# European Gypsy Moth Detection Survey

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|---|---|
| **Year:** | 2017 |
| **State:** | Washington |
| **Cooperative Agreement Name:** | European Gypsy Moth Detection |
| **Cooperative Agreement Number:** | FAIN: AP17PPQFO000C494 |
| **Project Funding Period:** | May 1, 2017 – April 30, 2018 |
| **Project Report:** | **Forest Pest Survey Report** |
| **Project Document Date:** | July 26, 2018 |
| **Cooperators Project Coordinator:** | Tiffany Pahs |
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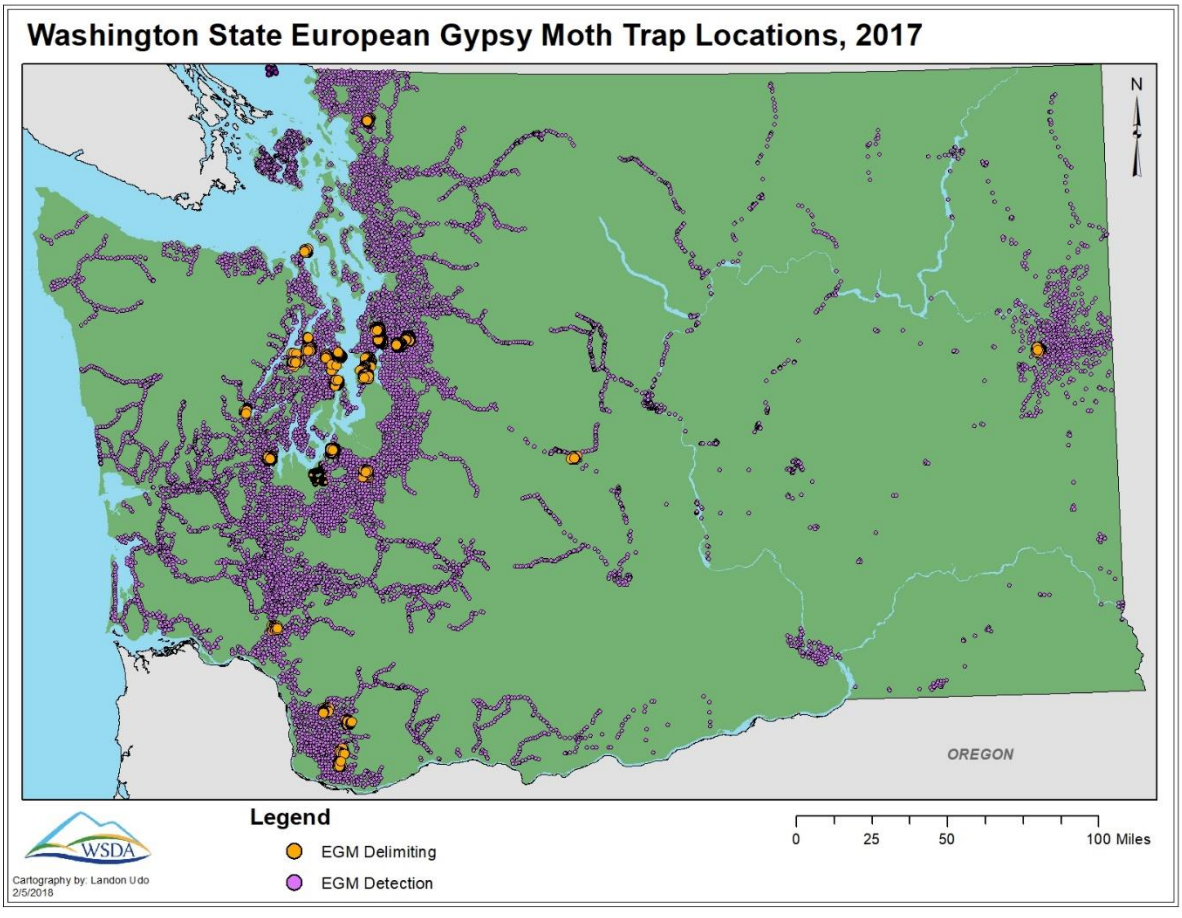
|---|---|
| Quarterly Report | ☐ |
| Semi-Annual Accomplishment Report | ☐ |
| Annual Accomplishment Report | ☒ |

