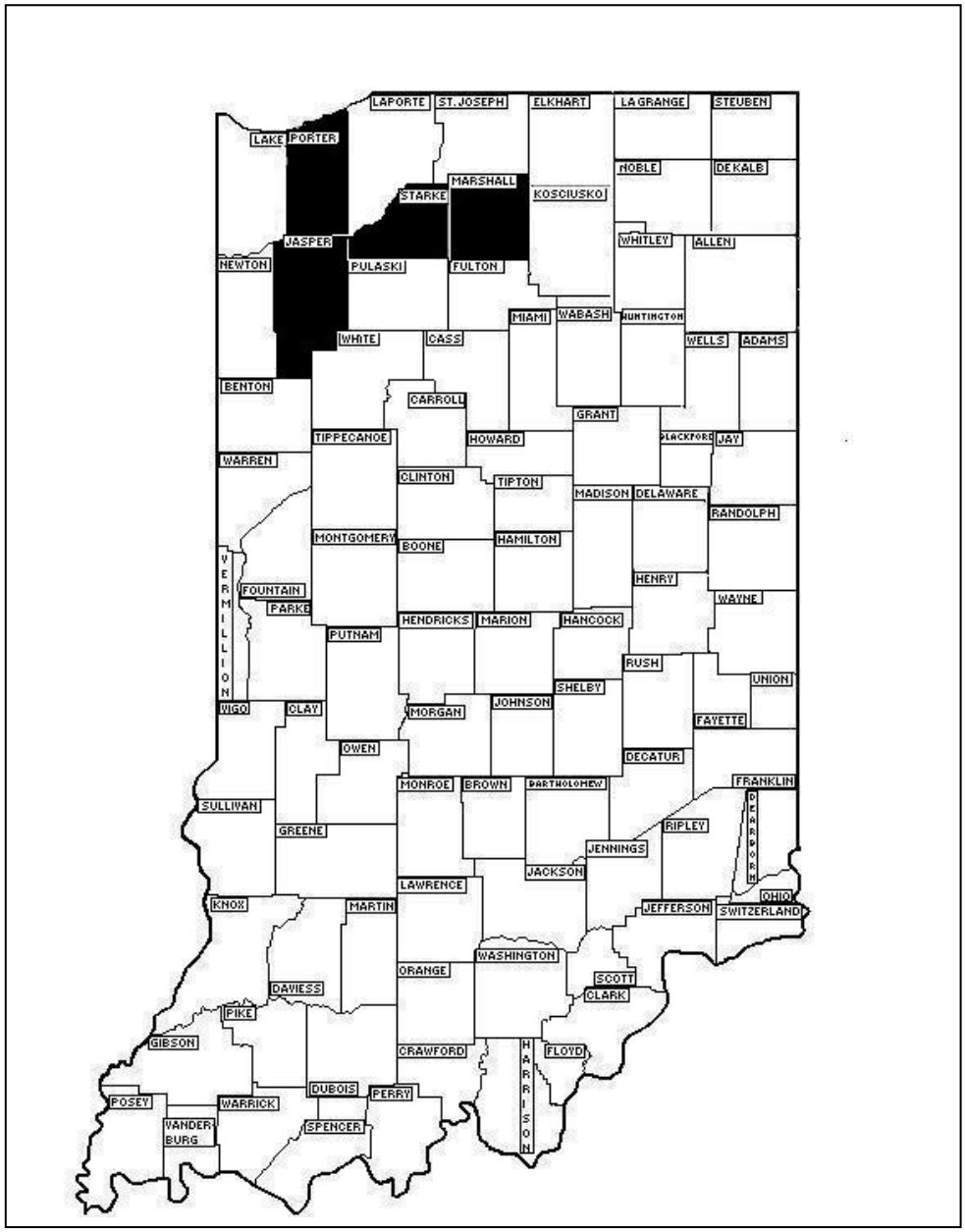
Environmental Assessment
Cooperative STS Spongy Moth Project
for Indiana – 2025



Environmental Assessment
Cooperative STS Spongy Moth Project
for Indiana – 2025

By
Indiana Department of Natural Resources
Division of Entomology & Plant Pathology
Indiana Department of Natural Resources
Division of Forestry
United States Department of Agriculture
Forest Service

For information or copies of this document, please contact:
Megan Abraham
State Entomologist
Indiana Department of Natural Resources
Division of Entomology and Plant Pathology
402 W. Washington Street, Room W290
Indianapolis, Indiana 46204
Phone (317) 232-4189

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1.0 Purpose and need for action

1.1. Proposed Action

The Indiana Department of Natural Resources (IDNR), Division of Entomology & Plant Pathology (DEPP) and Division of Forestry (DoF), proposes a cooperative project with the United States Department of Agriculture, Forest Service, State Private & Tribal Forestry (Forest Service, SP&TF) to treat Spongy Moth (*Lymantria dispar*) populations within the Slow-the-Spread (STS) Action Area. The proposed treatments are listed in table one. A total of 36,386 acres (1,402 Btk acres and 34,984 mating disruption acres) are proposed for this project (Table 1).

1.2. Project Objective

The objective of this cooperative project is to slow the spread of Spongy Moth populations by eliminating or decreasing reproducing populations from the proposed treatment sites.

1.3. Need for Action

Spongy Moth is not native to the United States, and it lacks effective natural controls. The caterpillars feed on the foliage of many host plants. Oaks are the preferred host species, but the caterpillars defoliate many species of trees and shrubs. When high numbers of spongy moth caterpillars are present, forests and trees suffer severe defoliation, which can result in reduced tree growth, branch dieback and even tree mortality. The high numbers of caterpillars also create a substantial public nuisance and can affect human health.

The STS analysis of the 2024 trapping data in Indiana identified potential problem areas (PPAs) at 96 locations in Indiana. The analysis identified higher or equivalent moth catches in delimiting survey grids placed at each site compared to detections and delimits in prior years and recommended action in these areas. Three of the 96 sites were identified for proposed treatment in 2025 based on this data, having suitable habitat for spongy moth, and able to meet STS program budget management. These three sites proposed for treatment in the cooperative STS spongy moth project are reviewed in this EA.

The State of Indiana, with the IDNR, Division of Entomology and Plant Pathology as the lead agency, is dedicated to preserving urban and rural forested habitats from damage by spongy moth and to enforcing interstate and intrastate quarantines to further protect areas not currently infested by this pest. If no action is taken, the spongy moth population will increase and spread throughout the State of Indiana and defoliation will occur sooner. Therefore, the "no action" alternative is not preferred due to the desire of state officials to eliminate the isolated infestations, prevent human discomfort associated with infestations, delay damage to local plant communities and reduce

spread to adjacent non-infested areas. Through public involvement, participating citizens supported the proposed action.

Table 1: Proposed treatment locations by county, site name, treatment type and dosage, number of applications and estimated acres for 2025 spongy moth treatments in Indiana. Btk treatments are aerial application of *Bacillus thuringiensis* var. *kurstaki.* Mating disruption (MD) is aerial application of disparlure.

County	Site Name	Proposed Treatment	Application Rate/acre	Applications	Acres
Marshall	Bourbon Btk 25	Btk	25 CLU[1]	2	1,402
			Total Btk		1,402
Jasper/Porter/ Starke	Wheatfield MD 25	Mating disruption	6 g[2]	1	27,607
Starke	Toto MD 25	Mating disruption	6 g[2]	1	7,377
			Total MD		34,984

[1]CLU= Cabbage looper units

[2] grams of disparlure (spongy moth mating pheromone)

1.4. Decisions to be made and responsible officials.

The proposed action requires participation by the Forest Service, SP&TF, as a cooperator with the IDNR. The official responsible for the Forest Service, SP&TF must decide the following:

- Should there be a cooperative treatment program, and if so, what type of treatment options should be used?
- Is the proposed action likely to have any significant impacts requiring further analysis in an Environmental Impact Statement (EIS)?

The official responsible for the Forest Service, SP&TF is:

Gina Jorgensen, Field Representative
USDA Forest Service, State, Private, and Tribal
Forestry 1992 Folwell Avenue
St. Paul, MN 55108

The responsible official for the Forest Service, SP&TF will decide before early May to ensure timely implementation for an effective program that meets the state's objectives if the action alternative is selected. This decision is not subject to appeal. If there are no significant impacts, this will be documented in a Decision Notice and Finding of No Significant Impact (FONSI) or other appropriate decision document, issued by the responsible official. If significant impacts are found and the project is to continue, an Environmental Impact Statement (EIS) would be prepared.

The officials responsible for the implementation of the *L. dispar* program with IDNR are:

Megan Abraham, State Entomologist
Indiana Department of Natural Resources
Division of Entomology and Plant Pathology
402 West Washington Street, IGC South, Room W290
Indianapolis, IN 46204
(317) 232 4189.

And

John Seifert, State Forester
Indiana Department of Natural Resources
Division of Forestry
402 West Washington Street, IGC South, Room W296
Indianapolis, IN 46204
(317) 232 4105.

1.5. Scope of the analysis

Since 1996 the USDA has carried out its *L. dispar* management responsibilities through the Forest Service and Animal and Plant Health Inspection Service (APHIS) and pursuant to a programmatic decision based on a 1995 Environmental Impact Statement (EIS) for gypsy moth management. The Record of Decision (ROD) for that EIS was signed in January of 1996; it allowed three management strategies – suppression, eradication, and slow-the-spread. The 1995 EIS was updated with a final Supplemental Environmental Impact Statement (SEIS), titled "Gypsy Moth Management in the United States: A Cooperative Approach," dated August 2012. The ROD for the SEIS was signed by the Forest Service in November 2012, maintaining the three strategies of suppression, eradication, and slow-the-spread (STS).

Spongy moth management strategies vary based on the infestation status of an area and include eradication treatments in non-infested areas, suppression treatments in the generally infested area, and slow-the-spread treatments in transition areas. The transition area is also known as the STS Action Area, where *L. dispar* populations are small, isolated, and manageable before coalescing into larger populations. The proposed

treatments involved in this Environmental Assessment (EA) are all within the STS Action Area.

Implementation requires that a site-specific environmental analysis be conducted, and public input gathered to identify and consider local issues before any Federal or cooperative suppression, eradication, or slow-the-spread projects are authorized and implemented. As part of the analyses conducted for the SEIS, human health and ecological risk assessments were prepared (USDA 2012a, Volumes III and IV). These site-specific analyses are tiered to the programmatic EIS and SEIS and documented in accordance with Agency National Environmental Policy Act (NEPA) implementing procedures (USDA 2012b, ROD, p. 2). The purpose of tiering is to eliminate repetitive discussions of the issues addressed in the SEIS (40 CFR, 1502.20 and 1508.28 in Council on Environmental Quality, 1992).

This environmental assessment provides a site-specific analysis of the alternatives and environmental impacts of treating spongy moth populations in Indiana.

1.6. Summary of Public Involvement and Notification

The National Environmental Policy Act requires public involvement and notification for all projects utilizing federal funds that may have an effect on human environment (40 CFR, 1506.6 in Council of Environmental Quality 1992). Local issues discussed at the public meetings and in subsequent phone calls, letters and emails are discussed in Appendix A.

On December 20, 2024 - 73 letter notifications were mailed to public officials and on January 15, 2025 – 3,359 postcard notifications were mailed to residents in the proposed treatment sites informing them of scheduled online public meetings. Legal notices were published in local newspapers informing the public about the upcoming meetings on the proposed treatment sites. An IDNR News Release was sent out on January 21, 2025, with information on the scheduled online public meetings and the public comment period. Information on the public meetings, proposed treatments and the comment period was also posted on the Indiana DNR, Div. of Entomology and Plant Pathology (DEPP) on.IN.gov/spongymoth and on the Indiana DNR-DEPP X account page.

The online public meetings were held via Zoom (Example 1A, 1B) and a recorded video of the presentation shown during the meetings is available for viewing at - https://www.youtube.com/watch?v=hn0jnm89QOw

Four virtual public meetings were held for citizens, public officials and interested individuals (Table 1). The proposed action and alternatives, including no action, were discussed. There was a total attendance of 24 citizens at the meetings.

Residents within proposed treatment sites will be mailed a notification approximately two weeks prior to treatment. DNR News Releases will be sent out to local media with a

request to communicate the information to the general public. Phone calls will be made to public officials, emergency personnel and others identified during the public involvement process. Updates regarding the scheduled day of treatment will continue prior to and through treatment days via a combination of local media, phone calls, emails, and X (Twitter) as updated information becomes available based on spongy moth life stage development and weather conditions.

Information gathered from the public and from resource professionals was used to identify and evaluate issues and concerns used to formulate the alternatives. They are grouped into five categories; 1) Human Health and Safety, 2) Effects on Non-target Organisms and Environmental Quality, 3) Economic and Political Impacts of Treatment vs. Non Treatment, and 4) Likelihood of Success of the Project.

1.7. Issues used to formulate the alternatives

Each of the major issues is introduced in this section. Discussion pertaining directly to each issue as it relates to the alternatives can be found in Chapter 4 and are summarized in Table 3.

Issue 1 - Human Health and Safety.

Three types of risk are addressed under this issue: 1) an aircraft accident during applications; 2) treatment materials and potential effects on people; and 3) the future effects of spongy moth infestations on people.

Issue 2 - Effects on Non-target Organisms and Environmental Quality.

The major concerns under this issue are: 1) the impact of treatment materials to non-target organisms, including threatened and endangered species that may be in the treatment site; and 2) the future impacts of spongy moth defoliation on the forest resources, water quality, wildlife, and other natural resources.

Issue 3 - Economic and Political Impacts of Treatment vs. Non Treatment.

Spongy moth outbreaks can have significant economic impacts due to effects on the timber resource, nursery and Christmas tree producers, and recreational activities. An additional economic impact is a spongy moth quarantine imposed to regulate movement of products from the forest, nursery, and recreational industries to uninfested areas.

Issue 4 - Likelihood of Success of the Project.
The objective of this cooperative project is to slow the spread of spongy moth populations by eliminating or decreasing reproducing populations from the proposed treatment sites. Alternatives vary in their likelihood of success for the current situation. Each year, project success is evaluated by treatment types for delaying spongy moth impacts to Indiana and neighboring states.

1.8. Summary of authorizing laws and policies

State

The Division Director (State Entomologist) may cooperate with a person in Indiana to locate, check, or eradicate a pest or pathogen (Indiana Code 14-24-2-1). The Division Director may, on the behalf of the department, enter into a cooperative agreement with the United States government, the government of another state, or an agency of the United States or another state to carry out this article (Indiana Code 14-24-2-2).

Aerial applicators must meet Indiana Pesticide Use and Application Law (Indiana Code 15-3-3.6) to provide safe, efficient, and acceptable applications of pesticides.

This project will be conducted in accordance with the National Pollutant Discharge Elimination System (NPDES) requirements and is operating under Indiana Pesticide General Permit ING870000.

The Non-Game and Endangered Species Conservation Law (Indiana Code 14-22-34).

Protection of Historic Properties (Indiana Code 14-21-1).

Federal

Authorization to conduct treatments for *L. dispar* infestations is given in the Plant Protection Act of 2000 (7 U.S.C. section 7701 et. seq.).

The Cooperative Forestry Assistance Act of 1978 provides the authority for the USDA and state cooperation in management of forest insects and diseases. The law recognizes that the nation's capacity to produce renewable forest resources is significantly dependent on non-federal forestland. The 2018 Farm Bill (P.L. 115-334, Sec 8 [16 U.S.C. 2104], Forest Health Protection) reauthorizes the basic charter of the Cooperative Forestry Assistance Act of 1978. The 2025 American Relief Act (P.L. 118-158) signed into law December 21, 2024 extended the 2018 Farm Bill through September 30, 2025.

The National Environmental Policy Act (NEPA) of 1969 (P.L. 91 190), 42 USC 4321 et. seq. requires a detailed environmental analysis of any proposed federal action that may affect the human environment. The courts regard federally funded state actions over which a federal agency conditions the use of the funds as federal actions.

The Federal Insecticide, Fungicide and Rodenticide Act of 1947, (7 USC 136) as

amended, known as FIFRA, requires insecticides used within the United States be registered by the United States Environmental Protection Agency (EPA).

