



2023 Spongy Moth Program

Annual Report

2/21/2024

Minnesota Department of Agriculture

Spongy Moth Program

625 Robert Street North

St. Paul, MN 55155

888-545-6684

reportapest@state.mn.us

www.mda.state.mn.us/spongymoth

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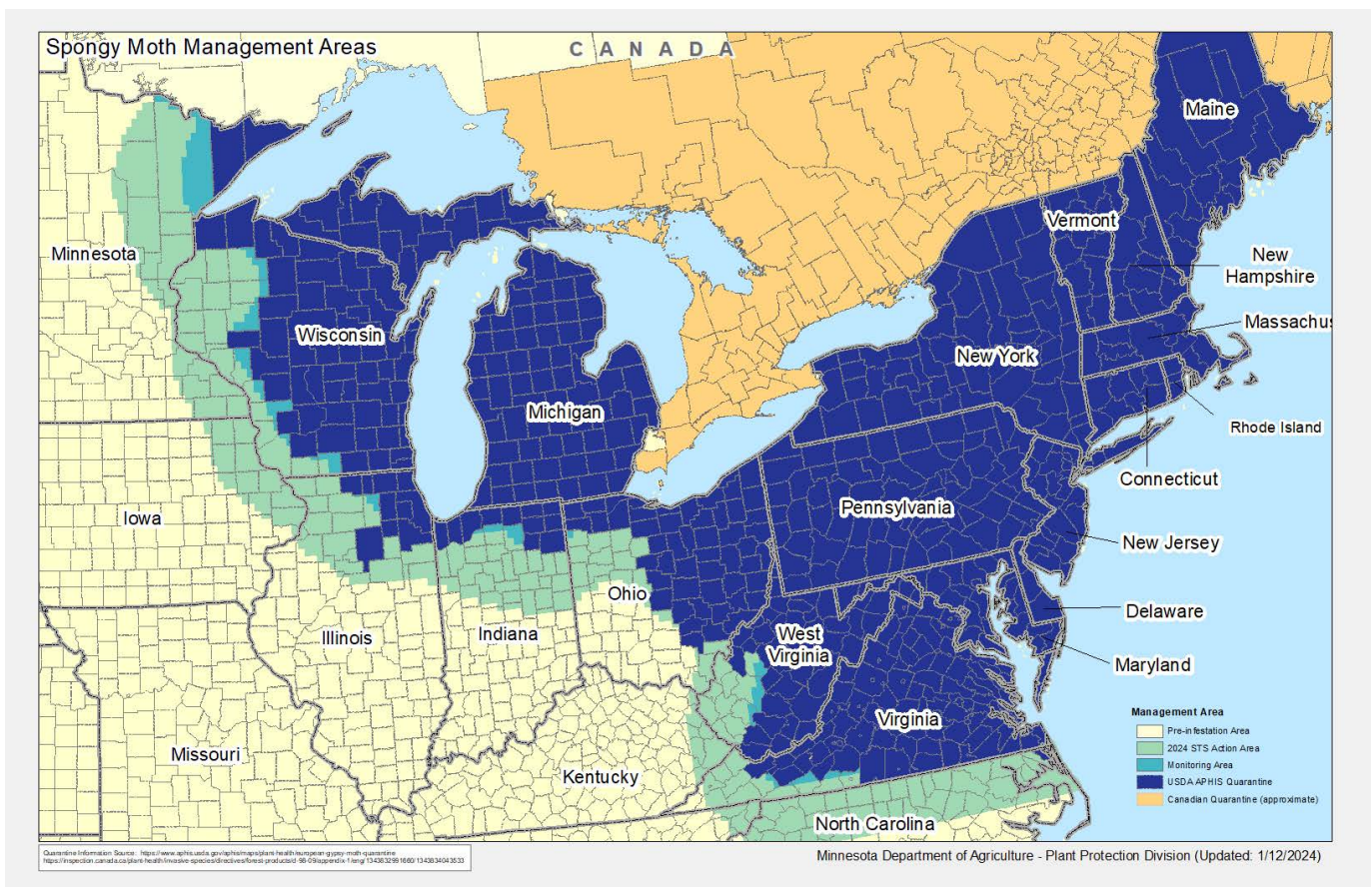
Contents