**A. Write a brief narrative of work accomplished. Compare actual accomplishments to objectives established as indicated in the work plan. If reporting on a combined surveys work plan, report accomplishments by survey. When the output can be quantified, a computation of cost per unit is required when useful.***

**Objectives Summary** - The primary objective of the European gypsy moth (EGM) survey is to protect Washington State's natural and agricultural resources. The survey is integral to the success of WSDA's efforts to keep gypsy moth from finding a permanent home in Washington State. Early detection is critical in preventing establishment through the timely implementation of an eradication program. When these populations are identified at an early stage, the task of eradication is less costly and greatly increases the chances for a successful eradication.

**Accomplishments Summary** - A total of 10,388 EGM detection traps were deployed in 2017. Traps were placed at a detection level density of approximately 1 trap/square mile in areas of high risk with suitable host material. Traps were placed in all 39 counties in Washington State (see Table 1). The EGM detection traps captured 7 moths at 7 sites; DNA genotyping confirmed the moths were of the North American variety of EGM.

*Figure 1. DETECTION AND DELIMITATION TRAP PLACEMENT FOR EUROPEAN GYPSY MOTH IN WASHINGTON STATE*



**Funding Summary** - All gypsy moth survey activities in Washington State (EGM Detection, EGM Delimiting, AGM Detection, AGM Delimiting, and Asian Defoliators) are combined in order to efficiently use all available resources. Funding and trap numbers for all surveys statewide have been combined to calculate an accurate cost per unit.

| Total Gypsy Moth Funding Amount, 2017 | Total Number of Traps for all Gypsy Moth Surveys, 2017 | Approximate Cost Per Unit, 2017 |
|---|---|---|
| $796,079 | 30,758 | $25.88/trap |

## 1. Survey methodology (trapping protocol):

The state was divided into 35 trapping routes within 6 field supervisor (lead worker) areas. Trappers were responsible for installation, monitoring, and removal of all gypsy moth traps. Field supervisors were responsible for overseeing field operations, conducting quality control checks on their trappers' routes, reviewing and correcting data, and in some places trapping their own assigned routes. Data points were collected electronically at each site visit using the iFormBuilder mobile application.

A total of 10,388 green delta traps baited with gypsy moth string lure were deployed in 2016 for the EGM detection survey. Trap installation began on June 5 and was completed on July 18. Traps were placed at a detection level density of approximately 1 trap/square mile in areas of high risk with suitable host material. Traps were placed in all 39 counties in Washington State (see Table 1).

| | Common Name | Scientific Name | Survey Method |
|---|---|---|---|
| **Target Pest:** | European Gypsy Moth | *Lymantria dispar dispar* | Paper Delta Trap, Green |

| | Proposed | Actual |
|---|---|---|
| **Sites (Locations):** | Statewide | The survey was conducted in all 39 counties as planned. |
| **Traps:** | 10,000 | 10,388 |

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|---|---|
| **Number of Counties:** | 39 |
| **Counties:** | Adams, Asotin, Benton, Chelan, Clallam, Clark, Columbia, Cowlitz, Douglas, Ferry, Franklin, Garfield, Grant, Grays Harbor, Island, Jefferson, King, Kitsap, Kittitas, Klickitat, Lewis, Lincoln, Mason, Okanogan, Pacific, Pend Oreille, Pierce, San Juan, Skagit, Skamania, Snohomish, Spokane, Stevens, Thurston, Wahkiakum, Walla Walla, Whatcom, Whitman, Yakima |

