Environmental Assessment

Gypsy Moth Eradication Program

Southeast Eugene, Lane County

April 9, 2009

Joint lead agencies	USDA, Animal and Plant Health Inspection Service Oregon Department of Agriculture
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A. Purpose and need for action

1. Decisions to be made and scope of analysis

Decisions

The Oregon Department of Agriculture (ODA), in cooperation with US Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), proposes to eradicate a gypsy moth infestation in Lane County, Oregon. At this time funding for this program is pending. There is nothing new in this Environmental Assessment (EA) 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. A draft supplement to the EIS is now completed, and has been made available for public comment and is in the process of being finalized. It can be found on-line at http://na.fs.fed.us/pubs/detail.cfm?id=8523. This EA has been prepared consistent with the National Environmental Policy Act of 1969 (NEPA) and APHIS' implementing procedures (7 Code of Federal Regulations (CFR) part 372) for the purpose of evaluating how the proposed action, if implemented, may affect the quality of the human environment. 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 EA 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 and the USDA APHIS in Portland. 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 gypsy moth 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.

Biology of gypsy moth

Gypsy moth, *Lymantria dispar* L., is one of the most damaging pests of trees 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. The gypsy moth has spread relentlessly and now covers the entire northeastern part of the United States from Maine south to North Carolina and west to Illinois and Wisconsin. Outbreaks of gypsy moth caterpillars can alter ecosystems. Defoliation of trees and plants as a result of caterpillar feeding can alter wildlife habitat, change water quality, reduce property and esthetic values, and reduce the recreational value of forests. Heavy gypsy moth infestations not only cause defoliation and mortality, but defoliated trees are more susceptible to attack by other insects and diseases that may kill them. When present in large numbers, gypsy moth caterpillars can be a hazard to human health and safety and disrupt people's lives, as well as be a nuisance (USDA 1995, EIS pp. 1-4).

Gypsy moths are notorious hitchhikers. Egg masses and pupae can be transported on nursery stock and Christmas trees, but can also be attached to other substrates

such as vehicles, camping equipment, and outdoor household articles that people bring with them when they come to Oregon. The wide host plant range of gypsy moth would allow it 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 then in many different isolated locations. These have been primarily in western Oregon, but recently it was found east of the Cascades mountain range in Bend (Deschutes County), Wasco (Sherman County), and Baker City (Baker County).

Two strains of gypsy moth now threaten Oregon: European gypsy moth (also known as the North American gypsy moth) and Asian gypsy moth. Asian gypsy moths are a strain of the same species that come from eastern Russia and Asia. The two strains look very similar; they cannot be reliably separated by visual examination. Scientists have developed genetic tests to distinguish one strain from the other (Garner and Slavicek 1996). However, the Asian gene markers in these tests are also present at low frequencies in established gypsy moth populations in eastern North America (Bogdanowicz et al. 1997). These genetic results indicate that hybridization between the two strains is likely and that the hybrids may pose an equal threat to Oregon. Gypsy moths introduced into Oregon from Europe or eastern North America are referred to simply as gypsy moths in this document.

Female Asian gypsy moths differ from European females because they can fly long distances, whereas North American females cannot fly. The Asian strain also feeds on a more extensive range of host trees, including some (e.g., larch) that are not favored by the North American strain. Asian gypsy moth caterpillars also develop more quickly and are larger than their North American counterparts.

Asian gypsy moth egg masses have been transported to Oregon on ships. As trade with east Asia continues to expand, containers and products from that part of the world will present an ever increasing risk of introduction. Asian gypsy moths may also reach Oregon via Europe. They have become established in Germany and other European countries where they are hybridizing with European gypsy moths.

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 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 that were apparently hybrids (North Carolina Department of Agriculture 1994).

History of gypsy moth infestations in Oregon

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.

The first gypsy moth in Oregon was trapped in 1979 in Lake Oswego, Clackamas County. Follow-up trapping indicated that the infestation did not become established. However, in the early 1980's detection programs revealed established gypsy moth infestations 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 1984 in Lane County. Traps in Eugene and Lowell caught large numbers of male moths in the summer of that year. Trapping densities were then increased and over 19,000 male gypsy moths were collected from a 355 square mile area. 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, followed by 7,135 acres in 1987, and 2,995 acres in 1988 -- all with *B.t.k.* Aerial treatments consisted of three applications each year. Following the 1988 spring treatment, delimitation trapping caught only 1 moth. The total cost of detection, eradication, and trapping for Lane County from 1984 to 1989 was estimated to be $18 million.

Two moths were subsequently caught in the Eugene/Springfield area in 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 were caught in Lane County in 1992 and no eradication programs were required from 1989 through 1994. However, in 1995 an 80-acre aerial spray program using *B.t.k.* was conducted to eradicate a breeding population in Veneta (Lane County). The program was a success. In 1995 three moths were trapped at another site near Dorena Lake and Schwarz Park (in Lane County) and 34 moths were trapped in 1996. This resulted in the smallest gypsy moth aerial spray program ever conducted in Oregon. Seventy acres were aerially sprayed with *B.t.k.* in the spring of 1997. In 2004, 183 acres were treated by air with *B.t.k.* in the south hills of Eugene to eradicate an infestation. Subsequent trapping indicated that the eradication effort was a success.

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. The area was inundated with sterile insects in an attempt to 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. Small 4-acre areas were treated with ground applications of *B.t.k.* in Lake Oswego in 1989 and 1991.

Another large eradication program in the state was completed in 1992 on 8,388 acres in North Portland. Ships that had visited Russian ports brought the Asian gypsy moth to Oregon via the Columbia River. *B.t.k.*, applied by helicopter, was used to eradicate the subsequent infestation. A second Asian gypsy moth infestation was successfully eradicated in 2001 in Portland's Forest Park. This treatment consisted of an aerial application of *B.t.k.* over 910 acres. More recently, 640 acres were treated in the spring of 2007 in St. Helens (west of Portland) for a single, large Asian gypsy moth that was caught in the summer of 2006. No Asian gypsy moths were caught there in 2007 or 2008.

Eradication programs for the North American gypsy moth were also 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 and 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 re-treated in 1999, although the eradication boundary was shifted slightly. Additional trap catches of 19 gypsy moths in the summer of 1998 on both sides of the eastern spray boundary indicated that another treatment was necessary. All of these programs utilized ground applications of *B.t.k.* (because of the small areas and easy access) followed by mass trapping. In 2004, a gypsy moth infestation was found at a commercial nursery in Eagle Creek, Clackamas County. Infested spruce nursery stocks had been imported from Ontario, Canada. Three aerial applications of *B.t.k.* over 268 acres successfully eradicated this infestation in 2005.

Infestations have also been eradicated in other parts of the state. Gypsy moth was successfully eradicated in Josephine County in 1988 and 1992 at two small sites. Other eradication programs were successfully conducted in Benton County in 1993 (440 acres near Philomath), Clackamas County in 1994 (270 acres near Carver), and Lincoln County in 2003 (706 acres near Fisher). All of the treatments included the use of helicopters to apply *B.t.k.* Three infestations of gypsy moth have been treated in Jackson County. In 1995 a small infestation in Jackson County was ground-sprayed with *B.t.k.* In 2001, 160 acres were aerially treated with *B.t.k.* in Ashland. Last year (2008) 336 acres in Shady Cove were sprayed with *B.t.k.* by helicopter to eradicate a gypsy moth infestation.

The first central Oregon eradication program was carried out in Deschutes County in spring 2007. Three aerial treatments of *B.t.k.* were applied to 533 acres in Bend. The source of this gypsy moth infestation was an eBay purchase of Chevy car parts (vintage 1967) that were shipped from Connecticut to Bend in January 2005. No additional moths were caught in 2007 or 2008; the gypsy moth has been eradicated.

For a review of gypsy moth detection and eradication programs in Oregon from 1979 through 1988, see Oregon Department of Agriculture (1989) and Oregon Department of Agriculture Plant Division Annual Reports (1995-2007). Hitchhiking gypsy moths will continue to be introduced into Oregon and other non-infested western states. With continual introductions via commercial trade and a mobile human population, the probability of gypsy moths becoming permanently established in Oregon and in the West is increasing. However, until that happens eradication of all isolated infestations that result from accidental introductions will continue to be the goal of the U.S. Department of Agriculture and the Oregon Department of Agriculture.

2. Proposed action

Proposed action: Eradication

The proposed action is eradication, which conforms to the EIS recommendation to eradicate isolated infestations found in the western United States. The EIS proposes alternative actions that include eradication, slow the spread, suppression, and no action. These alternatives are based on the known geographical distribution of the gypsy moth in the continental United States.

Gypsy moth distribution and abundance in the continental United States is described as follows: a) the area of the United States where the European strain of the gypsy moth is established is called the generally infested area b) a 50-100 mile band adjacent to this area is called the transition area, where the gypsy moth is spreading from the generally infested area c) the area where the gypsy moth is

not established is called the uninfested area. Isolated infestations resulting from accidental spread of the gypsy moth are found in this area. Different management strategies are carried out in each of these three areas: suppression in the generally infested area, slow- the-spread in the transition area, and eradication of isolated infestations in the uninfested area. If the Asian strain is detected, an eradication program may be conducted in all areas, including the generally infested area.

Our proposed action for Lane County in 2009 is based on trapping results from 2007 and 2008. In 2007, single gypsy moths were caught in two traps about 0.6 miles apart in southeast Eugene. Delimitation trapping in 2008 caught six gypsy moths in four traps near one of the 2007 positive sites: three of the moths were caught in a delimitation trap behind a residence where one of the gypsy moths was caught the previous year; three other moths were caught in three delimitation traps in the same area. Another moth (the seventh) was caught approximately 1.5 miles north of this site in a detection trap and is outside of the proposed eradication area. Two moths were also caught in a detection trap about 3.5 miles southwest of the other positive catches. This site is also outside of the proposed eradication area. All moths were submitted to the USDA Otis Pest Survey, Detection and Exclusion Laboratory and were determined by genetic analysis to be the North American strain.

We conducted interviews and egg mass searches in the surrounding neighborhood in late summer and fall 2008 but were not able to trace the source of introduction. There are an abundance of host plants in the area, including white oak, maple, birch, apple, willow, and alder. The information available to date indicates that the southeast Eugene site has a breeding gypsy moth population.

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. Implementation of alternative 1 would not reduce damage, prevent establishment, or slow the spread of the gypsy moth.
2) Suppression. The U.S. Department of Agriculture would reduce the adverse effects of the gypsy moth only in the generally infested area. Implementation of alternative 2 would help reduce damage caused by the gypsy moth in the generally infested area of the continent.
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. It would not slow the spread in the transition area. Implementation of alternative 3 would prevent the establishment of gypsy moth populations in the uninfested area and the Asian strain would be eradicated wherever it is found.
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. Alternative 4 represents no change from the current program.

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. Implementation of alternative 5 would prevent the establishment of gypsy moth populations in the uninfested area and slow the natural spread of the insect in the transition area. The Asian strain would be eradicated wherever it is found, including the generally infested area when the source of the introduction is known.

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. Implementation of alternative 6 would help reduce damage in the generally infested area, prevent the establishment of the gypsy moth in the uninfested area, and slow the natural spread of the insect in the transition area. The Asian strain would be eradicated wherever it is found, including the generally infested area when the source of the introduction is known.

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. An effective trap density for mating disruption is nine or more traps per acre.

5) Mating disruption. Tiny plastic flakes or beads embedded with synthetic gypsy moth sex pheromone are disseminated aerially. 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. Subsequent mating between sterile and fertile adults prevents the development of viable offspring. If the program is successful, the population will be reduced and eventually eliminated.

The preferred treatment option proposed for this eradication project is option 1 the application of *B.t.k.* Mass trapping (option 4) at a density of up to 3-9 traps/acre will be employed after the eradication program to determine its success. Mass trapping can also remove any remnant male 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 Eugene, Lane County in order to avoid economic and ecological impacts described under Need for Action.

Objective 1

Apply the biological insecticide *B.t.k.* to 626 acres centered on the Eugene site where three gypsy moths were caught in one trap in 2008 on Dillard Road (see the Eugene eradication area map, p. 15). *B.t.k.* will be applied three times by air at a rate of 24 billion cabbage looper units per acre about 7-14 days apart starting in late April or May. A cabbage looper unit is a measurement of potency for the Foray® 48B. Cabbage looper larvae are used in bioassays to determine potency for final product. This rate is equal to 64 ounces of Foray® 48B per acre.The exact timing depends on weather. Ideally, the *B.t.k.* application should target early instar stages 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 gypsy moth populations. 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. If only one or two moths are caught after the treatment, the area will be intensively trapped each year until no moths are caught for two consecutive years. Two years of negative trapping results indicate that the gypsy moth is eradicated.

Need for action

The 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. Gypsy moth larvae emerge from overwintering egg masses in the spring and can feed and develop on leaves of more than 500 species of trees and shrubs. An average of four million acres is defoliated each year in the eastern United States (EIS 1995). In Oregon, adults typically emerge from mid-July through August. Detection and delimitation trapping is conducted during these peak flight times. After mating, females lay egg masses that contain up to 1000 eggs. Oregon has many species of host plants that would be damaged or killed by gypsy moth, including those in forested and natural areas, agricultural lands, and urban areas. The gypsy moth would negatively affect the economy, natural resources, environmental quality, and potentially human health in Oregon should it become established.

4. Authorizing laws and policies

The US Department of Agriculture has broad 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 as amended (7 USC7701 et. seq.) 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 U.S.

1989 Memorandum of Understanding between the USDA Forest Service and USDA Animal and Plant Health Inspection Service for Management of the Gypsy Moth (12-34-81-0091-MU). This MOU is intended to provide direction for the two Agency's cooperation to evaluate, manage, and regulate the spread of gypsy moth in the U.S. For infestations in the western U.S. it specifies that APHIS is responsible for eradication programs on infested non-Federal lands of 640 or fewer acres and not contiguous with Federal land, while FS is responsible for eradicating infestations on Federal land and non-federal land contiguous with Federal land or over 640 acres. This MOU is valid indefinitely or until canceled or modified by either party.

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.

B. Public involvement and issues

USDA APHIS and ODA realize the importance of early and continued public involvement in the EA process. This section outlines the steps that have been taken to inform the public of the proposed action and to obtain public input in this assessment of that action.

Efforts were made to address issues and concerns among individuals and organizations that will be affected by the proposed gypsy moth eradication project. Under direction from USDA APHIS, starting in September 2008 and continuing through the fall, residents near the gypsy moth sites were informally contacted in person by ODA staff to notify them of the presence of the moths during the egg mass search process. Staff also attended the Southeast Neighborhood picnic in October 2008 to share gypsy moth and trap catch information with the area residents. During these contacts it was mentioned that an eradication program would be considered if the final survey results indicated the presence of a breeding population of gypsy moths. In December 2008, ODA met with Eugene City Parks and Open Space Division as well as representative of Mayor's office to share information on gypsy moth and proposed eradication action. In the winter of 2008, ODA also met with the Xerces Society in Portland and Northwest Coalition for Alternatives to Pesticides in Eugene to share information on responses to gypsy moth and other invasive species.

At APHIS' request a public information meeting notice about the proposed eradication project and the availability of the draft EA and comment period was mailed to residents in the proposed eradication area and adjacent properties in Eugene (about 1700 addresses) on February 3, 2009 and to Eugene city and Lane County government offices. In addition to sending letters with the date and location of the meeting to residents, concerned parties, and other individuals, such information was also published three times in the local newspaper before the meeting. A copy of the meeting notice appearing in the local newspaper is included in Appendix A. ODA also had a news release on February 10, 2009 to alert the media and public about the public information meeting and the proposed eradication. Letters announcing the APHIS/ODA eradication proposal and a copy of the draft Environmental Assessment were mailed to 46 individuals and parties, who expressed interest in this or past gypsy moth programs, on February 2, 2009 asking for comments by March 6, 2009. Copies of the public information meeting letter, draft Environmental Assessment, and other information were also placed on the ODA website, http://egov.oregon.gov/ODA/PLANT/IPPM/gm_eugene_eradication09.shtml.

The public information meeting was held in the local area on February 19, 2009 at the Calvary Fellowship, 4060 W Amazon Dr., Eugene, OR 97405 at 7:00 p.m. About 55 people from the public and six people from various government agencies attended the public information meeting. Information was presented at the meeting about the gypsy moth situation, the APHIS/ODA eradication proposal, and the availability of the draft EA and its comment period.

Representatives from other agencies and organizations present at the meeting included USDA APHIS and Oregon Department of Human Services (OHS), Health Services Division. Oregon Toxics Alliance (OTA) also attended the meeting and set up a table for people to sign up to stop the proposed gypsy moth eradication spray.

Several 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 questions were addressed orally by ODA, APHIS, and/or OHS staff. In addition, about 60 e-mails and 10 phone calls were received regarding the proposed eradication project. In consultation with APHIS, all were responded to by ODA staff via e-mails or phone calls. All public comments received on the draft EA and a summary of the questions and comments from the public meeting are included in Appendix D. APHIS' and ODA's responses to these comments can be found in Appendix E and as an attachment to the Finding of No Significant Impact (FONSI). Although many comments were received, no new issues were raised that were not addressed in the 1995 EIS or in the draft EA that require substantive changes to this EA.

Comments and concerns about gypsy moth problems and the proposal to employ an eradicative IPM program were sought from concerned citizens and organizations during the scoping process and the draft EA comment period. Citizens attended public meetings to voice their concerns and sent in comments through the mail and e-mail. These written comments will be made available to the public. The APHIS State Plant Health Director will review the comments received and the final EA to determine if a Finding of No Significant Impact (FONSI) on the proposed project can be made. If a FONSI is determined, the final EA and signed FONSI will be made available to the public. The Director of the Oregon Department of Agriculture will review the EA, FONSI and comments received before signing a decision to implement the program.

C. Affected environment

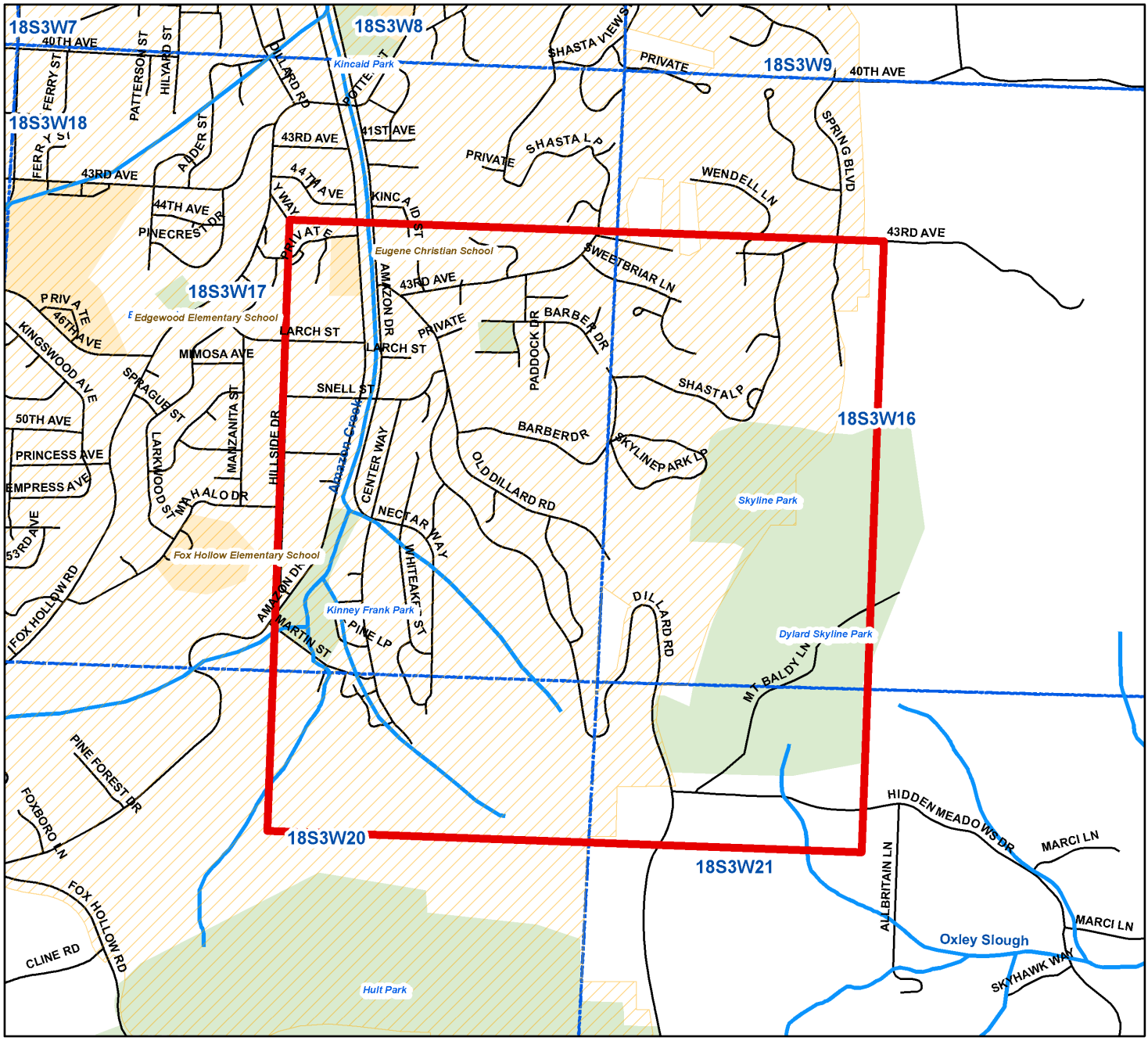
1. Location

The eradication area consists of approximately 626 acres in southeast Eugene, Lane County that will be aerially treated with *B.t.k.* 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. Movement of *B.t.k.* beyond the eradication area is likely to be affected by conditions such as temperature, humidity, wind direction, wind speed, and terrain.