- Program Overview & Background 1
- Treatments 2
- Trapping Survey 3
- Alternate Life Stage (ALS) Surveys 6
- Discussion 6
- Regulatory - Quarantine Compliance 7
- 2024 Program Plans 9
- MDA Spongy Moth Program Contacts 9
- Additional Information 9

Program Overview & Background

Spongy moth is one of the most devastating invasive forest pests in North America. Before efforts to significantly slow the spread were fully developed and implemented on a national level, spongy moth was defoliating an average of over a million acres of eastern forests annually. It is a human nuisance during outbreaks. Spongy moth is one of the oldest and most researched invasive species. It was introduced from Europe in Medford, Massachusetts in 1869. Slowing the spread is important to protect the remaining uninfested forests and urban trees for as long as possible. The Minnesota Department of Agriculture (MDA) tracks the movement of spongy moth into the state and treats localized infestations to protect the state’s forests, local property values, and vital tourism industry.

Figure 1. 2023 U.S. and Canadian spongy moth quarantined counties and management zones.



Minnesota is a member of the Slow the Spread (STS) Program carried out on a national level to reduce the spread of spongy moth to less than 5 miles per year (60% less than the historical spread rate). The STS “Action Area” is a 100-kilometer-band extending from Minnesota to North Carolina where millions of dollars are spent to aggressively treat start-up populations before becoming larger, harder to manage infestations. Eradication is no longer possible in the STS Action Area, but populations have not yet reached outbreak levels. Although life stages are still hard to find, the populations are building and can rapidly spread if not controlled.

Treatments

Minnesota had 26,914 acres of STS mating disruption treatments for spongy moth in four blocks within Carlton and St. Louis counties (STS Action Area). On December 1, 2022, the Spongy Moth Program Advisory Committee (SMPAC) reviewed and approved moving forward with proposing the 2023 treatment blocks. All required permits were obtained. An environmental assessment was completed with cooperating agencies. The USDA federal Decision Notices and Finding of No Significance was signed on May 24, 2023.

The public notification process required extensive outreach to local government units, land managers, and the public. Outreach included networking, consultations, public meetings, press releases, social media updates, posters, post card mailings to individual addresses within proposed treatment blocks, and website updates. The public could sign up for text and email messaging as well as use the MDA's Report a Pest line for updates during treatment applications.

Mating disruption treatment operations were overseen and funded by the United States Forest Service (USFS) STS Program. AI's Aerial Spraying (Ovid, Michigan) was the contracted applicator on the project and base operations were located at the Richard I. Bong Memorial Airport in Superior, Wisconsin. Air Tractor 402/502 aircrafts were used to apply SPLAT GM-0 at a rate of 6 grams per acre. Three application aircraft and two observation aircraft were used on the project. There were no delays on application days.

Figure 2. 2023 Locations of MDA/STS spongy moth treatment blocks.



Table 1. 2023 Spongy moth treatment details.

Block Name	County	Treatment Date	Polygon Acres
Holyoke	Carlton	July 14, 2023	14,083
Duluth East	St. Louis	July 17, 2023	2,365
Duluth West	St. Louis	July 17, 2023	7,389
Midway	St. Louis	July 17, 2023	3,077

Trapping Survey

Spongy moth traps do not control populations, they are used to estimate populations. Traps attract male moths by a lure that mimics the female pheromone. Most of the survey traps used in the 2023 season were delta traps. Delta traps are easily constructed and have a maximum capacity of approximately 15 moths. High-capacity milk carton traps can accommodate up to 1,000 moths and were used in project areas where higher moth catches were anticipated.

