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Howard Hedstrom
Hedstrom Lumber Company, Inc.
Grand Marais, MN 55604

Proposed Gypsy Moth Quarantine

- **There will be a huge impact on logging and mills**
- **The spread of the gypsy moth is inevitable, and the Slow the Spread program is ineffective**
- **The Moth is not fatal to our forests**
- **The Forest Products Industry is not the problem or the transmission vector**
- **In an abundance of caution, we can use mitigation measures around our wood yards**
- **Bark can be processed for transport around the State and Region.**

The gypsy moth was introduced in the eastern United States in the 1860's. It has been spreading west since then, and is now in most of Wisconsin, and heading into Minnesota. Lake and Cook Counties have the highest concentrations of the moth according to trapping data. Trapping has been going on in Minnesota since the 1970's. Cold winters, spring frosts and BT treatments have populations (known through trapping results) fluctuating, but the overall trend seems to be an increasing range and population of the moth. It is inevitable that the moth will be in all in Minnesota in a few years.

There is a train wreck coming in Minnesota called the gypsy moth quarantine.

All mills stockpile wood so that mill operations can continue during the no or slow harvest times. The season when stockpiles are built coincides with the quarantine's 90 day rule and the five-day utilization period. That is the period that moths hatch and fly and breed.

For an extreme example, there are two mills in Minnesota, and others in Wisconsin that use spruce as a primary species. Much of that is black spruce which grows on wet soils that have to be accessed when the ground is frozen. Those mills therefore need to stockpile spruce that is harvested during the winter months to use during the rest of the year. In Minnesota more than 50 percent of logging is done in the winter months for this reason.

If a mill cannot conform to the quarantine regulations because of these factors, it has no choice but to avoid sourcing its wood from quarantine areas. This puts timber in Cook and Lake Counties at risk of not finding buyers once the quarantine takes effect. That is why this quarantine is such an impending train wreck for loggers and forest managers in Cook and Lake Counties.

Economics

The stumpage value of current timber sales in Cook and Lake Counties are in the several million dollars range. The stumpage value amounts 25 to 33 percent of the delivered cost of wood, so the real economic impact is three or four times the stumpage value, or \$10 to \$20 million. The economic multiplier would bring the total economic impacts to more than \$50 million.

The effect of quarantine in Cook and Lake Counties would be the loss or delay of marketing that wood. 50% of harvests in Minnesota occur between December and April. The winter months provide the snow and frozen conditions that are necessary to access many stands that cannot be accessed in soft or wet soil conditions that are present the remaining times of the year.

Forest Impacts

The gypsy moth is an invasive species that can defoliate deciduous trees. In some regions it has had impacts on growth and yield, or caused tree mortality. There is no evidence of those impacts in the Lake States (Michigan, Wisconsin and Minnesota). Industry continually questions forest managers about growth and yield impacts and no examples come back. Agency folks dealing with the gypsy moth come back with the answer that the moth is messy; and has an impact on recreation because of the mess the moths can make when populations explode.

In 1992 a program was started called Slow the Spread (STS). In 2004, Minnesota joined the STS program. It is run by the Department of Agriculture, and there is a budget and staff allocated to monitoring and attempting to control the range and populations. The moth is too invasive, or the program too weak for STS to have much effect. We are now at the range and time predicted for the moth's spread if we had done nothing. Feasibility studies in 2009 predicted the moth's spread would be kept to 3-5 miles per year with treatments. Despite the STS program, the moth has spread at the no treatment rate of 13-15 miles per year, so it appears that the money we have spent, and the programs we have put in place have gone for naught. See attached graphs from the STS program on page 10.

Many think that our forests would benefit more if the dollars spent on STS were spent on other forest management objectives. A forest that is well managed and has varied age classes is more resilient to pests, wind throw and fire, and more pleasing to visitors.

Trapping data

Trapping data has been up and down, but trending up. The leading counties are Lake and Cook, with St. Louis coming up quickly. Counties mostly to the west are showing moths where trapping is present. The highest concentrations are around recreation sites or travel corridors. All the major wood using mills in Minnesota have had a trapping regime for the last 10 years. Even though the forest products industry moves and uses millions of cords of wood, sourced somewhat from within moth invested areas, there are not unusually high trapping results around mills. See attached data from MFI, pages 11 to 16. Areas around State Parks are actually the "hot spots" for the moth. Could you imagine the cost and disruption involved with trying to regulate recreation visitors?

