26p.

Joung, K.B. and J.C. Cote. 2000. A review of the environmental impacts of the microbial insecticide *Bacillus thuringiensis*. Technical Bulletin No. 29, Horticultural Research and Development Center, Agriculture and Agri-Food Canada, QP, Canada. 16 pp.

Kreutzweiser, D.P., S.B. Holmes, S.S. Capell, and D.C. Eichenberg. 1992. Lethal and sublethal effects of *Bacillus thuringiensis* var. *kurstaki* on aquatic insects in laboratory bioassays and outdoor stream channels. Bulletin of Environmental Contamination and Toxicology. 49:252-258.

Lih, M.P., F.M. Stephen, K.G. Smith, L.R. Nagy, and G.W. Wallis. 1995. Effects of a gypsy moth eradication program on nontarget forest canopy insects and their bird predators. pgs 193-198 in Proceedings of the 1994 Annual Gypsy Moth Review. 1994 October 30 - November 2; Portland, OR. National Gypsy Moth Management Board. 375 pp.

McGinnis, W.J.; Phillips, R.H.; Connaughton, K.P. 1996. County portraits of Oregon and Northern California. Gen. Tech. Rep. PNW-GTR-377. Portland, OR: United States Department of Agriculture, Forest Service, Pacific Northwest Research Station. Pages 124-129, 130-135.

Miller, J.C. 1990. Field Assessment of the Effects of a Microbial Pest Control Agent on Nontarget Lepidoptera. American Entomologist. 37:135-139.

Miller, J.C. 1990. Effects of a microbial insecticide, *Bacillus thuringiensis kurstaki*, on nontarget Lepidoptera in a spruce budworm-infested forest. *Journal of Research on the Lepidoptera*. 29(4):267-276.

Noble, M.A., P.D. Riben, and G.J. Cook. 1992. Microbiological and epidemiological surveillance programme to monitor the health effects of Foray 48B *B.t.k* spray. Report Submitted to: The Ministry of Forests, Province of British Columbia, Sept. 30, 1992.

North Carolina Department of Agriculture. 1994. Environmental Assessment for Bladen, Brunswick, Columbus, New Hanover, and Pender Counties, Gypsy Moth Eradication Project 1994. North Carolina Department of Agriculture, Raleigh, N.C.

Oregon Department of Agriculture. 1986. Environmental Assessment, Gypsy Moth Eradication Spray Program: Lane and Douglas Counties, April 1986. Oregon Department of Agriculture, Plant Division, Salem, Oregon.

Oregon Department of Agriculture. 1989. The Gypsy Moth in Oregon. Oregon Department of Agriculture, Plant Division, Salem, Oregon. 17 pp.

Oregon Health Services. 2003. Questions and Answers about Gypsy Spraying and Your Health – Oregon Health Services 2003 *B.t.k*. Fact Sheet. March 10, 2003. Oregon Health Services, Portland, Oregon. 5 pp.

Perkins, M. and J. R. Peterson. 1994. Impacts of *Bacillus thuringiensis* on resident bat populations, Carver, Oregon. Final report, on file: Oregon Department of Agriculture, Plant Division, Salem, Oregon. 13 pp.

Reardon, R., N. Dubois, and W. McLane. 1994. *Bacillus thuringiensis* for Managing Gypsy Moth: A Review. USDA Forest Service, National Center of Forest Health Management, FHM-NC-01-94, 32 pp.

Sample, B.E., L. Butler, R.C. Whitmore. 1992. The impacts of *Bacillus thuringiensis* applications on non-target arthropods: preliminary results. Appalachian Gypsy Moth Integrated Pest Management Demonstration Project News. 5(7):1-4.

Sample, B.E., L. Butler, C. Zivkovich, and R.C. Whitmore. 1993. Evaluation of *Bacillus thuringiensis* and defoliation effects on native Lepidoptera. USDA, Forest Service. AIPM Technology Transfer, NA-TP-10-93. 12 pp.

Schneeberger, N. F. 1996 Gypsy moth populations plummet in 1996 while "the fungus" skyrockets. *Gypsy Moth News*. 42:1-2.

Severns, P. 2002 Evidence for the negative effects of BT (*Bacillus thuringiensis* var. *kurstaki*) on a non-target butterfly community in western Oregon, USA. *Journal of the Lepidopterists' Society*. 56:166-170.

Surgeoner, G.A. 1994. Eradication Options for the European Strain of Gypsy Moth in British Columbia. Department of Environmental Biology, University of Guelph, Guelph, Ontario N1G 2W1. 78 pp.

Tuthill, R.W., A.T. Canada, K. Wilcock, P.H. Etkind, T.M. O'Dell, and S.K. Shama. 1984. An epidemiologic study of gypsy moth rash. *American Journal of Public Health*. 74(8):799-803.

U.S. Department of Agriculture. 1993. Environmental Monitoring Report, Asian Gypsy Moth Eradication Project: 1992. Animal and Plant Health Inspection Service, Biotechnology, Biologics and Environmental Protection, Technical and Scientific Services. 40 pp.

U.S. Department of Agriculture. 1995. Gypsy Moth Management in the United States, A Cooperative Approach. Final Environmental Impact Statement. USDA Forest Service, Northeastern Area State and Private Forestry, Radnor, PA.

- U.S. Department of Agriculture, Animal and Plant Health Inspection Service. 1994. Gypsy Moth Eradication Database, maintained at Plant Protection and Quarantine, Riverdale, MD.
- USDA Forest Service. 1990. Land and resource management plan (as amended by the 1994 Northwest Forest Plan). Corvallis, OR: Siuslaw National Forest.
- USDA Forest Service. 1992. Potential Impacts of Asian Gypsy Moth in the Western United States. Forest Pest Management, State and Private Forestry, P.O. Box 96090, Washington, D.C. or P.O. Box 3623, Portland, OR.
- USDA Forest Service. 1995. Assessment report: Federal lands in and adjacent to Oregon Coast Province. Two volumes. 200 p. Corvallis, OR: Siuslaw National Forest.
- USDA Forest Service. 1997. Lobster-Five Rivers watershed analysis. Corvallis, OR: Siuslaw National Forest.
- USDA Forest Service. 2002. Final environmental impact statement, Five Rivers landscape management project. Corvallis, OR: Siuslaw National Forest. 113 p. plus appendices.
- USDA Forest Service. 2003a. Biological assessment for the eradication of the gypsy moth which may disturb during nesting periods bald eagles, northern spotted owls, and marbled murrelets. Corvallis, OR: Siuslaw National Forest. 18 p.
- USDA Forest Service. 2003b. Gypsy moth eradication: Fisher site, Lincoln County; fisheries report and biological evaluation. Corvallis, OR. Siuslaw National Forest. 9 p.
- USDA Forest Service. USDI Bureau of Land Management. 1994. Final supplemental environmental impact statement on management of habitat for late-successional and old-growth species within the range of the northern spotted owl. Volume 1. Portland, OR.
- U.S. Environmental Protection Agency. 1998. Reregistration Eligibility Decision (RED) *Bacillus thuringiensis* EPA738-R-98-004, March 1998. 151pp.
- USDI. 2003. RE: Formal and informal consultation for the U.S. Forest Service eradication of gypsy moths on the Siuslaw National Forest. Portland, OR: Department of Interior, Fish and Wildlife Service. [FWS reference: 1-7-03-F-0237]. 33pp.
- U.S. Department of Interior, Fish and Wildlife Service. 1972. Results of four-day static fish toxicity studies of rainbow trout and bluegills. Report submitted to USDA.
- U.S. Department of Interior, Fish and Wildlife Service. 1975. Report on the study to determine the LC50 of disparlure for mallards and bobwhite quail. Report submitted to USDA, APHIS, PPQ.
- Wallner, W. E., N.R. Dubois and P.S. Grinberg. 1983. Alteration of parasitism by *Rogas lymantriae* (Hymenoptera: Braconidae) in *Bacillus thuringiensis*-stressed gypsy moth (Lepidoptera: Lymantriidae) hosts. *Journal of Economic Entomology*. 76:275-277.
- Webb, R.E., M. Shapiro, J.D. Podgwaite, R.C. Reardon, K.M. Tatman, L. Venables and D.M. Kolodny-Hirsch. 1989. Effects of aerial spraying with Dimilin, Dipel, or Gypcheck on two natural enemies of the gypsy moth (Lepidoptera: Lymantriidae). *Journal of Economic Entomology*. 82: 1695-1701.
- Weber, B.; Bowman, S. 1999. Economic well-being and poverty in Oregon and its counties. Corvallis, OR: Oregon State University Extension Service.
- World Health Organization. 1999. Environmental Health Criteria 217 *Bacillus thuringiensis*. WHO, Geneva 105 pp.