The proposed gypsy moth eradication area encompasses two sites where single gypsy moths were caught in 2007 and four sites where six gypsy moths were caught in 2008, including three moths that were caught in one trap. The eradication area includes four city parks: Kinney Frank Park, Shadow Wood Park, Skyline Park, and a newly acquired parcel of 40 acres in the Amazon Creek headwaters. Most of the eradication area is within the Eugene city limits, except for another park, Dylard Skyline Park (that borders Skyline Park). The exact location is within T18S R3W S16, 17, 20, and 21. The East Fork Amazon Creek runs from the south to north along the western portion of the eradication area. The northwest corner of the boundary begins at N 44.00753, W –123.07815 (GPS readings of the latitude and longitude), at the end of Y Way, and proceeds due east for approximately 5150 feet, along 43rd Avenue, and 400 feet east of

2009 Gypsy Moth Eradication Program
Eugene, Lane County
626 acre eradication 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.



Legend

- eradication area
- city limits
- rivers, water

Oregon Department of Agriculture
635 Capitol St. NE
Salem, OR 97301-2532

Prepared by: dkimberling
Printing date: January 5, 2009
Projection Information: OR Lambert Coordinate System
Datum: North American 1983
Software: ESRI ArcInfo
Data sources: Lane County taxlot, roads
\\Fileserver\ODA\Shared\Plant\Eugene\Lane2009\Eugene\Eugene_09_EA.mxd
This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

Spring Blvd. at N44.00750, W –123.05853. From this point it turns 90 degrees south and proceeds 5295 feet to a point 370 feet south of Hidden Meadows Dr. and 300 feet west of Allbritain Ln. at N 43.99297, W –123.05858. The boundary continues due west for 5150 feet to a point 1785 feet south of the intersection of Martin St. and Amazon Dr. at N 43.99303, W –123.07816. From this point the boundary turns 90 degrees north and continues for 5,295 feet to the starting point (see map of eradication boundary)

There are over 1500 residences and one school (Eugene Christian School) within the eradication area. Most residences are single-family homes, but there are some apartment complexes. There is also an assisted living residence. There are no businesses in the 626-acre area. The area is hilly and ranges in elevation from 450 feet along Amazon Creek to 1200 feet on Mt. Baldy peak. Trees are abundant within the area and include a mixture of Douglas fir (up to 200 feet tall), oak, maple, ash, and filbert. There is an understory of blackberry, vine maple, willow, sword fern, rhododendron, holly, and other plant species in the Amazon Creek headwaters. Many residential yards have landscaping and numerous other plant species. In addition, a long power line traverses the southern east-west length of the eradication area.

2. Environmental factors: federal and state listed species

Section 7 of the Endangered Species Act (ESA) and ESA's implementing procedures require Federal agencies to ensure that their actions are not likely to jeopardize the continued existence of federally listed threatened and endangered species or result in the destruction or adverse modification of critical habitat.

A biological assessment was prepared that considered all federally-listed endangered and threatened species, species proposed for listing, and designated critical habitat that may be affected by the proposed project to eradicate gypsy moths in Eugene, Oregon.

We determined that the proposed project will have no effect on the Oregon silverspot butterfly and its critical habitat, the Kincaid's lupine and its critical habitat, or Bradshaw's lomatium. The closest known population of the Oregon silverspot butterfly is near the coast, more than 20 miles away from Eugene (OR Natural Heritage Report, January 2009); this butterfly would not be exposed to *B.t.k.* applications because of its distance from the treatment area. Although, *B.t.k.* is not known to be toxic to plants, applications of insecticides could potentially adversely affect the insect pollinators of federally-listed plants. However, the Kincaid's lupine would not be affected by applications of *B.t.k.* because it is dependent on bees for pollination. Bees are not affected by *B.t.k.* Bradshaw's lomatium is also pollinated by bees, as well as flies, wasps, and beetles (Kaye, 1992). None of these insects are affected by *B.t.k.* Therefore, eradication sprays would have no effect on the pollinators of these plants.

We determined that the program may affect, but is not likely to adversely affect the Willamette daisy and Fender's blue butterfly (FBB) and their designated critical habitat. We requested concurrence with this determination from the U.S. Fish and Wildlife Service (Service) in Portland, Oregon. The Service was not able to concur with this determination for the Fender's blue butterfly without a survey of the treatment area for lupines that host the butterfly. We will survey the treatment area for presence of lupine host plants, and if present, will work with the Service to develop protection measures to ensure that the eradication program is not likely to adversely affect the Fender's blue butterfly. No applications of *B.t.k.* will occur until we have received concurrence from the Service.

Correspondence in relation to endangered species consultation is included in Appendix B.

State listed species were also considered. No vertebrate (birds, fish, mammals, reptiles, amphibians) will be affected by *B.t.k.* Only the larval stage of Lepidoptera (butterflies and moths) would be affected by *B.t.k.* No state listed Lepidoptera, other than the Federally listed FBB, are found about 5 miles away from the proposed treatment area. Mitigation measures are being determined for the FBB. If a plant is primarily pollinated by a Lepidoptera that is killed by *B.t.k.*, the plant could be impacted by the loss of a pollinator.

The table below includes a list of plant species known to occur within a two mile radius of the proposed eradication area (see table). Although some butterflies are documented as pollinators (Jackson 1996, Alverson and Kuydendall 1989), they are common and widespread in Oregon (Dornfeld 1980) and therefore could easily re-establish in the eradication area. In general butterflies are not known to be efficient pollinators (USDA Forest Service, Herrera 1987, Ramirez and Brito 1992, Wiklund 1979). Other insects such as bumblebees and solitary bees are likely more effective pollinators and are not affected by *B.t.k.* None of these listed plants will be adversely affected by the proposed action.

Table 1. List of protected plant species found within two miles of the proposed spray block

Species	Federal Status	State Status	Insect Visitors/Pollinators
Kincaid's lupine (*Lupinus sulphureus* ssp. *kincaidii*)	threatened	threatened	solitary bees, *Bombus* spp.
Bradshaw's desert-parsley (*Lomatium bradshawii*)	endangered	endangered	solitary bees, flies, wasps, and beetles (Kaye 1992)
Willamette daisy (*Erigeron decumbens* var. *decumbens*)	endangered	endangered	field crescent (*Phyciodes campestris*)*, syrphid fly (Jackson 1996)
shaggy horkelia (*Horkelia congesta* ssp. *congesta*)	species of concern	sensitive-critical	unknown
wayside aster (*Aster vialis*)	species of concern	threatened	bumblebees, solitary bees, blister beetle, and the woodland skipper butterfly (*Ochlodes sylvanoides*) (Alverson and Kuydendall 1989)
tall bugbane (*Cimicifuga elata*)	none	sensitive-critical	bumblebees, syrphid flies, solitary bees (Kaye 1998)

* The field crescent butterfly and woodland skipper are abundant and found almost everywhere in Oregon (Dornfeld 1980). These species could easily re-establish in the eradication area.

3. Human factors

No unusual hazards are known in the proposed eradication area. There are about 1500 properties within the proposed 626-acre eradication area; most are single-family residences. No hospitals, or day care centers exist within the proposed eradication area, but there is one assisted living facility, the Emerald Valley Assisted Living Residence. There is a change of staff at 6:00 am every day. One school, the Eugene Christian School, lies within the proposed eradication area near the northwestern corner. Parents drop off students at the school when it starts at 8:10 am. Teachers arrive around 7:45 am. Four other schools including Fox Hollow Elementary School, Spencer Butte Middle School, Edgewood Community Elementary School, and Ellis Parker Elementary School, are nearby and to the west or north of the eradication area. Several school bus routes serving these schools travel through the proposed 2009 eradication area. The bus for Spencer Butte Middle School runs between 8:10 am and 8:35 am and is in the vicinity of Dillard Rd. and E. 43rd Ave. Spencer Butte begins at 8:50 am each day. Another bus (RT 22) for Ellis Parker Elementary School enters the eradication area at 7:47 am at W. Amazon Dr. and E. 44th Ave., but leaves the area after that. Bus route 24 for Ellis Parker Elementary School runs within the eradication area between 6:50 am and 7:50 am. Ellis Parker begins at 8:00 am, but students start arriving around 7:15 am. Fox Hollow Elementary School is an alternative school (with no buses) that begins at 8:30. School buses do not run again until after 1:00 pm. Two city buses (#25 and #28) run along W. Amazon Ave. The earliest of these, each running at half hour intervals in the morning, arrives at W. Amazon and Martin St. at 6:07 am. Both continue to run at one-hour intervals later in the day. Property lots in the area are relatively large with dense vegetation coverage, especially trees. The four city parks are popular with locals and are used by the public for walking, playing or family leisure activities. Skyline Park has popular hiking and jogging trails leading to the Mt. Baldy peak.

Exposure to school children will be minimized or avoided by the timing of the project (before the school bus route begins). In addition, school bus drivers will be notified on days of treatment applications and ODA staff will be in communication with the school district transportation coordinator. The assisted living facility will be notified prior to *B.t.k.* applications. Signs affixed to barricades will be deployed on roadsides and signs with spray dates and times will be posted in local parks to alert the public before and during the scheduled *B.t.k.* applications.

Tourism, recreation, education, forestry, and agriculture are probably among the most important industries affecting humans around Eugene. Eugene is located in the south end of the Willamette Valley where the Willamette River runs through the city. This provides good opportunities for recreation and tourism. Eugene, with the University of Oregon, is also a higher education center for the southern Willamette Valley. Some local residents have home orchards, gardens, or small wood lots. In Oregon, Lane County ranked 11th in agriculture production in 2007 with a total value of $139 million. It is expected that the establishment of the gypsy moth will adversely affect these industries because trees and shrubs in private wood lots, the university campus, city streets and parks, and other recreation areas are suitable plant hosts. Broadleaf trees are important components of the local flora, especially along the rivers and streams, and are preferred hosts of the gypsy moth. Parks and recreation areas with defoliated trees and shrubs would be less attractive to tourists and local citizens.

Effects of the alternative treatment options on the human environment (including minority and low-income populations) are expected to be similar for all human populations regardless of nationality, gender, race, or income. No adverse human health or environmental effects on minority populations and low-income populations, or youth populations are expected as a result of implementing actions described for the preferred alternative in accordance with Executive Order No. 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, and Executive Order No. 13045, Protection of Children from Environmental Health Risks and Safety Risks.

D. Alternatives

Pesticide application: ground vs. air

If a chosen alternative includes pesticide sprays, the pesticide 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 block. If access is restricted or if the area is large, then aerial sprays are usually more practical, less disruptive to residents and wildlife, and more economical.

1. Treatment options under the 1995 EIS

The treatment alternatives for the proposed eradication program in Eugene are analyzed in the 1995 gypsy moth EIS. These alternatives are considered as treatment options for any gypsy moth eradication programs in the U.S. Six alternatives 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. Alternatives not considered in detail

Treatment alternatives 2, 3, 5, and 6 listed above are not considered for use this year for this gypsy moth eradication program. The rationale follows:

Diflubenzuron (Dimilin) is an insect growth regulator that has a broader non-target host range than *B.t.k.* and it can kill many other insects besides moth and butterfly caterpillars. Its use may adversely affect other insect populations, including beneficial ones.

Gypsy moth virus (Gypchek) is very host specific, but it is not widely available in the market and it is still somewhat experimental for eradication programs. The effectiveness of gypcheck has been variable.

Mating disruption effects on gypsy moth infestations is variable. This alternative has been used more frequently in recent years in slow-the-spread programs in eastern states but has not been used for eradication in western states.

Sterile insect releases are also experimental and their effect on gypsy moth suppression is variable.

These alternatives are not considered in detail because the probability that they are able to achieve the program goal of eradication with minimal effects to non-target species (including insects) has been judged to be too low or cannot 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. Since 2008, an organic formulation of *B.t.k.* became available after many years of public pressure. This organic formulation will be the one we propose to use. Application of *B.t.k.* poses little risk to human health or the environment. The host range of *B.t.k.* is limited to lepidopteran (moth and butterfly) caterpillars. There are no threatened or endangered species of Lepidoptera in or near the proposed eradication area in Eugene. Mass trapping removes male moths from the environment, thus reducing the probability of males finding females for mating. It can be an effective control tool when a gypsy moth infestation is small, but its effectiveness is variable when gypsy moth populations are large. Mass/intensive trapping can be an excellent monitoring tool to detect the 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 decades, 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 that we are proposing to use do not affect aquatic organisms. *B.t.k.* is relatively expensive because three applications (two in ground programs) are usually required to ensure eradication.

Oregon has had over 20 years of experience using *B.t.k.* to eradicate 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 eradication programs. 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 the placement of 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 tested as an eradication tool, but results have been unreliable. This method, however, is very useful when used in combination with other methods. Not only does mass trapping remove male moths from the breeding population, but it can also be used to evaluate the success of treatments and delimit any residual populations.

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 preferred alternative is to use the biological pesticide *B.t.k.* in conjunction with mass/intensive trapping. Eugene is suitable for aerial applications because of the size of the area (number of acres) and variable terrain. Three aerial applications of *B.t.k.* at a rate of 24 billion cabbage looper units per acre would be applied to a 626-acre eradication area in Eugene in 2009. The three treatments are planned to begin in late April about 7-14 days apart. Exact timing depends on weather conditions. 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.

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 delimit the location of any remaining populations. Trap densities in the core area will range from 3 to 9 traps per acre.

E. Environmental consequences

1. No action alternative

Gypsy moth

The 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. Gypsy moth larvae emerge from overwintering egg masses in the spring and can feed and develop on leaves of more than 500 species of trees and shrubs. An average of four million acres is defoliated each year in the eastern United States (EIS 1995). In Oregon, adults typically emerge from mid-July through August. Detection and delimitation trapping is conducted during these peak flight times. After mating, females lay egg masses that contain up to 1000 eggs. Oregon has many species of host plants that would be damaged by gypsy moth, including those in forested and natural areas, agricultural lands, and urban areas. The gypsy moth would negatively affect the economy, natural resources, environmental quality, and potentially human health in Oregon should it become established.

Gypsy moth and the economy

An established population of any gypsy moth strain in Oregon would have very serious economic impacts for some residents and industries in the state. Although it is expected that the Asian strain would spread more quickly than the North American strain (because of female flight ability and the broader host range), the economic impacts of quarantines resulting from any non-suppressed gypsy moth population are expected to be immediate.

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 Lane County gypsy moth infestation led California, the most important market state for Oregon, to place an embargo on all forest products and live plant material originating from that county. Although this embargo was soon replaced with a more reasonable USDA gypsy moth quarantine, the disruption of normal marketing relationships remained. Christmas tree growers near the more intense infestation sites were required to fumigate their trees before interstate movement and were subject to loss of export markets. Individual growers claimed losses as high as 80 percent from the cost of the fumigation process, with some claims as high as $200,000. For the following five years (until 1989), all Christmas tree growers inside the quarantine area were required to apply chemical insecticides to obtain certification for interstate movement; thus, their production costs and pesticide usage in the area increased.

Oregon is the number one producer of Christmas trees in the U.S. and failure to eradicate the gypsy moth would have led to an increasingly negative impact on the industry. Approximately 90 percent of the Christmas trees grown in Oregon are exported and the industry value in 2007 is about $109 million. Similarly, about 85 percent of the nursery stock grown in Oregon is exported to other states and countries. The value in 2007 of this sector is about $988 million (Oregon Agripedia 2008). Greenhouse and nursery products have been Oregon's most economically valuable commodities since 1994. The Christmas tree industry has also increased steadily during the last several years. Oregon's most lucrative markets are states that are geographically the closest and that are also free from the gypsy moth. There would be serious quarantine restrictions on nursery stock in infested areas should Oregon fail to exclude the gypsy moth.

State and federal quarantines imposed on wood products industries during the Lane County infestation in 1984 did not seriously affect these businesses. Nevertheless, limitations imposed by compliance agreements with the Oregon Department of Agriculture affected product movement and handling procedures. If the new gypsy moth infestation in Lane County is allowed to spread, similar embargoes and quarantines would be implemented and most likely become increasingly restrictive and expensive.

The potential impact of gypsy moth quarantines on Oregon would be similar to those outlined in a risk assessment of European gypsy moth for British Columbia (B.C.) (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." Further, "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 enacted a quarantine

in response to a large gypsy moth infestation in Vancouver Island in B.C. between 1998 and 1999.

Reforestation

The immediate economic threat of gypsy moth to the forest products industry is quarantine, but the long-term impact on reforestation projects may be just as important. Douglas fir and western hemlock have proven to be viable hosts for gypsy moth caterpillar in laboratory studies (Miller et al. 1991a, 1991b). Some defoliation of Douglas fir was observed in heavily infested areas of Lane County in 1984. Young conifers that are important timber species may suffer reduced growth or mortality when they are defoliated. Historically, hardwoods have not been considered of economic importance to the timber industry, but now they are receiving greater scrutiny from researchers and foresters. Gypsy moth infestations in Oregon would decrease the economic potential of hardwoods that presently cover 2 to 3 million acres in Oregon. Some companies are working specifically with hardwoods as they become more economically important in the western U.S.

Tourism

Oregon ranks fourth in the nation in the number of visitors to state parks and natural recreation areas. Native hardwood species that are good hosts for gypsy moths contribute significantly to the scenic beauty of Oregon. If gypsy moths become established in Oregon and defoliate areas where these species occur, visitors to the state would lose full use of the parks and campgrounds. Caterpillar feeding can create unwanted droppings on all types of outdoor equipment and caterpillar hairs can be irritating to humans. Areas known for their scenic beauty could be negatively affected and use of facilities by tourists could be decreased. May and June are important tourism months in Oregon. The value of tourism to Oregon in 2007 was about $8.3 billion. A significant proportion of visitors come from states that are also concerned about the gypsy moth. If gypsy moths become established in Oregon, it is expected that these states would impose serious limitations on recreational vehicles returning from Oregon.

Gypsy moth and 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 the gypsy moth becomes established in Oregon. During gypsy moth outbreak years, 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.