Figure 3. Delta trap



Figure 4. Milk carton trap



Statewide

- 20,730 traps
 - 20,689 set by MDA survey staff
 - 41 set by Three Rivers Parks District staff at their parks
- 112,932 male spongy moths
- 8,140 positive traps

Moth Catch by Region

- Southern Region = 3,727 moths (3.3% of statewide catch)
- Northern Region = 109,205 moths (96.7% of statewide catch)

Moths by Project Area (East to West)

- STS Monit1 & Monit2 Areas (W. Cook, Lake, and E. St. Louis counties) = 62,222 moths (55%)
- STS Action Area = 46,359 moths (41%)
- State Eradication Area = 4,351 moths (4%)

Figure 5. 2023 MDA spongy moth survey results map with total number of moths caught per county.

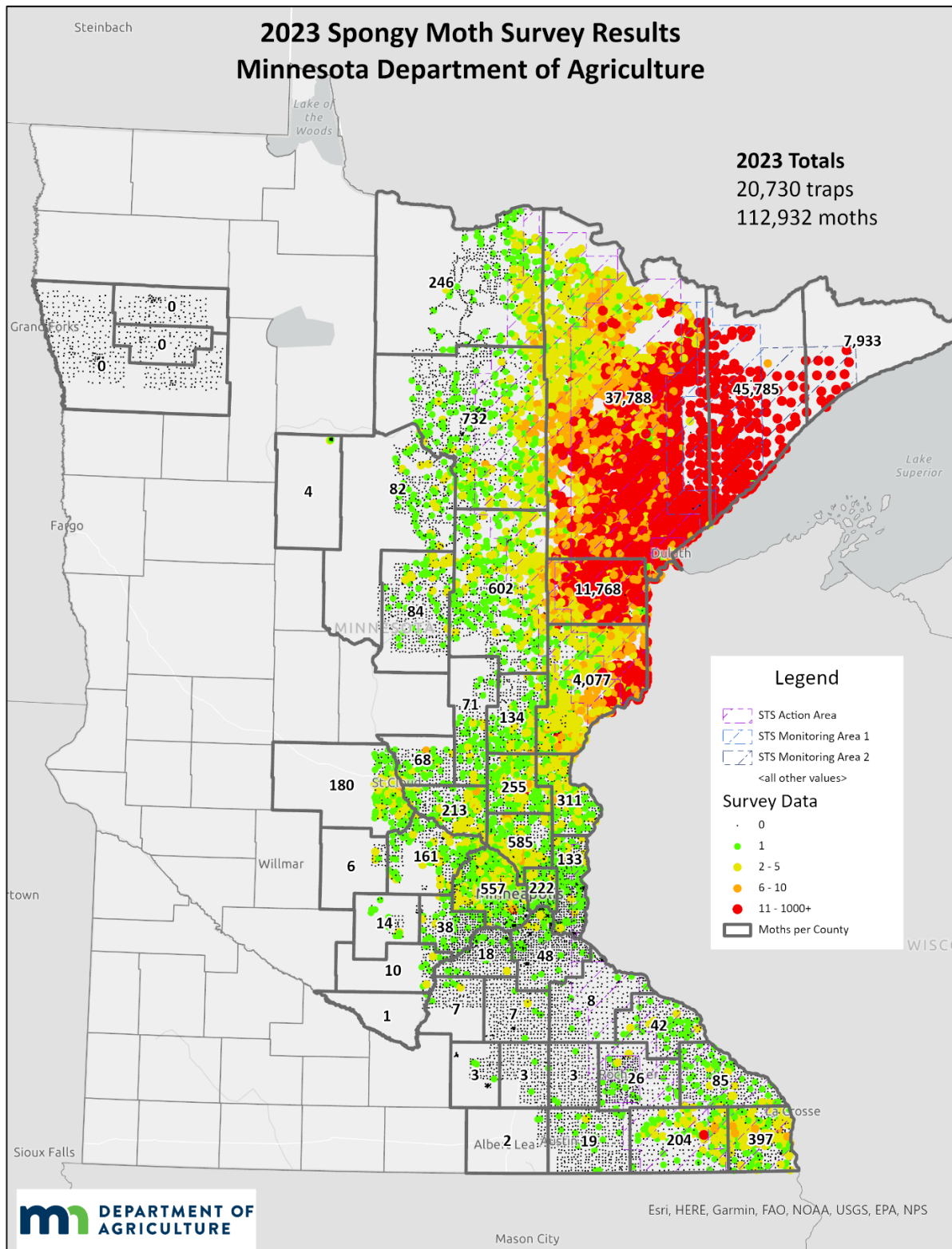


Figure 6. Minnesota statewide annual trapping survey male spongy moth catch 2014-2023.

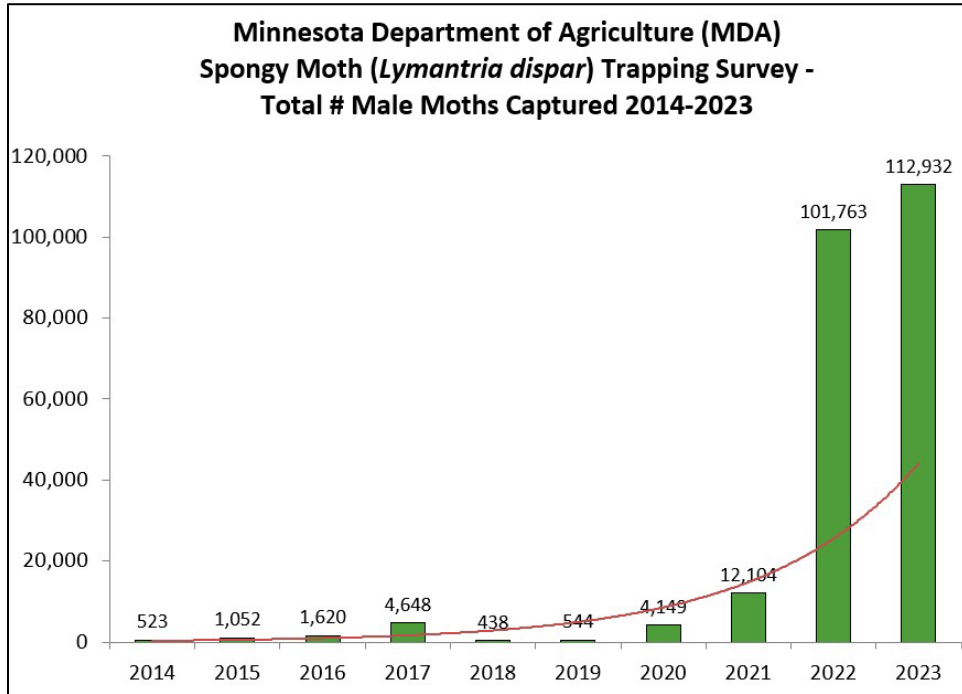
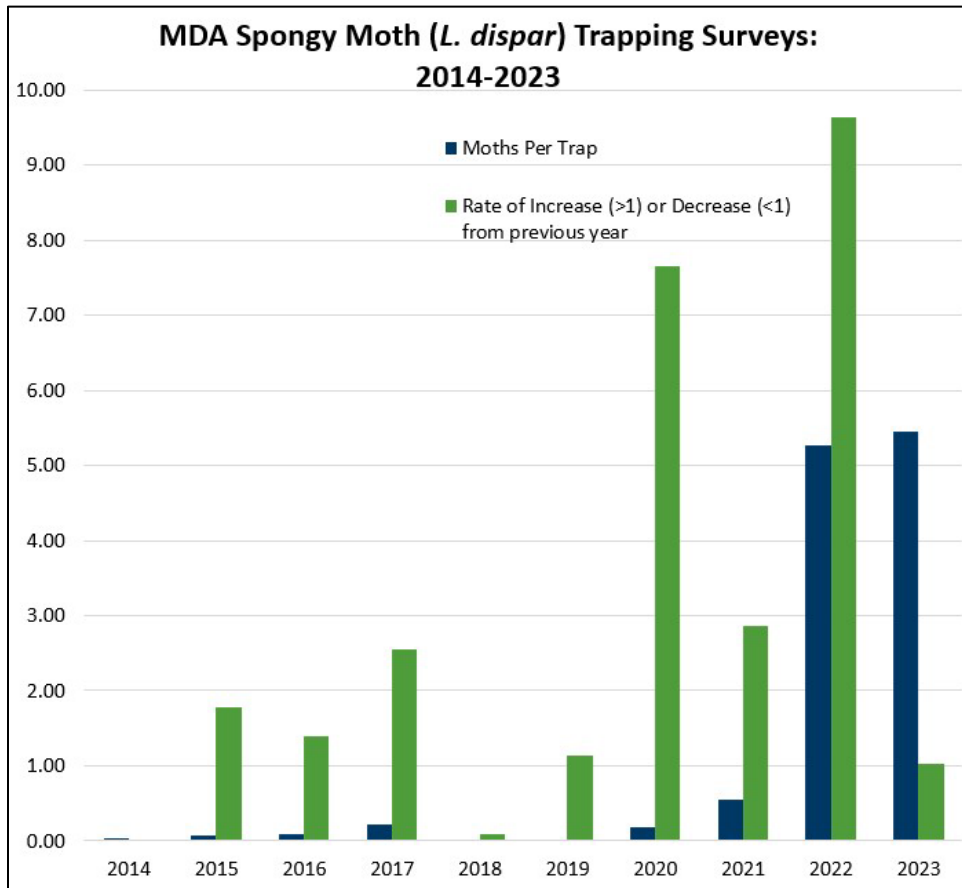