Appendix A. USDA Forest Service public scoping letter. Similar information was also published in local newspapers

File Code: 1950
Date: December 10, 2002

Dear Interested Party,

The South Zone Ranger District of the Siuslaw National Forest is working with the Oregon Department of Agriculture in developing an environmental document for an aerial treatment to eradicate an isolated gypsy moth infestation. The Gypsy Moth Eradication Project area is located about 15 miles southeast of the city of Waldport. A detailed map of the project area is enclosed.

I am requesting your comments concerning this project. If you have any site-specific concerns about the proposed action or knowledge that may be helpful, please bring them to my attention. The more specific you are, the better we will be able to address issues important to you in our environmental analysis process. To be fully considered in the analysis, your comments should be received no later than January 8, 2003. Because of the relatively short time frame between now and the time when treatment is proposed, the Forest Service will be requesting an exemption from stay on appeal.

The gypsy moth is an introduced insect. The current infestation was first detected in the fall of 2002. The primary goal of the Gypsy Moth Eradication Project is to eliminate the gypsy moth from this infested area before it can develop into a larger infestation. The gypsy moth has been identified as one of the worst forest insects in the eastern United States because it causes defoliation resulting in significant damage and mortality to trees. Some of the tree species affected by the gypsy moth are oak, alder, poplar, willow, and Douglas-fir. The project area includes lands managed by the Siuslaw National Forest and private lands in the lower Buck Creek, Cougar Creek, Crab Creek, and Cherry Creek areas of the Five Rivers watershed. This project complements the Oregon Department of Agriculture's pest control program by continuing eradication treatments wherever isolated gypsy moth infestations are found. The legal description of the project area is in T14 S, R10W, sections 34, 35, and 36; T14S, R9W, section 31; T15S, R10W, sections 1, 2, and 3; and T 15S, R 9W, section 6.

Currently, an interdisciplinary team of resource specialists has been assigned to assess the effects of spraying specific lands with the objective of protecting sensitive National Forest lands. They will assess the effects of management actions on resources such as fisheries, wildlife, and recreation, and will evaluate effects on public health.

Purpose and Need for the Project

The purpose of this project is to eradicate the gypsy moth isolated infestation through the use of aerial application of a bacterium-based insecticide. The need for this project is to reduce the risk of infestation and spread to surrounding areas, or to a larger area of the Western United States; prevent insect-caused mortality on late or older successional trees; and to develop mitigation measures and monitoring to reduce the potential threat of future infestation and spread.

Proposed Action

The analysis area includes about 3,820 acres. The proposed project area for 2003 totals about 706 acres, including about 198 acres of National Forest (NF) and 508 acres of private lands. The remaining approximate 3,114 acres—which include 2,170 acres of NF and 944 acres of private lands—may also require treatment in following years and will be considered during the development of alternatives for the environmental document. All proposed treatments will be by aerial spray, using *Bacillus thuringiensis* var. *kurstoki* (*B.t.k.*), a bacterium specific to moth and butterfly caterpillars. Additional information regarding this product is enclosed. In order to accomplish the needed eradication, the area will be treated with three applications about 10 days apart.

How can you get involved?

The best way to get involved is to tell us what your site-specific concerns are about the proposed action and to provide us with additional information you may have about the area affected by the proposed action. You can provide input in several ways:

Write us a letter. We can be contacted at the South Zone Ranger District, 4480 Hwy 101, Bldg. G, Florence, OR 97439, Attn: Gypsy Moth Eradication Project.

Call us with your comments. Bruce Buckley is the District contact for this project, and can be reached at 541-563-3211.

Contact us by email. Please include your name and address on email comments along with your email address. Send electronic comments to bbuckley@fs.fed.us.

I expect an environmental document ready for signature by early next year. Treatments from the analysis should begin around April 2003. If there are any questions I can answer at this stage, please contact me at 541-902-6948, or team member Bruce Buckley at 541-563-3211.

Sincerely,

/s/Ed Becker
ED BECKER
Acting South Zone Ranger

ENCLOSURES/



ACTIVE INGREDIENT:

<i>Bacillus thuringiensis</i> subsp. <i>kurstaki</i> , Lepidopteran Active Toxin.....	2.1%
INERT INGREDIENTS	97.9%
TOTAL	100.0%

POTENCY: 10,600 International Units (IU)/mg of product (equivalent to 48 billion IU/Gal). Potency units should not be used to adjust use rates.

EPA Reg. No. 73049-46

EPA Est. No. 33762-IA-001

List No. 60178

INDEX:

- 1.0 Statement of Practical Treatment
- 2.0 Precautionary Statements
 - 2.1 Hazard to Humans (and Domestic Animals)
 - 2.2 Personal Protective Equipment (PPE)
 - 2.3 User Safety Recommendations
 - 2.4 Environmental Hazards
- 3.0 Directions for Use
- 4.0 Storage and Disposal
- 5.0 Directions for Non-Agricultural Applications
- 6.0 Mixing
- 7.0 Application
- 8.0 Application Rates
- 9.0 Notice to User

KEEP OUT OF REACH OF CHILDREN

CAUTION

For **MEDICAL** and **TRANSPORT** Emergencies

ONLY Call 24 Hours A Day 1-877-315-9819. For All Other Information Call 1-800-323-9597.

1.0 STATEMENT OF PRACTICAL TREATMENT

If on Skin: Wash with plenty of soap and water. Get medical attention.

If in Eyes: Flush with plenty of water. Call a physician if eye irritation persists.

2.0 PRECAUTIONARY STATEMENTS

2.1 HAZARD TO HUMANS (AND DOMESTIC ANIMALS) CAUTION

Causes moderate eye irritation. Avoid contact with skin, eyes, open wounds or clothing. Wash thoroughly with soap and water after handling.

2.2 Personal Protective Equipment (PPE)

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Waterproof gloves
- Shoes plus socks

Follow the manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

2.3 User Safety Recommendations

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.

2.4 Environmental Hazards

Do not contaminate water when disposing of equipment washwaters.

3.0 DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

4.0 STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage or disposal of waste.

Storage: Store in a cool, dry place. Keep containers tightly closed when not in use. Store in temperatures above freezing and below 32°C (90°F).

Pesticide Disposal: Pesticide waste resulting from the use of this product may be disposed of on site or at an approved waste disposal facility in accordance with federal and local regulations.

Container Disposal: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

CONTINUED

5.0 DIRECTIONS FOR NON-AGRICULTURAL APPLICATIONS

Not for use on plants being grown for sale or other commercial use, or for commercial seed production, or for research purposes. For use on plants intended for aesthetic purposes or climatic modification and being grown in interior landscapes, ornamental gardens or parks, or on golf courses or lawns and grounds.

Not for use on trees being grown for sale or other commercial use, or for commercial seed production, or for the production of timber or wood products, or for research purposes except wide-area public pest control programs sponsored by government entities, such as mosquito abatement, gypsy moth control, and Mediterranean fruit fly eradication.

6.0 MIXING

Foray 48B contains the spores and endotoxin crystals of *Bacillus thuringiensis kurstaki*. Foray 48B is a stomach poison and is effective against lepidopterous larvae. After ingestion, larvae stop feeding within hours and die 2-5 days later. Maximum activity is exhibited against early instar larvae. Foray 48B may be used for both ground and aerial application. The product should be shaken or stirred before use. Add some water to the tank mix, pour the recommended amount of Foray 48B into the tank and then add the remaining amount of water to obtain the proper mix ratio. Agitate as necessary to maintain the suspension. The diluted mix should be used within 72 hours.