Gypsy moth and the environment

Keeping the gypsy moth out of Oregon is also essential to protect the state from adverse ecological effects. One of these effects is that gypsy moth feeding can lead to changes in forest stand composition. Oaks, alder, willow, hazelnut, and other deciduous hosts are preferred by gypsy moths and can suffer mortality from repeated defoliation. Oak trees in the East have been killed by repeated defoliation and have been replaced by other vegetation. The number of acres defoliated by gypsy moth in eastern states has fluctuated over the past five years: 175,000 acres in 2004, 798,000 acres in 2005, 1.3 million acres in 2006, 1.33 million acres in 2007, and1.59 million acres in 2008 (GM Digest 2008). This level of defoliation can severely impact watershed function.

Ecological consequences of large-scale defoliation include negative impacts on wildlife. Animals feeding on acorns from oak trees would be directly affected. Nesting sites and cover would be reduced. Defoliation of riparian areas would cause short-term increased, but long-term reduced 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 threatened or endangered species or species of concern (plant, insect, or certain 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.

Specifically, defoliation of riparian and other critical areas by the gypsy moth in Eugene could expose the Willamette River and its watershed to more direct sunlight and increase the water temperature (through loss of shade), which could negatively impact salmon and other fish species in the area. Other threatened and endangered species or species of concern may also be negatively affected due to gypsy moth defoliation and its resulting habitat modification. For example, streams and riparian areas could become contaminated with excessive excrement from caterpillar feeding and increased nitrate levels.

While it is difficult to predict the extent of environmental damage that the gypsy moth will cause by defoliation, it is not difficult to predict that pesticide use will increase when it is established. Even at relatively low levels of infestation, pressure is increased to use chemical sprays to certify certain plant products, including Christmas trees, nursery stock, and forest products, for interstate marketing. Storage sites for these products would likely receive more pesticide treatments, as would residential areas within urban and suburban settings. 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; 542,951 acres were treated to suppress populations in the generally infested area and 413,516 acres were treated in the transition (slow the spread) area in 2008 (GMDigest 2008).

2. Preferred action

This section will address the effects of the preferred action alternative 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. In addition, the draft EIS Supplement has been released and is used as a reference.

Bacillus thuringiensis var. *kurstaki*

B.t.k. is a naturally occurring soil bacterium. It is toxic to most caterpillars (larvae of butterflies and moths) when it is sprayed on foliage and ingested by them. 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), list 2 (Potentially Toxic Inerts) or list 3 (Inerts of Unknown Toxicity). In addition, some of the inert ingredients are FDA approved for use in foods or in food processing. *B.t.k.* products are exempt from residue tolerances by EPA. This means that there are no limitations on the amount of material 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. To qualify for an organic label, the active ingredients must be non-synthetic and not identified in 7 CFR 205.602 or synthetic and identified in 7 CFR 205.601. In addition the inert ingredients must be identified as from List 4 (inerts of minimal risk or no risk) on the EPA's list of inert substances. The new organically certified *B.t.k.* such as Foray® 48B is even safer than the previously safe non-organic formulation.

Some genetically modified crops such as corn 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, *B.t.* 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) conducted an exhaustive world literature review of *B.t.* They concluded in their book *Bacillus thuringiensis*: Biology, Ecology and Safety that "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 *B.t.*-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 *Bacillus thuringiensis* by Canadian scientists (Joung & Cote, 2000) produced similar conclusions. Syracuse Environmental Research Associates, Inc. submitted a more recent and extensive review to the USDA Forest Service (2004). This review, "Control/Eradication Agents for the Gypsy Moth – Human Health and Ecological Risk Assessment for *Bacillus thuringiensis* var. *kurstaki* (*B.t.k.*) Final Report," concluded that "Sensitive terrestrial insects are the only organisms likely to be seriously affected by exposure to *B.t.k.* or its formulations. All sensitive terrestrial insects are Lepidoptera and include some species of butterfly, like the endangered Karner blue and some swallowtail butterflies and promethea moths. At the application rates used to control gypsy moth populations, mortality rates among sensitive terrestrial insects are likely to range from approximately 80 percent to 94 percent or more. The risk characterization for other wildlife species is unambiguous: under foreseeable conditions of exposure, adverse effects are unlikely to be observed." Further, "In terms of potential human health effects, formulations of *B.t.k.* are likely to cause irritation to the skin, eyes, and respiratory tract; however, serious adverse health effects are implausible. For members of the general public, exposure levels are estimated to be below the functional human NOAEL for serious adverse effects by factors of about 28,000 to 4,000,000 [4 million]. [NOAEL, or no observable adverse effect level, is the maximum dose or exposure level that produces no observable toxic effect.] At the extreme upper range of exposure in ground workers, exposure levels are estimated to be below the functional human NOAEL for serious effects by a factor of 25. This assessment is based on reasonably good monitoring data, conservative exposure assumptions, and an aggressive and protective use of the available toxicity data."

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.

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, another manufacture's formulation of *B.t.k.*, 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 symptom complex or of involvement of any single organ system. Symptoms were those common to any community, e.g., nausea, headache/dysphoria, rash, or 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.* eradications for Asian gypsy moth in 1992. Combined, these eradications covered approximately 124,000 acres in urban residential neighborhoods in Tacoma, Washington and Portland, Oregon. Between the two states, over 300 complaints of human illness were received primarily via telephone "hotlines." No cases of infection were confirmed although 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 that 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, carried out in the eastern suburbs of Auckland, used aerial and ground treatments of *B.t.k.*. The report concluded that there was no evidence of a causal association between *B.t.k.* spray and human health effects or significant health problems during or after the spray treatment.

In 1999, The Capital Health Region of Victoria, British Columbia, coordinated a human health study of possible short-term health effects from aerial spraying of Foray ®48B on south Vancouver Island. The study was performed as a necessary condition for the spray program 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 must be reregistered to ensure that they meet current standards. In 1998 the United States Environmental Protection Agency (EPA) published a 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 (2009) has developed its recommendations for people affected by the proposed spray program. These recommendations are:

> "Even though Btk is not expected to result in adverse effects, we recommend that people stay indoors during the application. The Department of Agriculture should provide advanced notification to let you know when spraying will occur. If you or someone in your home is concerned about the application due to a medical condition please consult with a health care provider.
>
> Depending on the level of actions you choose to take, we recommend the following:

- Closing windows and doors and shutting off HVAC systems that distribute air from the outside into your home.
- Covering playground equipment, sandboxes, benches, toys, pet dishes, and lawn chairs before the application, or hosing them off afterward.

- Staying indoors during and for at least 30 minutes after spraying to allow droplets to settle and adhere to vegetation.
- Waiting until the spray has dried before touching vegetation treated during the application.
- Washing exposed skin with soap and water if direct contact with the spray droplets occurs. If you are outside at the time of application and the spray droplets get into your eyes, flush with water immediately and contact the Oregon Poison Center at 1-800-222-1222 for further medical advice.

  Although we don't have evidence that *B.t.k.* will affect any given group of people, individuals a compromised immune system may choose to avoid any potential for exposure by leaving the spray area during the application. If you or someone in your home is concerned and cannot stay indoors or leave the area during the application you might consider speaking to a health care provider.

  Foray® 48B product may contain residues of grains, other foods, or preservatives. If you have serious allergies to foods or food preservatives, you might consider contacting your health care provider. Your health care provider can consult with the manufacturer of Foray® 48B (Valent Biosciences – 1-800-323-9597) to discuss medical concerns about the "inert or other" ingredients."

This information will be sent to residents in the proposed eradication area in spray notices. Included in the spray notices is Oregon Poison Center phone number (1-800-222-1222) for residents who are exposed to *B.t.k.* and have health-related questions. A phone number for Oregon Health Services, 503-731-4024, is also provided for physicians with questions about specific patients. Oregon State University's National Pesticide Information Center website address, http://npic.orst.edu, and toll-free phone number, 1-800-858-7378, are also listed. Oregon Health Services will be available to consult with physicians about *B.t.k.* and any possible health effects.

B.t.k. and environment

B.t.k. and non-target Lepidoptera

Some non-target lepidopteran larvae (caterpillars) present in the proposed spray area will likely be killed by the application of *B.t.k.* In turn, animals dependent on caterpillars for food may be affected. Drift may affect non-target Lepidoptera near the treatment area (Whaley et. al. 1998). However, depressions in caterpillar populations are expected to be temporary because recolonization from adjacent areas will occur and most insects have a high reproductive capacity. There have been several studies that have examined these effects.

During the 1986-87 gypsy moth program in Oregon, a study assessed the direct impact of *B.t.k.* on non-target Lepidoptera in the canopy of Oregon white oak (Miller 1990). 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 pre-treatment levels in those blocks. However, a comparison of treated and untreated plots 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 of *B.t.k.* effects on non-target butterfly communities in western Oregon showed similar impacts (Severns 2002). Species richness and density were negatively affected for two years following *B.t.k.* sprays in 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 larval development experience the greatest impacts (Sample et al. 1993).

B.t.k. and aquatic insects

Some aquatic insects are susceptible to different 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 when it is applied at concentrations used in aerial treatments (Edit 1985, Kreutzweiser et. al. 1992). When *B.t.k.* is used for gypsy moth suppression or eradication in blocks with open water, fish and other animals dependent on aquatic insects for food should not be affected by the *B.t.k.* treatments.

B.t.k. and birds

A study in Oregon examined the indirect effects of *B.t.k.* on the reproductive success of insectivorous birds. The hypothesis was that food supply for the nestlings might be reduced. The study reported no significant differences between treated and untreated areas in numbers of eggs hatched and in nestling growth and development. When caterpillars were not 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 in *B.t.k.*-treated sites within a small aerial spray block when compared to non-treated control sites.

B.t.k. and natural enemies

Field studies suggest that *B.t.k.* may indirectly affect gypsy moth parasitoids. At least two parasitoid species, *Cotesia melanoscelus* and *Rogas lymantriae*, had increased rates of parasitism in areas that were sprayed with *B.t.k.* (Wallner et .al.

1983, Webb et. al. 1989). Field studies of insects other than Lepidoptera and their natural enemies have found little effect on other species or groups.

B.t.k. and water quality, soil condition, and microclimate

Water quality and soil condition should not be directly affected by *B.t.k.*. *B.t.k.* is not likely to affect most aquatic organisms and is naturally present in soils worldwide. Since *B.t.k.* can reduce the amount of defoliation by leaf-eating caterpillars, it may also help to preserve microclimate conditions.

B.t.k. and recreation and agriculture

The proposed application of *B.t.k.* should have a positive effect on tourism, recreation, forestry, and agriculture. Eradication of the gypsy moth will prevent defoliation of trees and other plants in the area and protect the economic and aesthetic value of these industries.

B.t.k. and domestic/farm animals

Domestic animals (e.g., dogs and cats) and farm animals (e.g., cattle and horses) should not be affected by the *B.t.k.* applications proposed in this program. Although there are no known studies on direct exposure to *B.t.k.* and its effect on these animals, other studies have been conducted. There were no differences between untreated laboratory or wild animals and exposed animals (either through injection or ingestion). Species included mice, rabbits, sheep, rodents, and shrew (WHO 1999).

3. 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. It is specific to gypsy moths and has few toxic effects on other organisms. Because the toxicity of insect pheromones is relatively low, the US EPA requires less rigorous testing for pheromones than for insecticides. Therefore, there is limited data on the toxicity of disparlure. (EIS Volume 2 1995, SERA 2004) Because the pheromone is embedded in PVC/twine dispensers within gypsy moth traps it is not expected to be dispersed into any ground or water resources. The pheromone will be time released from the dispenser into the air to attract the male moths. This pheromone is already present in areas that have gypsy moth populations. Section 5 from Appendix G of the 1995 EIS thoroughly discusses the ecological effects of disparlure, *B.t.k.*, and other treatment options on the environment. The risk assessment in the Draft Supplement EIS 2008 further discusses the environmental effects of disparlure and *B.t.k.* (SERA 2004).

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 (for 2 to 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 most likely be 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 on the level of parasitization by the wasp Ooencyrtus kuvanae, an egg parasitoid of gypsy moth (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.

4. 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). 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.

B.t.k. primarily impacts lepidoptera and species that may rely on lepidoptera as a primary source of food. The cumulative impacts in the proposed program in Eugene may be from multiple *B.t.k.* applications that extend the time of potential exposure and risk to a greater number of non-target Lepidoptera. However, because the proposed eradication area is relatively small, the opportunity for recolonization from the surrounding area is great. We currently know of no Federal, State, or other local projects in the proposed treatment area that will affect lepidoptera or other nontarget organisms that may also be affected by this action.

Another possible cumulative impact will be if the treatment needs to be conducted again in 2010 if the gypsy moth infestation is larger than expected. For example, if the gypsy moth spreads to areas larger than the proposed 2009 eradication area, i.e., larger than 626 acres in Eugene, then a larger area may be sprayed in 2010. If that happens, the cumulative impacts of the treatments over two consecutive years will extend the time of potential exposure and risk to a greater number of non-target Lepidoptera. Given the reversible nature of the irritant effects of *B.t.k.* and the low risk of serious health effects, cumulative effects from spray programs conducted over several years are not expected (SERA 2004). However, if future treatments are needed, a subsequent EA will be written and these risks will be evaluated further.

Pheromone traps placed in southeast Eugene in previous years and proposed for this year have no known cumulative effects in the environment. For this treatment year there are no known additional activities in or near the eradication area where *B.t.k.* may be applied in addition to the proposed program. Thus no cumulative impacts are expected from activities outside of the program.

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. No or minimal effects on water quality, microclimate, or soil productivity are likely from *B.t.k.* or disparlure use and the risk of cumulative effects is none to minimal.

5. Summary

The following table summarizes the effect of each of the eradication alternatives considered for this Environmental Assessment.

Table 2. Summary of alternatives considered

Alternative	Preferred	Human effect	Environmental effect	Meets program objectives
B.t.k	Yes	Short-term minor effects are possible, but no long-term or cumulative effects are anticipated.	Short-term effects on nontarget caterpillars are likely. Cumulative effects on nontarget species are not anticipated; recolonization will occur. No effects on water quality or forest and soil health.	Yes
Gypchek®	No	No effects.	No effects.	No
Diflubenzuron	No	No long or short- term effects anticipated at low exposure.	Effects are anticipated on nontarget insects and possibly 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

Based on the analysis in this EA, the proposed eradication program on 626 acres in Southeast Eugene using *B.t.k.* and Disparlure is not likely to have any adverse effects on the human environment including minorities, low income persons, children, or any other group or persons with special needs. Parks and natural areas will not be adversely affected, except for some minor potential impacts to aquatic insects and lepidopterans, as noted. The eradication program also will not adversely affect mammals, birds, reptiles, amphibians, and fish found in the area. *B.t.k.* may affect some aquatic insects, so measures will be taken to avoid application directly over Amazon Creek and a small seasonal pond found in the proposed area to minimize any effects. Non-target Lepidoptera larvae will be affected, however studies have shown, common resident butterfly populations will

quickly recover. Many Lepidoptera will not be in a susceptible life stage during the treatment period and thus will avoid adverse effects.

6. Monitoring

During the project, transects of monitoring cards will be used within the eradication area to determine if the *B.t.k.* is successfully applied. A program using pheromone traps will also be used to monitor the infestation and determine the success of the eradication project. Intensive trapping will continue until negative trapping results have been achieved for two years. This type of programmatic monitoring following *B.t.k.* treatment has been conducted in Oregon during the last two decades for all of the eradication programs.

7. Mitigation

The timing of the applications minimizes exposure to school children and to the public, since the applications are carried out prior to school start times and most of the public's daily activities. Notification calls will be made to the assisted care facility and school district transportation coordinator. Signs affixed to barricades will be deployed on roadsides to notify people in the community on the day of application. About two weeks before the first scheduled *B.t.k.* application notices that include precautions and recommendations from the Oregon Public Health Division will be mailed to residents in and near the eradication area. The spray dates, hotline phone number (1-800-525-0137), and *B.t.k.* health information will also be posted on the ODA website. There is also a link on the ODA website to sign up for automated phone updates on the eradication project, http://oda.state.or.us/dbs/ippm_registry/add.lasso.

Operating Procedures

The following standard operating procedures will be observed to safeguard human health and minimize effects on the environment.

General procedures

- The Oregon Department of Agriculture will work with Health Services of the Department of Human Services 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 designated eradication areas.
- 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.
- Species of concern and areas may be buffered as needed.

Aerial application procedures

Aerial *B.t.k.* applications (using a rotary atomizer as a spray device) will be made by a helicopter or fixed wing aircraft flying at or in excess of 50 feet above the tree canopy. Spray deposition cards will be utilized to monitor droplet size and coverage. 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 before spraying.

The project pilots and their aircraft will adhere to all FAA requirements.

No *B.t.k.* will be applied aerially when:

- Wind velocity is zero or exceeds 10 miles per hour.
- Air temperature exceeds 80º F or is less than 38º F.
- Rain is predicted (>50 percent probability) to occur before adequate drying time has elapsed, i.e., within 6 hours of application.
- Foliage is covered with visible water drops. *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 that 50 percent.
- The air turbulence (thermal updrafts, etc.) is great enough to disrupt the normal application.
- Temperature inversions are present with no air movement and are sufficient to interrupt the proper settling and penetration of material through the canopy.

Precautions taken during the *B.t.k.* application:

- School bus routes will not be directly sprayed when children are present.
- Helispot managers and other contract administrators can exercise shutdown authority when they observe aircraft safety or application violations.
- 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.
- Aerial *B.t.k.* application will be suspended whenever the *B.t.k.* does not appear to be settling in the target area.

*Small aerial projects may not require an observation aircraft.

F. Recommendation of the USDA APHIS and Oregon Department of Agriculture

The U.S Department of Agriculture, Animal and Plant Health Inspection Service and the Oregon Department of Agriculture, Insect Pest Prevention & Management Section jointly recommend that the gypsy moth infestation in Eugene 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 (Appendix C). This aqueous formulation 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 billion cabbage looper units per acre in a 626-acre eradication area in Eugene. The three treatments will begin in late April in Eugene, about 7-14 days apart. Exact timing depends on weather. Mitigation measures described in the 2009 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.

Following *B.t.k.* treatments, intensive/mass trapping programs will be used to monitor the effectiveness of the *B.t.k.* applications and to delimit the location of any remaining populations in Eugene. Trap density will be 3 to 9 traps per acre. If more moths are caught, additional egg mass searches and treatments will be considered for 2010. Two years of negative trapping results following the treatments will indicate the infestation has been eradicated.

G. Conclusion

This environmental analysis conducted by USDA APHIS and ODA has determined that the proposed gypsy moth eradication program using the bacterial insecticide, *Bacillus thuringiensis* var. *kurstaki* (*B.t.k.*) and mass/intensive trapping, will have no significant 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 area. No long-term, irreversible effects to non-target butterfly or moth populations 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), list 2 (Potentially Toxic Inerts), or list 3 (Inerts of Unknown Toxicity). The *B.t.k.* product (including the inert ingredients) being considered has been certified by EPA and OMRI (Organic Materials Review Institute) for organic production.
5) Two federally listed threatened or endangered plant species may occur within two miles of the proposed gypsy moth eradication area in Eugene: Willamette daisy *Erigeron decumbens* var. *decumbens* and Bradshaw's desert parsley *Lomatium bradshawii*. The proposed action will have no effect on threatened or endangered species or their designated critical habitats within or near the eradication areas.