Section 7 of the Endangered Species Act of 1973, as amended (16 USC 1531 et. seq.) prohibits federal actions from jeopardizing the continued existence of federally listed threatened or endangered species or adversely affecting critical habitat of such species.

Section 106 of the National Historical Preservation Act and 36 CFR Part 800: Protection of Historic Properties requires the State Historic Preservation Officer to be consulted regarding the proposed activities.

USDA Departmental *L. dispar* Policy (USDA 1990) assigns the Forest Service, SP&TF and APHIS responsibility to assist states in protecting non-federal lands from *L. dispar* damage.

Executive Order #12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. Consistent with this Executive Order, the Forest Service, SP&TF considered the potential for disproportionately high and adverse human health or environmental effects on any minority or low-income populations.

2.0 Alternatives including the proposed action

Alternatives are developed in this chapter. Some alternatives are eliminated from further consideration, while others are selected for detailed consideration.

2.1. Processes used to formulate the alternatives

The ROD for the SEIS, to which this document is tiered, maintains the three strategies for *L. dispar* management (eradication, slow-the-spread, and suppression) that were allowed in the EIS. Therefore, the Forest Service and APHIS can assist in funding and carrying out eradication, suppression, and slow-the-spread projects. The ROD for the SEIS adds the insecticide tefubenozide to the previous list of six approved treatments from the 1995 EIS. Therefore, seven treatments can be considered for use in developing treatment alternatives under the slow-the-spread and eradication strategies: 1) Btk; 2) diflubenzuron; 3) Gypchek; 4) mass trapping; 5) mating disruption; 6) sterile insect release; and 7) tebufenozide.

Information pertinent to developing alternatives for managing spongy moth in Indiana have been solicited from various groups (Appendix C – Agencies and Persons Consulted). However, the framework for proposing and selecting appropriate treatment alternatives was developed within the STS program by IDNR staff in cooperation with Forest Service, SP&TF.

2.2. Alternatives eliminated from detailed study

The following treatment options that were available under the SEIS were eliminated from consideration:

Diflubenzuron (Dimilin)

The label for Dimilin prohibits its use over wetlands and directly to water. This insecticide is a broad spectrum treatment and may increase the impact to nontarget species. Therefore, Dimilin is not considered for this project. In future projects, it may be evaluated for use.

Gypchek

Gypchek has proven effective at reducing spongy moth at higher population levels. However, Gypchek is a costly alternative with a very limited supply and is only used in environmentally sensitive areas, generally those with threatened or endangered lepidopterans which could be impacted by other treatment options (USDA 2012a, Vol. II, App. A pp. 3 to 4). Environmental review of the sites did not determine that any threatened or endangered lepidopterans occurred within the treatment sites. Due to no threatened or endangered species occurring within the proposed treatment sites, Gypchek is not considered for this project. In future projects, it may be evaluated for use.

Mass trapping

Mass trapping uses an intensive grid of traps to limit reproduction. Mass trapping is typically used on small spongy moth infestations of 100 acres or less (USDA 2012a, Vol. II, App. A, p. 5), and generally uses 9 or more traps per acre. This approach is very labor intensive, especially over large areas. Mass trapping has proven capable of eliminating or reducing spongy moth at very low population levels in small sites. The use of mass trapping can meet the project objective of eradicating spongy moth at small treatment sites. Due to the level of moth catches and the size of the areas proposed for treatment, mass trapping is not considered for this project. In future projects, it may be evaluated for use.

Sterile insect release

Sterile insect release can be done for elimination of isolated spongy moth populations. There are obstacles using this alternative - the limited release period; the need to synchronize production of mass quantities of sterile pupae; and the logistical difficulties of repeated release over a 4-week period (USDA 2012a, Vol. II, App. A, p. 7). This treatment alternative is currently not available, and it has not been used since 1992 (USDA 2012a, Vol. II, App. A, p. 8). Given these obstacles, sterile insect release is not considered for this project. In future projects, it may be evaluated for use.

Tebufenozide (Mimic)

This insecticide (an insect growth regulator) is selective against caterpillars (lepidopteran larvae), like Btk, but it has longer persistence in the environment than Btk.

Thus, it could have greater impact on nontarget caterpillar populations. Therefore, Mimic is not considered for this project. In future projects, it may be evaluated for use.

2.3. Alternatives considered in detail

Alternative 1 - No action

The no action alternative means no federal funding for any treatments. The state of Indiana may still complete some treatments at their discretion. Spongy moth will reproduce, and populations will begin to defoliate trees in the area. Spongy moth populations will be allowed to develop and spread to surrounding areas.

Alternative 2 – Btk only

Btk has been a commonly used treatment option in Cooperative Spongy Moth Projects in Indiana and other states. Btk is a naturally occurring soil-borne bacterium that is mass-produced and formulated into a commercial insecticide. The Btk strain is effective against caterpillars, including the spongy moth caterpillar. Caterpillars ingest Btk while eating the foliage. Once in the midgut, Btk becomes active and causes death within a few hours or days (USDA 2012a, Vol. II, App. A, p. 1).

Btk has proven effective at eliminating or reducing spongy moth at all levels of population. Btk has the potential to impact non target Lepidoptera, and it is more expensive than MD. Therefore, Btk is typically applied to sites that have high spongy moth populations (greater than 30 moths captured in monitoring traps) or when life stages, such as egg masses, have been found. Btk applications can meet the project objective of slowing the spread of spongy moth at the proposed treatment sites.

This treatment option typically uses two applications of Btk at 25 cabbage looper units (CLU) per acre applied from air or ground. The applications would begin when leaf expansion is near 50% and when first and second instar caterpillars are present and feeding. This usually occurs between late April and late May in northern Indiana. Most commercial formulations of Btk are aqueous flowable suspension containing 48 or 76 CLU per gallon (Appendix D – Product Labels). For aerial application at 24 to 38 CLU, less than 3.0 quarts (3/4 gallon) of the product would be applied per acre.

Alternative 3 - Mating disruption only

This treatment option uses one aerial application of the spongy moth pheromone (disparlure), prior to the emergence of male moths. Application would occur in mid-June to early July. Mating disruption relies on the attractive characteristics of disparlure, the spongy moth sex pheromone. The objective of mating disruption is to saturate the treatment area with enough pheromone sources to confuse the male moths and prevent them from finding and mating with female moths.

Mating disruption works well at eliminating mating success of spongy moth in areas that have very low population levels where male moths have a difficult time locating and mating with widely dispersed females. As local populations build and more females are around, male moths can visually located females and no longer rely on the pheromone to find females. So, mating disruption treatments are not as effective where monitoring traps catch 10 or more moths on average or where alternate life stages (egg masses, pupae) can be found relatively easily. Therefore, mating disruption can meet the project objective on some of the proposed sites but may not be able to meet that objective on other sites where higher level spongy moth populations have been found.

Alternative 4 – Btk and/or Mating disruption (Proposed Action)

The use of this alternative provides flexibility to select Btk or mating disruption alone or in combination for each site based on the following criteria: 1) spongy moth population level, 2) habitat type (urban, rural, open water or wetland), 3) nontarget organisms, 4) safety, and 5) cost and project efficiency. The use of this alternative can meet the objective of slowing the spread of spongy moth at all of the proposed treatment sites.

2.4. Mitigation measures for the proposed action

The Cooperative Spongy Moth Project will implement the following safeguards and mitigations:

- News releases of planned treatments and dates will be given to local news media.
- Implementation of a Work and Safety Plan.
- Prior to treatments, local safety authority will be notified by direct contact or phone calls.
- Prior to treatments, IDNR staff will communicate with private helipads and airports when application aircraft will be flying over the treatment sites.
- Prior to treatments, IDNR staff will communicate to and consult with aerial applicator regarding any aerial hazards (cell towers, etc.) and environmental concerns (T&E species locations, water, etc.) in and outside each treatment site to avoid.
- Employees of state and federal agencies monitoring the treatment will receive training on treatment methods to be able to answer questions from the public.
- Application of Btk will be suspended when school buses are in a treatment site or when children are outside on school grounds.

- The 76B formulation of Btk will be used because it is operationally more efficient and manages safety concerns by using a fewer number of loads to complete application.
- Aircraft will be calibrated for accurate application of treatment material.
- Applications will be timed based on larval development so that the most susceptible spongy moth life stage is targeted.
- Weather will be monitored during treatment to ensure effective deposition of the treatment material.
- The wind speeds during the application will be monitored by IDNR personnel and the aerial applicator will maintain the application within the boundaries of the proposed treatment sites.
- Treatment will be avoided or stopped if winds are above the guidelines stated in the Work and Safety Plan.
- Treatments will be stopped if drones are identified in a treatment site until the flight area is clear.

Monitoring

During the treatments, ground observers and/or aerial observers will monitor the application for accuracy within the site boundaries, swath width, and drift. Application information (e.g. swath widths, spray-on and spray-off, acres treated, and altitude) will be downloaded to an operations-based computer. The treatment sites will be monitored and reviewed, post-treatment, to determine the effectiveness of the treatments.

3.0 Affected Environment

3.1. Description of the proposed treatment sites

The three proposed treatment sites in four counties in the STS Action Area were selected based on the male moth trapping surveys, STS analysis, egg mass surveys and available habitat. The population analysis that led to the 2025 proposed treatment sites is available upon request from the IDNR Administrative file.

Each proposed treatment site is described in Table 2 and the paragraphs below based on the number of acres, percent tree canopy within the site, previous treatments, the presence of schools, land use, presence of water sources, potential aerial safety hazards, presence of egg masses, tree composition and other areas of potential concern. Maps are in Appendix B.

Table 2. Descriptions of the 2025 proposed spongy moth treatment sites. Maps of proposed treatment sites are in Appendix B.

County	Site Name	Acres	Approx % tree canopy	Previous treatment	Land usage*	Water sources	Aerial hazards	Egg masses found
Marshall	Bourbon Btk25	1,402	23%	No	N, A, R	Yes	No	Yes
Jasper/Porter/Starke	Wheatfield MD25	27,607	31%	No	N, A, R, B	Yes	Yes	No
Starke	Toto MD25	7,377	42%	No	N, A, R, B	Yes	No	No

*N = Natural, A = Agricultural, R = Residential, B = Business

MARSHALL COUNTY

Bourbon Btk25

- The site contains 1,402 acres.
- Tree species composition includes oak, maple, cherry, hickory, sycamore, walnut, bald cypress, pine, and other hardwoods.
- Six egg masses were found in the windbreak on the east side of SR 331.
- The site contains woodlots, agricultural fields, and residences.
- The site has had no prior treatment.

Hazards

- There are no known aerial hazards in the site.

Area Churches, Schools, Event Locations

- There are no known churches or schools within the site.

Other areas of concern; **water sources**

- The site includes Deer Creek, Clarence Baker Ditch, and several associated drainage ditches.
- The town of Bourbon is approximately 0.5 miles north of the site.

JASPER/PORTER/STARKE COUNTIES

Wheatfield MD25

- The site contains 27,607 acres.
- Tree species composition includes oak, birch, maple, cherry, and other hardwoods.
- No egg masses were found in the site.
- The site contains woodlots, agricultural fields, residences, and businesses.
- The site has had no prior treatment.

Hazards

- The NIPSCO Wheatfield Generating Station is in the middle portion of the site.

Sandhill Crane Observation Tower

- **Area Churches, Schools, Event Locations**
- Wheatfield Elementary School is within the site.
- Kankakee Valley High School is located in the west portion of the site.

Tefft United Methodist Church

Other areas of concern; water sources

● The town of Wheatfield is within the site.
●The Kankakee River runs through the northern portion of the site.
●Ponds and drainage ditches occur within the site.
● Portions of the Jasper-Pulaski State Fish and Wildlife Area are within the site.
● Stoutsburg Savana Nature Preserve is in the southwest portion of the site.
●Coastal Plain Ponds Nature Preserve and Tefft Savanna Nature Preserve are located within the site.
●Prairie Border Nature Preserve is in the southern portion of the site.
●Kankakee Township Park is in the southern portion of the site.
●Aukiki Weland Conservation Area is in the northern portion of the site.

STARKE COUNTY

Toto MD25

• The site contains 7,377 acres.
• Tree species composition includes oak, cherry, maple, walnut, and other hardwoods.
• No egg masses were found in the site.
• The site contains woodlots, agricultural fields, residences, and businesses.
• The site has had no prior treatment.

Hazards

• There are no known aerial hazards within the site.

Area Churches, Schools, Event Locations

• Heartland Church Starke County, Calvary Baptist Church, Fresh Faith Baptist Church, Twin Bridges United Baptist Church are located within the site.
• DnB Barn Event/Wedding Center is located within the site.

Other areas of concern; water sources

• Round Lake Wetland Conservation Area & Nature Preserve is located within the site.
• Craigmile Ditch, Anderson Ditch, Lindstrand Ditch and other drainage ditches and ponds occur within the site.

3.2. Threatened and endangered species

This federal and state funded project is in accordance with the National Environmental Policy Act of 1969. Section 7 of the Endangered Species Act prohibits federal actions from jeopardizing the continued existence of federally listed threatened or endangered species or adversely affecting critical habitat of such species. This project is considered a federal action and to avoid any negative impacts to federally listed endangered, threatened, candidate species, or their critical habitat, the IDNR DEPP consulted with the US Fish and Wildlife Service (USFWS) and the Indiana DNR Environmental Review Unit. Individual treatment sites along with proposed methods were evaluated for potential concerns. The consultation between Indiana DNR and USFWS determined that the spongy moth program is not likely to adversely affect any federally listed species. The consultation also determined that the proposed treatments would not jeopardize the listed proposed threatened species of butterflies.

See Appendix C - Agencies and Persons Consulted for response letters from agencies. The letters of request for consultation to these agencies are on file in the IDNR administrative record.

3.3. Protection of historic properties

Section 106 of The National Historic Preservation Act provides specific guidance for the preservation of prehistoric and historic resources when federal actions may have an adverse impact on these resources.

The State Historic Preservation Officer did not identify any historic properties that will be altered, demolished, or removed by the proposed project pursuant to Indiana Code 14-21-1.

See Appendix C- Agencies and Persons Consulted for consultation letters from agencies. The letters of request for consultation to these agencies are on file in the IDNR administrative record.

4.0 Environmental consequences

This section is the scientific and analytic basis for the comparison of alternatives. It describes the probable consequences (effects) of each alternative for each issue. Environmental consequences are summarized in Table 3 for each combination of the alternatives and issues.

4.1. Comparison of environmental consequences of alternatives considered in detail

Issue 1: Human Health and Safety

Alternative 1 – No action

For this alternative, there would be no cooperative project, therefore risk of human contact with mating disruption or Btk and an aircraft accident during application would not exist. However, future impacts by spongy moth to human health will occur sooner under Alternative 1 if treatments are not used to slow the spread of these spongy moth populations. Spongy moth outbreaks have been associated with adverse human health effects, including skin lesions, eye irritation, and respiratory reactions (USDA 2012a, Vol. IV, App. L, pp. 3-1 to 3-4). Spongy moth caterpillars can become a serious nuisance that can cause psychological stress or anxiety in some individuals (USDA 2012a, Vol. IV, App. L, pp. 3-4 to 3-5).

Alternative 2 – Btk only

A detailed analysis of the risks posed to humans by Btk, called Human Health Risk Assessment, was conducted for the Final SEIS (USDA 2012a, Vol. III, App. F., pp. 3-1 to 3-32). Human exposure to Btk provides little cause for concern about health effects. "There is no information from epidemiology studies or studies in experimental mammals to indicate Btk will cause severe adverse health effects in humans under any set of plausible exposure conditions" (USDA 2012a, Vol. III, App. F, p. 3-19). The only human health effects likely to be observed after exposure to Btk involve mild irritation of the skin, eyes, or respiratory tract (USDA 2012a, Vol. III, App. F, p. 3-19 to 3-32). "Given the reversible nature of the irritant effects of Btk and the low risks for serious health effects, cumulative effects from spray programs conducted over several years are not expected" (USDA 2012a, Vol. III, App. F, p. 3-32). Glare and O'Callaghan (2000) provide a comprehensive review of *Bacillus thuringiensis*, including Btk, and they conclude with this statement, "After covering this vast amount of literature, our view is a qualified verdict of safe to use."