7.0 APPLICATION

Ground Application: Use an adequate amount of tank mix to obtain thorough coverage without excessive run off. Use the recommended per acre dosages of Foray 48B in the following amounts of water:

High volume hydraulic sprayers	100 gallons
Mist blowers	10 gallons

Aerial Application: Foray 48B may be applied aerially, either alone or diluted with water at the dosages shown in the application rates table. Spray volumes of 32-128 ounces per acre are recommended. Best results are expected when Foray 48B is applied to dry foliage.

8.0 APPLICATION RATES

Crop	Pests	Rate ¹ (pts/acre)	Dosage ¹ (BIU/Acre)
Forests, Shade Trees, Ornamentals, Shrubs, Sugar Maple Trees, Ornamental Fruit, Nut and Citrus Trees ²	Gypsy Moth, Asian Gypsy Moth, Elm Spanworm	1.3-6.7	8-40
	Spruce Budworm, Browntail Moth, Douglas Fir Tussock Moth, Coneworm	1.3-5	8-30
	Tussock Moths, Pine Butterfly, Bagworm, Leafrollers, Tortix, Mimosa Webworm, Tent Caterpillar, Jackpine Budworm, Blackheaded Budworm, Saddled Prominent, Saddleback Caterpillar, Eastern and Western Hemlock Looper, Orange-striped Oakworm, Satin Moth	1-2.7	6-16
	Redhumped Caterpillars, Spring and Fall Cankerworm, California Oakworm, Fall Webworm	0.7-1.3	4-8

¹ Use the higher recommended rates on advanced larval stages or under high density larval populations.

² In treating Gypsy Moth and Asian Gypsy Moth infested trees and shrubs in urban, rural and semi-rural areas, exposure of non-target vegetation including, but not limited to, native and ornamental species and food or feed crops is permitted.

9.0 NOTICE OF WARRANTY

SELLER MAKES NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PURPOSE, OR OTHERWISE, EXPRESS OR IMPLIED, CONCERNING THIS PRODUCT OR ITS USES WHICH EXTEND BEYOND THE USE OF THE PRODUCT UNDER NORMAL CONDITIONS IN ACCORD WITH THE STATEMENTS MADE ON THIS LABEL. IN NO CASE SHALL THE SELLER BE LIABLE FOR CONSEQUENTIAL, SPECIAL, OR INDIRECT DAMAGES RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT. ALL SUCH RISKS SHALL BE ASSUMED BY THE BUYER.



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Oregon Fish and Wildlife Office
2600 S.E. 98th Avenue, Suite 100
Portland, Oregon 97266
(503) 231-6179 FAX: (503) 231-6195

Reply To: 8330.0441(03)
File Name: Sp44.wpd
TS Number: 03-365

November 18, 2002

Barry Bai
Oregon Department of Agriculture
635 Capitol Street NE
Salem, OR 97301-2532

Subject: Fisher, Lincoln County Gypsy Moth Project
USFWS Reference # (1-7-03-SP-044)

Dear Mr. Bai:

This is in response to your letter, dated October 28, 2002, requesting information on listed and proposed endangered and threatened species that may be present within the area of the Fisher, Lincoln County Gypsy Moth Project in Lincoln County. The U.S. Fish and Wildlife Service (Service) received your correspondence on October 28, 2002.

We have attached a list (Attachment A) of threatened and endangered species that may occur within the area of the Fisher, Lincoln County Gypsy Moth Project. The list fulfills the requirement of the Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*). U.S. Department of Agriculture (USDA) requirements under the Act are outlined in Attachment B.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems on which they depend may be conserved. Under section 7(a)(1) and 7(a)(2) of the Act and pursuant to 50 CFR 402 *et seq.*, USDA is required to utilize their authorities to carry out programs which further species conservation and to determine whether projects may affect threatened and endangered species, and/or critical habitat. A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) which are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (NEPA) (42 U.S.C. 4332 (2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to the Biological Assessment be prepared to determine whether they may affect listed and proposed species. Recommended contents of a Biological Assessment are described in Attachment B, as well as 50 CFR 402.12.

If USDA determines, based on the Biological Assessment or evaluation, that threatened and endangered species and/or critical habitat may be affected by the project, USDA is required to consult with the Service following the requirements of 50 CFR 402 which implement the Act.

Attachment A includes a list of candidate species under review for listing. The list reflects changes to the candidate species list published June 13, 2002, in the Federal Register (Vol. 67, No. 114, 40657) and the addition of "species of concern." Candidate species have no protection under the Act but are included for consideration as it is possible candidates could be listed prior to project completion. Species of concern are those taxa whose conservation status is of concern to the Service (many previously known as Category 2 candidates), but for which further information is still needed.

If a proposed project may affect only candidate species or species of concern, USDA is not required to perform a Biological Assessment or evaluation or consult with the Service. However, the Service recommends addressing potential impacts to these species in order to prevent future conflicts. Therefore, if early evaluation of the project indicates that it is likely to adversely impact a candidate species or species of concern, USDA may wish to request technical assistance from this office.

Your interest in endangered species is appreciated. The Service encourages USDA to investigate opportunities for incorporating conservation of threatened and endangered species into project planning processes as a means of complying with the Act. If you have questions regarding your responsibilities under the Act, please contact Stacy Sroufe at (503) 231-6179. All correspondence should include the above referenced file number. For questions regarding salmon and steelhead trout, please contact National Marine Fisheries Service, 525 NE Oregon Street, Suite 500, Portland, Oregon 97232, (503) 230-5400.

Sincerely,



for

Kemper M. McMaster
State Supervisor

Attachments
1-7-03-SP-044

cc: OFWO-ES
ODFW (nongame)

ATTACHMENT B

FEDERAL AGENCIES RESPONSIBILITIES UNDER SECTION 7(a) and (c)
OF THE ENDANGERED SPECIES ACT

SECTION 7(a)-Consultation/Conference

Requires:

- 1) Federal agencies to utilize their authorities to carry out programs to conserve endangered and threatened species;
- 2) Consultation with FWS when a Federal action may affect a listed endangered or threatened species to insure that any action authorized, funded or carried out by a Federal agency is not likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of Critical Habitat. The process is initiated by the Federal agency after they have determined if their action may affect (adversely or beneficially) a listed species; and
- 3) Conference with FWS when a Federal action is likely to jeopardize the continued existence of a proposed species or result in destruction or adverse modification of proposed Critical Habitat.

SECTION 7(c)-Biological Assessment for Major Construction Projects¹

Requires Federal agencies or their designees to prepare a Biological Assessment (BA) for construction projects only. The purpose of the BA is to identify proposed and/or listed species which are/is likely to be affected by a construction project. The process is initiated by a Federal agency in requesting a list of proposed and listed threatened and endangered species (list attached). The BA should be completed within 180 days after its initiation (or within such a time period as is mutually agreeable). If the BA is not initiated within 90 days of receipt of the species list, the accuracy of the species list should be informally verified with our Service. No irreversible commitment of resources is to be made during the BA process which would foreclose reasonable and prudent alternatives to protect endangered species. Planning, design, and administrative actions may be taken; however, no construction may begin.

To complete the BA, your agency or its designee should: (1) conduct an on-site inspection of the area to be affected by the proposal which may include a detailed survey of the area to determine if the species is present and whether suitable habitat exists for either expanding the existing population or for potential reintroduction of the species; (2) review literature and scientific data to determine species distribution, habitat needs, and other biological requirements; (3) interview experts including those within FWS, National Marine Fisheries Service, State conservation departments, universities, and others who may have data not yet published in scientific literature; (4) review and analyze the effects of the proposal on the species in terms of individuals and populations, including consideration of cumulative effects of the proposal on the species and its habitat; (5) analyze alternative actions that may provide conservation measures and (6) prepare a report documenting the results, including a discussion of study methods used, any problems encountered, and other relevant information. The BA should conclude whether or not a listed species will be affected. Upon completion, the report should be forwarded to our Portland Office.

¹A construction project (or other undertaking having similar physical impacts) which is a major Federal action significantly affecting the quality of the human environment as referred to in NEPA (42 U.S.C. 4332. (2)c). On projects other than construction, it is suggested that a biological evaluation similar to the biological assessment be undertaken to conserve species influenced by the Endangered Species Act.