H. Agencies and persons consulted

National Marine Fisheries Service (Ben Meyer) Willamette Basin Habitat Branch 1201 NE Lloyd Blvd, Suite 1100 Portland, OR 97232 503-231-2202	For information on threatened and endangered fish species.
Oregon Natural Heritage Information Center Oregon State University (Lindsey Koepke) 1322 SE Morrison Street Portland, OR 97214 (503) 731-3070 ext 104	For information on threatened and endangered fish species.
Oregon Dept. of Agriculture (Bob Meinke) 635 Capitol St. NE Salem, OR 97301 (541) 737-2317	For information on plant species of concern.
Oregon Department of Forestry (Rob Flowers) 2600 State St. Salem, OR 97301 (503) 945-7396	For review and comment.
Oregon Department of Human Services, Health Services (Kari Christensen) 800 NE Oregon Street, Suite 640 Portland, OR 97232-2162 (971) 673-1211	For assistance on measures to safeguard human health, and 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) Integrated Plant Protection Center, Cordley Hall Corvallis, OR 97331	For review and comment.
Oregon State University (Ross Penhallegon) Oregon State University/Lane County Extension 950 West 13th Avenue Eugene, OR 97402 (541) 682-4243	For local information in Eugene and review, comment.
Paul Hammond 2435 E. Applegate Philomath, OR 97370 (541) 929-3894	For information on threatened or endangered Lepidoptera.
USDA Forest Service (Kathy Sheehan) P.O. Box 3623 333 SW First Ave Portland, OR 97208 (503) 808-2666	For review, comment, and application timing issues.
US. Fish & Wildlife Service (Kevin Maurice) 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.

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Appendix A: Public information and scoping

Published in the Eugene Register Guard, Eugene, Oregon, February 5, 15, 17, 2009

Public Information Meeting

"The Gypsy Moth Problem"

Thursday, February 19, 2009 • 7:00 - 9:00 pm

Calvary Fellowship
4060 W Amazon Dr • Eugene, OR 97405

The Oregon Department of Agriculture is proposing an eradication program for a gypsy moth infestation detected in southeast Eugene. The department proposes three applications of the biological insecticide *Bacillus thuringiensis* var. *kurstaki*, applied by helicopter from late-April to mid-May 2009, to eradicate gypsy moth from the area. An intensive pheromone trapping program would follow. The proposed eradication area is a rectangular block of about 626 acres, roughly centered around the Old Dillard Road area.

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: Helmuth Rogg 1-800-525-0137, Bruce Pokarney 503-986-4559, or by email at gypsymoth@oda.state.or.us**. Please check your local phone book for TTY/TDD telecommunications service.

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

Appendix B: Endangered species act correspondence

From: Ben Meyer <Ben.Meyer@noaa.gov>
Date: December 11, 2008 1:05:13 PM PST
To: Barry Bai <bbai@oda.state.or.us>
Subject: Re: T&E species consultation

Mr. Bai

Based on the information you provided in your December 1, 2008 letter and available salmon presence/absence data, it is NMFS' opinion that there are currently no salmon under NMFS' jurisdiction occupying the area of the proposed gypsy moth eradication project in Eugene .

If you need any further assistance, please feel free to contact me at 503.230.5425.

Ben Meyer
Chief, Willamette Habitat Branch

Barry Bai wrote:
Dear Mr. Meyer,

Please find attached two files - a letter and a map, requesting the T& E species consultation. We appreciate your help in checking for the T&E species that may be present in our proposed gypsy moth eradication area in Eugene.

Please contact me if you have any questions.

Thank you in advance.

Barry.

PS: The letter was addressed to your director. I was told that it should be sent to you directly because the area is in Lane County.

Barry B. Bai, Ph.D.
Entomologist
Oregon Dept. of Agriculture
Plant Division
635 Capitol Street NE
Salem, Oregon 97301-2532
Tel: 503-986-4645
Fax: 503-986-4786
Email: bbai@oda.state.or.us

From: Kevin_Maurice@fws.gov
Date: December 2, 2008 10:58:13 AM PST
To: Barry Bai <bbai@oda.state.or.us>
Cc: Ted_Buerger@fws.gov, Richard_Szlemp@fws.gov, Mikki_Collins@fws.gov
Subject: Re: T&E species consultation

Hi Barry. Sorry I missed you. I have been out the last 2 days.
Attached is the Lane County species list and the link to our web page where you can find all OR county species lists. I have forwarded this e-mail to our contaminants division and staff with expertise in silver spot and fender blue butterfly ecology. They may have questions or further information to share. Feel free to give a call if you have any questions.
KJM

(See attached file: LANE COUNTY.doc)
http://www.fws.gov/oregonfwo/Species/Lists/

Kevin J. Maurice
Wildlife Biologist
USFWS Oregon State Office
2600 SE 98th Ave., Suite 100
Portland, OR 97266
(503) 231-6179
(503) 231-6195 (fax)
Kevin_Maurice@FWS.Gov

From: Barry Bai <bbai@oda.state.or.us>
To: Kevin_Maurice@fws.gov
12/01/2008 03:34 PM
CC: Helmuth W Rogg <hrogg@oda.state.or.us>, Diana N Kimberling <dkimberl@oda.state.or.us>
Subject: T&E species consultation

Dear Mr. Maurice,

Please find attached two files - a letter and a map, requesting the T& E species consultation. We appreciate your help in checking for the T&E species that may be present in our proposed gypsy moth eradication area in Eugene.

Please contact me if you have any questions.

Thank you in advance.

Barry.

Barry B. Bai, Ph.D.
Entomologist
Oregon Dept. of Agriculture
Plant Division
635 Capitol Street NE
Salem, Oregon 97301-2532
Tel: 503-986-4645
Fax: 503-986-4786
Email: bbai@oda.state.or.us

FEDERALLY LISTED, PROPOSED, CANDIDATE SPECIES
AND SPECIES OF CONCERN
UNDER THE JURISDICTION OF THE FISH AND WILDLIFE SERVICE
WHICH MAY OCCUR WITHIN LANE COUNTY, OREGON

LISTED SPECIES

Birds

Marbled murrelet	*Brachyramphus marmoratus*	CH T
Western snowy (coastal) plover	*Charadrius alexandrinus nivosus*	CH T
Brown pelican	*Pelecanus occidentalis*	E
Short-tailed albatross	*Phoebastria albatrus*	E
Northern spotted owl	*Strix occidentalis caurina*	CH T

Fish

Inland:

Oregon chub	*Oregonichthys crameri*	E
Bull trout	*Salvelinus confluentus*	CH T

Invertebrates

Insects:

Fender's blue butterfly	*Icaricia icarioides fenderi*	CH E
Oregon silverspot butterfly	*Speyeria zerene hippolyta*	CH T

Plants

Willamette daisy	*Erigeron decumbens var. decumbens*	CH E
Bradshaw's desert parsley	*Lomatium bradshawii*	E
Kincaid's lupine	*Lupinus sulphureus ssp. kincaidii*	CH T

PROPOSED SPECIES

None

No Proposed Endangered Species	PE
No Proposed Threatened Species	PT

CANDIDATE SPECIES

Birds

Streaked horned lark	*Eremophila alpestris strigata*

Reptiles and Amphibians

Inland:

Oregon spotted frog	*Rana pretiosa*

SPECIES OF CONCERN

Mammals

Pallid bat	*Antrozous pallidus pacificus*
White-footed vole	*Arborimus albipes*
Red tree vole	*Arborimus longicaudus*

FEDERALLY LISTED, PROPOSED, CANDIDATE SPECIES AND SPECIES OF CONCERN UNDER THE JURISDICTION OF THE FISH AND WILDLIFE SERVICE WHICH MAY OCCUR WITHIN LANE COUNTY, OREGON

Townsend's western big-eared bat	*Corynorhinus townsendii townsendii*
California wolverine	*Gulo gulo luteus*
Silver-haired bat	*Lasionycteris noctivagans*
Long-eared myotis bat	*Myotis evotis*
Fringed myotis bat	*Myotis thysanodes*
Long-legged myotis bat	*Myotis volans*
Yuma myotis bat	*Myotis yumanensis*
Camas pocket gopher	*Thomomys bulbivorus*

Birds

Northern goshawk	*Accipiter gentilis*
Western burrowing owl	*Athene cunicularia hypugaea*
Black tern	*Chlidonias niger*
Olive-sided flycatcher	*Contopus cooperi*
Black oystercatcher	*Haematopus bachmani*
Harlequin duck	*Histrionicus histrionicus*
Yellow-breasted chat	*Icteria virens*
Acorn woodpecker	*Melanerpes formicivorus*
Lewis' woodpecker	*Melanerpes lewis*
Mountain quail	*Oreortyx pictus*
Band-tailed pigeon	*Patagioenas fasciata*
Oregon vesper sparrow	*Pooecetes gramineus affinis*
Purple martin	*Progne subis*

Reptiles and Amphibians

Northern Pacific pond turtle	*Actinemys marmorata marmorata*
Coastal tailed frog	*Ascaphus truei*
Oregon slender salamander	*Batrachoseps wrighti*
Northern red-legged frog	*Rana aurora aurora*
Foothill yellow-legged frog	*Rana boylii*
Cascades frog	*Rana cascadae*
Southern torrent (seep) salamander	*Rhyacotriton variegatus*

Fish

Malheur mottled sculpin	*Cottus bairdi ssp.*
Pacific lamprey	*Lampetra tridentata*
Coastal cutthroat trout	*Oncorhynchus clarki ssp*

Invertebrates

Insects:

Tombstone Prairie farulan caddisfly	*Farula reaperi*
Tombstone Prairie oligophlebodes caddisfly	*Oligophlebodes mostbento*
Insular blue butterfly	*Plebejus saepiolus insulanus*
One-spot rhyacophilan caddisfly	*Rhyacophila unipunctata*

Plants

Pink sand-verbena	*Abronia umbellata ssp. breviflora*
Crenulate grape fern	*Botrychium crenulatum*
Cliff paintbrush	*Castilleja rupicola*
Cold-water corydalis	*Corydalis aquae-gelidae*
Willamette Valley larkspur	*Delphinium oreganum*
Peacock larkspur	*Delphinium pavonaceum*

FEDERALLY LISTED, PROPOSED, CANDIDATE SPECIES AND SPECIES OF CONCERN UNDER THE JURISDICTION OF THE FISH AND WILDLIFE SERVICE WHICH MAY OCCUR WITHIN LANE COUNTY, OREGON

Wayside aster	*Eucephalus vialis*
Shaggy horkelia	*Horkelia congesta ssp. congesta*
Thin leaved peavine	*Lathyrus holochlorus*
Frye's Limbella	*Limbella fryei*
Snake River goldenweed	*Pyrrocoma radiata*
Whitetop aster	*Sericocarpus rigidus*
Henderson's checker-mallow	*Sidalcea hendersonii*
Hitchcock's blue-eyed grass	*Sisyrinchium hitchcockii*

DELISTED SPECIES

Birds

American Peregrine falcon	*Falco peregrinus anatum*
Bald eagle	*Haliaeetus leucocephalus*

Definitions:

Listed Species: An endangered species is one that is in danger of extinction throughout all or a significant portion of its range. A threatened species is one that is likely to become endangered in the foreseeable future.

Proposed Species: Taxa for which the Fish and Wildlife Service or National Marine Fisheries Service has published a proposal to list as endangered or threatened in the Federal Register.

Candidate Species: Taxa for which the Fish and Wildlife Service has sufficient biological information to support a proposal to list as endangered or threatened.

Species of Concern: Taxa whose conservation status is of concern to the U.S. Fish and Wildlife Service (many previously known as Category 2 candidates), but for which further information is still needed. Such species receive no legal protection and use of the term does not necessarily imply that a species will eventually be proposed for listing.

Delisted Species: A species that has been removed from the Federal list of endangered and threatened wildlife and plants.

Key:

E	Endangered
T	Threatened
CH	Critical Habitat has been designated for this species
PE	Proposed Endangered
PT	Proposed Threatened
PCH	Critical Habitat has been proposed for this species

Notes:

Marine & Anadromous Species: Please consult the National Marine Fisheries Service (NMFS) (http://www.nmfs.noaa.gov/pr/species/) for marine and anadromous species. The National Marine Fisheries

FEDERALLY LISTED, PROPOSED, CANDIDATE SPECIES AND SPECIES OF CONCERN UNDER THE JURISDICTION OF THE FISH AND WILDLIFE SERVICE WHICH MAY OCCUR WITHIN LANE COUNTY, OREGON

Service (NMFS) manages mostly marine and anadromous species, while the U.S. Fish and Wildlife Service manages the remainder of the listed species, mostly terrestrial and freshwater species.

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Oregon Fish and Wildlife Office
2600 SE 98th Avenue, Suite 100
Portland, Oregon 97266
Phone: (503)231-6179 FAX: (503)231-6195

Reply To: 8330.I0065(09)
File Name: Aphis_BT spray
TS Number: 09-809

Kenneth R. Seeley, Ph.D.
Chief, Environmental Services
Policy and Program Development
United States Department of Agriculture
Animal and Plant Health Inspection Service
4700 River Road
Riverdale, MD 20737

Re: Program to Eradicate Gypsy Moth from Eugene, Oregon.

Dear Mr. Seeley,

The U.S. Fish and Wildlife Service (Service) has reviewed the March 6, 2009, biological assessment (BA) for the above referenced project. Your request for informal consultation and concurrence with your effects determination was received on March 9, 2009. Based on the information provided in the BA, we are unable to concur with your determination that the project "may affect, but is not likely to adversely affect" the Fender's blue butterfly ("Fender's", *Icaricia icarioides fenderi*) and Kincaid's lupine (*Lupinus sulphureus* ssp. *kincaidii*), for reasons described below.

The BA documents the nearest known locations of Fender's and its host plant but does not indicate whether the 626-acre treatment area has been surveyed for the butterfly or its host plants. The Salix Associates (2007) study cited in the BA was not a rare species survey, but rather a habitat suitability study and did not cover the entire proposed treatment area since Salix Associates could not access many of the privately owned lands in the area (Salix Associates 2007, pg. 21). In fact, Salix Associates (2007, pg. 24) documents that most of their study area has not been systematically surveyed for uncommon and rare species, and that some of these areas where no survey records exist may contain uncommon and rare species populations.

Oak savannah and grassland habitats within Animal and Plant Health Inspection Services' (APHIS) proposed treatment area should be considered potential habitat for Fender's based on species range information. Every year for the last five years, Fender's populations have been newly identified in habitat remnants that had not been previously surveyed (Hammond 2004, 2005, 2006, 2007 and 2008, and Severns 2008). Salix Associates (2007, pg. 27) documents 8% (204 acres) of their study area to support oak savannah and grassland communities and specifically identified which survey areas supported these habitats (pg. 28). Given the Fender's suitable habitat identified in the proposed project area, the lack of surveys for Fender's and its

host plants on the entire 626-acre treatment area, we can not concur with your determination that Fender's would not be exposed to *Bacillus thuringiensis* var. *kurstaki* (*Btk*), during aerial applications.

We recommend that APHIS survey the potential habitat areas within the 626-acre treatment area for Kincaid's lupine, (*Lupinus sulphureus* ssp. *Kincaidii*), spur lupine (*L. arbustus)*, and sickle-keeled lupine (*L. albicaulis*) to better assess Fender's presence. If none of the lupine host plants are identified, a determination of no effect to Fender's would be appropriate and APHIS would not need concurrence from the Service. However, if lupine plants are identified we recommend not treating these areas with *Btk*, or implementing buffers around the lupine plant locations to ensure the proposed project does not adversely affect Fender's. If treating lupine plants with *Btk* is unavoidable, we recommend APHIS request formal section 7 consultation with the Service.

Based on the information provided in the BA, we were unable to determine what effect aerial spray of *Btk* may have on Kincaid's lupine even if it does occur within the treatment area. We request that APHIS provide more information to substantiate the "may affect, but not likely to adversely affect" determination for Kincaid's lupine.

If you have any questions or concerns about this consultation or the consultation process in general, please feel free to contact Mikki Collins or Rollie White of my staff at (503) 231-6179.

Sincerely,

Acting for Paul Henson, PhD
State Supervisor

cc: Diana Kimberling, Oregon Department of Agriculture

OREGON NATURAL HERITAGE INFORMATION CENTER

OSU Oregon State University

Institute for Natural Resources
1322 SE Morrison Street
Portland, Oregon 97214-2423
503.731.3070
http://oregonstate.edu/ornhic

Thursday, December 11, 2008

Barry Bai
Oregon Dept. of Agriculture
625 Capitol Street NE
Salem, OR 97301-2532

Dear Dr. Bai:

Thank you for requesting information from the Oregon Natural Heritage Information Center (ORNHIC). We have conducted a data system search for rare, threatened and endangered plant and animal records for your Eugene Gypsy Moth Eradication Area Project at T 18S R 03W Sections 16, 17, 20, and 21, WM.

Thirty-three (33) records total were noted within a two-mile radius of your project site and are included on the enclosed computer printouts.

Please remember that the lack of rare element information from a give n area does not mean that there are no significant elements there, only that there is no informat ion known to us from the site. To assure that there are no important elements present, you should inventory the si te, at the appropriate season.

This data is confidential and for the specific purposes of your project and is **not to be distributed**. Please also note that as our database is continually updated, the data in this report should be considered current for one year from the date it was generated and shou ld not be cited after **December 2009**.

Please forward the included invoice to the appropriate party in your organization.

If you need additional information or have any ques tions, please do not hesitate to contact me.

Sincerely,

Lindsey Koepke
Assistant Information Manager
lindsey.koepke@oregonstate.edu
503.731.3070 x104

encl.: **invoice (H-121108-LAK4)**
computer printouts and data key

Appendix C: Product label

Flowable Concentrate

Foray® 48B

Biological Insecticide

For Commercial Forestry and Wide-Area Pest Treatment – Aerial Application Only

List No. 60181-04

FOR ORGANIC PRODUCTION

Active Ingredient:

Bacillus thuringiensis subsp. kurstaki, Strain ABTS-351, fermentation solids, spores and insecticidal toxins	12.65%
Other Ingredients	87.35%
Total	100.00%

Potency: 10,600 Cabbage Looper Units (CLU) per mg of product (equivalent to 48 billion CLU per gallon).

The percent active ingredient does not indicate product performance and potency measurements are not federally standardized.

KEEP OUT OF REACH OF CHILDREN

CAUTION

FIRST AID

If in eyes	• Hold eye open and rinse slowly and gently with water for 15 - 20 minutes. • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.

HOT LINE NUMBER

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-877-315-9819 (24 hours) for emergency medical treatment and/or transport emergency information. For all other information, call 1-800-323-9597.

PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS
CAUTION

Causes moderate eye irritation. Avoid contact with eyes or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet.

Personal Protective Equipment (PPE)
Applicators and other handlers must wear:

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

Follow 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.

Agricultural Use Requirements:
Mixers/loaders and applicators must wear a dust/mist filtering respirator meeting NIOSH standards of at least N-95, R-95 or P-95. Repeated exposure to high concentrations of microbial proteins can cause allergic sensitization.

When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

IMPORTANT: When reduced PPE is worn because a closed system is being used, handlers must provide all PPE specified above for "applicators and other handlers" and have such PPE immediately available for use in an emergency, such as spill or equipment breakdown.

Non-agricultural Use Requirements:
Mixers/loaders and applicators must wear a dust/mist filtering respirator meeting NIOSH standards of at least N-95, R-95 or P-95. Repeated exposure to high concentrations of microbial proteins can cause allergic sensitization.

USER SAFETY RECOMMENDATIONS

Users should:
- Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

Environmental Hazards
Except under the forest canopy, do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment washwaters.

This product must not be applied aerially within 1/4 mile of any habitats of threatened or endangered Lepidoptera.

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 State or Tribal agency responsible for pesticide regulation.

AGRICULTURAL USE REQUIREMENTS
Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. Refer to supplemental labeling under "Agricultural Use Requirements" in the Directions For Use section for information about this standard.

Refer to the Directions For Use (below) for further directions.

STORAGE AND DISPOSAL

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

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

Pesticide Disposal: To avoid wastes, use all material in this container by application according to label directions. If wastes can not be avoided, offer remaining product to a waste disposal facility or pesticide disposal program (often such programs are run by state or local governments or by industry).

Container Disposal: Nonrefillable container. Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration. Do not burn, unless allowed by state and local ordinances.