Compliance agreements

The Department of Agriculture has the authority to require mills that use wood from quarantine areas to sign a compliance agreement. The elements of this agreement call for storing quarantine wood separately, processing that wood within five days, and disposing of the bark through burning or landfill. This is for wood received during a prescribed period during a typical moth hatch. Wood from non-quarantine areas, but areas with known moth populations, is not treated in the same manner.

It might seem reasonable that concentrating wood in a mill yard would also concentrate moth outbreaks. There is no trapping evidence to confirm that thought, so the question is: What good will a quarantine and regulation of the Forest Products sector do to slow the spread of gypsy moth?.

It might seem to a person outside of the forest products industry, that the compliance agreement would not be onerous. In practice, it is difficult to impossible to comply. The wood storage requirement is an example of that. Wood flows are affected by season, weather, holidays and any number of other variables. Wood does not flow to a mill as it is consumed, but rather comes in spurts, sometimes not keeping up with mill usage and at other time far exceeding usage. If more quarantined wood is coming into a mill that they can process in the five days, the only course of action is to stop the flow of wood from quarantine areas. This is a logistics nightmare, compounded by the complication of mills switching species or species mix.

Processing wood

Forest Industry professionals have located egg masses on standing timber. To see how they would survive the process of harvests, those trees were flagged, and the wood was inspected after being harvested and processed in the woods. Results of inspections after the processing showed very few egg masses survived the trip from tree to a decked pile.

Similar studies should be done to track known egg masses through the mill. I expect that the egg masses would not survive debarking the wood, then running that bark through a hammer mill. Defining material that has been through these processes as meeting the quarantine's "processed" requirement would be a big step in helping mills deal with a quarantine. I have reports from mills that no moths are found near bark piles, which would be further evidence that egg masses don't survive the trip through our mills.

Eradication by Mass Trapping

In the areas around mill yards and wood yards, it seems reasonable and doable to do massive trapping as a mitigation measure against the chance that there are moths transported with wood products. See the handbook language on page 7.

Also, mating disruptant pheromones could be spread around the perimeter of wood yards to further guard against moths successfully reproducing if they survive processing and mass trapping.

ATTACHMENTS:

Following are excerpts from the Manual

- Shipping requirements
- Inspections
- Receiving mill requirements
- Behavioral Treatments for eradication
- Composting Procedures
- Attached Also: STS maps

MFI trapping analysis

Shipping Requirements:

CA—Loggers/Log, Pulpwood, and Wood Chip Shippers

Item #1: Name of Establishment

Item #2: Location of Establishment

Item #3: (Logs, Pulpwood, and/or Wood Chips) moving from a generally infested area to locations outside of the generally infested area.

Item #4: Gypsy Moth Quarantine, 7CFR 301.45

Item #5:

A. The establishment identified above hereby enters into a Compliance Agreement with the U. S. Department of Agriculture under the provisions of the gypsy moth quarantine. The establishment has chosen to exercise the option of self-inspection of the Regulated Article(s) listed above. The Regulated Article(s) will only move from the establishment, located inside the generally infested area, to receiving mills, located outside of the generally infested area, if the receiving mills are under Compliance Agreement.

B. After receiving training, employees of the establishment will be authorized to inspect and to complete inspection documents. The employee(s) of the establishment to be trained and certified will be (the following:)

(Add names of the employees to the CA.)

C. In accordance with instructions in the Regulatory Section of the Gypsy Moth Program Manual, a trained employee of the establishment will (1) inspect the regulated article(s) no more than 5 days prior to the date of movement, (2) treat and/or remove all life stages of the gypsy moth,

so that no viable individuals remain, and (3) complete and distribute copies of the inspection document. The trained employee of the establishment will distribute the copies of the inspection document as follows:

- a. The original of the inspection document will be attached to the waybill or other shipping document accompanying the shipment. The carrier will surrender the original inspection document to the consignee at destination.
- b. One copy of the inspection document will be retained by the establishment