Figure 7. Minnesota spongy moth male moth catch per trap and population rate of increase or decrease 2014-2023.



Alternate Life Stage (ALS) Surveys

Trapping surveys that have high or threshold numbers of male moths often lead to more intense, visual surveys in the fall for alternate life stages (ALS). ALS include female moths, egg masses, larvae, or pupae. The goal of ALS surveys is to find evidence of reproducing populations by searching for life stages other than the male moths caught in traps. Management strategies can then be considered and carried out.

Sites selected for ALS surveys are prioritized based on the location of trap sites relative to the invasion front, the number of moths captured in the trap(s), other trap catches in the surrounding area, historical moth catches, and whether the catches are at or near high-risk sites. Positive ALS finds are typically followed up by trapping survey delimitation (a higher concentration of traps) the following season and may trigger follow-up treatments.

There were 13 sites in St. Louis and Carlton counties (STS Action Area) where alternate life stages were reported by the public or found through alternate life stage surveys in 2023. Seven of these sites had fresh egg masses. There were no ALS finds in the State Eradication area. ALS surveys were not conducted by MDA staff in quarantined Lake and Cook County or in the STS Monit1 area of eastern St. Louis County.

Figure 8. Spongy moth life stages on burlap on infested nursery stock.



Discussion

The recent spread and increase in male moth detections does not necessarily mean equivalent spread or establishment of reproducing populations of spongy moth. The male spongy moths can fly far distances on their own without the flightless females, limiting reproducing populations. Despite the widespread male moth catches in recent years, there still hasn't been a lot of evidence of established reproducing populations outside of Minnesota's quarantined Lake and Cook counties.

In 2022 Minnesota's ALS surveys within the STS Action Area and State Eradication Area only had finds at one site in Duluth, MN (southeastern St. Louis County). Without additional ALS finds to confirm the spread of reproducing populations and not just male moth spread, minimal management was carried out in 2023. This was to see if the huge influx of 2022 male moths would persist in 2023 or fall back eastward as it had historically done in the past. It persisted in 2023.