Refillable Container: Refill this container with pesticide only. Do not use this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times.

Warranty and Disclaimer
To the extent permitted by applicable law, seller makes no warranty, express or implied, of merchantability, fitness or otherwise concerning the use of this product other than as indicated on the label. User assumes all risks of use, storage or handling not in strict accordance with accompanying directions.

DIRECTIONS FOR USE BOOKLET
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 State or Tribal agency responsible for pesticide regulation.

Apply this product only through aerial application.

AGRICULTURAL USE REQUIREMENTS
Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application.

Do not enter or allow worker entry into treated areas during the restricted-entry interval (REI) of 4 hours.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard (that involves contact with anything that has been treated, such as plants, soil, or water) is:
- Coveralls
- Waterproof gloves
- Shoes plus socks

NON-AGRICULTURAL USE REQUIREMENTS
The requirements in this box apply to uses that are NOT within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries or greenhouses.

APPLICATION
Apply Foray 48B, undiluted or with quantities of water sufficient to provide thorough coverage of plant parts to be protected, only by aerial equipment. The amount of water needed per acre will depend upon crop size, weather, spray equipment, and local experience.

Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment-and-weather-related factors determine the potential for spray drift. The applicator and the grower/treatment coordinator are responsible for considering all of these factors when making decisions.

HANDLING & MIXING

If Foray 48B is applied undiluted, the operator must ensure that the bulk quantity is well agitated and homogenous.

When Foray 48B is shipped by bulk tankers and transferred via a closed-loop mixing/loading system, the material is measured by passing through in-line flow meters directly into the aircraft, minimizing exposure to ground handling personnel.

In a similar manner, smaller containers of Foray 48B are also to be used with a closed-loop mixing/loading system to minimize the potential for accidental spills and exposure of ground handling personnel.

If dilution with water is needed for full crop coverage, fill tank with approximately 3/4 of the water required for dilution. Begin agitation and pump Foray 48B into the water while maintaining continuous agitation. Agitate as necessary to maintain suspension. Do not allow diluted mixture to remain in the tank for more than 72 hours.

When applying a diluted spray mixture, the use of a spreader-sticker approved for use on growing crops will improve the weather-fastness of the spray deposits. Add the spray adjuvant to the tank after the Foray 48B is added, and before the final volume of water is added to complete the mixture. Reduce or momentarily halt tank agitation and then add the required amount of adjuvant to the diluted mix. Use a closed-loop system to siphon the required quantity of adjuvant or pour the adjuvant into the top hatch of the tank. Once added, close tank opening, and resume agitation; add the rest of the water to complete the spray mix.

Combinations with commonly used spray tank adjuvants are generally not deleterious to Foray 48B, if the mix is used promptly. Before mixing in the spray tank, identify possible problems with physical compatibility by mixing all components in a small container in proportionate quantities. Check with an adjuvant supplier for advice on spray adjuvants that are compatible with biological pesticides such as Foray 48B to avoid incompatibilities.

SPRAY VOLUMES

Aerial Application: Use appropriate amount of Foray 48B, as indicated in the tables that follow, in aerial equipment undiluted or with quantities of water sufficient to provide thorough coverage of plant parts to be protected. In the western U.S., use a normal minimum of 5-10 gallons per acre; in the eastern regions, use a normal minimum of 2-3 gallons. The minimum amount of water needed per acre will depend upon crop size, weather conditions, spray equipment used and local experience.

GENERAL AGRICULTURAL USE INSTRUCTIONS

Foray 48B is a biological insecticide for the control of lepidopterous larvae. It contains the spores and endotoxin crystals of *Bacillus thuringiensis kurstaki.* Foray 48B must be ingested by the larvae to be effective. For consistent control, apply at first sign of newly hatched larvae (1st and 2nd instar larvae). Susceptible larvae that ingest Foray 48B cease feeding within a few hours and die within 2-5 days.

Foray 48B may be applied up to and on the day of harvest.

For maximum effectiveness, follow the instructions listed below:

Monitor fields to detect early infestations.

Apply Foray 48B when eggs start hatching and larvae are small (early instars) and before significant crop damage occurs. Larvae must be actively feeding to be affected.

Repeat applications every 3 to 14 days to maintain control and protect new plant growth. Factors affecting spray interval include rate of plant growth, weather conditions, and reinfestation. Monitor populations of pests and beneficials to determine proper timing of applications.

Under conditions of heavy pest pressures or when large worms are present use the higher rate, shorten the application interval, and/or improve spray coverage to enhance control. When these conditions are present, consider use of contact insecticide to enhance control.

Thorough coverage is essential for optimum performance.

Crop	Pests	Rate[1] (fl. oz./acre)
Forests, Shade Trees, Ornamentals, Shrubs, Sugar Maple Trees, Seed Orchards, Ornamental Fruit, Nut & Citrus Trees[2]	Gypsy Moth & Asian Gypsy Moth Elm Spanworm	21 - 107
	Spruce Budworm Browntail Moth Douglas Fir Tussock Moth Coneworm Buck Moth	21 - 80
	Tussock Moths Pine Butterfly Bagworm Leafrollers Tortrix Mimosa Webworm Tent Caterpillar Jackpine Budworm Blackheaded Budworm Saddled Prominent Saddleback Caterpillar Eastern & Western Hemlock Looper Orangestriped Oakworm Satin Moth	16 - 43
	Redhumped Caterpillars Spring & Fall Cankerworm California Oakworm Fall Webworm	11 - 31

Special Instructions:

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

[2]In treating Gypsy Moth and Asian Gypsy Moth infected 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.

Use and mix this product with other pesticides only in accordance with the most restrictive of label limitations and precautions. Do not mix this product with any product containing a label prohibition against such mixing. Do not exceed label dosage rates.

GENERAL NON-AGRICULTURAL USE INSTRUCTIONS

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 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.

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. Apply Foray 48B only by aerial application.

Use Foray 48B with a closed-loop mixing/loading system that will minimize the potential for accidental spills and exposure of ground handling personnel.

If dilution with water is needed for full crop coverage, fill tank with approximately 3/4 of the water required for dilution. Begin agitation and pump Foray 48B into the water while maintaining continuous agitation. Agitate as necessary to maintain suspension. Do not allow diluted mixture to remain in the tank for more than 72 hours.

Monitor to detect early infestations.

Crop	Pests	Rate[1] (fl. oz./acre)
Forests, Shade Trees, Ornamentals, Shrubs, Sugar Maple Trees, Seed Orchards, Ornamental Fruit, Nut & Citrus Trees[2]	Gypsy Moth & Asian Gypsy Moth Elm Spanworm	21 - 107
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	Tussock Moths Pine Butterfly Bagworm Leafrollers Tortrix Mimosa Webworm Tent Caterpillar Jackpine Budworm Blackheaded Budworm Saddled Prominent Saddleback Caterpillar Eastern & Western Hemlock Looper Orangestriped Oakworm Satin Moth	16 - 43
	Redhumped Caterpillars Spring & Fall Cankerworm California Oakworm Fall Webworm	11 - 31

Special Instructions:

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

[2]In treating Gypsy Moth and Asian Gypsy Moth infected 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.

Use and mix this product with other pesticides only in accordance with the most restrictive of label limitations and precautions. Do not mix this product with any product containing a label prohibition against such mixing. Do not exceed label dosage rates.

Aerial Application

Apply Foray 48B, either alone or diluted with water, aerially at the rates per acre shown in the application rates table. Spray volumes of 32-107 fluid ounces of product per acre give optimum coverage. Best results are expected when Foray 48B is applied to dry foliage.

For smaller spray volumes, mix the proper number of teaspoons of Foray 48B from the following chart to attain the desired rates:

If the rate is:	Add this amount per gallon of mix:
8 fl. oz. (0.5 pt.)/acre	1/2 teaspoon
16 fl. oz. (1.0 pts.)/acre	1 teaspoon
24 fl. oz. (1.5 pts.)/acre	1-1/2 teaspoons
32 fl. oz. (2.0 pts.)/acre	2 teaspoons
48 fl. oz. (3.0 pts.)/acre	3 teaspoons
64 fl. oz. (4.0 pts.)/acre	4 teaspoons

EPA Registration No. 73049-427
EPA Est. No. 33762-IA-1

VALENT BIOSCIENCES® CORPORATION
870 Technology Way, Suite 100
Libertyville, IL 60048

04-5701/R3

Appendix D: Public Comments Received

From: Eleanor Ryan <woodnymph3000@gmail.com>

Date: March 2, 2009 6:44:08 PM PST

To: Barry Bai <bbai@oda.state.or.us>, Helmuth Rogg <hrogg@oda.state.or.us>, Diana Kimberling <dkimberl@oda.state.or.us>, "Miller, Jeffrey" <jeffrey.miller@oregonstate.edu>, Eric Wold <class2rapids@comcast.net>, Jason Nuckols <jnuckols@tnc.org>, Bruce Newhouse <newhouse@ef.org>

Subject: Comments on the Proposed Environmental Assessment Gypsy Moth Eradication Program SE Eugene 2009

Dear Friends,

I am enclosing my comments on the Environmental Assessment for Spraying in Eugene in 2009. I tried to be as fair and accurate as possible while considering butterfly welfare.

Warmly--Ellie

Comments on Proposed Environmental Assessment: Gypsy Moth Eradication Program
Southeast Eugene, Lane County January 27, 2009

After having read carefully an studied many of the references from the proposed Environmental Assessment , I wish to comment as follows:

1. I would like to commend the authors for the high readability of the document for public use. Issues of history of Gypsy Moth in the state and of the economic consequences thereof were clearly stated.

2. Environmental factors: **Amphibians.** Although the document states there are no federally or state -listed endangered amphibians within the spray area, it has come to my attention that Red-legged Frogs are present in a small pond at the foot of Mt Baldy and in moist areas around that location. This information comes from the City of Eugene South Hills Study which I read on line. Perhaps the city has not forwarded this information to the ORNHIC
Given this disclosure, I expect this would require more **extensive mapping and planning** to avoid spraying that location. Although BtK is supposed to be harmless to amphibians, **do we spray endangered frogs?**

3. Environmental factors: **Federally listed Endangered plant Kincaid's lupine.**
From the same study of the City of Eugene South Hills, I have learned that a large population of Kincaid's Lupine has been located SW of the S Eugene Hills Study area. Reportedly Kincaid's exists on Solar Heights not far from Blanton Towers.
I understand this is a continuous ridge of upland prairie close to the designated spray area. There has been no indication that this area has been surveyed for Fender's Butterflies.

   Even if this Kincaid Lupine area is on private land , **if the endangered FBB were present outside but close by the spray area, Fender's Blue Butterfly is at risk of being eradicated.** We are accustomed to having FBB in our slighter higher and drier wetlands areas, but recently ,I understand that the Nature Conservancy has taken responsibility for private land on a similar south facing high ridge in the Colburg Hills. This Colburg Hills property was discovered to have Fender's Blue Butterfly , as well as many rare moths.
   (For information: Jason Nuckles TNC Eugene)
   Given the possibility of Fender's Blue on the Kincaid's Lupine , a survey of this upland prairie territory would be warranted. More specific information available from Bruce Newhouse Salix Associates and Eric Wold and Neil Bjorklund through the City of Eugene.

4. Environmental factors: **Butterflies.**
BtK spray is proposed as the agent for eradication of Gypsy Moths in the SE Eugene in '09. Although this BtK is a greatly improved product with “"organic certification”and only hours of persistence in the environment , the chief target of BtK is ALL LEPIDOPTERA.

   After studying P. Severns of 2002, I conclude: **It is disingenuous to state that BtK does not effect butterfly species who winter over as pupae.** (As recently portrayed at our Eugene community meeting).Because of the long time period of the 3 staged BtK spray repetitions (from Mid April to mid May) almost all local butterflies will be caught during that period in one of their vulnerable stages.

To this point ,I would like to discuss Paul Severns(2002) data from his Appendix P 170. (Chart included as addendum). The butterflies he sampled in the Schwarz Park spray site of 1997-2000 are very similar to the butterflies expected in the South East of Eugene.
For example: among Swallowtails both Pale and Western Tiger **winter over as pupae:** The adult can emerge from mid April to early May, but the resultant larva apparently were causalities to BtK by the final May 20th spray. Hence in the next two years no Swallowtails were produced on the study site.
Another example: Cedar Hairstreaks also **winter over as pupae**. The 5 adult Hairstreaks which are recorded in April-May are safe, but the resultant egg/larva are vulnerable to late spraying. No Hairstreaks are recorded in next three years. The Cedar Hairstreak species never recovered through the fourth summer (or third year). This lead to a local extinction at Schwarz Park of Cedar Hairstreaks.

In addition to above, of course, **it is clear that butterflies who winter over as eggs or larva will perish with the BtK sometime between early April to mid May.** Clodius Parnassian winters over as an egg. From two adults identified in 1997 there were no apparent offspring after 4 summers. Clodius Parnessian became locally exterminated in Schwarz Park after repeated BtK events. In the Schwarz Park study, Severns stated the abundance of the all butterfly species was depressed. Only in the 4th summer did most of the species recover.

Thus it is NOT CORRECT to assume (as in p.27 of EA, 1st paragraph) "however in the 3rd year both indexes (species richness and density) rebounded to prespray levels." Actually 2 species **Clodius Parnassian and Cedar Hairstreak apparently were locally exterminated** as they did not reappear by the 4th summer.

Jeffrey Miller (1990, 2007) predicts localized extinction of non-target lepidoptera in response to repeat BtK events. "Locally distributed monophagous and rare Lepidoptera are most likely to experience a resultant BtK induced extinction because they occupy narrow ecological niches"(Severns 2002).

Jeffrey Miller in discussing Rare, Endangered and Management Sensitive species notes that monophagous species are among those most likely to be harmed. Of course this includes Fender's Blue but in addition such monophagous vulnerable butterfly species such as Clodius Parnassian (Dicentra feeders), Great Spangled Fritillaries (Viola feeders), and Chalcedona Checkerspot (Asters). The latter two species also maintain local sedentary colonies which increases their vulnerability. (Chalcedona is not anticipated in SE Eugene)

5. Environmental Factors: **Lepidoptera in Oak Woodland:** Although not specifically addressed in the Environmental Assessment an oak woodland area exists in the spray designated area. Based on Jeffrey Miller's 1990 paper on BtK effects on Lepidoptera in Garry Oak in Elmira community which included sampling and raising caterpillars, one can conclude that : if BtK treated , the oak woodland will experience decline in the number of lepidoptera both as a to species and number of individuals. One can conclude that within three summers the number of immature lepidoptera will return to prespray levels. However the number of Lepidoptera Species or species richness may well be significantly lower.

Based on Miller of 2007—here are some uncommon or rare moths found in oak woodlands.: Mesogona subcuprea—Western Oak Sallow—is uncommon to rare

Catocala aholibah uncommon to rare
Catocala ilia---Zoe Underwing—ENDEMIC to low elevation oak woodland. Uncommon

Will these moths be included in a survey of insects possibly threatened by BtK?

To conclude: although most species of Lepidoptera will recover in 3 years, some especially vulnerable species of both Moths and Butterflies are not likely to recover and may become locally exterminated. Hence BtK is not specific enough to target only Gypsy Moths and there are potential LONG TERM CONSEQUENCES to its use.

Hence one can not say (as EA p. 27 conclusions). "No long term irreversible effects to non-target butterfly or moth populations are expected." THIS IS NOT TRUE.

6 ON THE POSITIVE SIDE TOWARD MORE SPECIFIC TREATMENTS

Gypsy Moth is an exceptional pest, leading to extreme defoliation, especially of Confirs. We applaud the Agriculture Department's successful wide-ranging trapping with specific pheromones to identify the location of Gypsy Moths throughout the state.

We applaud the increasing improvement of BtK to reduce toxic effects to humans, pets, fish bees and etc. The recent approval of organic status"shows the improvement of" inert ingredients"towards being less deleterious to humans.

Helmuth Rogg has recently notified me that the EPA approval for Gypcheck will soon be available in Oregon. It will likely be available for next years possible Gypsy Moth finds.

Given that reintroductions from unmanaged eastern states are guaranteed , next year the Agriculture Department will be ready for a new treatment alternative Gypcheck which is more specific to Gypsy Moths.

Some studies have indicated the greater effectiveness of Gypcheck in conjunction with EM-Entomophaga maimaiga,-a fungus which infects the Gypsy Moth caterpillar, and which can be transferred via resting spores. This product has not yet been approved by EPA in Oregon, but perhaps as a research program through the Forest Service it could be tested.

For Em reported non-target organisms include other members of Lymantridae, for example:
Leucoma salicis—an introduced pest
Orgyia psuedosugata Douglas Fir Tussock Moth---A Forest Pest This is now treated perhaps with BtK. These three are pests and will not be missed.

I have found three native Lymantridae which might be harmed by EM
Dasychera grisefacta –an uncommon native widely distributed.
Dasychera vagan—Variable Tussock Moth common in oak woodlands and widely distributed.
Orgyia antiqua—Rusty tussock Moth—common in broadleaf trees and widely distributed.

Obviously EM would be extensively tested in Oregon trials , but it shows promise as a control treatment. It has been successful in the east. Rainy Spring conditions increase its effectiveness.

Oregon springs might provide perfect conditions for EM dissemination

I would like to thank Jeffrey Miller, Paul Severns, Helmuth Rogg, Barry Bai, and Diana Kimberling, who have helped to educate me re: BtK, Gypsy Moths, and the effects on non-target lepidoptera of treatment programs.

Representing the Eugene-Springfield Chapter of the North American Butterfly Association, naturally my greatest concerns are for the welfare of Butterflies. We all know that their welfare depends on SPECIFIC TARGETED TREATMENTS and these we encourage the Department of Agriculture and the Forest Service to make available and employ.

CONCLUSION; The preliminary document presented at the Community Meeting in Eugene was not totally forthright. Knowable studies are not quoted correctly. The Environmental Assessment is not completely researched with an up-to-date field survey This is still needed. The library of knowledge is fuller and richer than the Environmental Assessment portrays with respect to species included and the terrain to be sprayed.

Submitted by Eleanor Ryan President of Eugene/Springfield NABA
1728 Karyl Ave, Eugene, OR
541-684-8979

Some References: Jeffrey Miller. Field Assessment of the Effects of a Microbial Pest Control Agent on Nontarget Lepidoptera. American Entomologist 36:135-139.

Jeffrey Miller and Paul Hammond. Butterflies and Moths of the Pacific Northwest Forests and Woodlands. Rare, endangered, and Management Sensitive Species. Forest Health Technology team September 2006-7.

Paul Severns. Evidence for the Negative Effects of BT on a non-target Butterfly community in Western Oregon, USA. Journal of the Lepidopterists' Society. 56(3), 2002, 166-170.

Ann E. Hajek. Proceedings 1998. Use of Fungi to control Gypsy Moth. Prepared from a video tapped presentation.

From: "Rob Jerome" <mjerome@uoregon.edu>
Date: March 6, 2009 10:51:32 AM PST
To: <gypsymoth@oda.state.or.us>
Subject: Comment: Environmental Assessment: Gypsy Moth Eradication Program: Southeast Eugene

I attended the public meeting in Southeast Eugene regarding the proposed spraying of B.t.k. to begin in late April of 2009. I am sure you are already aware that the overall tone of the public meeting was not supportive of the spraying proposal.

According to page 21 of the Environmental Assessment: Gypsy Moth Eradication Program of January 2009:

"Mass trapping removes male moths from the environment, thus reducing the probability of males finding females for mating. It can be an effective control when a gypsy moth infestation is small, but its effectiveness is variable when gypsy moth populations are large."

Since the number of gypsy moths trapped in Southeast Eugene was so small, I am still unclear as to why a mass trapping approach would not be attempted before the proposed spraying.

The relative safety risks of mass trapping as opposed to spraying was not discussed at the public meeting to my knowledge. I would be most supportive of a gypsy moth program which posed the least possible risk to humans and the environment.