Appendix E

CA - Receiving Mills

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- c. Another copy of the inspection document will be forwarded to the Plant Protection and Quarantine Office specified in Item #13.
- D. During the five months of April through August, the establishment will safeguard Regulated Article(s) after certification from infestation or reinfestation. Safeguards will be (1) storage before shipment and (2) covering (of pulpwood and wood chips) during transit through generally infested areas. Regulated Articles exposed during transit will be treated as infested articles.
- E. PPQ will provide the establishment with (1) appropriate sections of the Gypsy Moth Program Manual, (2) training, and (3) updated information. Among other information, the updated information will include (1) quarantine reports, (2) a listing of generally infested areas, and (3) current maps of the generally infested area when available.
- F. (Log, pulpwood, and/or wood chip) staging or holding areas must be (set suitable distance) away from standing trees.
- G. During the five months of April through August, the establishment will safeguard Regulated Articles when the Regulated Articles originate in a non-infested area and are transhipped through the generally infested area. The Regulated Articles will be moved under cover and stored indoors or under cover, so that infestation will not occur. Regulated Articles exposed during transit will be treated as infested articles.
- H. PPQ and State Department of Agriculture inspectors retain the right to (1) make spot checks of shipments, (2) monitor inspection procedures and (3) examine records of shipments to locations outside of the generally infested area.
- I. If the establishment fails to comply with provisions of this agreement and/or the gypsy moth regulations, this Compliance Agreement will be canceled. When a cancellation occurs, each shipment will require individual inspection by a PPQ or State inspector; in addition, cancellation could result in the assessment of civil penalties.
- J. The U. S. Department of Agriculture will furnish the service of the PPQ inspectors without cost. Other than the service of the PPQ inspector, the U. S. Department of Agriculture will not be responsible for any costs or charges incident to inspections or compliance with the quarantine.

CA - Receiving Mills

Item #1: Name of Receiving Mill

Item #2: Location of Receiving Mill

Appendix E

CA - Receiving Mills

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Item #3: (Logs, Pulpwood, and/or Wood Chips) moving from a generally infested area to a mill located in a non-infested area.

Item #4: Gypsy Moth Quarantine, 7CFR 301.45

Item #5:

A. The receiving mill, specified in Item #1, will accept shipments of (logs, pulpwood, or wood chips) from a generally infested area only when the shipments are accompanied by a (1) USDA Certificate (?), (2) USDA Limited Permit, or (3) signed Accurate Statement, which will state that the product(s) have been inspected and/or treated and are free of all life stages of gypsy moth.

B. Only the receiving mill, located as specified in Item #2, will receive and process shipments of Regulated Articles from generally infested areas.

C. During the months of April through August, the receiving mill on the site specified in Item #2 will destroy, process, or treat (specify method) within 5 days all bark which come from generally infested areas.

During the remainder of the year, the receiving mill will destroy, process or treat the bark on a timely basis. (A map of generally infested areas is attached.)

D. PPQ and State inspectors will have unlimited access to holding areas for the Regulated Article(s) and to the environs of the receiving mill in order to (1) conduct gypsy moth detection surveys, (2) inspect shipments, and (3) monitor compliance.

E. The receiving mill, specified in Item #1, will be responsible for eradicating any gypsy moth infestation on the premises or in the environs of the receiving mill that result from receiving infested (logs, pulpwood, or wood chips).

F. The U. S. Department of Agriculture will furnish the service of the PPQ inspectors without cost. Other than the service of the PPQ inspectors, the U. S. Department of Agriculture will not be responsible for any costs or charges incident to inspections or compliance with the quarantine.

G. PPQ and the State Department of Agriculture retain the right to check compliance, at their discretion, by conducting inspections and by examining records. Examining records will involve the examination of (1) receiving records, (2) shipping documents, and (3) inspection documents on regulated articles received from generally infested areas.

H. Failure to comply with the gypsy moth regulations and/or the provisions of this Compliance Agreement may result in cancellation of this Compliance Agreement and/or assessment of civil penalties.

Behavioral Treatments for Eradications

Mass Trapping

Background—Mass trapping uses the synthetic sex pheromone, disparlure, to attract male moths to traps placed in a grid pattern across the treatment area. The objective of mass trapping is to capture male gypsy moths before they have a chance to locate and mate with female moths. As an eradication method, mass trapping can be used alone or with other methods of eradication. For example, the majority of eradication use mass trapping after insecticide application.

Mass trapping is most effective when used to eradicate low-population densities.

Appendix G

Behavioral Treatments Used in Eradications

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Use—Mass trapping involves using an aggressive trapping grid of 3 to 10 traps per acre. If the core area of the infestation is known, increased trapping densities in the core area will be at the level of 10 traps per acre.