Minnesota hit a new annual statewide male moth catch record in 2023 with 112,932 moths. That was a 11% increase from 2022 with 101,763 moths, which was a 741% increase from 2021 with only 12,104 moths. There were more male moth detections and further into the State Eradication Area in 2023 than ever before. In just a two-year period, the resulting 2024 STS Action Area has been moved west in the northern region by about 90

kilometers (56 miles). However, the project area in Minnesota’s southern region hasn’t moved much in the last few years and will only slightly push west in 2024.

Although there were numerous sites surveyed with ALS finds in 2023, there were many exceedingly high catch trap sites surveyed where life stages could not be found. Positive 2023 traps will be further delimited in 2024 if they meet the established delimitation criteria and treatments have been proposed where appropriate for the 2024 season. Areas selected for proposed 2024 treatments in the STS Action Area were determined by a combination of ALS finds and highest trap catches. (See 2024 Program Plans section for proposed treatments info.)

The spread and number of male moth detections in 2022 and 2023 were a nationwide trend. For example, Wisconsin had a staggering 397,415 spongy moths in 2023, which was a 96.4% increase from 2022. Reasons behind the nationwide spread and increase may include favorable spring weather conditions for larval development, warmer than average winters (less lethal to overwintering egg masses), and wind dispersal of early “ballooning” larvae or flying male moths during strong meteorological events from infested areas. Minnesota gets “blow overs” of male moths and likely ballooning larvae across Lake Superior from northern Bayfield County in Wisconsin, where considerable defoliation has been observed. In Minnesota, there also seemed to be a correlation between high catch traps occurring along busy highways and in major construction areas – typical vectors for human assisted movement of infested materials.

Program success is measured by how long the significantly higher costs of managing established spongy moth populations are delayed due to fully functioning trapping and treatment programs. The statewide 2023 trapping survey results reflect the continued success of Minnesota’s Spongy Moth Program by identifying isolated populations, tracking population growth through time, applying pinpointed management options, and monitoring treated areas for success. The widespread male moth distribution throughout the MDA’s trapping survey area as well as persistent moth presence in certain areas substantiate the continued need for investment in the detection survey and subsequent eradication and STS treatment efforts.

Regulatory - Quarantine Compliance

The MDA establishes compliance agreements (CA) with entities that wish to move regulated articles out of the spongy moth quarantine areas and into non-quarantined areas of the state. Most regulatory activities occur in Cook and Lake counties, which were quarantined in July 2014 and are also under a parallel federal quarantine for spongy moth. The MDA issues three types of compliance agreements for the movement of regulated articles: limited permits, accurate statements, and certificates. The type of documentation issued depends on which regulated articles are transported and how they will be used.

Table 2. 2023 MDA spongy moth compliance agreements and limited permits.

Compliance Agreements and Limited Permits	Quantity
Holiday Greenery CA	3
Pulpwood and Sawbolt Receiver CA	8
Logs and Firewood Receiver CA	3
Heat Treatment Certified Firewood Producer	1
Transport CA	9
Limited Permit	36

Limited permits (LP) are required for the transportation of pulpwood to approved receiving facilities outside the quarantine area and they expire annually on April 30. Accurate statements and certificates expire one year after they are issued. Holiday greenery CAs are renewed annually in October.