FEDERALLY LISTED AND PROPOSED ENDANGERED AND THREATENED SPECIES,
 CANDIDATE SPECIES AND SPECIES OF CONCERN THAT MAY OCCUR WITHIN THE
 AREA OF THE FISHER, LINCOLN COUNTY GYPSY MOTH PROJECT
 1-7-03-SP-044

LISTED SPECIES^{1/}Birds

Marbled murrelet ^{2/}	<i>Brachyramphus marmoratus</i>	CH T
Bald eagle ^{3/}	<i>Haliaeetus leucocephalus</i>	T
Northern spotted owl ^{4/}	<i>Strix occidentalis caurina</i>	CH T

Fish

Coho salmon (Oregon Coast) ^{5/}	<i>Oncorhynchus kisutch</i>	**T
--	-----------------------------	-----

PROPOSED SPECIES

None

CANDIDATE SPECIESFish

Steelhead (Oregon Coast) ^{6/}	<i>Oncorhynchus mykiss</i>	**CF
--	----------------------------	------

SPECIES OF CONCERNMammals

White-footed vole	<i>Arborimus albipes</i>
Red tree vole	<i>Arborimus longicaudus</i>
Pacific western big-eared bat	<i>Corynorhinus (=Plecotus) townsendii townsendii</i>
Silver-haired bat	<i>Lasionycteris noctivagans</i>
Pacific fisher	<i>Martes pennanti pacifica</i>
Long-eared myotis (bat)	<i>Myotis evotis</i>
Fringed myotis (bat)	<i>Myotis thysanodes</i>
Long-legged myotis (bat)	<i>Myotis volans</i>
Yuma myotis (bat)	<i>Myotis yumanensis</i>

Birds

Band-tailed pigeon	<i>Columba fasciata</i>
Olive-sided flycatcher	<i>Contopus cooperi (=borealis)</i>

Mountain quail
Purple martin

Oreortyx pictus
Progne subis

Amphibians and Reptiles

Tailed frog
Northern red-legged frog
Southern torrent salamander

Ascaphus truei
Rana aurora aurora
Rhyacotriton variegatus

Fish

Pacific lamprey
Coastal cutthroat trout (Oregon Coast)

Lampetra tridentata
Oncorhynchus clarki clarki

Invertebrates

caddisfly (no common name)
Roth's blind ground beetle

Lepania cascada
Pterostichus rothi

Plants

Queen-of-the-forest
Moss

Filipendula occidentalis
Limbella fryei

(E) - Listed Endangered

(PE) - Proposed Endangered

(S) - Suspected

(T) - Listed Threatened

(PT) - Proposed Threatened

(D) - Documented

(CH) - Critical Habitat has been designated for this species

(PCH) - Critical Habitat has been proposed for this species

Species of Concern - Taxa whose conservation status is of concern to the Service (many previously known as Category 2 candidates), but for which further information is still needed.

(CF) - Candidate: National Marine Fisheries Service designation for any species being considered by the Secretary for listing for endangered or threatened species, but not yet the subject of a proposed rule.

** Consultation with National Marine Fisheries Service may be required.

^{1/} U. S. Department of Interior, Fish and Wildlife Service, October 31, 2000, Endangered and Threatened Wildlife and Plants, 50 CFR 17.11 and 17.12

^{2/} Federal Register Vol. 57, No. 45328, October 01, 1992, Final Rule - Marbled Murrelet

^{3/} Federal Register Vol. 60, No. 133, July 12, 1995 - Final Rule - Bald Eagle

^{4/} Federal Register Vol. 57, No. 10, January 15, 1992, Final Rule-Critical Habitat for the Northern Spotted Owl

^{5/} Federal Register Vol. 63, No. 153, August 10, 1998, Final Rule-Oregon Coast Coho Salmon

^{6/} Federal Register Vol. 63, No. 53, March 19, 1998, Final Rule-West Coast Steelhead



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
525 NE Oregon Street
PORTLAND, OREGON 97232-2737

Refer to:
OHB2002-0281-SL

November 22, 2002

Barry Bai, Ph.D.
Oregon Department of Agriculture
635 Capitol Street NE
Salem, Oregon 97301-2532

Re: Species List Request for Gypsy Month Eradication Project, Yachats River Basin, Lincoln County, Oregon.

Dear Dr. Bai:

The National Marine Fisheries Service (NOAA Fisheries) received your letter requesting a list of threatened and endangered species for the proposed action located in Lincoln County, Oregon, on October 31, 2002. We have enclosed a list of all anadromous salmonid fishes within Oregon under NOAA Fisheries' jurisdiction that are listed as endangered, threatened, or as a candidate species for listing under the Endangered Species Act (ESA) (Enclosure 1). Please contact the U.S. Fish and Wildlife Service regarding the presence of species falling under its jurisdiction.

Available information indicates that one listed anadromous fish species, Oregon Coast coho salmon (*Oncorhynchus kisutch*), may be present in the proposed action area.

This letter constitutes the required notification of the presence of a Federally-listed threatened or endangered species or critical habitat under NOAA Fisheries' jurisdiction in the area that may be affected by the proposed project (Appendix A to Part 330, section C.13(5)(I)).

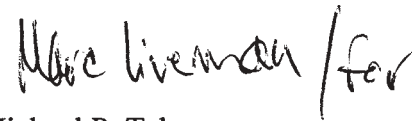
Please refer to section 7 of the ESA and its implementing regulations (50 CFR Part 402) for information on the consultation process. Additional information on listed species' distribution, copies of Federal Register documents designating listed species status, and links to various ESA consultation policies and tools may be found on our web site at: www.nwr.noaa.gov.

In addition, the Pacific Fisheries Management Council, which was established under the Magnuson-Stevens Act, has described and identified essential fish habitat (EFH) in each of its fisheries management plans. EFH includes "those waters and substrates necessary to fish for spawning, breeding, feeding, or growth to maturity." All habitat in the Yachats River basin that was historically accessible to coho and chinook salmon is designated EFH.



Please direct any questions regarding this letter to Rob Markle of my staff in the Oregon Habitat Branch at 503.230.5419.

Sincerely,

A handwritten signature in black ink that reads "Mike Tehan / for". The signature is written in a cursive, slightly slanted style.

Michael P. Tehan
Chief, Oregon Habitat Branch
Habitat Conservation Division

Enclosure (1)

Endangered, Threatened and Candidate Pacific Salmon Under NOAA Fisheries' Jurisdiction in Oregon

Endangered, Threatened, and Candidate Pacific Salmon Under NOAA Fisheries' Jurisdiction in Oregon

Evolutionarily Significant Unit	Final Rule E = Endangered T = Threatened C = Candidate	Critical habitat (Final Rule)	Protective Regulations (Final Rule)
Upper Columbia River Spring Chinook Salmon	E: March 24, 1999; 64 FR 14308	N/A	ESA section 9 applies
Snake River Fall Chinook Salmon	T: April 22, 1992; 57 FR 14653	December 28, 1993; 58 FR 68543	April 22, 1992; 57 FR 14653
Snake River Spring/Summer Chinook Salmon	T: April 22, 1992; 57 FR 14653	October 25, 1999; 64 FR 57399	April 22, 1992; 57 FR 14653
Upper Willamette River Chinook Salmon	T: March 24, 1999; 64 FR 14308	N/A	July 10, 2000; 65 FR 42422
Lower Columbia River Chinook Salmon	T: March 24, 1999; 64 FR 14308	N/A	July 10, 2000; 65 FR 42422
Snake River Basin Steelhead	T: August 18, 1997; 62 FR 43937	N/A	July 10, 2000; 65 FR 42422
Middle Columbia River Steelhead	T: March 25, 1999; 64 FR 14517	N/A	July 10, 2000; 65 FR 42422
Upper Willamette River Steelhead	T: March 25, 1999; 64 FR 14517	N/A	July 10, 2000; 65 FR 42422
Lower Columbia River Steelhead	T: March 19, 1998; 63 FR 13347	N/A	July 10, 2000; 65 FR 42422
Oregon Coast Steelhead	C: March 19, 1998; 63 FR 13347	N/A	N/A
Upper Columbia River Steelhead	E: August 18, 1997; 62 FR 43937	N/A	ESA section 9 applies
Oregon Coast Coho Salmon	T: August 10, 1998; 63 FR 42587	N/A	July 10, 2000; 65 FR 42422
S. Oregon/Northern California Coasts Coho Salmon	T: May 6, 1997; 62 FR 24588	May 5, 1999; 64 FR 24049	July 18, 1997; 62 FR 38479
Lower Columbia River/SW Washington Coho Salmon	C: July 25, 1995; 60 FR 38011	N/A	N/A
Columbia River Chum Salmon	T: March 25, 1999; 64 FR 14508	N/A	July 10, 2000; 65 FR 42422
Snake River Sockeye Salmon	E: November 20, 1991; 56 FR 58619	December 28, 1993; 58 FR 68543	ESA section 9 applies

November 5, 2002

Barry—

Just a note to go with the attached map.