A slight risk of an accident always exists when conducting aerial applications. Btk uses one or two applications for slow the spread. To further reduce this risk, a detailed work and safety plan is required prior to program implementation, which outlines guidelines for aircraft inspections, Btk loading, and conditions for safe applications.

The effect of spongy moth outbreaks on humans would be delayed using this alternative.

Alternative 3 – Mating disruption only

A detailed analysis of the risks posed to humans by mating disruption, called Human Health Risk Assessment, was conducted (USDA 2012a, Vol. III, App. H, pp. 3-1 to 3-10). The toxicity of insect pheromones to mammals is relatively low, and their activity is target specific. Therefore, the EPA does not foresee negative effects on humans and requires less rigorous testing of these products than of conventional insecticides. Once absorbed through direct contact, disparlure is very persistent in humans, and individuals exposed to disparlure may attract adult male moths for prolonged periods of time. This persistence is viewed as a nuisance and not a health risk (USDA 2012a, Vol. III, App. H, pp. 3-9). In acute toxicity tests, disparlure was not toxic to mammals, birds, or fish (USDA 2012a, Vol. III, App. H, pp. 4-1 to 4-8). Therefore, no effects on human health are anticipated.

Mating disruption using SPLAT® GM Organic involves the aerial application of amorphous polymer matrix droplets that are infused with spongy moth pheromone. The formulation of SPLAT GM consists of small waxy droplets, approximately 0.3 mm to 2.0 mm in size when released from a conventional aerial application system. All matrix ingredients in SPLAT GM Organic are cleared as food safe by the FDA and are biodegradable. The droplets are a grayish white in color and applied at a rate of 3 to 30 grams of active ingredient (disparlure) per acre (see Appendix D – Product Labels). Applications would most commonly be applied at a rate of either 6 or 15 grams (equivalent of approximately 1.2 teaspoons or 3.0 teaspoons) of pheromone per acre.

A slight risk of an accident always exists when conducting aerial applications. Mating disruption uses one application. To further reduce this risk, a detailed work and safety plan is required prior to program implementation, which outlines guidelines for aircraft inspections, product loading, and conditions for safe applications.

The effect of spongy moth outbreaks on humans would be delayed using this alternative.

Alternative 4 – Btk and/or Mating disruption

The human health and safety consequences stated above for Alternatives 2 and 3 apply to this alternative.

Issue 2: Effects on Nontarget Organisms and Environmental Quality

Alternative 1 – No action

The "no action alternative" would likely result in a more rapid build-up of spongy moth populations and defoliation of susceptible forested areas, especially oak and aspen dominated forests. In other parts of the northeastern U.S., spongy moth outbreaks have changed the structure of some forest ecosystems by killing a portion of the oak component and encouraging tree species that spongy moth caterpillars avoid, such as red maple (USDA 2012a, Vol. II, Ch.4, pp. 4 to 5). Spongy moth outbreaks in North America have not resulted in widespread loss of oak, rather a subtle change in many locations towards a more mixed forest (USDA 2012a, Vol. II, Ch.4, p. 5). In Indiana forests, maples and beech should become more prevalent as spongy moth caterpillars focus their feeding on oaks. The effects of defoliation depend on many factors, including defoliation severity, frequency, timing, tree health and vigor, and the role of secondary organisms, including insects and pathogens (USDA 2012a, Vol. IV, App. L, p. 4-5). Spongy moth infestations generally result in tree mortality losses of less than 15% of total basal area, but in some cases can exceed 50% (USDA 2012a, Vol. IV, App. L, p. 4-6).

Spongy moth defoliation and subsequent tree mortality (especially oak trees) caused by the feeding of millions of caterpillars has a variety of impacts on the environment. Some of these changes are detrimental to certain species and favorable to others during and after spongy moth outbreaks. Defoliation can result in changes to soil condition, microclimate, water quality, water yield, acorn production, and other environmental factors due to the loss of leaf tissue, the waste material produced by large number of feeding caterpillars, and the tree mortality that can follow outbreaks (USDA 2012a, Vol. II, Ch. 4, pp. 4 to 7). Some species of mammals, birds, terrestrial invertebrates, fish, and aquatic invertebrates are negatively impacted by spongy moth related feeding (USDA 2012a, Vol. II, Ch. 4, pp. 7 to 9). As an example, acorn production can drop during and immediately following an outbreak and this can reduce populations of white-footed mice (USDA 2012a, Vol. II, Ch. 4, p. 8). On the other hand, dead trees favor some species of birds that use dead wood as nesting sites or that feed on wood or bark infesting insects that thrive in dead and dying trees (USDA 2012a, Vol. II, Ch. 4, p. 8).

With Alternative 1 (No action), localized defoliating populations are expected on oak trees at the proposed treatment sites.

Alternative 2 – Btk only

Using Btk is likely to maintain the forest condition in the short-term by eliminating spongy moth populations in the treatment sites, thus keeping populations from expanding and causing defoliation. However, in the long-term, spongy moth will likely become more widely distributed in Indiana even if this alternative is followed.

Btk may indirectly help in maintaining existing forest conditions, water quality, microclimate, and soil condition by delaying spongy moth population increases (USDA 2012a, Vol. II, Ch. 4, p. 10). The ecological risk assessment of the effects of Btk on nontarget organisms states that adverse effects due to Btk are unlikely in mammals and birds (USDA 2012a, Vol. III, App. F, pp. 4-2 to 4-3). The effects of Btk on birds, plants, soil microorganisms, or soil invertebrates other than insects are not of plausible concern (USDA 2012a, Vol. III, App. F, pp. 4-3 to 4-8). The Environmental Protection Agency classifies Btk as virtually nontoxic to fish (USDA 2012a, Vol. III, App. F, p. 4-8). No toxicity data are available on amphibians, though other strains of Btk appear to have low toxicity to this group (USDA 2012a, Vol. III, App. F, p. 4-9). Btk does not harm garden plants. In fact, it is a common garden insecticide against caterpillars such as the cabbage looper.

Btk has been shown to be toxic to several species of target and nontarget Lepidoptera (USDA 2012a, Vol. III, App. F, pp. 4-3 to 4-6). Btk selectively kills members of the insect order Lepidoptera that are actively feeding as caterpillars at or soon after the period of application, though not all non-target Lepidoptera are as sensitive to Btk as is spongy moth (USDA 2012a, Vol. III, App. F, pp. 4-4 to 4-6). Btk applications occur earlier than when most beneficial Lepidopteran caterpillars are active. Outside of the Lepidoptera, the negative impact of Btk on other insect orders is minor (USDA 2012a, Vol. III, App. F, pp. 4-6 to 4-7). It is, therefore, more "selective" than many insecticides that kill a wider array of insects. However, concerns still exist over its possible negative impact on native caterpillars, which may occur in the proposed treatment areas. Btk may impact nontarget species of spring-feeding caterpillars in the treatment site, but the impact to the local population is usually minimal as Btk rapidly degrades on the foliage within a few weeks, and the nontarget lepidopterans generally re-colonize treatment sites in less than 2 years (USDA 2012a, Vol. II, Ch. 4, pp. 13 to 14).

Alternative 3 – Mating disruption only

Mating disruption using disparlure is likely to maintain the forest condition in the short-term (5 to 10 years) by eliminating or reducing spongy moth populations in the treatment site, thus keeping populations from expanding and causing defoliation. However, in the long-term (10 to 15 years), spongy moth will likely become more widely distributed in Indiana even if this alternative is followed.

Matrix ingredients in SPLAT® GM Organic are cleared as food safe by the FDA and are biodegradable.

Disparlure may indirectly help in maintaining existing forest conditions, water quality, microclimate, and soil condition (USDA 2012a, Vol. II, Ch. 4, p. 19) by delaying spongy moth population increases. The ecological risk assessment states that disparlure has a very low toxicity to mammals and birds (USDA 2012a, Vol. III, App. H, pp. 4-1 to 4-2).

Like other insect pheromones, disparlure is generally regarded as nontoxic to mammals, and no adverse effects are expected from exposure (USDA 2012a, Vol. II, Ch. 4, pp. 19).

In addition, it is not likely to cause toxic effects in aquatic species (USDA 2012a, Vol. III, App. H, pp. 4-3 to 4-5). One study found that disparlure caused unusually high mortality in water fleas (*Daphnia*). Later it was determined that the mortality was due to physical trapping in undissolved disparlure of the organisms at the water surface, not due to toxicity (USDA 2012a, Vol. III, App. H, pp. 4-4 to 4-8). This is an experimental artifact and is not likely to be encountered under operational use.

Disparlure is a pheromone component for some other species (USDA 2012a, Vol. III, App. H, pp. 2-1 to 2.2), and could disrupt mating in some other species of moths (nun moth, pink gypsy moth) in the genus *Lymantria* (USDA 2012a, Vol. III, App. H, p. 4-2). All of these species are Asian or Eurasian and are not known to occur in North America. There is no basis for asserting that mating disruption would occur in other nontarget species in North America, including nontarget insects, specifically native Lepidoptera.

Alternative 4 – Btk and /or mating disruption

The nontarget and environmental consequences stated above for Alternatives 2 and 3 apply to this alternative.

Issue 3: Economic and Political Impacts of Treatment vs. Non-Treatment

Alternative 1 – No action

If no treatments were applied, the likely action would be to implement a quarantine in counties during the next year. Quarantine would regulate movement of firewood, logs, other timber products, mobile homes, recreational vehicles, trees, shrubs, Christmas trees, and outdoor household articles. This would create a financial impact on industries that deal with these products.

If current populations are not treated, they will continue to reproduce and grow in size. Defoliation will become noticeable in the future, but it would be difficult to predict exactly when noticeable defoliation would occur. Requests for federal assistance to suppress *L. dispar* would be likely when defoliation occurs. Suppression projects are generally more expensive in total dollars than slow the spread projects because much larger areas are treated. The economic impact to state budgets and affected property owners would increase, as responsible agencies would need to administer and fund these suppression projects, and these types of projects are often cost shared with the property owners.

Following defoliation, negative financial impacts are likely to occur for recreational industries such as resorts and campgrounds. Homeowners, private woodland owners, and forest-based industries could be impacted by spongy moth treatment costs, tree

mortality, and adverse human health effects. The economic impact of no action would allow spongy moth infestations to greatly advance ahead of the Transition Area (the area between infested areas and non-infested areas), thus devaluing the Slow The Spread Program accomplishments, and shift the STS line and infestations much further south.

Alternatives 2 (Btk only), 3 (Mating disruption only), and 4 (Btk and/or Mating disruption)

If treatments are applied, regulatory action is not likely for Marshall, Jasper and Starke counties during the next year and the impacts listed under Alternative 1 would be delayed for these counties. These proposed treatment sites are located within the STS Action Area and this alternative corresponds with the national strategy for managing spongy moth in these areas. P o r t e r county is already under quarantine for spongy moth. Treatment of the reproducing population in these areas will reduce spread into Marshall, Jasper and Starke Counties and delay those counties being quarantined. This corresponds to the STS program goal of reducing spread to 4.8 miles per year.

Economic analysis for this site-specific assessment shows the Benefit-Cost Ratio is 8.5:1.0 (Economic Analysis document is in the IDNR Administrative File).

The proposed treatment sites have been determined based on results from spongy moth surveys using STS protocols. The proposed treatment itself will have minimal socioeconomic effects, and it will not have disproportionate effects on any minority or low-income population. Aerial application of a pesticide may be controversial in the public arena. Through public outreach and scoping, the IDNR provides information and answers questions about the treatments concerning human health and environmental quality for residents within and near the proposed treatment sites. Also, political leaders are contacted about the proposed project.

Issue 4: Likelihood of Success of the Project

Alternative 1 – No action

The project objective would not be met with this alternative. Isolated spongy moth populations in the proposed treatment sites would continue to grow, and these populations would serve as a source for increased spread within the counties and into surrounding counties. If these isolated populations were allowed to grow and coalesce, spongy moth could spread through the state in 10 years (Sharov et al. 2002).

Alternative 2 – Btk only

Project success is likely with this alternative. Btk has proven effective at eliminating or reducing spongy moth at all population levels. However, this alternative is more expensive and has the potential for non-target impacts.

Alternative 3 – Mating disruption only

Project success is likely with this alternative in two treatment sites with low spongy moth populations. However, one site has *L. dispar* populations above the recommended level for treatment with mating disruption.

Alternative 4 – Btk and/or mating disruption

Project success is optimized with this alternative when treatment selection criteria are used to select the most appropriate treatment for any individual site, Btk or mating disruption. This alternative is the best option because the project will likely be successful at all treatment sites, while minimizing costs and potential non-target impacts.

Treatment selection criteria used to evaluate each site are: 1) spongy moth population level, 2) habitat type (urban, rural, open water or wetland), 3) nontarget organisms, 4) safety, and 5) cost and project efficiency. Btk is selected for areas where alternate life stages are found and have higher population levels. MD is selected for areas with lower population levels

4.2. Summary of alternatives considered in detail

Under alternative one (no action) spongy moth populations are likely to continue to persist, reproduce, and expand in population size. Local and eventually long-distance spread from these areas would be likely. Some tree mortality, especially of oak species, is anticipated in areas where spongy moth becomes established. In the long-term, the stands with established spongy moth would trend away from forests containing oaks to species less preferred by spongy moth caterpillars.

The proposed alternative offers the greatest probability of meeting the project objective (see Section 1.1 above). The short-term impact that applications of Btk might have on local non-target Lepidoptera populations should be minimal since under this alternative Btk is limited to one treatment site (1,402 acres), a small percentage of the overall 36,386 acre project. No endangered or threatened species are likely to be adversely affected within the treatment areas, and we would anticipate that native Lepidoptera would rapidly recolonize the Btk treatment sites from the surrounding untreated areas. The mating disruption treatments should be successful because they are focused on sites with very low spongy moth populations.

The proposed alternative of Btk and MD treatments delays the immediate economic and political impacts created by a possible federal quarantine and offers the best chance for slowing the spread and establishment of spongy moth populations in the state. Thus, the economic and nuisance impacts associated with spongy moth should be delayed over a longer time period.

See Table 3 summarizing the alternatives and issues.

Table 3: Comparative matrix summarizing the alternatives and issues.

	Issue 1 **Human Health & Safety**	**Issue 2** **Effects on Nontarget Organisms & Environmental Quality**	**Issue 3** **Economic and Political Impacts**	**Issue 4** **Likelihood of Success of the Project**
Alternative 1- No action	- No risk of an aircraft accident or pesticide spill. - No risk of Btk contact with humans. - Spongy moth outbreaks will occur sooner along with the associated nuisance and health impacts to humans.	- No direct effect on nontarget organisms, including threatened and endangered species. - Future spongy moth impacts will occur sooner, which includes defoliation and reduction in the oak component of forest stands.	- Regulatory action would occur sooner with implementation of quarantines. - Spread of spongy moth through these counties and into adjacent counties would not be slowed. - Suppression projects and negative financial impacts from defoliation would occur sooner.	- The spread of spongy moth would not be slowed at the treatment sites and the project objective would not be met.
Alternative 2- Btk only	- Slight risk of aircraft accident and pesticide spill. - Contact with Btk may cause mild and temporary irritation (eye, skin & respiratory). - Delay effect of spongy moth outbreaks on humans.	-There could be some impact on spring feeding caterpillars, temporarily reducing local populations. - No effect on Karner blue butterfly and Mitchell's satyr as neither species is known to occur within the proposed Btk site. - Not likely to adversely affect Indiana bat, northern long-eared bat or tricolored bat. - Would not jeopardize monarch butterfly or Western Regal Fritillary butterfly. - Delay the impact of spongy moth defoliation on environmental quality.	- Regulatory action would not be implemented in these counties during the current year and/or economic impacts to landowners would be delayed. - Slows the spread of spongy moth.	- Success is likely in the treatment sites.
Alternative 3- Mating disruption only	- Slight risk of aircraft accident. - No effect on human health. - Delay effect of spongy moth outbreaks on humans.	- No effects to nontarget organisms, including any threatened and endangered species known to occur within the sites. - Delay the impact of spongy moth defoliation on environmental quality.	- Regulatory action would not be implemented in these counties during the current year and/or economic impacts to landowners would be delayed. - Slows the spread of spongy moth.	- Success is likely in treatment sites with very low populations. However, in one site, mating disruption is likely to fail because local spongy moth populations are too high.
Alternative 4- Btk and/or Mating disruption	- Same as alternative 2 or 3 depending on the treatment at each site.	- Same as alternative 2 or 3 depending on the treatment at each site.	- Regulatory action would not be implemented in these counties during the current year and/or economic impacts to landowners would be delayed. -Slows the spread of spongy moth.	- Success is likely in all the treatment sites.