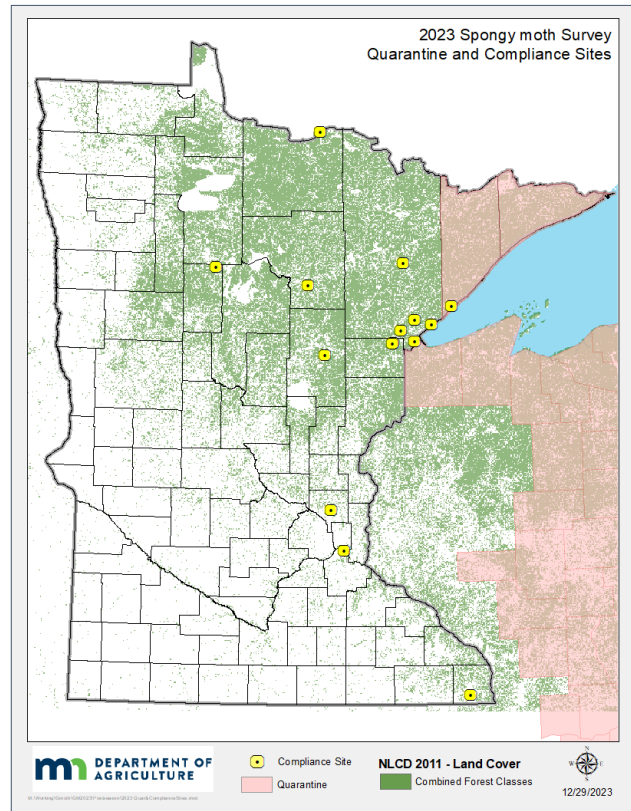
Minnesota quarantine regulations do not require transporters of pulpwood to sign formal compliance agreements, rather they are required to attend compliance agreement training each year to issue state limited permit documents. The MDA has online training module for limited permit holders. Permit holders must take the training and pass a test before a limited permit is issued. A similar online training via conference or video call and e-signature system is used for CAs.

The MDA may implement state emergency quarantines when reproducing spongy moth populations are found outside of the advancing population front within the State Eradication Area. These state emergency quarantines are temporary in nature and are typically lifted after eradication treatments are completed.

The MDA spongy moth regulatory program is a multi-faceted program that relies on strong cooperative relationships with other state agencies and units within the MDA. The MDA identifies, classifies, catalogues, and maintains a geodatabase of high-risk regulatory sites. High-risk locations include sites with elevated potential as being pathways for the human-assisted movement of spongy moth. The MDA cooperates with the Minnesota Department of Natural Resources to provide outreach at high-risk sites such as state parks, state forests, and public campgrounds. Outreach materials are also provided to privately owned campgrounds across Minnesota.

Three wreath and garland producers who receive material from a quarantined area operate under a joint MDA and USDA APHIS compliance agreement. Compliance agreements ensure they conduct 100% visual inspection of regulated items while handcrafting wreaths and garlands.

Figure 9. 2023 locations of spongy moth quarantine and compliance sites.



2024 Program Plans

Proposed Treatments

- Approximately 160,000 acres of mating disruption (STS Action Area):
 - Northern Region - Carlton, Chisago, Isanti, Pine, and St. Louis counties
 - Southern Region - Fillmore and Houston counties
- Approximately 4,000 acres of proposed Btk (STS Action Area; Northern Region):
 - Carlton County
 - One small block in St. Louis County

Survey

The 2024 MDA spongy moth detection trapping survey project area will continue to focus on the eastern side of Minnesota since the invasion front is coming in from the eastern states. Special attention will again be paid to the STS Action Area, select highest-risk sites such as nurseries, mills, parks, urban communities, and delimits. The goal is to maintain approximately 21,000 early detection survey traps across the statewide project area.

MDA Spongy Moth Program Contacts

Kimberly Thielen Cremers

Plant Pest Regulatory and Mitigation Section Manager

kimberly.tcremers@state.mn.us

Office: 651-201-6329

Cell: 651-248-5485

Natasha Northrop

Spongy Moth Survey Program Supervisor

natasha.northrop@state.mn.us

Office: 651-201-6692

Cell: 651-341-6158

Danielle DeVito

Pest Mitigation and Regulatory Coordinator

Spongy Moth Treatment Coordinator

danielle.devito@state.mn.us

Cell: 507-384-1129

Additional Information

www.mda.state.mn.us/spongymoth

www.slowthespread.org

www.aphis.usda.gov