The blue circle is a northern spotted owl nest location.

The black triangles are occupied marbled murrelet sites.

The green is mature conifer dominated stands (i.e. greater than 18 inch DBH and more than 50% conifer) that are considered suitable habitat for marbled murrelets and northern spotted owls.

The gray shaded area represents the zone in which all mature habitat is considered suitable habitat for bald eagles due to its proximity to fishable water bodies.

Hope this helps,

A handwritten signature in black ink, appearing to read "Carl". The signature is stylized with a large, looped 'C' and a horizontal line underneath.

Carl R. Frounfelker
Siuslaw Forest Wildlife Biologist

Appendix D. Public Information Meeting Notice Published in Local Newspapers

Published in:

Midvalley Sunday, Feb. 2 & Feb. 9, 2003

Lincoln County News, Feb. 5 & Feb. 12, 2003

Newport News-Times, Feb. 5 & Feb. 7, 2003

Public Information Meeting

"The Gypsy Moth Problem"

Thursday, February 13, 2003
7:00 - 9:00 pm
Waldport Senior Center
265 Alsea Highway (near the fire station)
Waldport, OR 97394

The Oregon Department of Agriculture is proposing an eradication program for a gypsy moth infestation in the Fisher (Five Rivers) area of Lincoln Co. The department proposes three applications applied by helicopter of the biological insecticide *Bacillus thuringiensis var. kurstaki*, followed by an intensive pheromone trapping program to eradicate gypsy moth from the area. The area to be treated, in late April - May 2003 is approximately 706 acres centered roughly on the intersection of Five Rivers and E. Buck Creek Roads.

You are invited to attend this public information meeting to learn more about the gypsy moth and the proposed eradication program. For more information, contact **the Oregon Department of Agriculture: Kathleen Johnson, 1-800-525-0137, Bruce Pokarney, 503-986-4559, TTY (hearing impaired), 503-986-4762; or by email at gypsymoth@oda.state.or.us.**

Individuals with disabilities requiring accommodations at the public information meeting should contact Kathleen Johnson as soon as possible at the number above.

Appendix E. Written Comments Received on the Draft EA

X-Sender: forester@proaxis.com (Unverified)
Date: Mon, 03 Feb 2003 10:15:15 -0800
To: gypsymoth@oda.state.or.us
From: Steven Kadas <forester@proaxis.com>
Subject: comments re:eradication program for Fisher area

Kathleen J.R. Johnson
Oregon Dept. of Agriculture, Plant Division
635 Capitol Street NE
Salem, OR 97301-2532

Dear Kathleen,

I am writing to offer comments regarding the Gypsy Moth eradication program being considered for the Fisher area in Lincoln County. My occupation is Chief Forester for Thompson Timber Company, Corvallis, Oregon. Thompson Timber Company manages timberlands for Thompson Tree Farm, Inc., also of Corvallis. Thompson Tree Farm, Inc. owns 110 acres of timberland located on Cherry Creek, T14S, R9W, Section 31, which lies just outside the 706 acre eradication area of the project.

As a landowner with long-term interests in the area, we strongly support the decision to aeriaily apply Btk over the infestation area in order to eradicate Gypsy Moths.

Please let me know if I can be of service in any way to help with the implementation of the proposed action.

Respectfully,

Steven Kadas, Forester
Thompson Timber Co.

Subject: Five Rivers project
Date: Tue, 11 Feb 2003 10:02:05 -0800
From: "Newton, Michael" <Mike.Newton@orst.edu>
To: <bbuckley@fs.fed.us>
Cc: <gypsymoth@oda.state.or.us>

Dear Mr. Buckley:

Reference is made to the cooperative program to spray gypsy moth with b.t. on private land near Fisher, Oregon.

My family owns 65 acres in the middle of the project area, mostly in managed Douglas-fir forest cover. We are anxious to avoid an outbreak of any destructive exotic insect or disease in that vicinity, if for no other reason because the forest land in that area is some of the world's most productive land for growing Douglas-fir, which had unmatched properties for construction world-wide. This is not only a resource for our family, it is a critical resource for the country, and a source of employment for residents of the area.

My preference for treating the moth would be a product that provides better insurance of eradication that is usually provided by a biological product. Carbaryl is safe and effective. I understand that there are sentiments in the area in opposition to that, but having a totally effective treatment when an outbreak is young is a cardinal principle of integrated control.

Having said that, I do support the use of b.t. if that is the only option now available. It is clearly a more attractive option than not treating.

I believe it would be a serious error to fail to treat with an effective remedy once an outbreak of Gypsy moth is spotted.

Please ensure that there is follow-up observation to determine whether there are residual moths, and, if they are found to be present, plan for the use of an insecticide such as carbaryl, with b.t. in stream buffers, if there is to be a follow-up.

I offer the above suggestions from 45 years of experience at OSU dealing with environmental effects of pesticides and alternatives for dealing largely with vegetation. I am author of the EPA's *Silvicultural Chemicals and Protection of Water Quality*, Report 97/9-77-036, 224 pages, Seattle, and also of over 200 other publications dealing with pesticides and their long and short-term consequences. I remain active in this research on a full-time basis. I hope the above has some value for your program.

I do support the program, and appreciate the USFS and ODA being on the job to handle such emergencies.

Michael Newton, Professor Emeritus, Forest Ecology
OSU Department of Forest Science
• (Home 541-929-3074)

From: "Peter and Lorraine Karassik" <karassik@casco.net>
To: <kjohnson@oda.state.or.us>
Subject:
Date: Mon, 24 Feb 2003 11:36:25 -0800

This is in response to the presentation of the ODA in regard to the gypsy moth eradication proposal for 5 Rivers.

1. We want the gypsy moth eradication plan to meet the needs of the ODA and the community of Five Rivers .
2. The presentation led us to believe that this wasn't a proposal but a done deal-- therefore we felt disempowered and disrespected.
3. No alternatives seemed viable to the ODA.
4. If a spray product is used, we want a product that meets OMRI's list of accepted formulations which are in keeping with organic practices.
5. We object to a spray formulation being used that contains ingredients whose contents must remain unknown.
6. Foray 48 b's warning labels are troublesome. Ag use and forest use recommend the same concentrations of the same product. The ag use warning label warns not to use Foray 48b over water and to not allow people into the spray area for 12 hours after application. We want the precautionary principle followed which means when there is the presence of uncertainty and possible harm, you take precautionary measures. If Foray 48 b is used, we want the most stringent warnings of the manufacturer followed.
7. We would like to take part in any monitoring and trapping following possible spraying. We have a source of possible monies.
8. Since the meeting I have had contacts with Kathleen Johnson of the ODA and I feel some of our concerns and viewpoints are being heard. We hope that a solution to the gypsy moth problem is reached with the cooperation of the Five Rivers community and the ODA.
9. Please keep us informed about any actions, decisions, and cooperative solutions.
10. Thank you, Peter and Lorraine Karassik 1087 Buck Creek Rd.
Tidewater,Or. 97390 541-528-7192 karassik@casco.net

Date: Mon, 24 Feb 2003 22:17:48 -0800
From: Craig Harbison <charb@presys.com>
To: kjohnson@oda.state.or.us
Subject: Target area - Five Rivers

Recently our community in Five Rivers was notified by the USFS and the ODA as to the introduction of the gypsy moth into our area.