4.3. Cumulative effects

Cumulative effects are the incremental impacts of the action when added to past, present, and reasonably foreseeable actions.

These impacts (cumulative impacts) can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7). The total cumulative impacts are determined by analyzing the direct and indirect effects of the proposed action.

(a) Direct effects, which are caused by the action and occur at the same time and place.

(b) Indirect effects, which are caused by the action and are later in time or farther removed in distance but are still reasonably foreseeable. Effects and impacts as used in these regulations are synonymous (40 CFR 1508.8).

The site-specific analysis of this environmental assessment is tiered to the programmatic EIS and SEIS and documented in accordance with the National Environmental Policy Act (NEPA) implementing procedures (USDA 2012b, ROD, p. 2). The purpose of tiering is to eliminate repetitive discussions of the issues addressed in the SEIS (40 CFR, 1502.20 and 1508.28 in Council on Environmental Quality, 1992). The programmatic EIS and SEIS addressed cumulative impacts of the national STS spongy moth program and treatment options. Therefore, this document focuses on site specific issues that pertain to cumulative effects.

Btk treatments applied to an area for 3 consecutive years may cause delays in Lepidoptera populations recolonizing the area and may have greater impacts on some species with very small habitats (USDA 2012a. Vol. II Ch. 4 p. 13). These repeated Btk treatments in adjacent years would make cumulative effects more likely.

None of the proposed treatment sites have had any prior treatment.

Review of the proposed treatments and sites by the U.S. Fish & Wildlife Service and the Indiana DNR concluded that the 2025 proposed spongy moth program was not likely to adversely affect federally listed species. The review also concluded that the proposed treatments would not jeopardize the proposed threatened listed butterfly species.

The Indiana Dept. of Natural Resources, Division of Historic Preservation and Archeology concluded that no historic properties would be altered, demolished, or removed by the proposed project.

Therefore, a conclusion of “no cumulative effects” is made for this proposed project.

5.0 List of preparers and reviewers

PREPARERS:

Phil Marshall, Forest Health Specialist, Division of Forestry, Indiana Department of Natural Resources, Vallonia State Nursery, 2782 W County Road 540 S, Vallonia, IN 47281.

EA Responsibility: Participated in writing and reviewing the environmental assessment and in the development of the proposed cooperative *L. dispar* project.

Experience and Education: Experience as Forest Health Specialist since 1974 and experience in *L. dispar* management since 1977. M.F., Duke University in Forest Entomology and Pathology; B.A., Catawba College in Pre-Forestry.

Angela Rust, Natural Resources Inspector, Division of Entomology and Plant Pathology, Indiana Department of Natural Resources, P.O Box 757, Tell City, Indiana 47586.

EA Responsibility: Participated in writing and reviewing the environmental assessment and in consultation of the proposed cooperative *L. dispar* project.

Experience and Education: Natural Resources Inspector with the Indiana Department of Natural Resources, Division of Entomology and Plant Pathology since 1995. B.S., Purdue University in Entomology.

Patrick Engelken, Entomologist, USDA Forest Service, Eastern Region, Forest Health Protection, State, Private and Tribal Forestry, 1992 Folwell Ave., St. Paul, MN 55108.

EA Responsibility: Participated in review of the environmental assessment and final development of the proposed cooperative *L. dispar* project.

Experience and Education: Forest entomologist with the USDA Forest Service in St. Paul, MN since 2020. M.S., Michigan State University in Entomology; B.S., Washburn University in Biology.

REVIEWER:

Megan Abraham, State Entomologist, Division of Entomology and Plant Pathology, Indiana Department of Natural Resources, 402 W. Washington Street, Room 290W, Indianapolis, IN 46204.

EA Responsibility: Reviewer

Experience and Education: State Entomologist with the Indiana Department of Natural Resources, Director of the Division of Entomology and Plant Pathology, State Plant

Regulatory Official. M.S., Purdue University in Entomology; B.S., Purdue University in Wildlife Science with a minor in International Studies.

6.0 List of persons and agencies consulted

Eric Biddinger, Natural Resources Inspector, IDNR Entomology and Plant Pathology, 402 West Washington Street, Room W290, Indianapolis, IN 46204.
Consultation on treatment sites and proposed project.

Kallie Bontrager, Natural Resources Inspector, IDNR Entomology and Plant Pathology, 402 West Washington Street, Room W290, Indianapolis, IN 46204.
Consultation on treatment sites and proposed project.

Vince Burkle, Natural Resources Inspector, IDNR Entomology and Plant Pathology, 402 West Washington Street, Room W290, Indianapolis, IN 46204.
Consultation on treatment sites and proposed project.

Tom Coleman, Entomologist, STS Coordinator (2020), USDA Forest Service, FHP, 200 W. T. Weaver Blvd., Asheville, NC 28802. Consultation on proposed project.

Susan Cooper, Field Supervisor, U.S. Fish and Wildlife Service, 620 South Walker Street, Bloomington, IN 47403. Consultation on threatened and endangered species.

Beth McCord, Director, IDNR Division of Historic Preservation and Archaeology, 402 West Washington Street, Room W274, Indianapolis, IN 46204. Consultation on historical properties of concern.

Kristy Stultz, Natural Resources Inspector, IDNR Entomology and Plant Pathology, 402 West Washington Street, Room W290, Indianapolis, IN 46204.
Consultation on treatment sites and the proposed project.

Rachel Van Voorhis, Environmental Coordinator, Environmental Review Unit, IDNR Division of Fish and Wildlife, 402 West Washington Street, Room W273, Indianapolis, IN 46204. Consultation with Rachel Van Voorhis and other IDNR staff on Natural Heritage Program data and IDNR concerns within the proposed project.

7.0 References cited

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USDA. 2012a. Gypsy Moth Management in the United States: A Cooperative Approach. Final Supplemental Environmental Impact Statement, Vols. I – V. USDA-Forest Service and USDA-APHIS. NA-MB-01-12.

USDA. 2012b. Gypsy Moth Management in the United States: A Cooperative Approach. Record of Decision. USDA-Forest Service and USDA-APHIS.

8.0 APPENDIX A: ISSUES, QUESTIONS AND CONCERNS FROM PUBLIC INVOLVEMENT

On December 20, 2024 - 73 letter notifications were mailed to public officials and on January 15, 2025 – 3,359 postcard notifications were mailed to residents in the proposed treatment sites informing them of scheduled online public meetings. Legal notices were published in local newspapers informing the public about the upcoming meetings on the proposed treatment sites. An IDNR News Release was sent out on January 21, 2025, with information on the scheduled online public meetings and the public comment period. Information on the public meetings, proposed treatments and the comment period was also posted on the Indiana DNR, Div. of Entomology and Plant Pathology (DEPP) website on.IN/gov/spongymoth and on the Indiana DNR-DEPP X page.

The online public meetings were held via Zoom (Example 1A, 1B) and a recorded video of the presentation shown during the meetings is available for viewing at - https://www.youtube.com/watch?v=hn0jnm89QOw

Four virtual public meetings were held for citizens, public officials and interested individuals (Table 1). The proposed action and alternatives, including no action, were discussed. There was a total attendance of 24 citizens at the meetings.

At each of the public meetings, representatives from the Division of Entomology and Plant Pathology presented the proposed spongy moth project and answered and received questions and comments. The presentation explained:

- the life cycle, feeding habits and hosts of spongy moth.
- the identification of spongy moth.
- survey methods.
- spongy moth impacts and damage to the trees and forest.
- selection of proposed sites.
- selection of the treatment options.
- the timing and application of treatments.
- boundaries of the treatment sites with maps.
- the public comment period and decision process.

All public comments received by the public comment deadline of February 28, 2025 were considered in the final decision for the proposed treatments.

Information gathered from the public and from resource professionals was used to develop and review issues and concerns related to the project. They are grouped into two main categories; 1) issues used to formulate the alternatives in the environmental assessment (the four main issues), and 2) other issues and concerns.
The questions and comments received during and after the public meetings were categorized into four main issues:

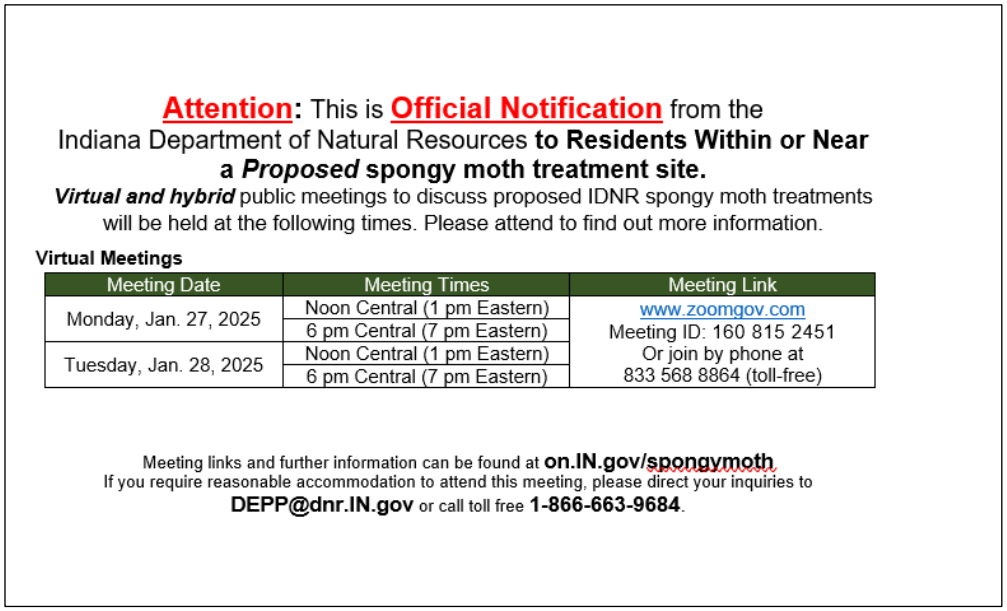
- Human health and safety.
- Nontarget effects and environmental effects.
- Economic and political impacts.
- Likelihood of success of the proposed project, and the treatment options proposed.

These four issues were used to analyze each of the Alternatives in the Environmental Consequences (Section 4.0) in the Environmental Assessment. Recordings of the public meetings were made and are available in the Administrative File for the project.

After the decision on the proposed treatments is made and if treatments are conducted, residents will be mailed a notification approximately two weeks prior to treatment. DNR News Releases will be sent out to local media with a request to communicate the information to the public. Phone calls will be made to public officials and other interested individuals. Updates regarding the scheduled day of treatment will continue prior to and through treatment days via local media, phone calls, emails, and X (Twitter).

Example 1A. Copy of public meeting notification postcard with dates, times, and access information for the online Zoom meetings (front side).

Example 1B. Copy of public meeting notification postcard with dates, times, and access information for the online Zoom meetings (back side).



Attention: This is **Official Notification** from the Indiana Department of Natural Resources **to Residents Within or Near a *Proposed* spongy moth treatment site.**

Virtual and hybrid public meetings to discuss proposed IDNR spongy moth treatments will be held at the following times. Please attend to find out more information.

Virtual Meetings

Meeting Date	Meeting Times	Meeting Link
Monday, Jan. 27, 2025	Noon Central (1 pm Eastern)	www.zoomgov.com Meeting ID: 160 815 2451 Or join by phone at 833 568 8864 (toll-free)
	6 pm Central (7 pm Eastern)	
Tuesday, Jan. 28, 2025	Noon Central (1 pm Eastern)	
	6 pm Central (7 pm Eastern)	

Meeting links and further information can be found at **on.IN.gov/spongymoth**
If you require reasonable accommodation to attend this meeting, please direct your inquiries to **DEPP@dnr.IN.gov** or call toll free **1-866-663-9684**.

Table 1. Table of Online Public Meetings and Attendance

Date	Time	Attendance
Monday January 27	1 PM EST	11
Monday January 27	7 PM EST	3
Tuesday January 28	1 PM EST	6
Tuesday January 28	7 PM EST	4
	Total	**24**

9.0 APPENDIX B. MAPS OF PROPOSED TREATMENT SITES

Image 1: Table with list of maps of proposed treatment sites

COUNTY	SITE NAME	TREATMENT	MAP TYPE	PAGE
	Statewide - All Sites		Street	33
Marshall	Bourbon Btk25	Btk x 2	Aerial	34
Jasper/Porter/Starke	Wheatfield MD25	Btk x 2	Aerial	35
Starke	Toto MD25	MD 6 grams	Aerial	36

Image 2: Map showing locations of three proposed treatments in northern Indiana.

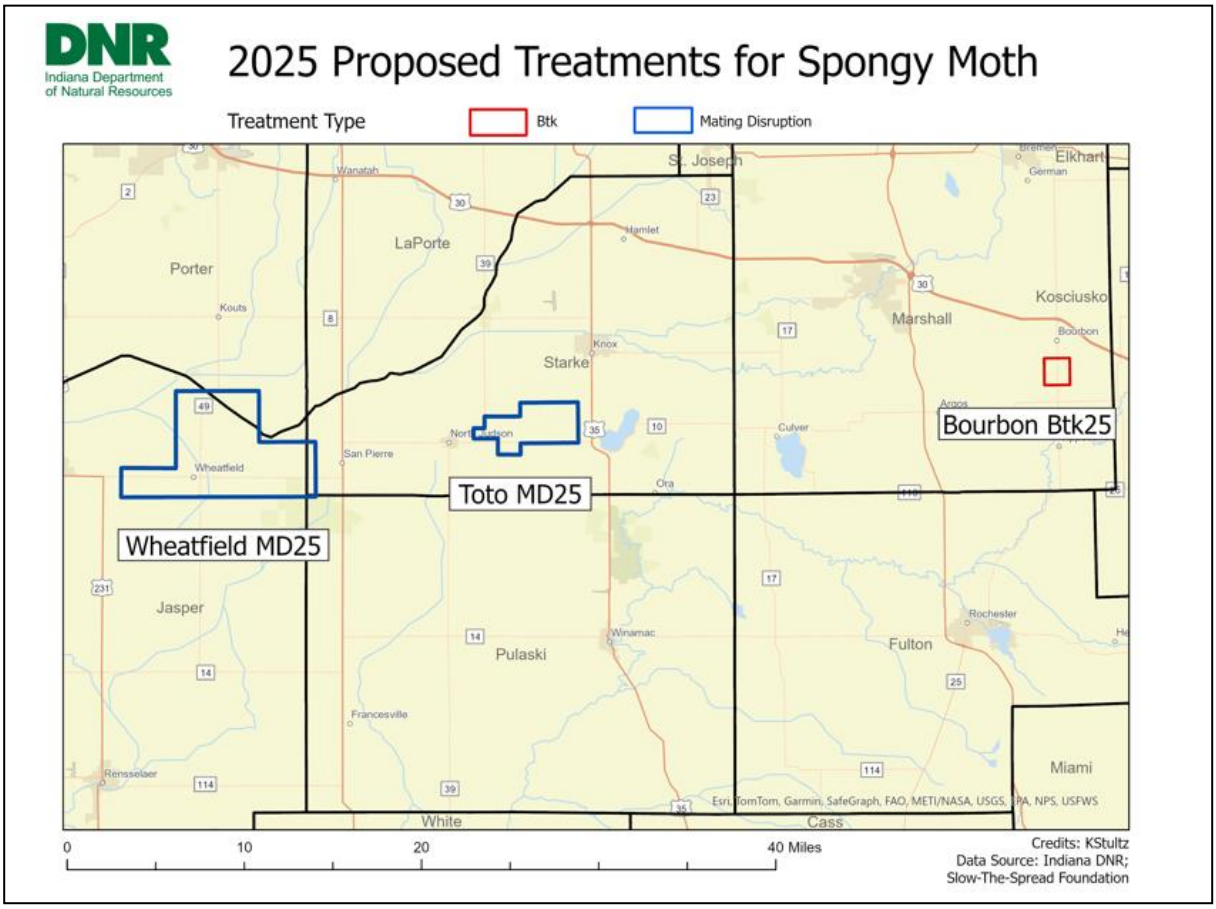


Image 3: Map showing the Bourbon Btk25 proposed treatment site in Marshall County.