Two types of traps are used depending on the expected number of moths caught.

1. The standard “delta” trap is a small-capacity trap about 8 inches (20 cm) long, 4 inches (10 cm) high, and triangular in cross section. To lure the male moth, a tiny plastic strip or wick impregnated with the pheromone is stapled to the inside of the trap. To entrap the male moths, a sticky substance coats the inside surface of the trap.

2. The “milk carton” trap, so called because it resembles a milk carton, is used in areas where large numbers of male moths would quickly overwhelm the sticky surface of the smaller delta trap. Like the delta trap, a small pheromone plastic strip or wick is placed inside the milk-carton trap to lure the male moth. Unlike the delta trap, the milk carton trap contains a 1-inch by 4-inch (2.5 x 10 cm) laminated plastic strip containing the insecticide dichlorvos (DDVP). When used in milk carton traps, DDVP is formulated and registered as Vaportape II (Hercon Environmental Company, Emigsville, PA).

Effectiveness—The higher the population density, the greater the risk that a male will find and mate with a female before being lured into a trap. Therefore, treatment is best used where there are less than 10 egg masses per acre (25 egg masses per hectare).

Mass trapping is a labor-intensive treatment, especially over large areas.

Therefore, it is typically used on small infestations less than 100 acres (40.4 hectares). Mass trapping does **not** affect nontarget organisms, except those (primarily flying insects) that accidentally find their way into the traps.

In residential areas with small infestations, mass trapping is an alternative to using insecticides. Mass trapping is an option where there is strong resistance to using insecticides.

Mating Disruption

Background—The objective of mating disruption is to saturate the treatment area with enough pheromone sources to confuse the male moths and thereby prevent them from finding and mating with female moths.

Use—Mating disruption can be accomplished by either ground or aerial

application of disparlure.

1. In ground applications, disparlure is distributed on laminated polymeric dispensers or tapes impregnated with the pheromone. From the laminated

Appendix G

Experimental Treatments Considered For Use in Eradications

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polymeric dispensers and tapes, the pheromone is slowly released into the environment. Because the laminated polymeric dispensers and tapes must be manually attached to trees, this method is labor intensive.

2. In aerial applications, disparlure is distributed by dispensers. One type of dispenser is the small (0.1 inch; 2.5 mm) pheromone-impregnated plastic flake. Aircraft drop the flakes, treated with a sticking agent (Gelva 2333), on the forest canopy and understory vegetation.

Effectiveness—In eradications, mating disruption is best suited for areas containing less than 10 egg masses per acre (25 egg masses per hectare).

Mating disruption may be used alone or with other treatments.

Using disparlure as a mating disruptant is desirable because the pheromone does **not** affect nontarget organisms; however, the plastic dispensers may remain for some time before disintegrating

Composting Procedure for Bark in a Pile

Step 1: Start a Compost Pile

Start a compost pile of at least 200 cubic yards.

Step 2: Leave Compost Pile Undisturbed

Allow the compost pile to remain undisturbed until the temperature reaches 120 °F (49 °C) for at least 4 continuous days. In situations where 120 °F (49 °C) cannot be maintained for at least 4 continuous days, the compost pile shall remain undisturbed until the temperature reaches 100 °F (37.8 °C) for at least 6 continuous days.

Step 3: Remove Compost Pile's Outer Layer

Using a front-end loader or a bulldozer, remove the outer layer of the compost pile to a depth of 3 feet.

Step 4: Start a Second Compost Pile

Start a second compost pile using the recently removed cover material as a core.