I think all parties concerned are aware of the potential gravity of a gypsy moth infestation. What I take issue with is the manner in which this situation has been addressed by the various agencies involved. Since our initial notification, many members of our community have submitted written comment and attended the meeting sponsored by the USFS and the ODA. Even if well intentioned, the presentation given was lacking in substantive responses to our concerns. In fact, the entire process has seemed perfunctory with the conclusion preordained..

Another galling aspect of this process is the pesticide being foisted on us. Although touted by government agencies as being "safe", I think there exists a long history in corporate America of agencies assuring the public that products are "safe." We need look no further than the tobacco industry. We want a product certified organic. We expect a product certified organic since it seems in the realm of possibility.

I would also echo other concerns expressed at the Waldport meeting. This is very much a community committed to organic farming practices (whether certified or not). Has this operation been truly evaluated as to its impact on the residents of Five Rivers? Has the targeted acreage been assessed realistically?

I would support the comments submitted to your office by Peter and Lorraine Karassik. I would like to add that this is an issue that concerns us all. We should be working in cooperation with each other, not at odds with each other. We are a formidable, eclectic group of people and not without resources.

Sincerely,
Mona Linstromberg
831 E. Buck Ck. Rd.
Tidewater, OR 97390
541-528-3512

Mailing address:
87140 Territorial Rd.
Veneta, OR 97487
541-935-2795



Oregon Tilth, Inc.

470 Lancaster Dr. NE • Salem, OR 97301 • Phone (503) 378-0690 Fax (503) 378-0809
Email: organic@tilth.org Web Site: www.tilth.org

February 24, 2003

Kathleen J. R. Johnson, Ph.D.
Insect Prevention and Management Program
Oregon Department of Agriculture
635 Capitol Street NE
Salem, OR 97301-2532

Dear Ms. Johnson,

Thank you for inviting Oregon Tilth, Inc. to comment on the draft Environmental Assessment Gypsy Moth Eradication Program Lincoln County January 27, 2003 received February 23, 2003. As you are aware, Oregon Tilth is the principle USDA-accredited organic certification agent operating in Oregon.

Although a biological agent such as *Bacillus thuringiensis* subsp. *kurstaki* is certainly a preferable choice of insecticide for the eradication effort, this draft fails to adequately assess the impact on organic gardens and perhaps organic farms present in the treatment and buffer areas.

The USDA National Organic Program 7CFR Part 205.601(m)(1) states that synthetic inert ingredients used with an active pesticide ingredient in organic production must appear on EPA List 4 – Inerts of Minimal Concern. This draft Environmental Assessment specifies the presence of organic sites and briefly describes inert ingredients in the proposed pesticide formulations but fails to distinguish either the synthetic/nonsynthetic status or the EPA List 3/EPA List 4 status of 'inert' ingredients in Foray 48B and Dipel 6AF.

Part 205.672(a) (and (b)) state that any harvested crop (or livestock) that has contact with a prohibited substance applied as the result of a Federal or State emergency pest treatment program cannot be represented as organically produced.

Until distinctions concerning inert ingredients are made, and compliance with the National Organic Program is confirmed, the recommended eradication strategy threatens to have negative social on people of Fisher, Oregon by depriving them of choice to grow and consume organically produced food and enjoy organically managed gardens.

If organic farms are present in the treatment or buffer areas, the negative impacts could expand to include economic threats to producers. Although the land would retain its organic status according to Part 205.672, treated crops could not be marketed as organic, perhaps resulting severe financial hardship for the affected producer.

I encourage the Oregon Department of Agriculture to resolve the issues surrounding pesticide 'inert' ingredients and organic gardens and farms prior to proceeding with the recommended eradication program.

Thank you for considering my comments and if I may be of further service, please do not hesitate to contact me at the phone number or address given above.

Sincerely,

P. Gonzalves

Pete Gonzalves
Executive Director

CAROL VAN STRUM
7493 East Five Rivers Road
Tidewater, Oregon 97390
(541) 528-7151

Date: February 24, 2003

To: Kathleen Johnson
ODA Plant Division

Fax #: (503) 986-4786

pp.: 10

Re: Comments on Draft Environmental Assessment, Gypsy Moth
Eradication Program, Lincoln County, January 27, 2003

A December 10, 2002 letter from Ed Becker of the Siuslaw National Forest informed us of this project and asked for our comments and site-specific concerns. Many Five Rivers residents, including myself, responded with serious questions and specific, detailed concerns about the project.

The draft EA acknowledges receipt of our comments (pp. 9-10), but except for that acknowledgment the EA nowhere addresses the concerns we raised. For example, my detailed January 1, 2003 comments are completely ignored in the draft EA; I attach them and hereby incorporate them in these comments. I strongly suggest that instead of copying and pasting most of its EA from an eight-year-old federal EIS, ODA and the Forest Service prepare a proper, site-specific EA for this project, addressing fully the site-specific concerns and alternatives raised by the public:

1. The draft EA does not state the cost of the proposed project, an omission that precludes meaningful comment and comparison of alternatives.
2. The draft EA does not state how much of the cost will be paid by the state of Oregon and how much by the federal government.
3. The draft EA nowhere explains the need to spray 705 acres aerially to eradicate gypsy moths found only in a single yard. It does not discuss any site-specific factors, or any other factors, to support this decision, precluding any meaningful comment and analysis of how this acreage figure was reached, the site-specific factors underlying it, and the site-specific basis on which the boundaries of the area were determined.
4. The only "alternatives" discussed in the draft EA are lifted wholesale from a 1995 federal EIS and include no site-specific alternatives whatsoever except a "no action" alternative. For

example, the draft EA nowhere discusses any treatment option other than the aerial spraying of 705 acres, omitting any other alternatives such as treatment only of the affected yard, outside of which no trace of gypsy moths were found. As spraying of the yard and its immediate vicinity could be accomplished with ground equipment, followed by the mass trapping already planned, this would obviously have the least environmental impact and be the cheapest and most efficient use of financial resources. The draft EA itself notes a number of successful gypsy moth eradication projects in Oregon with ground equipment on "small" infestations of four to twenty-two acres (see p. 3 of draft EA); certainly an infestation limited to a single yard warrants thorough consideration of the same alternative, particularly given current gross deficits in both state and federal budgets. Without any discussion of such site-specific alternatives, the draft EA defies meaningful comment and confirms the impression that the decision was made and finalized before any public comment was solicited.

5. By omitting any site-specific treatment/application alternatives, the draft EA also omits any discussion of the costs of such alternatives, making it impossible to compare such costs to the costs of the "preferred" project, the costs of which are also omitted. These omissions alone render the entire draft EA useless and public comment futile.

6. The treatment options in the draft EA are lifted wholesale from the 1995 federal EIS, omitting any site-specific or product-specific options suggested by our comments. For example, the draft EA adopts the Btk alternative, along with all discussions of environmental and human health impacts, from the 1995 EIS, which refers only to Btk itself, not to the specific product, Foray 48B, that the EA has chosen. There is no discussion whatsoever of the basis for choosing Foray 48B instead of any other Btk product, or of the environmental and human health impacts of Foray 48B compared to other Btk products. Totally ignoring our comments regarding unidentified ingredients in Foray 48B and our concerns about our surface water supplies and organic produce, meat, and eggs, the EA nowhere discusses alternative Btk products for which the ingredients are known or which are approved for use on organic produce. This failure also renders the entire draft EA useless and public comment futile.

7. The draft EA does not cite a single laboratory toxicity study of the effects of Foray 48B for its claims of safety to humans and the environment, relying almost exclusively on laboratory studies of pure Bt rather than of formulated products such as Foray 48B, which contains only 2 percent Bt. Indeed, the draft EA cites only a single laboratory study on any Bt product formulation, a 1972 acute toxicity study with Disparture conducted by Industrial Bio-Test Laboratories, a company notorious for wholesale fraud and falsification of toxicity tests, all of which were declared invalid by EPA and FDA; the directors of the company were convicted of fraud. Because even invalid and fraudulent

toxicity tests have been allowed to support EPA pesticide registrations, the courts have held repeatedly that an agency cannot rely on EPA registration as evidence of safety and must independently review and evaluate the toxicity of the specific product it intends to use. The draft EA nowhere indicates that even a superficial attempt has been made to review a single valid laboratory toxicity study of Foray 48B.