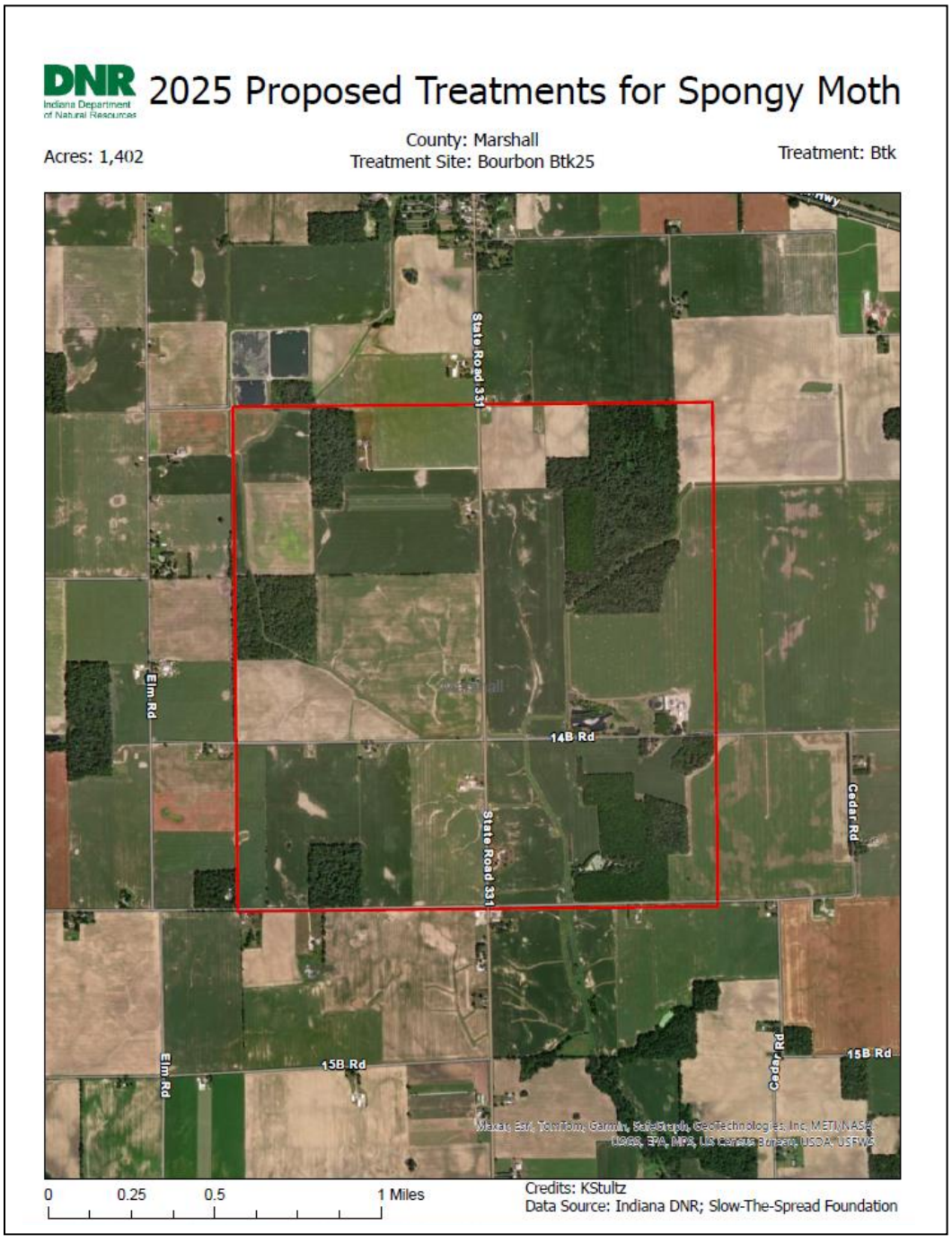


Image 4: Map showing the Wheatfield MD25 proposed treatment site in Jasper/Porter/Starke Counties.

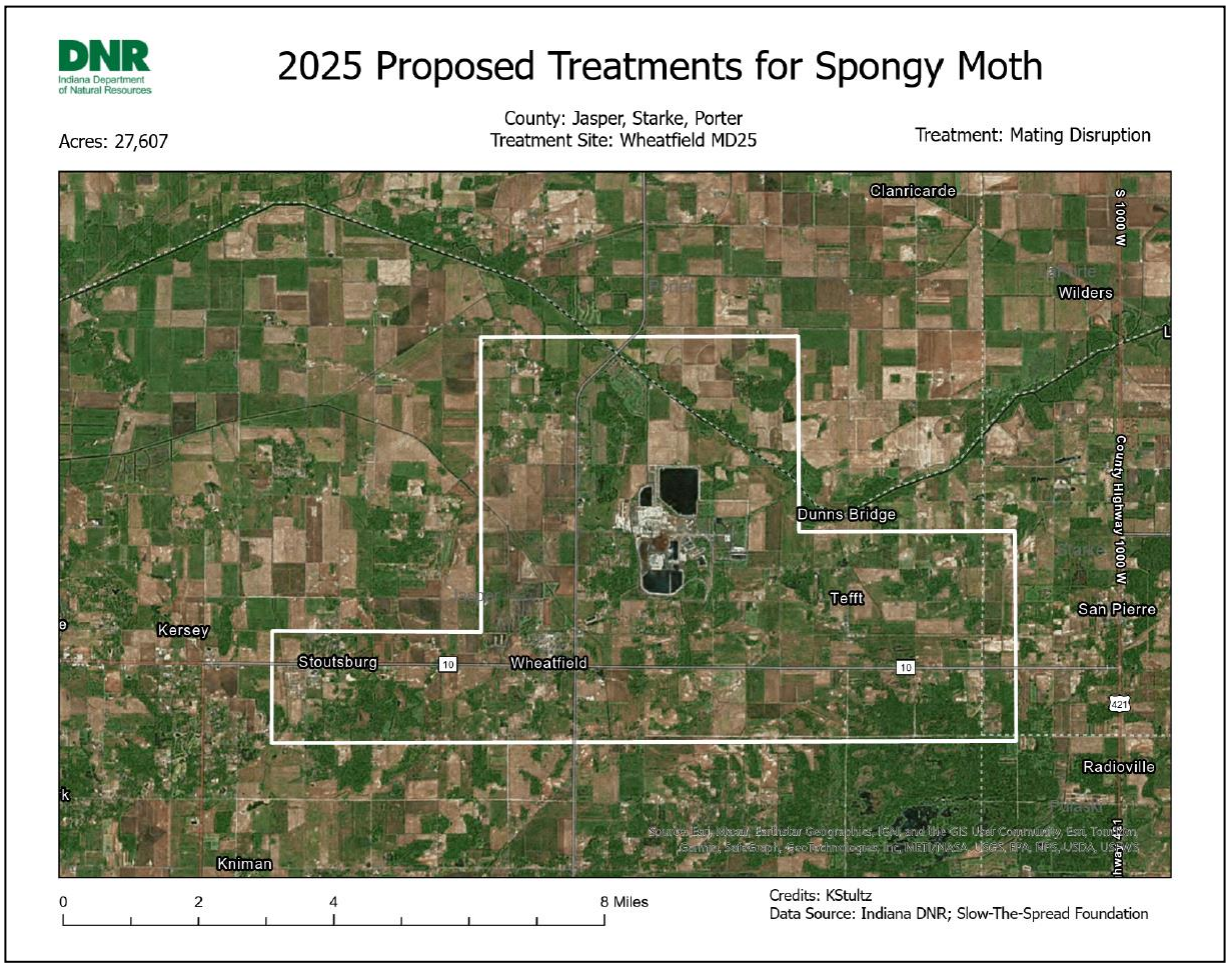
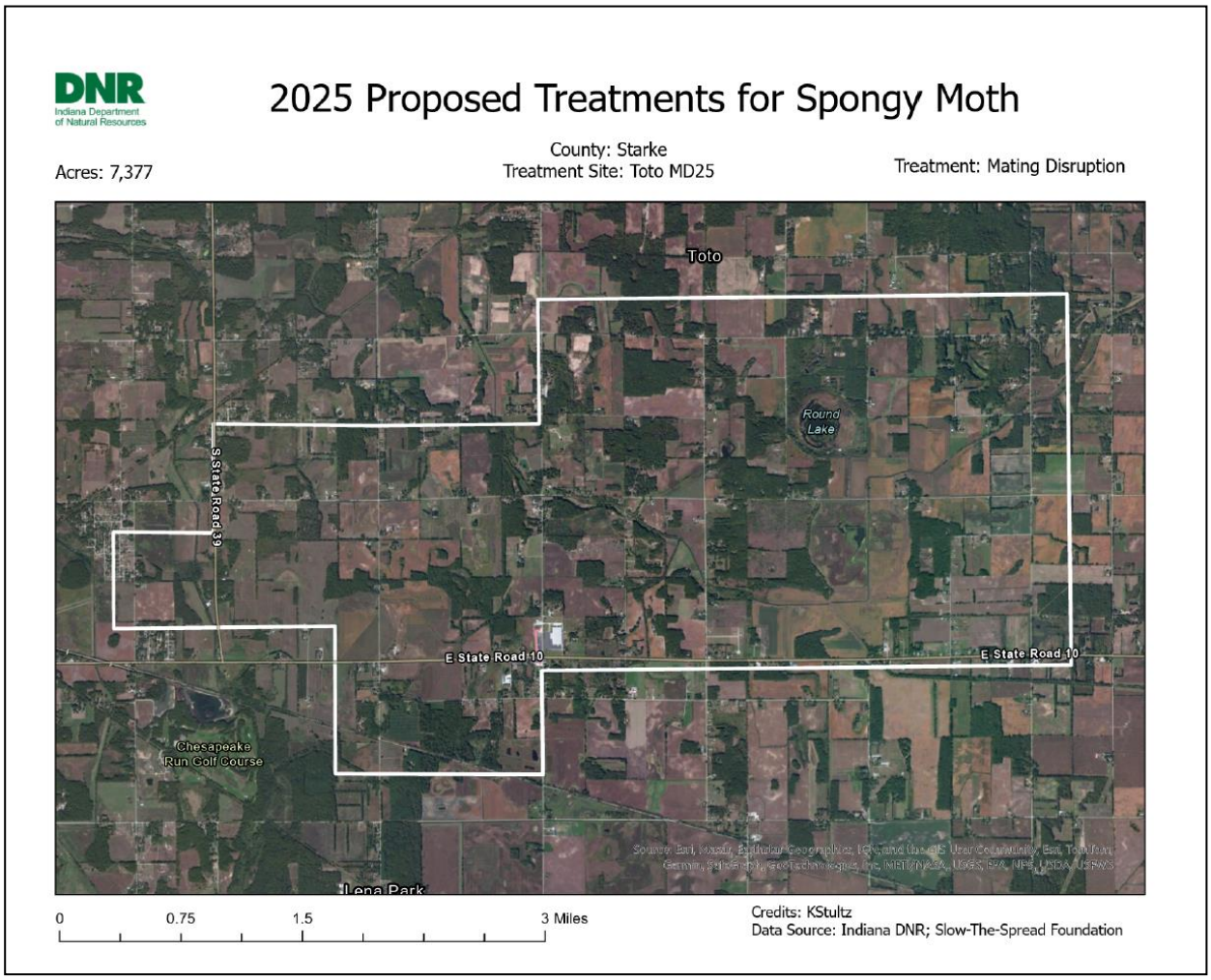


Image 5: Map showing the Toto MD25 proposed treatment site in Starke County.



10.0 APPENDIX C. AGENCIES AND PERSONS CONSULTED

Image 1: U.S. Fish & Wildlife Service (USFWS) response on the environmental review of the 2025 proposed spongy moth treatment sites. Letter continues on Images 2 and 3 below.

From: Harrison, Sarah A
To: Rust, Angela D.
Subject: Re: [EXTERNAL] Project Code 2025-0048678 Indiana DNR 2025 Proposed Spongy Moth Treatments
Date: Thursday, March 6, 2025 1:17:07 PM

EXTERNAL EMAIL: This email was sent from outside your organization. Exercise caution when clicking links, opening attachments or taking further action, before validating its authenticity.

This responds to your email requesting our concurrence on the proposed Spongy Moth Treatment in Marshall, Jasper, Porter and Starke counties, Indiana.

These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (16 U.S.C. 661 et. seq.) and are consistent with the intent of the National Environmental Policy Act of 1969, the Endangered Species Act of 1973, and the U. S. Fish and Wildlife Service's Mitigation Policy.

There may be suitable summer habitat for the Federally endangered Indiana bat and northern long-eared bat and proposed endangered tricolored bat present throughout the project site. The project would apply insecticides strategically at 4 sites to target spongy moths. Based on a review of the information you provided; the U.S. Fish and Wildlife Service would concur that the proposed project is not likely to adversely affect any Federally listed Indiana bat and northern long eared bat and proposed tricolored bat. This precludes the need for further consultation on this project as required under Section 7 of the Endangered Species Act of 1973, as amended. However, should new information arise pertaining to project plans or a revised species list be published, it will be necessary for the Federal agency to reinitiate consultation.

We appreciate the opportunity to comment at this early stage of project planning. If project plans change such that fish and wildlife habitat may be affected, please re-coordinate with our office as soon as possible.

Sarah Harrison
Fish & Wildlife Biologist
USFWS Indiana Field Office
620 South Walker St
Bloomington, IN 47403
Phone direct: 812-902-1748

Image 2: Continuation of U.S. Fish & Wildlife Service response on the environmental review of the 2025 proposed spongy moth treatment sites. Letter continues on Image 3 below.

NOTE: This email correspondence and any attachments to and from this sender is subject to the Freedom of Information Act (FOIA) and may be disclosed to third parties.

From: Rust, Angela D. <ARust@dnr.IN.gov>
Sent: Friday, February 28, 2025 5:54 PM
To: Harrison, Sarah A <sarah_harrison@fws.gov>
Subject: [EXTERNAL] Project Code 2025-0048678 Indiana DNR 2025 Proposed Spongy Moth Treatments

This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.

Dear Ms. Harrison,

This correspondence pertains to the project submitted into the Planning and Consultation System (IPaC) for the Indiana DNR 2025 Proposed Spongy Moth Treatments. The Project Code received for this project submission is 2025-0048678.

We have reviewed the official species list provided by USFWS and the IPaC System and have made the following effects determinations.