Step 5: Move the Core Material

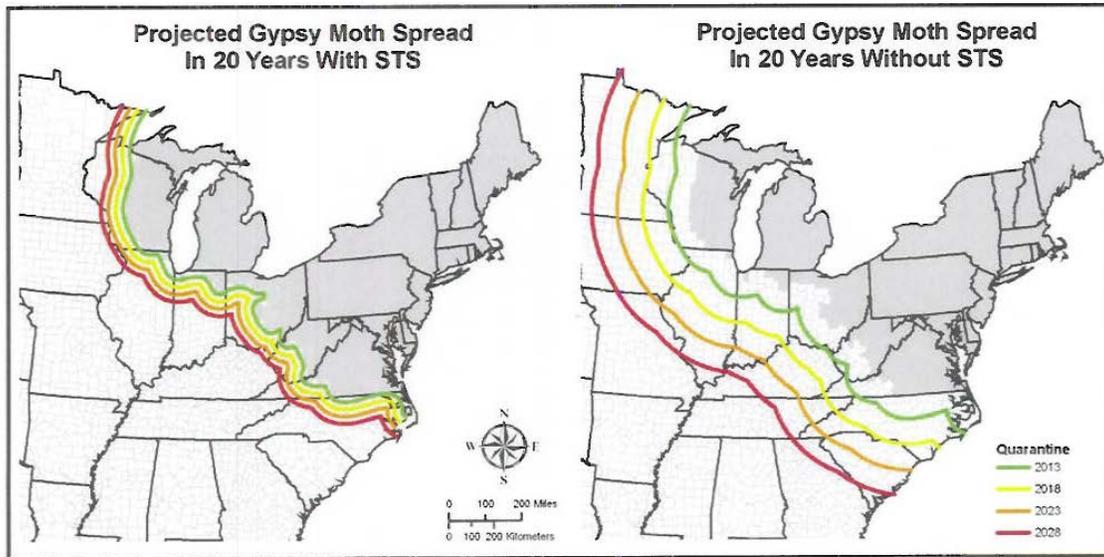
Move the core material from the first compost pile and place on the second compost pile as a cover at least 3 feet deep. (Leave some composted material to serve as "inoculum" for subsequent piles.)

Step 6: Leave Second Compost Pile Undisturbed

Allow the second compost pile to remain undisturbed until the temperature reaches 120 °F (49 °C) for at least 4 continuous days. In situations where 120 °F (49 °C) cannot be maintained for at least 4 continuous days, the second compost pile shall remain undisturbed until the temperature reaches 100 °F (37.8 °C) for at least 6 continuous days.

Step 7: Remove the Second Compost Pile

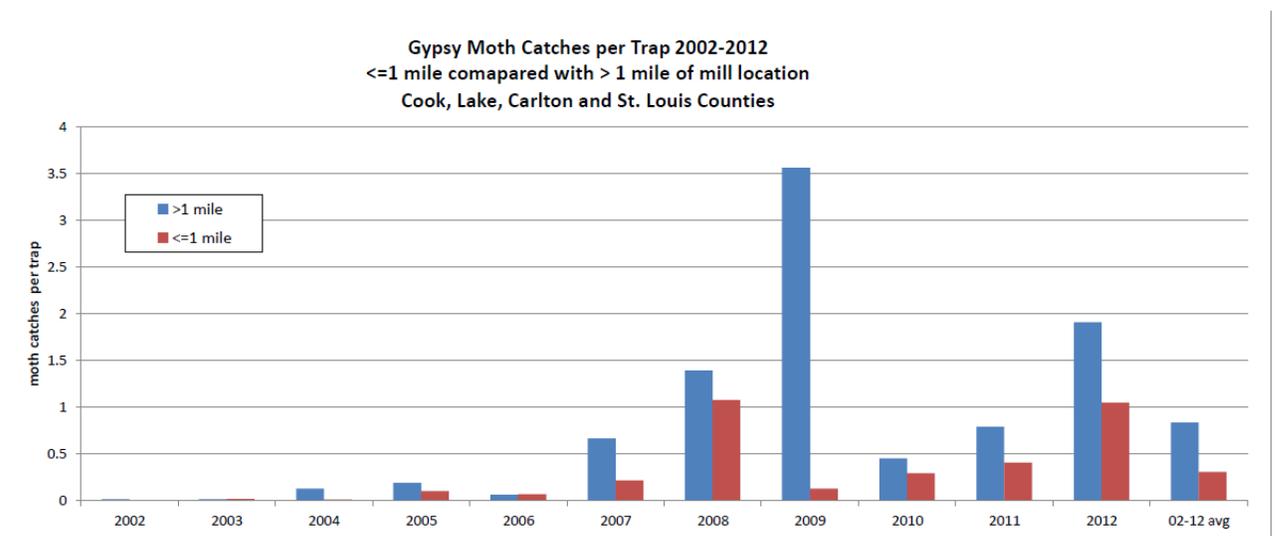
Remove the second compost pile and use as fully composted material



Grey shaded counties are infested as of 2008. Colored lines represent the predicted boundary of the gypsy moth quarantine over the next 20 years, with and without the STS Project.