Manford R. Jerome, Jr.
1325 Skyline Park Loop
Eugene, OR 97405

From: Pont.Richard@epamail.epa.gov

Date: March 9, 2009 8:51:53 AM PDT

To: Dale L Mitchell <dmitchel@oda.state.or.us>, Janet Fults <jfults@oda.state.or.us>

Cc: Keaney.Kevin@epamail.epa.gov

Subject: Re: WPS Clarification

Janet, et al,

First a little intro to give some background for the eventual

recipients. When EPA conducts its risk assessment for a pesticide, the Agency considers and estimates the different types/sources of potential exposures that may arise from the use of that pesticide (dietary, occupational, residential, drinking water, etc.). EPA then calculates the potential risk from these different potential exposures (based on the various toxicity studies, residue data, and other data available to the Agency), and determines the appropriate risk mitigation measures needed to mitigate potential exposures down to a level where the potential risk from these exposures is considered negligible. A variety of different safety factors are built into the risk assessment and mitigation process to provide margins of safety for the most sensitive populations and to take into account such things as inter-species variability, differences in dietary consumption habits among different populations, and differences for those occupationally exposed versus those whose only exposure is incidental, residential, or dietary, etc.

The final set of mitigation measures needed on the label depend primarily on the use patterns for the product and potential exposures (i.e., are there food uses, residential uses, etc.), and the product toxicity and the types and severity of different adverse effects identified in the studies submitted to the Agency. There are different types of risk mitigation measures to address different sources of exposures. For example, pre-harvest intervals (PHIs) are established to assure that a given commodity will not be harvested and allowed into the food chain sooner than that time period needed to assure that pesticide residue levels on the consumed commodity will be below the established "tolerance" levels for that pesticide/commodity combination.

Similarly to PHIs, the Agency uses a variety of methods to mitigate occupational exposure. These include such things as restricted-entry intervals (REIs), personal protective equipment (PPE), engineering controls (e.g., enclosed cabs, closed systems, etc.), and restricting the use of the product so that it can only be applied by certified applicators. When determining the mitigation measures needed to prevent adverse effects from occupational exposures, the Agency assumes that a person will be exposed to pesticides eight hours a day, for five days a week, over their normal working lifespan - increasing the potential for chronic effects. Because the potential lifetime exposure for an occupational pesticide worker is so much higher than the potential lifetime exposure for the average public citizen whose only source of exposure would be from incidental, dietary or drinking water, or residential exposure, the mitigation measures needed to mitigate chronic occupational exposure are going to be greater than the mitigation needed for the average person among the public. Hence, the REIs are established to prevent that worker from getting repeated higher level exposures that might be encountered if they went back in the treated area immediately after application every day, five days a week, over their lifetime. It is important to note that even though this product does have an REI to mitigate occupational exposure, the four-hour REI is the lowest REI restriction used by the Agency for WPS products - granted only to those products that meet certain low-toxicity criteria.

Generally speaking, REIs per se, are not used for mitigating risk to the public and bystanders. In determining the potential risks to the public and bystanders the Agency considers the potential for acute effects if they are exposed to the product or its residues, and determines if delayed entry requirements are necessary. If so, those would be reflected on the label under the non-agricultural use section of the label. In general, if the Agency noted during its risk assessment that there were significant risks to the public that warranted substantial delayed entry requirements or other types of risk mitigation for non-occupational persons, more than likely the Agency would modify the use pattern or require changes to formulation that lowered toxicity because it realizes the prior types of mitigation measures are not suitable for mitigating bystander risk since they are not likely to get the label information. The exception would be certain lawncare type products where it is expected a PCO would deliver this information to the consumer as part of a label requirement.

I hope this helps provide the explanation you were looking for. If you have any questions, please let me know.

Richard Pont

U.S. EPA/Office of Pesticide Programs (7506P)

Certification and Worker Protection Branch

phone: (703) 305-6448

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For more information about Pesticide Worker Safety visit:

http://www.epa.gov/pesticides/health/worker.htm

WPS Clarification

Janet Fults

to: Kevin Keaney, Richard Pont

03/06/2009 12:45 PM

Cc: Dale L Mitchell

Kevin & Richard,

I am asking for your help in addressing a relatively basic question that is being asked of the Oregon Department of Agriculture by a special interest group. To give you a little background, the ODA is planning to conduct aerial applications of the Btk product FORAY 48B to control a gypsy moth infestation. The area to be treated is a residential neighborhood in south Eugene, Oregon. The label question that is being asked of us is in regard to the WPS reentry interval of 4 hours. The question is: Why is it necessary to protect workers and prevent them from entering the treated site for 4 hours, but it is not necessary to protect citizens from the same exposure potential? We have explained that the use does not constitute a use covered by the WPS, but this does not have any relevance to citizens that are not familiar with the implementation of WPS. The Non-Ag Use box of FORAY 48B does not have any requirements at all.

So, bottom line, would either of you please provide the rationale as to why workers need restrictions on reentry and other persons do not. I have explained the worker exposure risk potential with dislodgeable residues, tasks, etc but since our state agency who is supporting, and organizing, this treatment program, any explanation that ODA provides is not trusted at this point. A response from EPA will be recognized as a more reliable source of information.,

I have attached a copy of the label for your reference. Of course, if you would prefer to have someone else respond to this request, that is fine. I just wanted to make this request of you and see where it needs to go.

If you can respond by Monday, please cc Dale Mitchell at dmitchel@oda.state.or.us on your response as I will. be out until Tuesday. I will be available if you have questions from Tuesday on.

Thank you for this and I will definitely owe you one!!

Regards,

Janet

Janet Fults, Program Manager

Pesticide Registrations, Certification/Licensing,

Water Quality & Fertilizers

Oregon Dept of Agriculture

Pesticides Division

(503) 986-4652

(503) 986-4735 fax

jfults@oda.state.or.us

From: Sally Nunn <salaxnunn@gmail.com>
Date: March 11, 2009 8:59:42 PM PDT
To: <gypsymoth@oda.state.or.us>
Subject: Gypsy Moth Spraying in Eugene

Dear Mr. Rogg,

I was contacted by members of Oregon Toxics Alliance to support their opposition to aerial spraying for the Gypsy moth locally. While I support OTA's hard work on behalf of citizenry, in conscience, I cannot support this decision.

Bacillus thuringiensis is naturally occurring in decaying matter in soils the world over and has been used in treating insect pests since 1958. Although I spent the greater part of a week reading available materials on Bt var. Kurstaki as a method for eradicating the moth, I could find no cases of serious human health consequence from either controlled testing or spraying regimes.

I understand many are fretful about spraying but their fears are not corroborated by any but anecdotal evidence of unpleasant effects. Studies that show harm from injecting Btk-- a bacterium that produces protein for which we lack receptors-- directly into rats does not translate to harm for humans. Injecting them with peanut butter would be as lethal at the reported dosage.

Reports from our local experts, National Coalition of Alternatives to Pesticides (NCAP), fully document their extensive research and, as of this writing, their preferred alternative was Btk. People are quick to forget we used to use truly harmful chemicals like Sevin or Malathion before Btk became available.

Eradication programs in New Zealand, a source used by OTA to support their argument against Btk, may have stopped not because of citizen outcry but because the moths were gone after the program. The US Environmental Protection Agency, Health Canada, World Heath Organization and others have judged it safe.

As a non-scientist, but, one who fully supports the scientific method, I believe that Btk is not harmful to humans, except perhaps psychologically problematic, and the proposed spraying is the best available method to combat a potentially very harmful infestation.

Yours Truly,

Sally Nunn

--
Sally Nunn (speaking solely for myself)
Many Rivers Group Sierra Club, Political Chair
Oregon League of Conservation Voters, Lane Steering Committee
EcoBroker
Prudential R.E. Professionals
1601 Willamette Street
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(fax) 541-485-4460
(cell) 541-517-7531
sallynunn@prurep.com

"Helping people find suitable habitat"
If you know of anyone considering a move-
I'd appreciate your referral!

From: Helmuth Rogg <hrogg@oda.state.or.us>
Date: March 11, 2009 8:33:20 PM PDT
To: Dan Hilburn <Daniel.J.Hilburn@state.or.us>, Katy Coba <kcoba@oda.state.or.us>
Cc: Barry B Bai <bbai@oda.state.or.us>, Diana N Kimberling <dkimberl@oda.state.or.us>, Lisa R Hanson <lhanson@oda.state.or.us>
Subject: Fwd: NCAP statement on gypsy moth/Btk

Dear Katy and Dan,
NCAP is supporting our Btk treatment.

Best regards,
Helmuth

Begin forwarded message:
From: Kim Leval <kleval@pesticide.org>
Date: March 11, 2009 6:17:08 PM PDT
To: hrogg@oda.state.or.us
Subject: NCAP statement on gypsy moth/Btk

Hello Helmut,

I am sending you our position statement on the use of Btk to eradicate gypsy moths in the Eugene area. This statement will be read tomorrow at the hearing by Mayor Kitty Piercy. We will not be present at the meeting.

If you have questions please call me. Thank you, Kim

Kim Leval, Executive Director
Northwest Coalition for Alternatives to Pesticides
PO Box 1393
Eugene, OR 97440
Phone (541) 344-5044 ext. 15
kleval@pesticide.org
www.pesticide.org
Protecting the health of people and the environment by advancing alternatives to pesticides

Written Testimony by the

Northwest Coalition for Alternatives to Pesticides

March 12, 2009

The mission of the Northwest Coalition for Alternatives to Pesticides (NCAP) is to protect the health of people and the environment by advancing alternatives to pesticides.

With our mission and values in mind, we have considered the health and environmental effects of the proposed use of Bacillus thuringiensis v. kurstaki (Btk). We consider Btk to be the most reasonable alternative to using toxic chemicals for eradicating gypsy moths this year.

NCAP has history with the issue of gypsy moths and the use of Btk.

In the 1980s, a large infestation of gypsy moths was discovered in Lane County, including Eugene. At that time, the Oregon Department of Agriculture (ODA) proposed spraying Btk over most of the acreage and spraying one of two conventional chemicals over the epicenters of the infestation. NCAP was one of many voices that pushed ODA to use only Btk.

The 1980s infestation had eluded state monitoring for several years, so the state ended up spraying more than 230,000 acres. Acting swiftly to control new infestations can reduce pesticide use by keeping the control area smaller.

We have researched the use of Btk and looked anew at what other alternatives are available.

Other alternatives that target only gypsy moths — and do not affect other moths and butterflies — include a pheromone, a virus, and a fungus. Like Btk, all of these would be considered pesticides. However, one is not yet registered by the Environmental Protection Agency and the other two are not currently registered for use in Oregon. Serious consideration should be given to their future role in an eradication program.

With regard to human health, it is not possible to say that there is no risk associated with the proposed spray. However, studies of people exposed to Btk during aerial spray programs, including some studies done in Oregon, have found that Btk causes few immediate adverse effects.

We want to emphasize that with any program like this, public agencies must make every effort to communicate clearly and broadly with the public about steps people can take to protect their health, including publicizing a phone number to call if they experience any symptoms.

Foray 48B, the Btk product used in the past, has been reformulated to meet national organic standards and can now be used by organic farmers. The national organic standards regulate both Btk and the inert ingredients in Foray 48B.

The manufacturer of Foray 48B disclosed the inert ingredients to the ODA, but it is clear that the public will not have access to this information at this time because of federal protection of confidential business information.

NCAP has long advocated — and will continue to advocate — for the public's right to know the identity of all ingredients in any pesticide product.

For this year's proposed eradication, we still consider Btk to be the most reasonable alternative to using toxic chemicals for eradicating gypsy moths.

We're happy to answer questions and share our research. Please call Kim Leval, NCAP Executive Director at (541) 344-5044, ext. 15.

From: Ann Kneeland <annbkneeland@yahoo.com>

Date: March 12, 2009 12:43:59 PM PDT

To: <gypsymoth@oda.state.or.us>

Subject: Comments on Gypsy Moth Eradication Spray in Eugene, OR - Spring 2009

To Whom It May Concern:

Please include this email as formal comments on the Proposed 2009 Gypsy Moth Eradication Program in Eugene, Lane County, Oregon on 626 acres in south Eugene.

I am primarily concerned that this planned spray does not comply with the Foray 48B Product Label requirements. As the label itself states: "It is a violation of Federal Law to use this product in a manner inconsistent with its labeling."

First, the Foray 48A Product Label states: "Except under the forest canopy, do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark." Large parts of the Amazon creek and headwaters are open water ways. Eugene has recently done extensive clearing along the banks of the Amazon Creek within the eradication area. As result, these waterways are cleared of blackberries and other low-lying brush. Much of these waterways in the eradication area are NOT UNDER FOREST CANOPY. An aerial spray of these waterways will inevitably result in the direct application of Foray 48A to water, prohibited by the label. This direct application of Foray 48A to water is a violation of the Product Label requirements and, therefore, of Federal Law.

Second, the Foray 48A Product Label states: "Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected workers may be in the area during application." In order to comply with this label requirement, NO residents, school children, non-spray-related workers, park visitors and other persons MAY BE IN THE ERADICATION AREA DURING THE APPLICATION. It is not sufficient to post, advertise or otherwise provide notice that many people who live, work, recreate, pass through or otherwise be in the eradication area may never see or be aware of. This inadequate type of notification makes it foreseeable that people will remain in the application area. If non-spray-related workers are in the eradication area during application,

this is a violation of the Product Label requirements and, therefore, of Federal Law.

Similarly, the Foray 48A Product Label also states: "Do not enter or allow worker entry into treated areas during the restricted-entry interval (REI) of 4 hours." Based on the label requirements, only spray workers are allowed in the area during the application, and no one, including the spray workers, are allowed in the application area for four hours after the application. The agency must specify how it intends to get all people out of the eradication area during the application, and keep them out for at least four hours after the application. These details have not been provided. If workers or any other person is allowed in the eradication area within four hours after the application of Foray 48A, this is a violation of the Product Label requirements and, therefore, of Federal Law.

Finally, on the ODA website entitled "Protecting Eugene from the Gypsy Moth," there is no clear information about the comment period on this proposed federal action. In addition, on the newspaper notice of the Public Information Meeting on February 19, 2009, there is no mention of a comment period. Citizens should be provided with the necessary information to comment during the relevant time period, as these comments are the only way that a citizen can have any meaningful input with potential legal consequences.

Thank you for reviewing and addressing these comments.

Sincerely yours, Ann B. Kneeland, Eugene resident

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If there is no struggle, there is no progress. Those who profess to favor freedom, and deprecate agitation, are men who want crops without plowing up the ground, they want rain without thunder and lightning.

- Frederick Douglass

The Nature Conservancy
Protecting nature. Preserving life.™

The Nature Conservancy in Oregon
821 SE 14th Avenue
Portland, OR 97214-2537

tel 503 802-8100
fax 503 802-8199
nature.org/oregon

3-12-2009

Statement regarding gypsy moth eradication in SE Eugene

Mayor Piercy:

On behalf of The Nature Conservancy in Oregon, I am writing to express support for the treatment of Gypsy moths in SE Eugene. We support the Oregon Department of Agriculture's use of sound science to determine where, when and how treatments will occur.

The Nature Conservancy is a private, international, non-profit organization that preserves plants, animals and natural communities that represent the diversity of life on Earth by protecting the lands and waters they need to survive. To date the Conservancy has been responsible for the protection of more than 12 million acres in the United States and has helped preserve more than 80 million acres in Latin America, the Caribbean, Asia and the Pacific. In Oregon, the Conservancy owns or manages 46 nature preserves and has helped protect over 500,000 acres of important habitats, with support from about 23,000 household members.

Based on our over 45 years of on-the-ground work in Oregon, we understand the threat invasive species pose to our land and waters. Next to habitat conversion the greatest threat to this country's native plants, animals and natural communities is invasive species. The European gypsy moth has been one of the most destructive exotic forest pests introduced to North America. Gypsy moth larvae feed on the broadest host range of all established exotic pests in North America and prefer hardwood trees. Trees respond to defoliation from larval feeding by producing new leaves at the cost of draining energy reserves. Repeated defoliations will eventually cause decline and tree mortality in some cases. Oak species, particularly trees that are stressed or located on dry ridges, are preferred hosts. Gypsy moth damage affects timber and recreational industries and can have a significant impact on wildlife populations, biodiversity and the overall ecosystem. When populations reach epidemic levels, tree mortality can be as high as 90%.

Of concern to The Nature Conservancy in Oregon is the potential impact of gypsy moths on the Willamette Valley's oak savannas and oak woodlands. Formerly abundant in the Valley a recent report now estimates that almost 100% of oak savannas have been converted to other uses. Only 10% of oak woodlands remain. Many wildlife species rely on these communities and the spread of gypsy moth into these habitats would be tragic.

The Nature Conservancy in Oregon is a strong supporter and promoter of early detection and rapid response as the most effective and efficient method of eradication for invasive species. The Oregon Department of Agriculture has implemented a very effective early detection program.

They actively monitor for gypsy moths each year, and identify a breeding population when gypsy moths are found in the same area two years in a row. Treatment at this time, when the population is small and confined, has the best chance of successful eradication with both the least cost and the least impact on both the human and natural environment.

Sincerely,

Steven C. Buttrick
Director of Conservation Science and Planning
The Nature Conservancy in Oregon

Comments on the 2009 Draft Environmental Assessment
Gypsy Moth Eradication Program, Southeast Eugene, Lane County
March 13, 2009
Submitted by Jan Wroncy

I would like to present the following comments in opposition to aerial spraying of FORAY 48B insecticide over the Southeast section of Eugene. I was a victim of Oregon Department of Agriculture's spraying in the 1980's and do not wish this hellish experience on any more people in Oregon. I have friends who live in this year's drop zone, who also lived in the Crest area spraying during spraying a few years ago. For them, and for all other potential victims of this illegal non-consensual exposure of humans, and the environment, I hereby asked the Oregon Department of Agriculture to abandon the use of pesticides (biological agents with over 87% chemical agents mixed in, or purely chemical insecticides).

I am also hereby incorporating by reference, and/or by attachment comments submitted by Lisa Arkin of Oregon Toxics Alliance, by Thomas A. Kerns, Environment and Human Rights Advisory, Debbie Schlenoff for Lane County Audubon Society, Carol Van Strum (victim of the 2003 Five Rivers Gypsy Moth Spray Program) comments on the Draft Supplemental Environmental Impact Statement (SEIS), and my own comments on the SEIS.

VIOLATIONS of HUMAN RIGHTS:

See the excellent discussion of human rights violated in the attached document entitled *A Human Rights Assessment of ODA's Proposed Aerial Gypsy Moth Spray in Eugene, Oregon* by Dr. Thomas A. Kerns prepared for Katy Coba, Oregon Department of Agriculture, and for Lisa Arkin, Oregon Toxics Alliance on March 2, 2009.

ILLEGAL EXPERIMENTATION ON HUMANS: **A violation of both human rights and of federal law (40 CFR Section 156.10 (a)(5)(ix):**

FEDERAL LAW

7 USCA Section 136j Unlawful acts [FIFRA section 12]

(a)(2) It shall be unlawful for any person ---

(G) to use any registered pesticide in any manner inconsistent with its labeling

(P) to use any pesticide in tests on human beings unless such human beings (i) are fully informed of the nature and purposes of the test and of any physical and mental health consequences which are reasonably foreseeable therefrom, and (ii) freely volunteer to participate in the test

The Oregon Department of Agriculture is NOT asking permission from the residents who will be subjected to this non-consensual exposure to this biological and chemical pesticide formula - FORAY 48B.

The Oregon Department of Agriculture is NOT allowing humans to "freely volunteer".

The Oregon Department of Agriculture has NOT revealed "any reasonably foreseeable physical and mental health consequences" of the active biological agent, Bacillus thuringiensis kurstaki (Btk), much less for the Formula FORAY 48B. Although the ODA and the federal agencies funding this pesticide (bio/chemical) program have been received information about many studies from around the world showing the harm of both Bt, Btk, and FORAY 48B repeatedly, ODA has not fully incorporated the information available, and certainly not shared it with potential human volunteers.