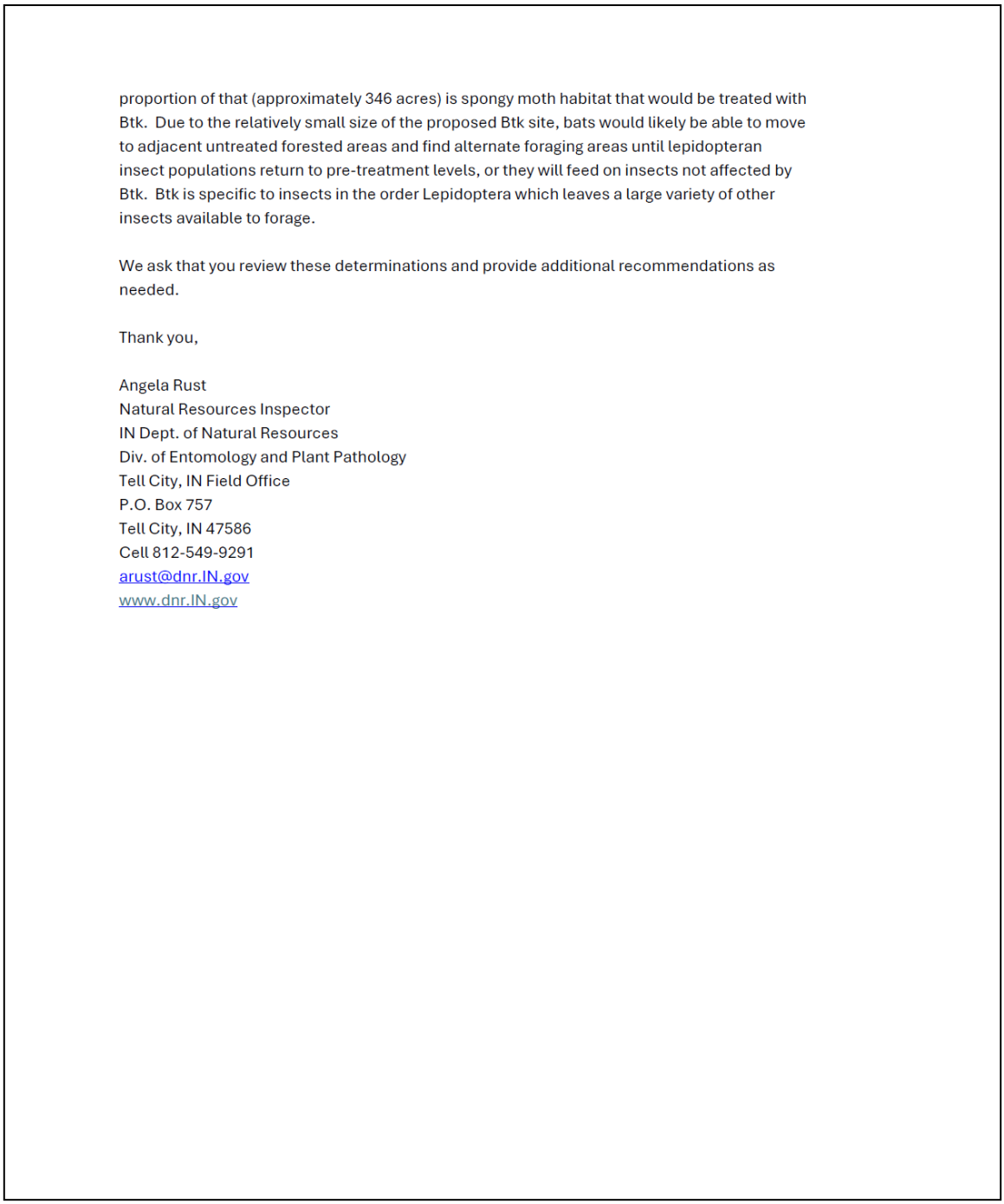
For the Monarch Butterfly *Danaus plexippus* and Western Regal Fritillary Butterfly *Argynnis idalia occidentalis* a determination of "No Jeopardy" has been made.

Mating disruption treatments are specific to spongy moth and would not impact these species. For Btk treatments, the monarch larvae if present could be affected. However, due to the different biological development/emergence of the larvae of spongy moth and monarch butterfly, the monarch larvae are unlikely to be present during the treatment periods. Monarch larvae are also most likely to be found in more agricultural areas where milkweed species (Asclepias spp.) is more likely to grow. The Western Regal Fritillary larvae are most likely to be found in areas associated with sand prairies and open sand savanna and areas supporting tall grass growth. Btk treatments target wooded lots and tree lines. Within the 1,402-acre evaluation area of the proposed Btk site, only a much smaller proportion of that (approximately 346 acres) is spongy moth habitat that would be treated with Btk.

For the Indiana Bat *Myotis sodalist*, Northern Long-eared Bat *Myotis septentrionalis* and Tricolored Bat *Perimyotis subflavus* a determination of "Not Likely To Adversely Affect" has been made.

Mating disruption treatments are specific to spongy moth and would not impact these species. Within the 1,402-acre evaluation area of the proposed Btk site, only a much smaller

Image 3: Final page of the U.S. Fish & Wildlife Service response on the environmental review of the 2025 proposed spongy moth treatment sites.



proportion of that (approximately 346 acres) is spongy moth habitat that would be treated with Btk. Due to the relatively small size of the proposed Btk site, bats would likely be able to move to adjacent untreated forested areas and find alternate foraging areas until lepidopteran insect populations return to pre-treatment levels, or they will feed on insects not affected by Btk. Btk is specific to insects in the order Lepidoptera which leaves a large variety of other insects available to forage.

We ask that you review these determinations and provide additional recommendations as needed.

Thank you,

Angela Rust
Natural Resources Inspector
IN Dept. of Natural Resources
Div. of Entomology and Plant Pathology
Tell City, IN Field Office
P.O. Box 757
Tell City, IN 47586
Cell 812-549-9291
arust@dnr.IN.gov
www.dnr.IN.gov

Image 4: Response letter from the Indiana Department of Natural Resources Environmental Review Unit on the 2025 proposed spongy moth treatment sites. Letter continues on Images 5,6 and 7 below.

THIS IS NOT A PERMIT

State of Indiana
DEPARTMENT OF NATURAL RESOURCES
Division of Fish and Wildlife
Early Coordination/Environmental Assessment

DNR#: ER-27140

Request Received: January 22, 2025

Requestor:
Angela Rust
Indiana Department of Natural Resources
Division of Entomology and Plant Pathology
P.O. Box 757
Tell City, IN 47586

Project:
2025 Proposed Spongy Moth Treatment Sites

County/Site Info: Jasper, Marshall, Porter, Starke Counties

The Indiana Department of Natural Resources has reviewed the above referenced project per your request. Our agency offers the following comments for your information and in accordance with the National Environmental Policy Act of 1969.

If our agency has regulatory jurisdiction over the project, the recommendations contained in this letter may become requirements of any permit issued. If we do not have permitting authority, all recommendations are voluntary.

Regulatory Assessment:
Formal approval by the Department of Natural Resources under the regulatory programs administered by the Division of Water is not required for this project.

Natural Heritage Database:
The Natural Heritage Program's data have been checked. No properties, high quality natural communities, or threatened or endangered species have been documented in or near the project area for **Bourbon Btk25**.

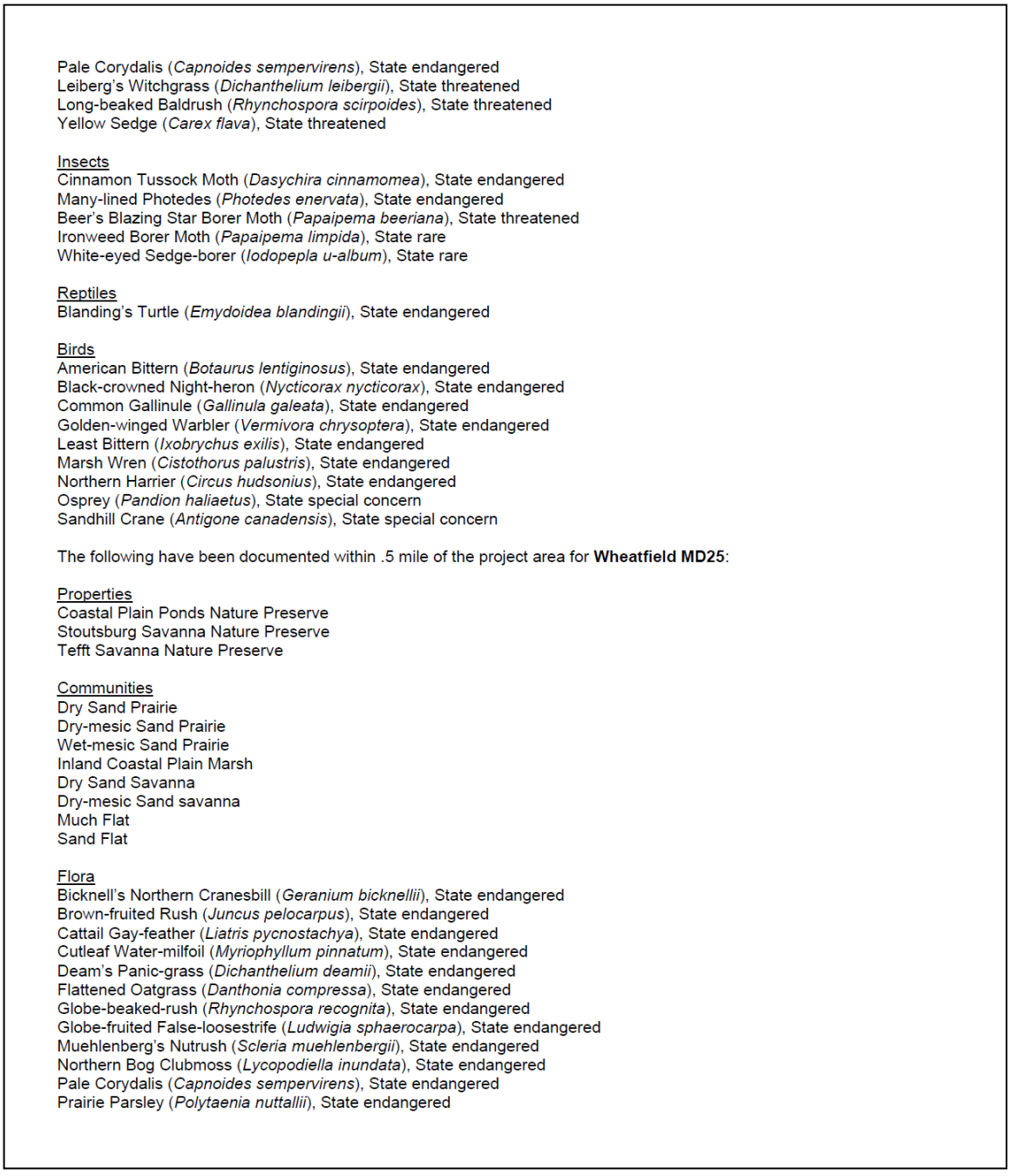
The following have been documented within .5 mile of the project area for **Toto MD25**:

Properties
Round Lake Wetland Nature Preserve

Communities
Grand Prairie Dry-mesic Upland Forest
Grand Prairie Mesic Upland Forest
Lake
Fen
Marsh
Sedge Meadow

Flora
Appalachian Ladies'-tresses (*Spiranthes arcisepala*), State endangered
Cyperus-like Sedge (*Carex pseudocyperus*), State endangered
Long-leaved Panic-grass (*Coleataenia longifolia ssp. longifolia*), State endangered

Image 5: Continuation of response letter from the Indiana Department of Natural Resources Environmental Review Unit on the 2025 proposed spongy moth treatment sites. Letter continues on Image 6 and 7 below.



Pale Corydalis (*Capnoides sempervirens*), State endangered
Leiberg's Witchgrass (*Dichanthelium leibergii*), State threatened
Long-beaked Baldrush (*Rhynchospora scirpoides*), State threatened
Yellow Sedge (*Carex flava*), State threatened

Insects
Cinnamon Tussock Moth (*Dasychira cinnamomea*), State endangered
Many-lined Photedes (*Photedes enervata*), State endangered
Beer's Blazing Star Borer Moth (*Papaipema beeriana*), State threatened
Ironweed Borer Moth (*Papaipema limpida*), State rare
White-eyed Sedge-borer (*Iodopepla u-album*), State rare

Reptiles
Blanding's Turtle (*Emydoidea blandingii*), State endangered

Birds
American Bittern (*Botaurus lentiginosus*), State endangered
Black-crowned Night-heron (*Nycticorax nycticorax*), State endangered
Common Gallinule (*Gallinula galeata*), State endangered
Golden-winged Warbler (*Vermivora chrysoptera*), State endangered
Least Bittern (*Ixobrychus exilis*), State endangered
Marsh Wren (*Cistothorus palustris*), State endangered
Northern Harrier (*Circus hudsonius*), State endangered
Osprey (*Pandion haliaetus*), State special concern
Sandhill Crane (*Antigone canadensis*), State special concern

The following have been documented within .5 mile of the project area for **Wheatfield MD25**:

Properties
Coastal Plain Ponds Nature Preserve
Stoutsburg Savanna Nature Preserve
Tefft Savanna Nature Preserve

Communities
Dry Sand Prairie
Dry-mesic Sand Prairie
Wet-mesic Sand Prairie
Inland Coastal Plain Marsh
Dry Sand Savanna
Dry-mesic Sand savanna
Much Flat
Sand Flat

Flora
Bicknell's Northern Cranesbill (*Geranium bicknellii*), State endangered
Brown-fruited Rush (*Juncus pelocarpus*), State endangered
Cattail Gay-feather (*Liatris pycnostachya*), State endangered
Cutleaf Water-milfoil (*Myriophyllum pinnatum*), State endangered
Deam's Panic-grass (*Dichanthelium deamii*), State endangered
Flattened Oatgrass (*Danthonia compressa*), State endangered
Globe-beaked-rush (*Rhynchospora recognita*), State endangered
Globe-fruited False-loosestrife (*Ludwigia sphaerocarpa*), State endangered
Muehlenberg's Nutrush (*Scleria muehlenbergii*), State endangered
Northern Bog Clubmoss (*Lycopodiella inundata*), State endangered
Pale Corydalis (*Capnoides sempervirens*), State endangered
Prairie Parsley (*Polytaenia nuttallii*), State endangered

Image 6: Continuation of response letter from the Indiana Department of Natural Resources Environmental Review Unit on the 2025 proposed spongy moth treatment sites. Letter continues on Image 7 below.

Sandplain Flax (*Linum intercursum*), State endangered
Sessile-leaved Bugleweed (*Lycopus amplectens*), State endangered
Small-fruited Spike-rush (*Eleocharis macrocarpa*), State endangered
Small Swollen Bladderwort (*Utricularia radiata*), State endangered
Snail-seed Pondweed (*Potamogeton bicupulatus*), State endangered
Sun Sedge (*Carex inops ssp. heliophila*), State endangered
Toothed Sedge (*Cyperus dentatus*), State endangered
Black-fruited Spike-rush (*Eleocharis melanocarpa*), State threatened
Carey's Smartweed (*Persicaria careyi*), State threatened
Carolina Yellow-eyed Grass (*Xyris difformis*), State threatened
Creeping St. John's-wort (*Hypericum adpressum*), State threatened
Deep-root Clubmoss (*Diphasiastrum tristachyum*), State threatened
Fire Cherry (*Prunus pensylvanica*), State threatened
Grooved Yellow Flax (*Linum sulcatum*), State threatened
Northeastern Smartweed (*Persicaria opelousana*), State threatened
Northern Witchgrass (*Dichanthelium boreale*), State threatened
Primrose-leaf Violet (*Viola primulifolia*), State threatened
Reticulated Nutrush (*Scleria reticularis*), State threatened
Robbins' Spike-rush (*Eleocharis robbinsii),* State threatened
Spoon-leaved Sundew (*Drosera intermedia*), State threatened
Straw Sedge (*Carex straminea*), State threatened
Warty Panic-grass (*Panicum verrucosum*), State threatened
Weakstalk Bulrush (*Schoenoplectiella purshiana*), State threatened
Western Silvery Aster (*Symphyotrichum sericeum*), State threatened
Yellow Gentian (*Gentiana alba*), State threatened
Zigzag Bladderwort (*Utricularia subulate*), State threatened