Illustration 5/0/01

The green line is 2013, and Lake County is a bit beyond that. The graph on the right is the projected spread if there was no STS program. If the STS program was working, the moth would not even be in Bayfield County, WI as shown on the left.

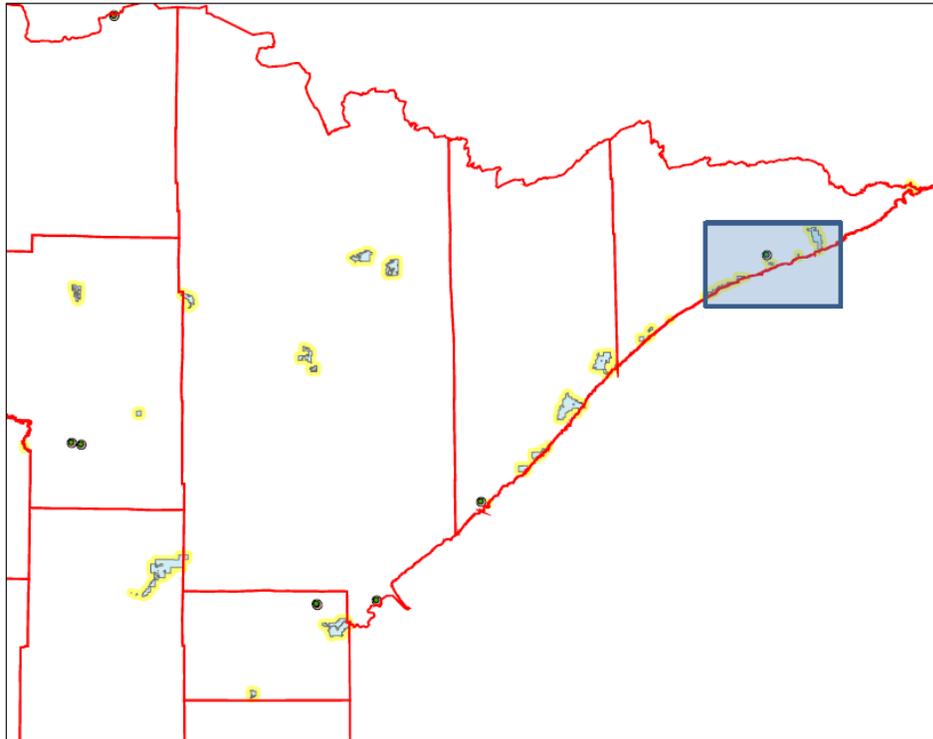


The moths generally do not fly more than a mile. The blue represents traps more than a mile from mill yards, and show that the incidence of moths are higher to much higher away from mills. If forest products were a prime vector for moving moths, you would expect that the trap data would be much higher around yards that handled thousands of cords of wood.

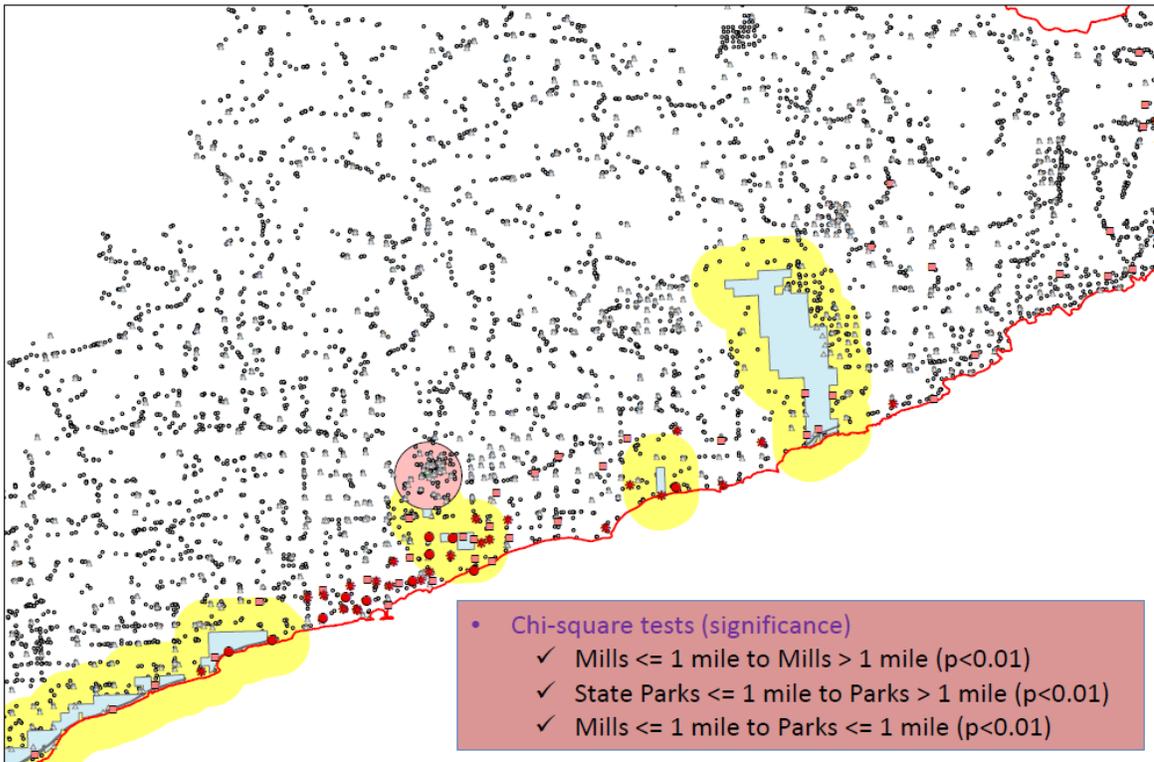
Selection of Gypsy Moth Traps: One Mile Buffers Around Mills and State Parks