8. In spite of numerous comments regarding the impacts of Foray 48B spraying on farms growing organic (whether certified or not) produce, berries, fruit, eggs, and beef for sale, the draft EA nowhere discusses these concerns, nor does it reveal that Foray 48B is not included on the list of biological controls acceptable for organic produce by Oregon Tilth. The total failure to discuss these concerns, to consider the economic impacts on the population affected, or to discuss alternative products acceptable for organic uses, is an insult to the public comment process.

9. Similarly, in spite of comments regarding the safety of spraying Foray 48B directly into our domestic water supplies, which are almost all surface springs, the draft EIS dismisses such concerns with a cavalier reference to EPA registration, which as noted above does NOT guarantee safety. Particularly given the Foray 48B label's specific prohibition of applications to surface water, this dismissal of our concerns is unconscionable.

In summary, the draft EA reduces its purported alternatives to a choice between "no action" and its preferred option, as if no other treatment, application, or product alternatives existed. The comments we previously submitted in good faith certainly pointed to the existence of such alternatives, and the EA's failure to consider them renders the entire project suspect.

We do not want gypsy moths in our valley and we have genuinely attempted to participate meaningfully in ODA's project. The same cannot be said for ODA, which has totally ignored our concerns in this draft EA. Should ODA proceed with its preferred option it should not expect cooperation in this or future projects from the people it has insulted and dismissed as negligible.

Sincerely,



Carol Van Strum
attachment

CAROL VAN STRUM
7493 East Five Rivers Road
Tidewater, Oregon 97390
(541) 528-7151

January 1, 2003

U.S. Forest Service
South Zone Ranger District
4480 Hwy 101, Bldg G
Florence, Oregon 97439

Attn: Gypsy Moth Eradication Project

Re: December 10, 2002 notice
File Code: 1950

COMMENTS ON DECEMBER 10, 2002 NOTICE LETTER

Because the above-referenced letter does not provide enough information upon which to base meaningful comments, I have filed a December 30, 2002 Freedom of Information Act request (attached) in order to obtain the necessary information. The FOIA request also seeks information concerning contracts and agreements with spray manufacturers, suppliers, and applicators, in order to determine whether the decision to spray was made prior to any environmental assessment being made, as is strongly suggested by the December 10 letter's statement that the Forest Service is requesting an exemption from stay on appeal.

Whether or not the decision to spray predates any environmental assessment, I expect the information requested in the attached FOIA request, and answers to further questions raised in these comments, to be provided to us as well as a draft environmental impact statement, in order for us to comment meaningfully on the need for and environmental impacts of the proposed project before a final decision on the project is made and a final environmental impact statement published.

The following information and answers must be provided before meaningful public comment is sought:

1. The letter does not provide enough information to determine the need for the project

The December 10, 2002 letter does not identify where in the "analysis" area traps were located, in which traps and locations no gypsy moths, eggs, or larvae were found, or in which specific location[s] and traps any gypsy moths, eggs, or larvae were found; nor does it specify how many gypsy moths and/or egg masses were found, and where. According to the owner of the property in-

volved, the only egg masses found were located on a van that had traveled here in late 2000 from New York state, and on buildings next to the van; the only gypsy moths found were three males, which were also in the immediate area surrounding the van, the farthest being found at the mailbox.

If these were indeed the only egg masses or adult moths found, there is strong reason to question the proposed spraying of over 700 acres, as according to USDA literature, female gypsy moths do not fly and so lay their eggs close to the place where they issued as moths. If no egg masses were found outside the immediate vicinity of the van from N.Y. that apparently introduced them, it would be reasonable to assume the infestation to be localized to that immediate area, and the Forest Service must explain in detail why the aerial spraying of private homes, gardens, surface water supplies, livestock, salmon-bearing creeks, wildlife, and orchards over more than a full square mile is necessary.

Without specifying the exact location of each moth and egg mass found, the December 10, 2002 letter does not provide enough information for meaningful public comment on the necessity of the project. This information must be disclosed before any public comment period for the project is closed, and sufficient time allowed for public investigation and understanding of the proposed project and alternative options to it.

2. The December 10 letter's failure to identify the components and/or ingredients of Foray 48B precludes any meaningful comment

Because the letter does not identify all components of the product it apparently intends to spray (Foray 48B, identified only in the attached "Oregon Health Division's 2001 Btk Fact Sheet"), and because the unreferenced laboratory studies discussed in the attachment were conducted on Btk alone, not on the complex mixture of "inert" ingredients, stickers, binders, contaminants, preservatives, and other components in combination with Btk in the formulated product, the Forest Service must disclose fully the identity of each and every component of the product it intends to spray. The Forest Service must also determine what break-down products are likely to form from each component and from the combination of components, and determine the toxicity and environmental persistence of each component and break-down product as well as of the entire mixture.

Without such information on the identity, toxicity, and persistence of all components of the product, it is impossible to assess potential impacts on wildlife, livestock, fish, humans, or water quality. Because the project intends to spray our water supplies, most of which are open surface springs, as well as our livestock, gardens, pastures, and homes, the Forest Service cannot even pretend to assess its impacts without first identifying all the components of the proposed product and determining

the toxicity and persistence of each component, of any and all breakdown products, and of the total mixture.

In this regard, the Forest Service must recognize that most if not all residents of the "analysis area" cut firewood from the area, stack it, and burn it for heat and/or cooking. The identity of all components and breakdown products of the intended spray is crucial to understanding whether any toxic materials such as dioxins, benzopyrenes, etc., will be formed by the burning of the sprayed wood.

The Forest Service must disclose the above information in order for the public, and in particular the residents it intends to spray, to provide meaningful comment. Because it intends to spray directly both private property and surface water supplies as well as salmon-spawning streams, any trade-secret status afforded the manufacturer of the intended product is far outweighed by the public's need to know and comment on this government project. If the manufacturer refuses to allow such disclosure, the Forest Service must pursue other alternatives to this project.

3. The notice letter fails to identify cumulative impacts of this project upon residual effects of prior Forest Service activities in the same area

The December 10, 2002 notice letter presents this project as if it were to be carried out in a pristine landscape without any prior contamination that could interact with the Foray 48B spray. This implication is misleading to the point of deliberate deception. The Forest Service of all agencies knows, or should know -- and the residents of Five Rivers have not forgotten -- the damage inflicted by the Forest Service in the past.

During the 1970s, the Forest Service aerially sprayed dioxin-contaminated herbicides over most of the federal land included in the present project. As the Forest Service's own studies amply demonstrated (see Forest Service documents submitted in *CATS v. Berglund*; U.S.E.P.A., In re: The Dow Chemical Company, et al, docket no.s 415 et al; and the U.S. Forest Service's own 1978 "Final Environmental Statement: Vegetation Management With Herbicides, Pacific Northwest Region"), this spraying resulted in high dioxin levels (2,3,7,8-tetrachloro-dibenzo-p-dioxin, the most toxic synthetic substance known) in wildlife and drinking water sediments in Five Rivers, muscle and fat tissue in deer and elk, and human tissue from a local baby born without a brain.

The associated health problems of residents and their livestock were well documented in the above-mentioned court proceedings, including cancers, heart attacks at a young age, spontaneous abortions, grossly deformed infants, both human and animal, stillbirths, uterine hemorrhaging, and increased susceptibility to diseases such as meningitis. Even four years after EPA's 1979 emergency suspensions of 2,4,5-T and 2,4,5-TP, EPA found that

dioxin levels in Five Rivers stream sediments had increased four-fold, apparently from spray residues continuing to seep into creeks from throughout the watershed.