The residents have not even been told all of the ingredients that they will be forcibly exposed to. See INERTS below for list of secret ingredients in FORAY 48B. Therefore also, have not been told "any reasonably foreseeable physical and mental health consequences" of the inerts, and are also denied to them for the other 87.35% ingredients in the formula.

VIOLATIONS of FEDERAL PESTICIDE LAWS:

The label of FORAY 48B is misbranded by placing the words "FOR ORGANIC PRODUCTION" in a prominent position on the label implying that if it is safe for organic crops, it is safe to spray on people, houses, yards, parks, schools, businesses, nursing homes, and churches.

40 CFR Section 156.10 (a)(5)(ix)

> it is a violation of the Code of Federal Regulation ....to state or imply that a pesticide is safe, even when used according to label instructions. See exact language of the law below:

(a)(5) *False or misleading statements*. Pursuant to section 2(q)(1)(A) of the Act, a pesticide or a devise declared subject to the Act pursuant to § 152.500, is misbranded if its labeling is false or misleading in any particular including both pesticidal and non-pesticidal claims. Examples of statements or representations in the labeling which constitute misbranding include:

(ix) Claims as to the safety of the pesticide or its ingredients, including statements such as "safe," "nonpoisonous," "noninjurious," "harmless," or "nontoxic to humans and pets" with or without such qualifying phrase as "when used as directed";

Details below:

Title 40: Protection of Environment
PART 156—LABELING REQUIREMENTS FOR PESTICIDES AND DEVICES
Subpart A—General Provisions

§ 156.10 Labeling requirements.

(a) *General* —(1) *Contents of the label.* Every pesticide product shall bear a label containing the information specified by the Act and the regulations in this part. The contents of a label must show clearly and prominently the following:

(5) *False or misleading statements.* Pursuant to section 2(q)(1)(A) of the Act, a pesticide or a device declared subject to the Act pursuant to §152.500, is misbranded if its labeling is false or misleading in any particular including both pesticidal and non-pesticidal claims. Examples of statements or representations in the labeling which constitute misbranding include:

(i) A false or misleading statement concerning the composition of the product;

ODA is stating that this is a biological pesticide, not chemical. In reality Foray 48B is 13% BtK, and 87% CHEMICAL ingredients including the active pesticide ingredient 1, 2-Benzisothiazolin-3-one.

(v) Any statement directly or indirectly implying that the pesticide or device is recommended or endorsed by any agency of the Federal Government;

EPA does not endorse or recommend pesticides, only registers them.

(vii) A true statement used in such a way as to give a false or misleading impression to the purchaser;

OMRI certified is right on the label and ODA uses this to justify spraying homes, gardens and people. Both the manufacturer and ODA are at fault here.

(viii) Label disclaimers which negate or detract from labeling statements required under the Act and these regulations;

Here again, the OMRI certification on the label detract from labeling statements that are cautionary and have the effect of (federal) law.

(ix) Claims as to the safety of the pesticide or its ingredients, including statements such as "safe," "nonpoisonous," "noninjurious," "harmless" or "nontoxic to humans and pets" with or without such a qualifying phrase as "when used as directed"; and

(x) Non-numerical and/or comparative statements on the safety of the product, including but not limited to:

(A) "Contains all natural ingredients";

(B) "Among the least toxic chemicals known"

(C) "Pollution approved"

OMRI certified, and approved for use on organic farms, etc. are used to imply safety. This is clearly a violation of federal law (FIFRA).

In my opinion, ODA and the manufacturer of Foray 48B have violated 40 CFR 156.10.

VIOLATIONS of ENDANGERED SPECIES ACTS:

See the comments by Debbie Schlenoff for Lane County Audubon regarding the need for a current survey of the area for endangered species, rare, threatened, or watchlist species - Fender's Blue Butterfly, and for the red-legged frog. THIS MUST BE DONE BEFORE SPRAYING! The Survey must include an area farther out than the 1/4 mile buffer mentioned on the label because the topography and weather conditions as well as the fact that rain water will wash off all the solid surfaces such as roof tops, driveways, parking lots, and roads will all drain away from the sprayed area. Additionally, my drift expert advises me that this insecticide (bio/chemical) will blow with the dust from the sprayed area. It would be reasonable to expect that heavy motor vehicle traffic which occurs in this area of Eugene with also spread the biologically active ingredient (Btk) entrained with the dust and spread by the tires of the cars. This could impact an enormous area which must be surveyed for endangered species that are susceptible to either air or water borne biological/chemical insecticides.

VIOLATIONS of THE CLEAN WATER ACT:

If FORAY 48B is considered an "aquatic" pesticide, it requires a National Pollution Discharge Elimination System (NPDES) Permit under the Clean Water Act. The brilliant rulings in firstly Headwaters v. Talent Irrigation District, and secondly in League of Wilderness Defenders v. Forsgren in the Ninth Circuit Court of Appeals established that pesticides have to comply with both the Federal Insecticide Fungicide and Rodenticide Act (FIFRA) and with the Clean Water Act (CWA) and therefore require and NPDES permit if allowed in water. The recent Sixth Circuit Ruling in National Cotton Council et al v. EPA. established that the "Bush Rule" allowing applications of certain pesticides to water to be conducted without NPDES permits was to be thrown out.

The Environmental Protection Agency will be developing procedures to follow. Meanwhile, if an NPDES permit will be required, then Oregon Department of Agriculture should, at a bare minimum, NOT APPLY FORAY 48B in a manner that it will end up in any body of water, including but not limited to Amazon Creek and its tributaries. Aerial applications of insecticides from helicopter (even bio/chemical insecticides) drift long distance, and may still end up in the water.

See attached Wester Environmental Law Center's Winter Newsletter attached.

VIOLATIONS of THE AMERICANS WITH DISABILITIES ACT, 1990 Title II

In Lee v. Los Angeles County 2001, published decision in the Ninth Circuit, the court determined that basically anything a state or local government does is subject to an ADA claim. By discriminating against people who have disabilities on the basis of their disability, or by denying disabled people access, the state and/or local government is violating disabled people under ADA Title II. See discussion below.

VIOLATIONS of THE REHABILITATION ACT

Any time that the government (city, county, or state) uses federal funds in a way that disparately harms disabled people, that is a clear violation of the Rehabilitation Act of 1973. All federal funding may be pulled from the offending government body for violations of the Rehabilitation Act. Clearly people

who are disabled by immune system impairment (unable to fight off infection, or immune system overreaction, or autoimmune disorders), liver impairment (unable to detoxify chemical poisons), porphyria, chemical injury, chemical sensitivity, respiratory disorders including asthma, and many other debilitating conditions.

VIOLATIONS of NEPA

By not including the "other ingredients" in the NEPA documentation (the Eugene Draft EA, the EIS this is tied to, and in the Draft Supplemental EIS that is in progress) the public and the agencies who make decisions on the environmental impacts, CAN NOT be making accurate science based decisions lacking this critical information about what is ACTUALLY being spread around the environment, and what impact an exposure to humans, fish and wildlife and the environment would be.

UNDISCLOSED OTHER INGREDIENTS:

See attached lists of other ingredients, including other active pesticidal ingredients.

Respectfully submitted by,

Jan Wroncy
Post Office Box 1101
Eugene, OR 97440

From: "Lisa Arkin" <larkin@oregontoxics.org>

Date: March 13, 2009 8:39:31 AM PDT

To: <gypsymoth@oda.state.or.us>

Cc: "'Helmuth Rogg'" <hrogg@oda.state.or.us>, "Daniel J Hilburn" <dhilburn@oda.state.or.us>, "'Barry Bai'" <bbai@oda.state.or.us>, "'Katy Coba'" <kcoba@oda.state.or.us>

Subject: Public Testimonies - Gypsy Moth Eradication

Reply-To: <larkin@oregontoxics.org>

Dear Dan, Barry and Helmuth,

Thank you for participating in the Mayor's Town Hall meeting last night. I appreciate the time you took to travel to and from Eugene. I sincerely believe in the value of public discourse, sharing information and collaborative efforts for the public benefit.

In that spirit I hope that ODA and OTA will continue to talk about following public health precautions for the gypsy moth spray in the event that it is carried out. I understand that all of you have expressed a willingness to work together to ensure that Eugene residents feel safe, know how to keep themselves and their families safe, and are fully cognizant of the details of the spray plans.

I urge you to follow through with the City of Eugene and with our organization on the specific recommendations that OTA has made in our testimony. These bulleted points best reflect the wishes of the SE neighborhood residents for assistance during the spray program.

I am also forwarding on two pieces of testimony that were sent directly to my office but intended to be submitted to your department during the public comment period.

Please enter these three documents into the public record for the public comment period for the 2009 Eugene Oregon Gypsy Moth Eradication Program.

I look forward to communications in the near future. Also, please thank Katy for attending the earlier meeting with Mayor Piercy and OTA.

Sincerely ,

Lisa Arkin

Executive Director, Oregon Toxics Alliance

Please become a member of Oregon Toxics Alliance! You can support and strengthen our successful work to protect Oregon's residents and environment from toxics & pesticides! OTA is actively changing Oregon's environmental health policies to create a future free from toxic harm.

Go to http://www.oregontoxics.org/join.html

Thank you very much!

Email: larkin@oregontoxics.org

Website: www.oregontoxics.org

Office Phone: 541-465-8860

Street Address: 1192 Lawrence Street

Eugene, OR 97440

Oregon Toxics Alliance Testimony

Spraying Foray 48B for the Gypsy Moth in Eugene, Oregon – 2009

To: The Oregon Department of Agriculture, Plant and Invasive Species Divisions

From: Lisa Arkin, Oregon Toxics Alliance

Date: 3/13/09

Oregon Toxics Alliance works for all Oregonians to expose root causes of toxic pollution and help communities find solutions that protect human and environmental health. We advance the use of precautionary action and alternative assessment, a policy framework that advances long-term environmental health. Our vision is a future in which a child's health is the index applied for making decisions about the use of chemicals. We are submitting this testimony on behalf of hundreds of our members in the Lane County area.

OTA acknowledges that a limited aerial application of Foray 48B is less harmful than previous eradication strategies and is the State's best alternative to deal with the threat of a gypsy moth outbreak at this time. However, OTA's position is that pesticide exposure is a matter of both environmental health *and* human rights. For this reason, OTA can not endorse the proposal to spray Foray 48B over a populated area, but is providing guidance to the ODA and the City of Eugene about applying the precautionary principle to protect residents and ecosystems in the spray scenario.

OTA is making the following recommendations that can best safeguard the health of Eugene residents, promote protection of local endangered species, and ensure that all applicable laws and requirements are followed by the Department of Agriculture.

1. **HUMAN RIGHTS:** All parties involved in the gypsy moth eradication project must work together to insure that every Eugene resident is afforded the right to protection of body and property.

2. **PUBLIC NOTIFICATION PROCESSES:** Ensure that governments and agencies comply with a comprehensive Public's Right-to-Know policy.

    - Accurate and full disclosure of pesticide ingredients (active and inerts), label specifications, and precautions about the dates, times and methods of application. See list of schools and parks that need on-site notification at the end of this document *

    - Provide notification by multiple means – signage, email lists, websites, phone calls, etc. – especially to those individuals susceptible to or concerned about adverse health impacts.

3. **HEALTH:** Oregon Toxics Alliance seeks to protect the lives and property of Eugene residents who live in, work in, attend school in, visit or travel through the proposed spray area.

    - Specify that the Foray 48B manufacturer's label requires a 4-hour interval between application and re-entry time for farm workers– AS A PRECAUTION advise residents to stay indoors at least 4 hours after a spray and/or until the spray is completely dry;

    - Advise vulnerable residents – pregnant women, children and adults with asthma and other chronic diseases – to plan to leave the area for 4 hours if they have concerns;

    - Advise all residents in the spray or drift zone to make their home draft proof – use towels, duct tape, etc. around drafty windows and doorways and shut off all ventilation systems.

- Accommodation under the American with Disabilities Act: Assist residents with serious chronic or acute health concerns, or place-bound persons with a plan to withdraw themselves from the spray area if they do not wish to be exposed.
- Provide information to parents and schools on preventing exposure to children in the spray and drift zones, including early morning school access without exposure.
- Coordinate with the 4-J School District to cover playground equipment and toys, etc.
- If the spray is applied on a weekend, notify Kidsports and City sports leagues that they must cancel all morning games.
- Arrange for health effects monitoring studies to be undertaken by the Department of Health or independent third parties. Active (rather than passive) surveillance methodologies should monitor for a range of adverse health effects, both acute and chronic, associated with spray exposures. Include neighborhood representatives to help design these studies. Provide a call-in number for people to report immediate adverse reactions.

4. **LOCAL ENDANGERED SPECIES:** There is a reasonable chance that a population of Fenders Blue butterfly thrives in or nearby the spray area. If so, there exists a significant overlap in the development of both the Fenders Blue butterfly and the gypsy moth, meaning that the endangered butterfly would be harmed if spraying occurs during this developmental period. The red-legged frog, an endangered amphibian, is also native to the spray zone and was recently sited there.

- OTA recommends an independent biological survey and mitigation plan for the presence of the endangered Fender's Blue butterfly and the red-legged frog.
- Provide existing studies on environmental impacts of Foray 48B on amphibian species. Ensure compliance with ESA.

***Parks & hiking trail system needs sandwich board signs at trail heads (consult with SE Neighborhood)**

SCHOOLS	**PARKS AND TRAILS**
Eugene Christian School	Skyline Park
Edgewood Park	Shadow wood Park
Charlemagne & Fox Hollow School	Ridgeline Trails in spray/drift zone
Ellis Parker School	East-West Amazon Greenway
Spencer Butte Middle School	Frank Kenney Park (Martin St. betw. East and West Amazon)
Edgewood Elementary School	
Church playgrounds and pre-school play areas	

This is to report my research on the vulnerability of the endangered Fender's Blue Butterfly to aerial spraying of *B.t.k.* insecticide to control a local outbreak of Asian variety Gypsy Moths, which can destroy 25% of evergreen and deciduous trees if left unchecked. The proposed *B.t.k.* application is a section of urban and rural land centered near the southern terminus of Old Dillard Road, in southeast Eugene. The ODA proposes that their spray program plan:

"*B.t.k.* will be applied three times by air at a rate of 24 billion international units (i.e., 24 billion cabbage looper units) per acre about 7-14 days apart starting in late April or May; exact timing depends on weather. Ideally, the *B.t.k.* application should target early instar stages 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."

While there are no known populations of the lupine plants on which Fender's Blue Butterfly larvae feed within this spray proposal and buffer area, the area has not been surveyed carefully for them or for the Fenders butterflies that they support. Within the proposed spray zone approximately 80 acres of moderately suitable habitat at 5 localities occur according to my analysis of aerial imagery. Some Kincaid's lupines occur in habitats similar to those about 2 miles ESE of the west boundary of this zone. Others are reported in the South Eugene Hills between the proposed area and Lane Community College. Marginally viable populations of butterflies are known to occur on lupine patches occupying much less area than an acre. Thus there is a low but definite probability that undiscovered lupine and Fenders butterflies occur within the proposed spray area.

The question then becomes should an undiscovered outlier population of endangered butterfly occur within the spray zone, will the spraying diminish or extirpate that population? I have also researched the life cycle characteristics of Fender's blue butterfly and find that credible experts have observed post-diapausal (later) instar stages occurring from late February through May when winged adult butterflies appear, breed and lay eggs at a time roughly synchronous with the blooming period of Kincaid's lupine patches. And early instar stages (pre-diapausal) occur from mid May into early July. My conclusion based on the proposed spraying period, is that there is some small overlap period in post-diapausal instars and a very significant overlap in pre-diapausal (early) instars of Fenders Blue butterfly that could pose potential harm to Fender's populations. If early instars of Fenders butterfly are susceptible to *B.t.k.* in similar proportion to Gypsy Moth instars, it is reasonable to assume that a similar mortality would occur, that is roughly 95%.

It is important to keep in mind that gypsy moths occupy forested areas and the host plants for Fender's Blue Butterflies occupy prairies or savannas with only a scattering of open grown trees. If spraying were confined to forested areas, the potential for disrupting or eradicating unknown Fenders populations would be minimized, especially if open and savannah habitats were treated with moth pheromone traps or other means that would not also affect butterflies, but would reduce breeding moths.

It is also important to understand that over half of the known individuals of Fender's Blue Butterfly occupy areas of Willow Creek Preserve in West Eugene, some 5 miles west and north from the proposed gypsy moth eradication area. While there is a small risk of hurting a marginal undiscovered population of Fenders Blue Butterflies within the spray area, there is a potential future

risk of greatly harming the largest known population of Fenders Blue Butterflies. Left unchecked the southeast Eugene gypsy moth outbreak might spread and produce new Gypsy Moth occurrences near Willow Creek that require aerial spraying for successful eradication. A 700 per cent increase in trapped moths in the last two years is cause for concern and appropriate, effective action must be taken to prevent a larger threat from moth eradication spraying elsewhere that might damage Fenders Blue Butterflies. Precaution about harming undiscovered Fenders Blue Butterflies must be balanced with risk of failure to control the known moth outbreak - a potentially greater harm to our local endangered butterfly.

--
Ethen Perkins, Ph.D. Botany University of British Coumbia
botanical surveys, *wetlands consultation*, *rare species*, *restorations*
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Kenneth J Welker, MD, ABS
Diplomate American Academy
of Anti-Aging, Regeneration
and Functional Medicine

OREGON OPTIMAL HEALTH
living better longer

Jeanette L Welker, APRN, FNP-BC
Diplomate American Academy
of Anti-Aging, Regeneration
and Functional Medicine

March 12, 2009

RE: Aerial Spraying Plan Foray 48B

Dear members of the Eugene City Council and honorable Mayor,

It is my understanding that the department of agriculture is recommending aerial spraying of urban areas near or on the region of southeast Eugene. This would include public exposure to the aerial spraying of Foray 48B in effort to control and or eradicate the population of gypsy moths recently identified in this area. I am not opposed to the use of this biological spray for purposes of this biological spray for Gypsy moth containment. However, strict precautionary measures should be carefully followed to insure the least likely harm to the public. There are multiple individuals at risk to experience or suffer allergic reactions, aggravation of chronic medical conditions. When exposed through inhalational or dermal contact with Foray 48B.

Based on the public information disclosed from Auckland New Zealand and Australia, it appears Foray 48 B, has been associated with specific allergic reactions, and aggravation of ongoing chronic medical conditions in public individuals exposed to it during similar aerosolized urban use. Approximately 80% of the ingredients of Foray 48B used to improve the aerosolization and plant contact remain undisclosed and labeled only as 'inert' substances. The experience and evidence of unknown benign 'inert' enhancer substances of other herbicides and pesticides being truly benign has lead to tragic consequences. The potency and toxicity of the 'active' ingredients is increased greater than 100 fold or more. These substances, not disclosed, under protection of proprietary commercial information, are not required to be included or used in formal toxicity regulatory control testing.

Therefore, those responsible to ensure public safety and the preventative mitigation of taxpayer legal jeopardy would best adhere to minimum standards recommended public safety regarding the use of Foray 48B. Adequate public full disclosure of the risks and the health advisements /recommendations for personal and public safety needs to occur well ahead of the spraying to mitigate health risks to the vulnerable members of our community that may be adversely affected. Agricultural use requires a minimum of 4 hours post spraying before close contact is permitted and no less of a requirement should be tolerated here.

I would recommend the city require generous public information opportunities for those likely to undergo exposure to have adequate warning and recommendations to remain outside of the area or indoors with windows closed for a period of 4 hours following the spraying. This would include affected public schools if done during the week or during times of school activity.