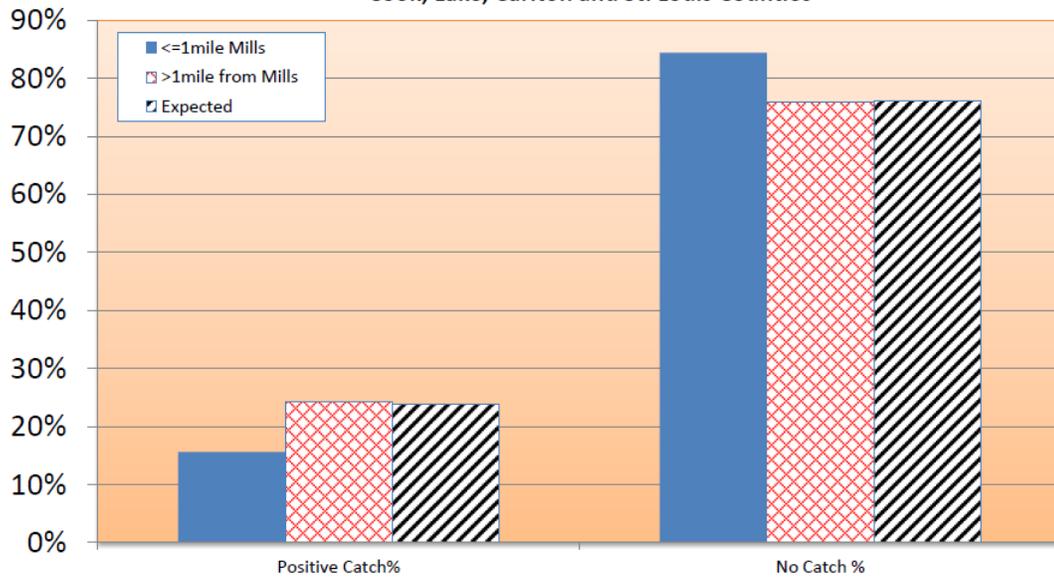
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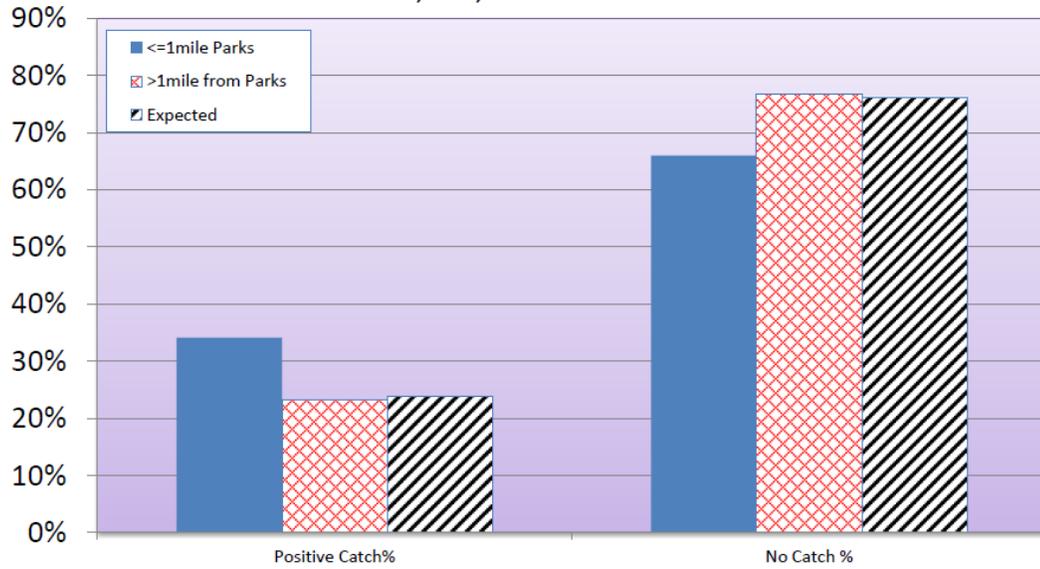