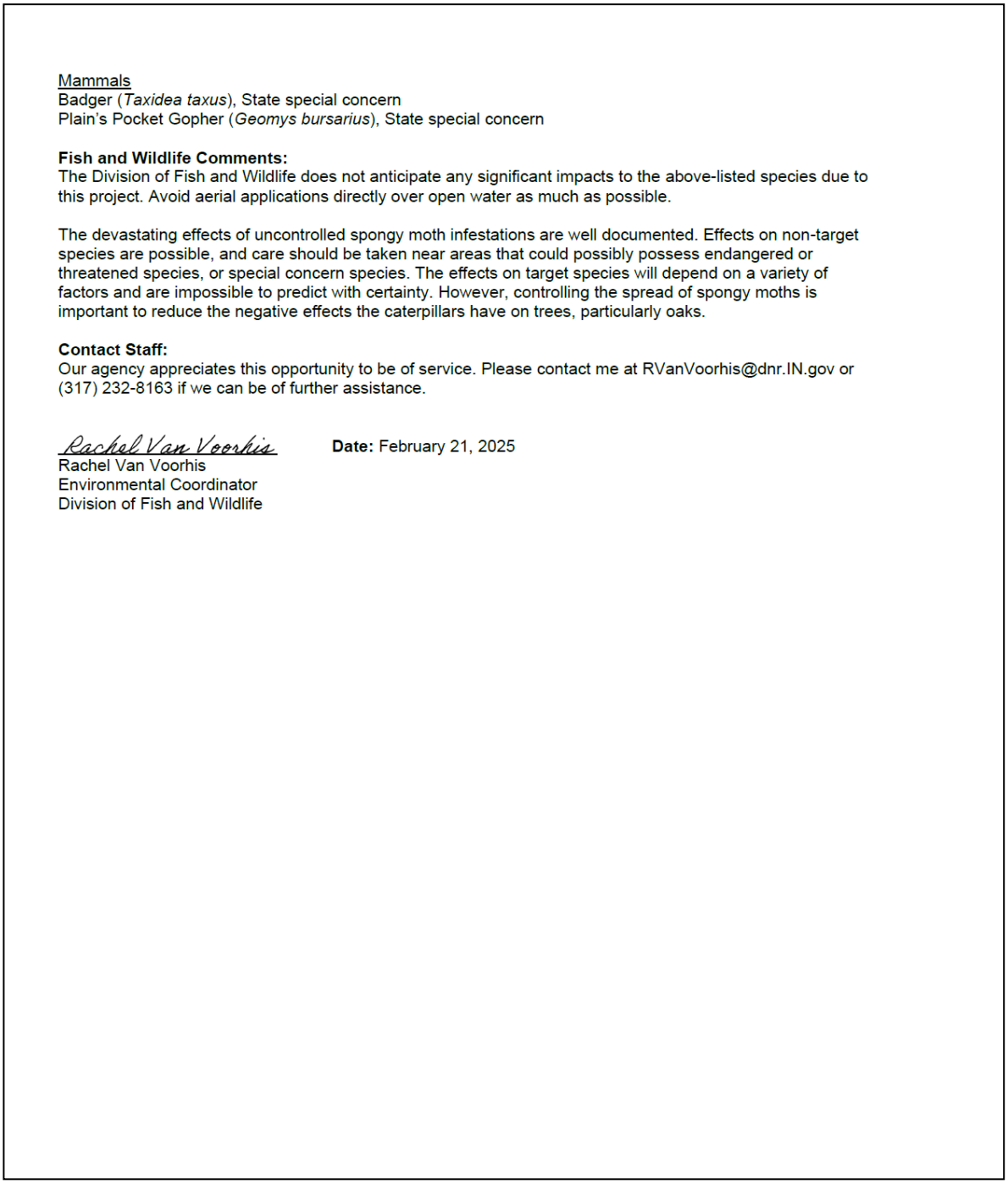
Insects
Frosted Elfin (*Callophrys irus*), State endangered
Regal Fritillary (*Speyeria idalia*), State endangered
Ring's Cochylid Moth (*Aethes ringsi*), State endangered
Bunchgrass Skipper (*Problema byssus*), State threatened
Patricia's Cochylid Moth (*Aethes patricia*), State threatened
Cobweb Skipper (*Hesperia metea*), State rare
Dusted Skipper (*Atrytonopsis hianna*), State rare
Indian Skipper (*Hesperia sassacus*), State rare
Olympia Marble (*Euchloe olympia*), State rare
Record Keeper (*Feltia manifesta*), State rare
Striated Phaneta Moth (*Phaneta striatana*), State rare

Mussels
Sheepnose (*Plethobasus cyphyus*), State endangered

Reptiles and Amphibians
Plains Box Turtle (*Terrapene ornata ornata*), State endangered
Smooth Green Snake (*Opheodrys vernalis*), State endangered
Blue-spotted Salamander (*Ambystoma laterale*), State special concern
Western Ribbon Snake (*Thamnophis proximus proximus*), State special concern

Birds
Golden-winged Warbler (*Vermivora chrysoptera*), State endangered
Henslow's Sparrow (*Ammodramus henslowii*), State endangered
Whooping Crane (*Grus americana*), State endangered
Black-and-white Warbler (*Mniotilta varia*), State special concern
Peregrine Falcon (*Falco peregrinus*), State special concern
Migratory Bird Concentration Area

Image 7: Final page of the response letter from the Indiana Department of Natural Resources Environmental Review Unit on the 2025 proposed spongy moth treatment sites.



Mammals
Badger (*Taxidea taxus*), State special concern
Plain's Pocket Gopher (*Geomys bursarius*), State special concern

Fish and Wildlife Comments:
The Division of Fish and Wildlife does not anticipate any significant impacts to the above-listed species due to this project. Avoid aerial applications directly over open water as much as possible.

The devastating effects of uncontrolled spongy moth infestations are well documented. Effects on non-target species are possible, and care should be taken near areas that could possibly possess endangered or threatened species, or special concern species. The effects on target species will depend on a variety of factors and are impossible to predict with certainty. However, controlling the spread of spongy moths is important to reduce the negative effects the caterpillars have on trees, particularly oaks.

Contact Staff:
Our agency appreciates this opportunity to be of service. Please contact me at RVanVoorhis@dnr.IN.gov or (317) 232-8163 if we can be of further assistance.

Rachel Van Voorhis **Date:** February 21, 2025
Rachel Van Voorhis
Environmental Coordinator
Division of Fish and Wildlife

Image 8: Response letter from the Indiana Department of Natural Resources, Division of Historic Preservation and Archaeology on the historical and archaeological review of 2025 proposed spongy moth treatment sites.

DNR Indiana Department of Natural Resources

Mike Braun, Governor
Alan Morrison, Director

Division of Historic Preservation & Archaeology·402 W. Washington Street, W274·Indianapolis, IN 46204-2739
Phone 317-232-1646·Fax 317-232-0693·dhpa@dnr.IN.gov

February 13, 2025

Megan Abraham
State Entomologist
Indiana Department of Natural Resources
Division of Entomology and Plant Pathology
402 W. Washington Street, Room W290
Indianapolis, Indiana 46204

State Agency: Indiana Department of Natural Resources

Re: Information for the proposed spongy moth treatment sites for 2025 (DHPA No. 33306)

Dear Ms. Abraham:

Pursuant to Indiana Code 14-21-1 the Indiana Department of Natural Resources, Division of Historic Preservation and Archaeology ("DHPA") has conducted a review of the materials dated and received by the DHPA on January 23,2025, for the above indicated projects in Marshall, Starke, Jasper and Porter counties, Indiana.

Based on our analysis, we do not believe that any historic properties will be altered, demolished, or removed by the proposed project.

If you have any further questions regarding this determination, please contact the DHPA. Questions regarding our comments for this project should be directed to Chad Slider at (317) 234-5366 or cslider@dnr.IN.gov. Additionally, in all future correspondence regarding the above indicated project, please refer to DHPA No. 33306.

Very truly yours,

Chad W. Slider

Beth K. McCord
Director, Division of Historic Preservation & Archaeology

BKM:CWS:cws

emc: Angela Rust, Division of Entomology
Megan Abraham, Division of Entomology

The DNR mission: Protect, enhance, preserve and wisely use natural, cultural and recreational resources for the benefit of Indiana's citizens through professional leadership, management and education.

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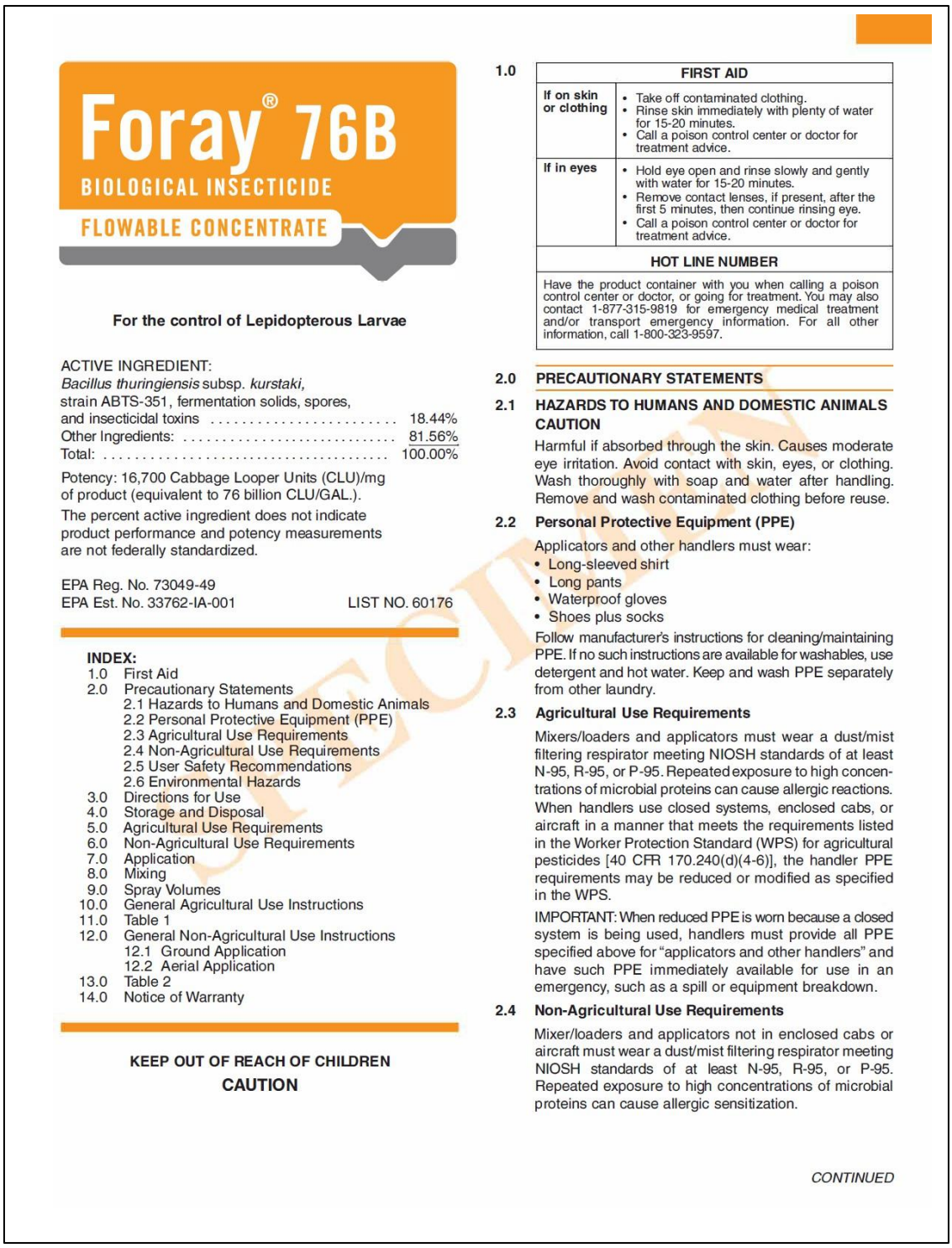
11.0 APPENDIX D. PRODUCT LABELS

Image 1: Manufacturer's product label for the Foray 76B insecticide. Label continues on images 2, 3 and 4.



Foray® 76B
BIOLOGICAL INSECTICIDE
FLOWABLE CONCENTRATE

For the control of Lepidopterous Larvae

ACTIVE INGREDIENT:

Bacillus thuringiensis subsp. *kurstaki*, strain ABTS-351, fermentation solids, spores, and insecticidal toxins	18.44%
Other Ingredients:	81.56%
Total:	100.00%

Potency: 16,700 Cabbage Looper Units (CLU)/mg of product (equivalent to 76 billion CLU/GAL.).

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

EPA Reg. No. 73049-49
EPA Est. No. 33762-IA-001 LIST NO. 60176

INDEX:

KEEP OUT OF REACH OF CHILDREN
CAUTION

1.0

FIRST AID	
If on skin or clothing	• Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a poison control center or doctor for treatment advice.
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 with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-877-315-9819 for emergency medical treatment and/or transport emergency information. For all other information, call 1-800-323-9597.	

2.0 PRECAUTIONARY STATEMENTS

2.1 HAZARDS TO HUMANS AND DOMESTIC ANIMALS
CAUTION

Harmful if absorbed through the skin. Causes moderate eye irritation. Avoid contact with skin, eyes, or clothing. Wash thoroughly with soap and water after handling. Remove and wash contaminated clothing before reuse.

2.2 Personal Protective Equipment (PPE)

Applicators and other handlers must wear:
- Long-sleeved shirt
- Long pants
- Waterproof gloves
- Shoes plus socks

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

2.3 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 reactions. 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.

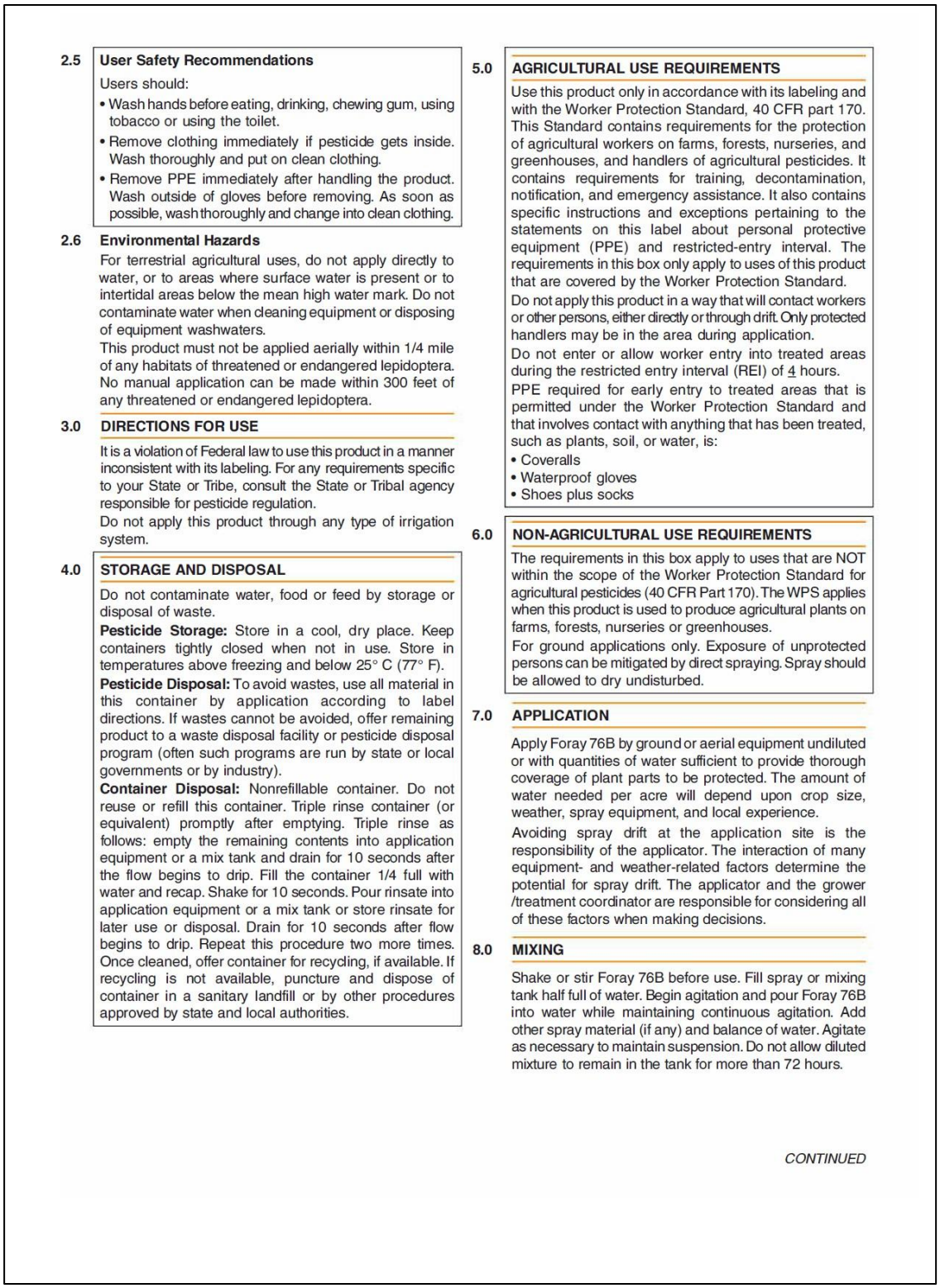
IMPORTANT: When reduced PPE is worn because a closed system is being used, handlers must provide all PPE specified above for "applicators and other handlers" and have such PPE immediately available for use in an emergency, such as a spill or equipment breakdown.