Dioxin's profound effects on the immune system are well known and well documented, as are its association with a broad range of cancers, heart and circulatory system damage, and reproductive problems (see, e.g., U.S. EPA's ongoing "Health Assessment Document for 2,3,7,8-Tetrachlorodibenzo-p-Dioxin (TCDD) and Related Compounds). Dioxin's extreme persistence in the environment is measured in decades or even centuries, particularly in soil and stream sediments. In assessing the impacts of its new spray plan, the Forest Service cannot ignore the dioxin residues left by its own prior activities in Five Rivers. A responsible assessment must include the following:

- a. Determine by independent analyses by at least two laboratories the current levels of 2,3,7,8-TCDD and other dioxins in water supply sediments, stream sediments, soil, wildlife, fish, livestock, and human samples from the analysis area described in the December 10, 2002 letter;
- b. Determine what health effects associated with dioxin exposure still exist in both animals and humans in the analysis area, using the U.S. EPA and Department of Veterans Affairs compilations of health effects associated with dioxin;
- c. Determine through published, peer-reviewed literature and/or independent contractor research what impacts the current spray project, including each component of the proposed spray product as well as the formulated product, may have on a population (human, animal, and fish) already affected by prior dioxin exposure;
- d. Determine what additive or synergistic effects each component of the proposed spray product, as well as the formulated product, may have with such dioxin residues as remain in the environment of the analysis area.

As none of the unreferenced studies discussed in the fact sheet attached to the December 10, 2002 letter appear to have reported on populations previously exposed to dioxin, they are irrelevant to the dioxin-exposed population and environment that the Forest Service intends to spray here. Until the Forest Service fully investigates and discloses the dioxin assessment described above, it cannot begin to assess the impacts of its current proposal.

4. The December 10, 2002 letter provides no information at all on possible effects of the project on non-target species

It is impossible to comment on a proposal that does not even mention the impacts of the project on non-target species. The

Forest Service blatantly omits such information in its notice. Instead, by attaching a fact sheet pertaining only to human health, the Forest Service clearly implies that no other organisms will be affected, which is patently false and misleading. The fact sheet itself reads more like a manufacturer's promotional flyer than a factual document, deliberately confusing Btk with a product that is 97.9 percent something else, and extolling the safety of it while evading liability with advice to avoid exposure. Nowhere does this alleged fact sheet advise on how livestock or wildlife should avoid exposure, however. For example, we are entrusted with the care of a valuable thoroughbred horse that has emphysema and cannot be confined in a barn without collapsing from breathing dust; how can such an animal "avoid exposure" from aerial sprays? What about our chickens, which eat green vegetation all day? Can the Forest Service honestly say this spray will not injure them or contaminate the eggs we sell? Has the Forest Service even considered what impacts its spraying will have on animals and other non-target species?

It certainly doesn't appear so. Btk is deadly to the instars of all butterflies and moths at several stages of development, and the Forest Service letter nowhere addresses the widespread impact its aerial applications of Btk products will have on all lepidoptera species in the area. The Forest Service must assess and disclose what endangered lepidoptera or other insect species in the area may be affected. The Forest Service must also fully explore the economic and ecological impacts of Btk killing populations of beneficial insects important to the area as pollinators and/or weed controls. The December 10 letter gives no indication whatsoever that the Forest Service has done so, and its failure raises serious questions about the agency's haste to implement the project.

The issue of beneficial insects is particularly sensitive in Five Rivers, where the cinnabar moth was introduced in 1976 to control tansy ragwort. Until that time, tansy ragwort, a non-native, toxic weed deadly to livestock and wildlife, had spread rampant over clearcuts, roadsides, pastures, and every patch of clear ground throughout the area, growing so densely it choked out all else. In 1976, the USDA Extension Service obtained several thousand cinnabar moth larvae for release in the valley; it was four or five years before they had a noticeable effect, but that effect was dramatic indeed: suddenly, every tansy plant in the area was covered with cinnabar caterpillars, which ate the plants to bare stalks every spring, and summer brought huge clouds of cinnabar moths everywhere. Within a few years, tansy ragwort had all but disappeared from the landscape, and so had most of the cinnabar moths. Since the early 1980s, a delicate balance has been achieved, with a surge in tansy ragwort plants one year followed by surges in cinnabar moth populations the following two years.

Because cinnabar moth caterpillars develop at roughly the same time and rate as gypsy moth larvae, they would inevitably be

killed by Btk applications during that susceptible period. It is therefore imperative that the Forest Service examine the ecological and economic impacts of killing the only effective control of tansy ragwort over more than a square mile of mostly private lands that include pastures, hay fields, and orchards where tansy ragwort was formerly a severe and often fatal problem. What would be the economic impact of a tansy ragwort explosion and resultant loss of both livestock and of marketable hay? How many years will it take to re-establish the cinnabar moth population to effective levels? These are vital questions to those of us who raise livestock and grow hay both as feed and to sell; the Forest Service must address these questions in proposing to spray so large an area of private land when the gypsy moth "infestation" is limited to only one small parcel.

5. The December 10, 2002 letter does not mention impacts on water quality

In addition to the questions of bacteriological and chemical contamination, our surface domestic water supplies as well as our creeks and streams are especially vulnerable to the large numbers of butterfly and moth larvae likely to be killed by the Forest Service applications. Speaking from first-hand experience with how even the small body of a single dead mouse or newt can befoul an entire water system, I do not think the prospect of hundreds or even thousands of caterpillar corpses decomposing in our household spring and the watercourses that feed it is a negligible concern. The Forest Service must consider what pathogens may develop in the decomposing bodies of a broad spectrum of caterpillar species ending up in our domestic water supplies and creeks, and what effects such pathogens could have on the health of our families, livestock, and fish.

6. The Forest Service has failed to consider any alternatives other than the plan presented in the December 10, 2002 notice

The December 10 notice letter nowhere discusses the possibility of any options other than blanket aerial spraying of more than 700 acres to control an "infestation" consisting of three gypsy moths and several egg masses found on a single vehicle and the yard immediately adjacent to it. The total failure of the Forest Service to consider any alternatives other than massive aerial spraying to control such a miniscule, limited "infestation" makes mockery of the public comment process by implying that no other options are available.

The December 10 presentation of the project as a "done deal" with no alternatives raises valid questions about the need for the program and the motives behind it. For example, if such a limited infestation could be cheaply controlled by hand-spraying of the yard and buildings where the egg masses occurred, why is the Forest Service spending hundreds of dollars per minute to aeri-ally spray more than a square mile area? How would the costs

of manual spraying of a single yard compare to the costs of this project? Could it be that the bureaucracy has funding that will not be renewed if it isn't spent? Is this yet another example of profligate waste of our tax money, akin to the Pentagon's 600-dollar toilet seat and 400-dollar hammer?

These are valid questions. In its failure to consider alternatives to this plan, the Forest Service denies the public any opportunity to evaluate and compare the costs, effectiveness, and impacts of its proposal to the costs, effectiveness, and impacts of other options.

In summary, the Forest Service has failed utterly to present enough information for the public, or anyone else, to meaningfully evaluate and comment upon either the need for this project or the costs, effectiveness, and impacts of this project compared to alternative actions. The December 10, 2002 notice letter appears therefore to be no more than a hastily drawn sham to meet public notice and comment requirements for a decision already made. As such, the letter is a blatant insult to anyone with valid comments, as well as to taxpayers who will unwittingly fund this wasteful, overblown response to a tiny, easily controlled problem. I strongly suggest that the Forest Service take an honest hard look at the need for this project, fully examine other alternatives, and present the public with valid information upon which to comment, before plunging blindly ahead with what appears to be an ill-conceived project in total disregard for its consequences.

The Forest Service needs, perhaps, to be reminded that the people of Five Rivers have been grossly betrayed and seriously damaged by the agency's actions in the recent past. The Forest Service's arrogant refusal to determine the effects of its dioxin-contaminated herbicides on human health or to examine alternatives to their use led to our landmark *CATS v. Berglund* court decision and ultimately to the EPA emergency suspension and final cancellation orders permanently banning production and use of the same chemicals. Throughout those years of litigation, the Forest Service adamantly maintained that their herbicides were absolutely safe and that the forests would die without them. The Forest Service's promotion of its current project echoes too eerily the lies of yesteryear, and I strongly urge the agency not to make the same mistakes again.

Sincerely,

Carol Van Strum