Thank you for this opportunity to present my concerns and opinion. My interest lies strictly in the expressed public health concern as I am sure you are interests are as well aligned. I am unable to personally represent this opinion to you because of prior commitments of speaking to the Gluten Intolerance Group of Eugene this

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OREGON OPTIMAL HEALTH
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evening. I would be happy to further discuss this in detail for anyone wishing to do so. Thank you for the opportunity to engage these concerns with you,

Sincerely, to our good health,

Kenneth J Welker, MD

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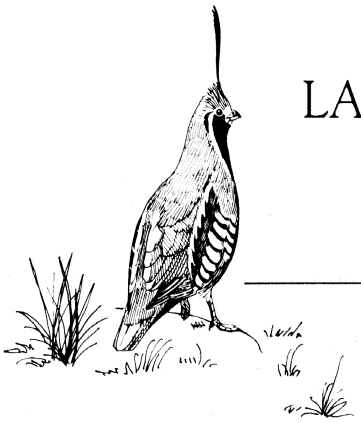

LANE COUNTY AUDUBON SOCIETY
AN OREGON CHAPTER OF THE NATIONAL AUDUBON SOCIETY
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Helmuth W. Rogg
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Dear Dr. Roth and Members of the Oregon Department of Agriculture,

Please accept our comments on the Draft Environmental Assessment: Gypsy Moth Eradication Program, Southeast Eugene, Lane County, Oregon, 2009.

Lane County Audubon Society is not, at this time, offering an opinion in support of or in opposition to the use of a B.t.k. spray program to control gypsy moth populations. We do, however, have some concerns about instituting such a program that we would like to see addressed.

Firstly, we would like to applaud the Department for their efforts to monitor populations of gypsy moth. We understand how devastating large populations of this invasive pest can be. We also appreciate efforts to use an agent which is relatively specific rather than a broad spectrum chemical insecticide. Further, we commend the choice of an "organic" formulation of the B.t.k. product.

We are, in general, disturbed by a lack of scientific data on many aspects of the program.

The Effects of B.t.k Spray on Non-target Populations
There are many local species of Lepidoptera that will be in the larval stages during the spray period. Although it is reasonable to conclude that most species of butterflies and moths will be able to re-populate the area over the next few years, it is entirely possible that vulnerable species will not recover. Please see comments submitted by Eleanor Ryan of the North American Butterfly Association for a more detailed discussion of this topic. It would suggest that further research is needed.

Food chain impacts are likely to result after wiping out many spring caterpillars, particularly given that it may take multiple years to recover. Insectivorous birds may be impacted by the lack of food sources especially during the nesting season. Again, it is likely that most species of birds will re-populate the area after some time although there is insufficient data to show which species would be impacted and what the recovery times would be. Your EA cites studies that show no effect on the success of insectivorous birds but it is balanced and objective to note that other studies have demonstrated such an effect. The United States Gypsy Moth EIS cites studies that show some impact on bird populations. Rodenhouse and Holmes (1992) report for Black-throated Blue Warblers "Significant reductions in number of young fledging per nest, nestling growth rates and survival, and number of nests attempted per pair." Norton et al. (2001) similarly saw impacts of B.t.k spray on Spruce Grouse in Canada. There is insufficient follow-up data to determine the long term effects of this phenomenon.

Endangered Species

We request that the area be surveyed for rare, threatened, or watchlist species before a spray program is initiated. You include in your report information from the Oregon Natural Heritage Information Center (a State agency) which includes the following quote with their data releases. *"Please remember that the lack of element information from a given area does not mean that there are no significant elements there, only that there is no information known to us from the site. To assure that there are no important elements present, you should inventory the site at the appropriate season."*

We have been informed that the federally listed endangered plant, Kincaid's lupine, has been identified in south Eugene on a continuous ridge of upland prairie that is near the proposed spray area. This plant supports the federally listed endangered Fender's Blue Butterfly and warrants a proper survey for this endangered Lepidoptera. Although it has previously been thought that Fender's Blue was located only in west Eugene, a recent discovery of the butterfly was made in the Coburg Hills, again suggesting that further survey is needed. It is insufficient to state that the listed species would not be impacted due to its later emergence time (as was stated at the Public Meeting in February). The projected plan of three sprays separated by one to two week intervals and uncertain weather conditions does not leave enough of a time buffer to ensure that Fender's Blue caterpillars would not be sprayed. In addition, there is some question as to the range in time of the emergence of the caterpillar. Many insects have recently been found to be emerging earlier than in the past; we have insufficient data to determine that this is not the case with this endangered butterfly.

A study from the City of Eugene indicates that the endangered red-legged frog is present in wet areas at the base of Mt. Baldy located within the proposed spray area. Although B.t.k presumably affects only Lepidoptera, the spray contains about 13% *Bacillus* and about 87% *other* ingredients. We do not know if these other ingredients will have an impact on frogs. For example, spray formulations often contain ingredients that control unwanted growth. Even if they are organic, they are often toxic to frogs. The Foray 48B label instructs that water not be contaminated. In a developed region such as the proposed spray area, run–off is a concern. Further analysis is required.

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Trends in Population Growth and Alternate Methods of Control
We would like to see more data on trends in population growth of the moth. You trapped 6 moths in the area last year and 3 the year before; do we have data from which we can extrapolate to determine future numbers? We would like more information on alternate methods to control small populations, such as pheromone traps and mechanical removal. The EA states that "mass trapping can be an effective control agent when a gypsy moth population is small", yet it is then ruled out. We would like to see the data that informs this decision and under what circumstances the data was obtained. For instance, have past efforts been made in the approximately one week period when the males are active but before the females begin "calling"?

Concerns about Resistance
We rely on the effectiveness of B.t.k to control Gypsy moth populations. Resistance to insecticides in general has been well documented. As of now, (thankfully) there are no published reports of resistance to B.t.k. in gypsy moths but it is disingenuous to imply that resistance cannot arise because it is a biological agent (as was stated at the public meeting in February) or that resistance to B.t.k is non-existent (also stated). In fact, there is documentation of dozens of Bt-resistant populations of bollworm moth, *Helicoverpa zea*. We hope we have learned from experience in dealing with antibiotic-resistant bacteria and pesticide-resistant insects that we should be extremely judicious in our use of these control agents on which we rely.

Thank you for your willingness to consider these issues and the opportunity to comment on the proposed Gypsy Moth Eradication Program.

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Rodenhouse, Nicholas L. and Richard T. Holmes (1992) Results of Experimental and Natural Food Reductions for Breeding Black-Throated Blue Warblers. Ecology 73(1):357-372

3

Questions from the public information meeting in Eugene:

1. What are the inerts in Foray®?
2. Why spray for 7 moths? It is not an outbreak.
3. Why don't you try natural enemies?
4. What about other butterflies and moths?
5. How would the virus be dispersed if it were used?
6. Why aren't you using the sex pheromone to control the moth?
7. If the traps catch the males, then the females can't have babies. So, why do you need to spray?
8. If *B.t.k.* is effective, why aren't they using it in the eastern U.S.? And, if it's so safe, why not spray a much larger area here?
9. How can you be sure it is not harmful to people, dogs, etc.? Would you drink it?
10. What would be the costs of quarantines to businesses?
11. There are no data to support the decision that 7 moths will increase to much larger numbers in one year. There is no justification for spraying.
12. The spray is aerial. The information about stomach content being acidic is not relevant. What happens when exposure is aerial? One of the reports says that the spray will go into homes and concentrate at rates 7 times higher. What will happen then?
13. You have totally ignored studies about the timing of exposure, for young children and pregnant women. Effects will be different.
14. Effects from aerial spraying in New Zealand have been continual. (She cited a litany of anecdotal quotes from residents who had adverse reactions)
15. Some of residents in the spray area are very sensitive (allergies to deodorants, etc.). Their houses are older and closing windows and doors will not keep the spray out. Are you willing to risk killing them?
16. Are you aware of any studies that assess the effects of the formulation on human health? (the formulation, not *B.t.k.*)?
17. Have there been any analyses of the effects on Americans with Disabilities?
18. An individual with porthyria stood up and claimed that he had severe repercussions after the last spray in 2004.
19. Who are peer reviewers for studies when a chemical is registered?
20. Will you put people up in hotels?
21. More questions on inerts: What about inerts listed in Europe..nitric acid, sulfuric acid, etc. ?

Appendix E: Responses to Comments Received

Specific issues and concerns raised

As previously noted, APHIS/ODA mailed the public information meeting notice to about 1700 residents in the project and adjacent area on February 3, 2009 and published the meeting notice in the Eugene Register Guard on February 5, 15, and 17. During the two weeks after the mailing only two inquiries were received about the project from the area residents. On February 16, 2009, Oregon Toxics Alliance (OTA) sent out an e-mail to its members, area residents, and other interested parties to alert them about the proposed eradication spray, and urged people to write to both ODA and the mayor of Eugene to stop the proposed spray. As a result, about 60 e-mails were received during the next four weeks. About 45 of these e-mails supported what OTA stated in its e-mail or website opposing the proposed spray and about 15 e-mails were supportive of the proposed action.

The Eugene Register Guard, the local newspaper, did a poll one day after the scheduled APHIS/ODA public information meeting on February 20, 2009. The question asked was: should insecticides be sprayed in the Lane County area to control the gypsy moth? Of 307 total votes: 227 (74%) said yes, 60 (20%) said no, 16 (5%) was unsure, and 4 (1%) didn't care.

At the request of OTA and other residents, the mayor of Eugene requested that the EA comment period be extended for one more week to March 13, 2009. APHIS/ODA agreed to this extension. The mayor also held a small group meeting that included OTA, Southeast Neighborhood representatives, ODA, Lane County Public Health, and other city and county officials to discuss issues and concerns on March 5. In addition, the mayor hosted a public forum on gypsy moth issues on March 12, 2009. OTA organized a panel of five people for the forum that included: Lisa Arkin, OTA representative; Dan Hilburn, ODA representative; Virginia Orum, a homeopathic doctor; Tom Kerns, a professor of philosophy from Seattle Community College; and Lisa Warnes, a representative from the Southeast Neighborhood. About 30 people attended the public forum. Questions were raised by the audience and answered by panel members. Most questions and concerns were about public health issues associated with the aerial spraying of the Foray® 48B.

Some of the specific issues and concerns received during the comment period are discussed below. APHID and ODA also responded to these questions and concerns via e-mails and phone calls. Additionally, APHIS and ODA produced a "frequently asked questions and answers" sheet and posted it on ODA's website along with other relevant information on *B.t.k.* and health issues. Many of these web links are from independent sources such as universities, the World Health Organization, and government agencies. Readers are encouraged to independently access web links to find factual information for themselves.

Inert ingredients /organic Foray® 48B formulation

At the public information meeting and in subsequent letters, some residents expressed concern about the lack of public disclosure by the manufacturer of the inert Foray® 48B ingredients. The manufacturers consider the identity of their inert ingredients to be a trade secret. They have stated they will "not provide public access to our intellectual property."

However, the manufacturer of Foray® 48B provided the complete ingredient list, including active and all inerts, to the Organic Materials Review Institute (OMRI) in Eugene. Foray® 48B has been certified by OMRI for organic production since 2008 and it is the product ODA proposes to use in 2009 in Eugene. OMRI has published standards and policies that they use to run a certification program to approve products for organic use. The regulatory criteria for pesticides used on organic crops are as follows: 1. Active ingredients must be non-synthetic and not identified in 7 CFR 205.602 or synthetic and identified in 7 CFR 205.601; 2. The non-active ingredients in both a formulated active ingredient and the full product formula must be identified in List 4 (inerts of minimal risk or no risk) on the EPA's list of substances. Also, non-synthetic substances are allowed as inert ingredients in pesticide formulas unless they are identified in 7 CFR 205.602; 3. 'Synthetic' is defined in 7 CFR 205.2.

Oregon Health Services has prepared a *B.t.k.* fact sheet for residents and other interested persons (http://oregon.gov/DHS/ph/pesticide/btkfacts.shtml). This information has been or will be provided to area residents prior to any proposed spray treatments.

"What is Foray® 48B?

Foray® 48B, EPA Registration No. 73049-427, is certified by the Organic Materials Review Institute (OMRI) as an organic product. The product contains 12.65% *B.t.k.* as the active ingredient. In addition to the bacterial ingredient, Foray® 48B may contain "inert or other" ingredients, including binders that help the spray stick to vegetation after it is applied. Foray® 48B may also contain carriers such as: water, carbohydrates, and proteins from grain sources like corn or soybeans, stabilizers for acid control, preservatives, and wetting agents. The EPA assesses the toxicity of "inert or other" ingredients; please refer to the EPA website for more information, www.epa.gov/opprd001/inerts.

In prior years, before the organic formulation, the manufacturer disclosed the inert ingredients to OHS under a confidentiality agreement. 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 exempt from residue tolerances by EPA. This means that there are no limitations on the amount of material allowed on food items.

Even with this extremely low risk to humans or the environment, members of the public remain concerned about the unknown inert ingredients. As a result APHIS and ODA pursued the development of an organic formulation of this product with the manufacturer, Valent Bioscience. As mentioned above, the organic formulation that is now available meets an even higher standard for safety. APHIS and ODA have determined that the organic formulation of Foray® 48B is the safest and most effect tool available for eradication of this gypsy moth infestation.

Agricultural vs. forestry labels (area wide pest control program)

Concerns have been raised about special restrictions found on the agricultural use label for Foray® 48B, such as the four hour restricted entry interval after the application. These special requirements on the agricultural label are due to the 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 "wide-area public pest control programs sponsored

by governmental entities, such as mosquito abatement, gypsy moth control, Mediterranean fruit fly eradication." The Foray® 48B forestry label chosen for this application includes such an exemption.

EPA commented on this specific question. An email from Richard Pont, EPA Office of Pesticide Programs, Certification and Worker Protection Branch, indicated that the risk to agricultural workers is greater than the risk to the general public and bystanders. The EPA assumes a worker will be exposed eight hours a day five days a week throughout a normal lifetime. No restricted entry interval (REI) is required for the public or bystanders. REI is the amount of time that must elapse between treatment and when a person can reenter and handle the crop without wearing protective equipment. A four hour REI for workers is the lowest REI used by the EPA. The complete text of his email comments is found in Appendix D.

Size of eradication area: ground vs. aerial application

The eradication area location and boundary are based on gypsy moth trap catches, 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 2007, when it was first detected in the area.

Because the area needed to be treated is large, has restricted access, tall trees, and a wooded area, applying the pesticide by helicopter is the only feasible way to treat. Foray® 48B organic formulation is for wide-area pest treatment - aerial application only according to the label.

The government found only seven gypsy moths, why treat for only seven moths?

This is not a suppression treatment to reduce a nuisance species like mosquitoes. Catching gypsy moths two years in a row in the same neighborhood is firm evidence that a breeding population is established there. The gypsy moth is an exotic pest of national concern. Eradicating this infestation will prevent the population from becoming permanently established and spreading throughout the state. Eliminating invasive species early prevents ecological and economic damage; this results in less use of pesticides in the future. Keeping invasive species out of Oregon is good for the environment. All western states not infested by gypsy moth are following the same guidelines established by USDA, i.e., to eradicate any breeding populations to prevent gypsy moth from establishing in un-infested western US.

Why not use pheromone traps or a species-specific virus?

We do use pheromone traps in the area and it will be heavily trapped for the next two years. The traps are good for monitoring the effectiveness of the treatment, but by themselves are not effective at completely eradicating the population.

There is a species-specific virus that targets gypsy moth but it is not available commercially. According to current research, results have been inconsistent. Someday this may be a viable alternative, but it is not an option today. The NPV product is not registered for use in Oregon.

It seems like we'll never eradicate them. Why not accept the inevitable and quit all this spraying?

ODA first detected gypsy moths in Oregon in 1979 in Lake Oswego. Several dozen infestations have been detected since. The largest was in 1984-5 when over

19,000 moths were caught in Lane County. APHIS and ODA pioneered the use of *B.t.k.* to combat that infestation; a quarter of a million acres were sprayed over several years. It was the largest successful gypsy moth eradication program in the western US.

These infestations were not related to each other. Each represents a new introduction – we often find old egg masses on a travel trailer or picnic table that has come from an infested eastern state. In 2008 we treated an infestation in Shady Cove and in 2007 we treated infestations in Bend and St. Helens. The current infestation in Eugene is not evidence that gypsy moth eradication projects have failed – in fact our success at eradication has been excellent. It is evidence that gypsy moths establish readily in Oregon where there are abundant hosts and a favorable climate.

Our experience in Oregon indicates that one season of treatments with *B.t.k.* is highly likely to completely eradicate gypsy moth populations. Rarely a second year of treatments has been required.

Will *B.t.k.* kill the monarch and swallowtail butterflies?

B.t.k. will not kill adult butterflies, bees, ladybugs, native non-lepidopteran pollinators, or other beneficial insects. It only kills young caterpillars due to their susceptible digestive system. Unfortunately, some non-target moth and butterfly species that are in the caterpillar stage during the treatment will be killed. These native species will quickly move back into the neighborhood from the surrounding area. Monarchs will not be in the area and swallowtail butterflies will not be in the susceptible life stage during the gypsy moth eradication program. There will be no long term effects to these species.

California stopped spraying and is considering using sterile release techniques. Why is ODA proposing to spray?

In California, the pest and type of treatment that you have been hearing the most about in the news and on the internet is very different from what we are proposing in Eugene. The pest in question in California was not the gypsy moth, but the light brown apple moth (LBAM) and the product used to treat LBAM was not *B.t.k.*, but a specific pheromone (sexual hormone used to disrupt mating of the pest). In Eugene, we are treating the gypsy moth and using a biological product that has an excellent health and safety record.

California has used and continues to use *B.t.k.* to eradicate populations of gypsy moth. In early March 2009 a small population of gypsy moths was treated with *B.t.k.* in Ojai, California.

Are there any violations of human rights, the endangered species act, the clean water act, NEPA, federal pesticide laws, or pesticide labeling requirements, etc.?

Some comments stated that APHIS and ODA are in violation on the above areas. We will make sure that we are in compliance with all appropriate federal, state, and local government laws. We plan to conduct the proposed program to protect Oregon from invasive species such as the gypsy moth without violating any laws or human rights.

Northern red-legged frog Rana aurora aurora

The northern red-legged frog is federally listed as a species of concern. Species of concern are those taxa whose conservation status is of concern to the U.S. Fish and Wildlife Service, but for which further information is still needed. Such species receive no legal protection and use of the term does not necessarily imply that a species will eventually be proposed for listing. Consultation with Oregon Natural Heritage Information Center did not indicate any record of this species in the area. However, a report commissioned by the city of Eugene (South Ridgeline Habitat Study, Salix Associates 2007) indicates that the frog is present in and around a small pond near the east side of the eradication area. The frog requires aquatic or semiaquatic habitats and is omnivorous with a preference for invertebrates. Primary food sources are most likely aquatic insects and other invertebrates in the pond. The proposed action should not affect the frog because *B.t.k.* does not affect amphibians or aquatic invertebrates. In addition, Foray® 48B will not be applied directly in the pond.

Potential Kincaid's lupine *Lupinus sulphureus* ssp. *kincaidii* and Fender's blue butterfly (FBB) *Icaricia icarioides fenderi* in the area

The USDA APHIS has submitted a biological assessment (USDA, APHIS, 2009) to the U.S. Fish and Wildlife Service (Service) and is currently in consultation with the Service regarding effects to listed species within or near the eradication area. APHIS has determined that the proposed program will have no effect on the Kincaid's lupine even if it is within the eradication area because its pollinators are not lepidopterans and *B.t.k.* is not phytotoxic. However, the FBB may be present within the eradication area if appropriate host lupine plants are present. Therefore, the Service has requested that APHIS and ODA conduct a survey for lupines in the suitable habitats present in the eradication area. We have arranged for a survey in April 2009 with Dr. Paul Hammond, an FBB expert at Oregon State University. If lupine or FBB are found, appropriate mitigation measures will be developed in consultation with the Service. No *B.t.k.* will be applied until consultation with the Service is completed.