2.4 Non-Agricultural Use Requirements

Mixer/loaders and applicators not in enclosed cabs or aircraft 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.

CONTINUED

Image 2: Manufacturer's product label for the Foray 76B insecticide. Label continues on images 3 and 4.



2.5 User Safety Recommendations

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.
- Remove clothing immediately if pesticide gets inside. Wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling the product. Wash outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

2.6 Environmental Hazards

For terrestrial agricultural uses, 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. No manual application can be made within 300 feet of any threatened or endangered lepidoptera.

3.0 DIRECTIONS FOR USE

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

Do not apply this product through any type of irrigation system.

4.0 STORAGE AND DISPOSAL

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

Pesticide Storage: Store in a cool, dry place. Keep containers tightly closed when not in use. Store in temperatures above freezing and below 25° C (77° F).

Pesticide Disposal: To avoid wastes, use all material in this container by application according to label directions. If wastes cannot 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 1/4 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 flow begins to drip. Repeat this procedure two more times. Once cleaned, offer container for recycling, if available. If recycling is not available, puncture and dispose of container in a sanitary landfill or by other procedures approved by state and local authorities.

5.0 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 and that involves contact with anything that has been treated, such as plants, soil, or water, is:

- Coveralls
- Waterproof gloves
- Shoes plus socks

6.0 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.

For ground applications only. Exposure of unprotected persons can be mitigated by direct spraying. Spray should be allowed to dry undisturbed.

7.0 APPLICATION

Apply Foray 76B by ground or aerial equipment undiluted or with quantities of water sufficient to provide thorough coverage of plant parts to be protected. 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.

8.0 MIXING

Shake or stir Foray 76B before use. Fill spray or mixing tank half full of water. Begin agitation and pour Foray 76B into water while maintaining continuous agitation. Add other spray material (if any) and balance of water. Agitate as necessary to maintain suspension. Do not allow diluted mixture to remain in the tank for more than 72 hours.

CONTINUED

Image 3: Manufacturer's product label for the Foray 76B insecticide. Label continues on image 4.

To improve weather-fastness of the spray deposits for hard to wet crops, such as cole crops, use a spreader-sticker approved for use on growing crops. Combinations with commonly used spray tank adjuvants are generally not deleterious to Foray 76B, 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.

9.0 SPRAY VOLUMES

Ground Application: Use amount of Foray 76B, as indicated in the tables that follow, in ground equipment with quantities of water sufficient to provide thorough coverage of plant parts to be protected. The amount of water needed per acre will depend upon crop size, weather conditions, spray equipment used and local experience.

Aerial Application: Use amount of Foray 76B, 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 per acre. The minimum amount of water needed per acre will depend upon crop size, weather conditions, spray equipment used and local experience.

10.0 GENERAL AGRICULTURAL USE INSTRUCTIONS

Foray 76B is a biological insecticide for the control of lepidopterous larvae. It contains the spores and endotoxin crystals of *Bacillus thuringiensis kurstaki*. Foray 76B 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 76B cease feeding within a few hours and die within 2-5 days.

Foray 76B 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 76B 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 reinfestations. 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 a contact insecticide to enhance control.

Thorough coverage is essential for optimum performance. Ground applicators equipped with directed drop nozzles can improve coverage.

11.0 Table 1.

Crop	Pests	Rate[1] (fl. oz./acre)
Forests, Shade Trees, Ornamentals, Shrubs, Sugar Maple Trees, Ornamental Fruit, Nut & Citrus Trees[2]	Gypsy Moth[2] Elm Spanworm	13.5 - 67.5
	Spruce Budworm Browntail Moth Douglas Fir Tussock Moth Coneworm Buck Moth	13.5 - 50.5
	Tussock Moth Pine Butterfly Bagworm Leafroller Tortrix Mimosa Webworm Tent Caterpillar Jackpine Budworm Blackheaded Budworm Saddled Prominent Saddleback Caterpillar Eastern & Western Hemlock Looper Orangestriped Oakworm Satin Moth	10.0 - 27.0
	Redhumped Caterpillar Spring & Fall Cankerworm California Oakworm Fall Webworm	7.0 - 13.5

Special Instructions

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

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

This product can be mixed and used with other pesticides only in accordance with the most restrictive of label limitations and precautions. This product cannot be mixed with any product containing a label prohibition against such mixing. No label dosage rates may be exceeded.

12.0 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 interior plantscapes, 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 for wide-area public pest control programs sponsored by government entities, such as mosquito abatement, gypsy moth control, and Mediterranean fruit fly eradication.

Do not apply this product through any type of irrigation system.

Foray 76B contains the spores and endotoxin crystals of *Bacillus thuringiensis kurstaki*. Foray 76B 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 76B by ground or aerial equipment.

CONTINUED

Image 4: Final page of the manufacturer's product label for the Foray 76B insecticide.

Shake or stir Foray 76B before use. Add some water to the mix tank, pour the specified amount of Foray 76B into the tank, and then add the remaining amount of water to obtain the proper mix ratio. Agitate as necessary to maintain the suspension. Do not allow diluted mixture to remain in the tank for more than 72 hours.

12.1 Ground Application

Use an adequate amount of tank mix to obtain thorough coverage without excessive run off. Use the indicated recommended per acre rates of Foray 76B in up to the following amounts of water:

High volume hydraulic sprayers	100 gallons
Mist blowers	10 gallons

12.2 Aerial Application

Apply Foray 76B, either alone or diluted with water, aerially at the rates shown in the application rates table. Spray volumes of 28-67.5 fluid ounces of product per acre give optimum coverage.

13.0 Table 2.

Crop	Pests	Rate[1] (fl. oz./acre)
Forests, Shade Trees, Ornamentals, Shrubs, Sugar Maple Trees, Ornamental Fruit, Nut & Citrus Trees[2]	Gypsy Moth[2] Elm Spanworm	13.5 - 67.5
	Spruce Budworm Browntail Moth Douglas Fir Tussock Moth Coneworm Buck Moth	13.5 - 50.5
	Tussock Moth Pine Butterfly Bagworm Leafroller Tortrix Mimosa Webworm Tent Caterpillar Jackpine Budworm Blackheaded Budworm Saddled Prominent Saddleback Caterpillar Eastern & Western Hemlock Looper Orangestriped Oakworm Satin Moth	10.0 - 27.0
	Redhumped Caterpillar Spring & Fall Cankerworm California Oakworm Fall Webworm	7.0 - 13.5

Special Instructions

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

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

14.0 NOTICE OF WARRANTY

To the extent consistent with 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 risk of use, storage or handling not in strict accordance with accompanying directions.

Foray is a registered trademark of Valent BioSciences Corporation.

VALENT BIOSCIENCES CORPORATION
870 TECHNOLOGY WAY
LIBERTYVILLE, IL 60048 USA
PH: 800-323-9597

Image 5: Manufacturer's product label for SPLAT GM Organic mating disruption. Label continues on image 6.

SPLAT

GM -O™

For Mating Disruption of
Lymantria dispar, gypsy moth

SPLAT (Specialized Pheromone & Lure Application Technology) is an amorphous polymer matrix for the sustained release of insect pheromones. SPLAT GM-O provides control by disrupting mating behavior.

For Organic Production

ISCA

ACTIVE INGREDIENT:

Disparlure (Z)-7,8-Epoxy-2-methyloctadecane:	13.00%
OTHER INGREDIENTS:	87.00%
TOTAL:	100.00%

Net Contents: _____ Lbs _____ Kg
Batch Number: _____

EPA Reg. No. 80286-12
EPA Est. No. 80286-CA-004

KEEP OUT OF REACH OF CHILDREN

CAUTION

FIRST AID STATEMENT

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 poison control center or doctor for treatment advice.

IF ON SKIN OR CLOTHING:
- Take off contaminated clothing.
- Wash skin immediately with soap and water, then rinse with plenty of water for 15-20 minutes.

IF SWALLOWED:
- Call poison control center or doctor immediately for treatment advice.
- Have person sip a glass of water if able to swallow.
- Do not induce vomiting unless told to do so by poison control center or doctor.
- Do not give anything by mouth to an unconscious person.

HOTLINE NUMBER

National Pesticides Information Center: Have the product container or label with you when calling a poison control center, doctor, or going for treatment. For emergency information concerning this product, call the National Pesticides Information Center (NPIC) at 1-800-858-7378 seven days a week, 6:30 am to 4:30 pm Pacific Time (NPIC Web site: www.npic.orst.edu).

See side/back panel for additional precautionary statements.

Image 6: Final page of the manufacturer's product label for SPLAT GM Organic mating disruption.

PRECAUTIONARY STATEMENTS	
HAZARDS TO HUMANS AND DOMESTIC ANIMALS, CAUTION: Causes moderate eye irritation. Harmful if swallowed or absorbed through skin. Avoid contact with skin, eyes, or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove contaminated clothing and wash before use.	
PERSONAL PROTECTIVE EQUIPMENT (PPE): Applicators and other handlers must wear long-sleeved shirt and long pants, waterproof gloves, and shoes plus socks. Follow the manufacturer's instructions for cleaning maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.	
ENVIRONMENTAL HAZARDS: For terrestrial uses: Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Incidental applications to water under the forest canopy are not considered to be a direct application to water, but should be avoided if practicable. Spray valves must be shut off when passing over surface water not under the canopy. Do not contaminate water when cleaning equipment or disposing of equipment washwaters or rinsate.	
DIRECTIONS FOR USE	
It is a violation of Federal Law to use this product in a manner inconsistent with its labeling. Always consult your pest control advisor, distributor or ISCA Technologies, Inc. for advice regarding the use of **SPLAT GM-O**.	
GENERAL	**SPLAT GM-O** uses the pheromone of the gypsy moth (*Lymantria dispar*), to disrupt adult moth mating and thus reduce larval damage to trees.
TARGET PEST	Gypsy Moth (*Lymantria dispar*)
AREA-WIDE CONTROL	This product is only for use in wide-area gypsy moth control programs sponsored by government entities. Areas of application include, but are not limited to: forests; residential, municipal, and shade tree areas; recreational areas such as campgrounds, golf courses, parks, and parkways; ornamental and shade trees; shelterbelts; right-of-way; and other easements. Area-wide or wide-area application of **SPLAT GM-O** is most effective. The efficacy of any mating disruption strategy will be reduced by the influx of adults from surrounding areas. It is for this reason that mating disruption works increasingly well with larger acreages, where the ratio of exposed borders to overall area treated is reduced. Always make application of **SPLAT GM-O** in consultation with your pest control advisor, distributor, or ISCA Technologies, Inc. No intentional food uses are permitted. However, an exemption from the requirement of a tolerance is established for residues of (Z)-7,8-epoxy-2-methyloctadecane (Disparlure) on all food and feed crops that occur when it is used to treat trees, shrubs, and pastures and such use results in unintentional spray and drift to non-target vegetation including non-food, food, and feed crops.
MONITORING	Monitor for pests on a regular basis so that timely intervention with insecticides or alternative controls are possible. Use gypsy moth pheromone-baited monitoring traps made by ISCA Technologies or other suitable traps to monitor the presence of male moths, their emergence and their movement. Place monitoring traps before applying **SPLAT GM-O** to determine the infestation level. Continue monitoring throughout the season to evaluate efficacy and longevity of the pheromone application. Monitor treated plots for the target pest. Implement supplementary control measures if the pest population densities are above economic threshold levels.
APPLICATION TIMING	Apply **SPLAT GM-O** anytime in the two weeks preceding male flight and adult activity. Additional applications may be made if populations exceed the economic threshold. Consult your pest control advisor, distributor, or ISCA Technologies, Inc. for proper application timing.
APPLICATION CONDITIONS	Apply **SPLAT GM-O** when the ambient air temperature is above 50°F. **SPLAT GM-O** will cure within 3-4 hours following application, after which it will become rain fast and UV resistant. Do not apply if rain is expected within 1-2 hours of application or the temperature is outside of this range.
APPLICATION RATE	The application rate of **SPLAT GM-O** ranges from 23 grams to 230 grams of undiluted product per acre. This is equivalent to 3 grams to 30 grams of pheromone active ingredient (AI) per acre. Do not exceed 150 grams of AI per acre per year for multiple applications.
PREPARATION FOR USE	Always check **SPLAT GM-O** 24 hours before using. If **SPLAT GM-O** has been stored in a refrigerated area and has hardened, allow at least 48 hours at room temperature to achieve a workable consistency. Always mix **SPLAT GM-O** thoroughly before use; a drill with a paint mixing paddle or similar device works best. Avoid mechanical mixing with sharp blades, which come into contact with the plastic container as this can introduce shards of plastic into the **SPLAT GM-O** formulation, which might interfere with product flowability and application.
APPLICATION EQUIPMENT	**SPLAT GM-O** is applied either aerially or by ground with conventional application systems pressurized either by centrifugal pumps or positive displacement pumps, pressurized gas cylinders, or a combination of both. The flow of **SPLAT GM-O** product can be controlled with agricultural-type solenoids. Calibrate applications based on volume output and application speed and swath area treated. Do not apply this product through any type of irrigation system. **SPLAT GM-O** can also be applied manually using other devices like a metered dosing gun. To ensure proper application, consult your pest control advisor, distributor, or ISCA Technologies, Inc.
POINT SOURCE SIZE, PLACEMENT, AND SPACING	For ground applications, **SPLAT GM-O** dollop size can be varied depending on pest population and duration of control desired. A dense infestation will require a higher density of point sources to achieve optimal mating disruption. With aerial applications, there is less control over the variation in droplet size and there will be a range from approximately 300 to 2000 microns in size. When **SPLAT GM-O** is sprayed on the tree canopy at 46 grams per acre (6 grams AI per acre), the range in droplet size will usually be 300 to 1000 microns. This will provide area-wide, season-long management of low-density populations. To ensure proper application, please consult your pest control advisor, distributor, or ISCA Technologies, Inc.
CLEANING EQUIPMENT	Clean equipment with water and citrus or limonene detergents.
STORAGE AND DISPOSAL	
PESTICIDE STORAGE	Do not contaminate water, food or feed by storage and disposal. Store product sealed and refrigerated. If possible, if refrigerated, do not store with food. If refrigeration is not available, store product in a cool dry place, out of direct sunlight. Do not exceed 75°F for long-term storage. Avoid freezing. In case of leak or spill, wipe with paper towel and dispose of waste when product hardens.
PESTICIDE DISPOSAL	Wastes resulting from the use of this product may be disposed of on site or at an approved waste facility.
CONTAINER DISPOSAL	Nonrefillable container. Do not refill or reuse this container. Triple rinse (or equivalent) promptly after emptying. Then offer for recycling if available, or puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by state and local authorities by burning. If burned, stay out of smoke.
WARRANTY AND LIMITATION OF DAMAGES	
Read all directions carefully. All statements concerning the use of this product apply only when used as directed. ISCA Technologies warrants that this material conforms to the specifications on the label and is reasonably fit for the intended purpose referred to on the label. To the extent consistent with applicable law, ISCA Technologies makes no other express or implied warranty of merchantability or fitness for a particular purpose or any other express or implied warranty.	
ISCA Technologies, Inc. 1230 Spring St., Riverside, CA, 92507 951-686-5008 www.iscatech.com	