Gypsy Moth Trapping Data 2002-2012
 Comparison of Forest Product MILL Traps <= 1 or > 1 mile
 Cook, Lake, Carlton and St. Louis Counties



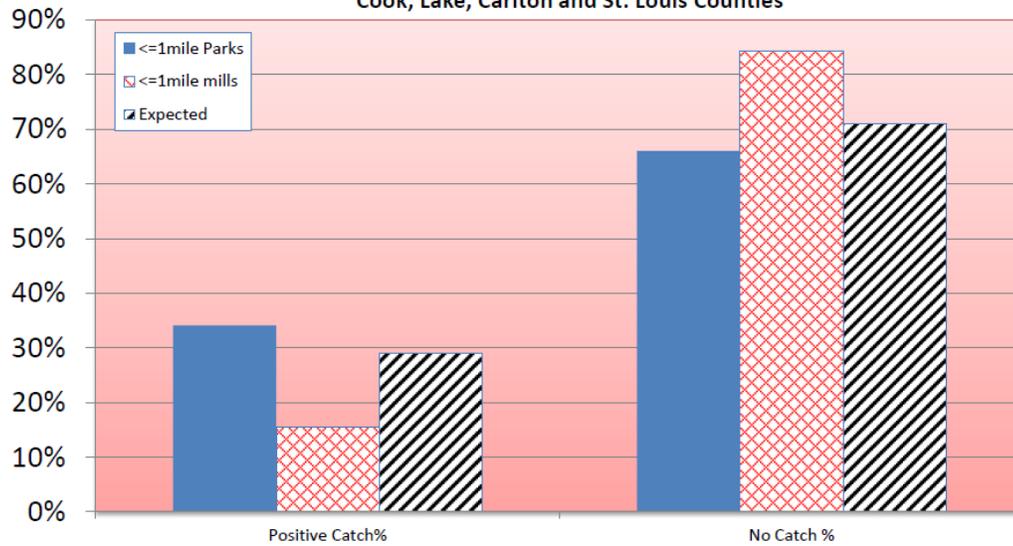
There is a significant difference ($p < 0.01$) between trap catches within a mile of a mills when compared with moth catches greater than 1 mile from mills. Moth catches <= 1 mile from **MILLS** are significantly **LOWER** than catches > 1 mile from state parks.

Gypsy Moth Trapping Data 2002-2012
 Comparison of State Parks Traps <= 1 or > 1 mile
 Cook, Lake, Carlton and St. Louis Counties



There is a significant difference ($p < 0.01$) between trap catches within a mile of a parks when compared with moth catches greater than one mile from state parks. Moth catches <= 1 mile from **PARKS** are significantly **GREAT**ER than catches > 1 mile from state parks.

Gypsy Moth Trapping Data 2002-2012
Comparison of State Parks and Forest Product Mills Traps <= 1 Mile
 Cook, Lake, Carlton and St. Louis Counties



There is a significant difference ($p < 0.01$) between trap catches within 1 mile of a state parks compared with moth catches within 1 mile of a mill. Moth catches ≤ 1 miles from **PARKS** are significantly **GREATER** than moth catches ≤ 1 mile from **MILLS**.