*Table 1. 2017 WSDA GYPSY MOTH TRAPPING SURVEY - MOTH & TRAP COUNTS BY COUNTY AND SURVEY TYPE*

| County | # of Moths | # Total Traps | # Traps - EGM Detection | # Traps - EGM Delimiting | # Traps - AGM Detection | # Traps - AGM Delimiting |
|---|---|---|---|---|---|---|
| Adams | 0 | 12 | 12 | 0 | 0 | 0 |
| Asotin | 0 | 9 | 9 | 0 | 0 | 0 |
| Benton | 0 | 59 | 59 | 0 | 0 | 0 |
| Chelan | 0 | 260 | 260 | 0 | 0 | 0 |
| Clallam | 0 | 561 | 238 | 0 | 323 | 0 |
| Clark | 1 | 1882 | 440 | 200 | 120 | 1122 |
| Columbia | 0 | 8 | 8 | 0 | 0 | 0 |
| Cowlitz | 0 | 572 | 302 | 48 | 222 | 0 |
| Douglas | 0 | 74 | 74 | 0 | 0 | 0 |
| Ferry | 0 | 18 | 18 | 0 | 0 | 0 |
| Franklin | 0 | 26 | 26 | 0 | 0 | 0 |
| Garfield | 0 | 5 | 5 | 0 | 0 | 0 |
| Grant | 0 | 139 | 139 | 0 | 0 | 0 |
| Grays Harbor | 0 | 1080 | 643 | 0 | 437 | 0 |
| Island | 2 | 535 | 84 | 0 | 451 | 0 |
| Jefferson | 0 | 561 | 238 | 43 | 280 | 0 |
| King | 5 | 5880 | 677 | 721 | 1023 | 3459 |
| Kitsap | 18 | 1429 | 337 | 629 | 265 | 198 |
| Kittitas | 0 | 145 | 117 | 28 | 0 | 0 |
| Klickitat | 0 | 280 | 177 | 0 | 103 | 0 |
| Lewis | 0 | 1042 | 1034 | 8 | 0 | 0 |
| Lincoln | 0 | 19 | 19 | 0 | 0 | 0 |
| Mason | 0 | 514 | 479 | 22 | 13 | 0 |
| Okanogan | 0 | 188 | 188 | 0 | 0 | 0 |
| Pacific | 0 | 401 | 268 | 0 | 133 | 0 |
| Pend Oreille | 0 | 45 | 45 | 0 | 0 | 0 |
| Pierce | 86 | 5571 | 612 | 417 | 46 | 4496 |
| San Juan | 0 | 760 | 548 | 0 | 212 | 0 |
| Skagit | 0 | 781 | 504 | 0 | 277 | 0 |
| Skamania | 0 | 297 | 154 | 0 | 143 | 0 |
| Snohomish | 0 | 1157 | 804 | 10 | 343 | 0 |
| Spokane | 0 | 595 | 559 | 36 | 0 | 0 |
| Stevens | 0 | 59 | 59 | 0 | 0 | 0 |
| Thurston | 1 | 2540 | 440 | 102 | 147 | 1851 |
| Wahkiakum | 0 | 169 | 68 | 0 | 101 | 0 |
| Walla Walla | 0 | 27 | 27 | 0 | 0 | 0 |
| Whatcom | 4 | 882 | 583 | 32 | 267 | 0 |
| Whitman | 0 | 20 | 20 | 0 | 0 | 0 |
| Yakima | 0 | 114 | 114 | 0 | 0 | 0 |
| **Total** | **117** | **28716** | **10388** | **2296** | **4906** | **11126** |

Traps were then inspected every 2-3 weeks in July, August, and September for the presence or lack of presence of gypsy moth. Seven moths were captured in the designated EGM detection traps in August. An additional 110 moths were captured in traps designated for our EGM delimiting (103), AGM detection (2), AGM delimiting (4) surveys, and one in *a* Nun moth, *Lymantria monacha,* trap. All moths captured underwent molecular analysis by the WSDA Molecular Diagnostics Laboratory as well as the OTIS CPHST Laboratory to determine if they were of the Asian or European variety. All were confirmed to be of the North American European variety, *Lymantria dispar dispar*.

Trap removal began in September and was completed in October. Trap removal was delayed in to October in Clallam, Jefferson, and Kitsap Counties due to a late season live moth capture consistent with degree day emergence modeling in those areas.

**2. <u>Survey dates</u>:**

| | Proposed | Actual |
|---|---|---|
| **Survey Dates:** | June 6 – September 29 | June 5 – October 25 |
| **Trap Install:** | June 6 – July 10 | June 5 – July 18 |
| **Trap Inspection:** | July 10 – August 31 | July 5 – September 21 |
| **Trap Removal:** | September 1 – September 28 | September 5 – October 25 |

**3. <u>Benefits and results of survey</u>:**

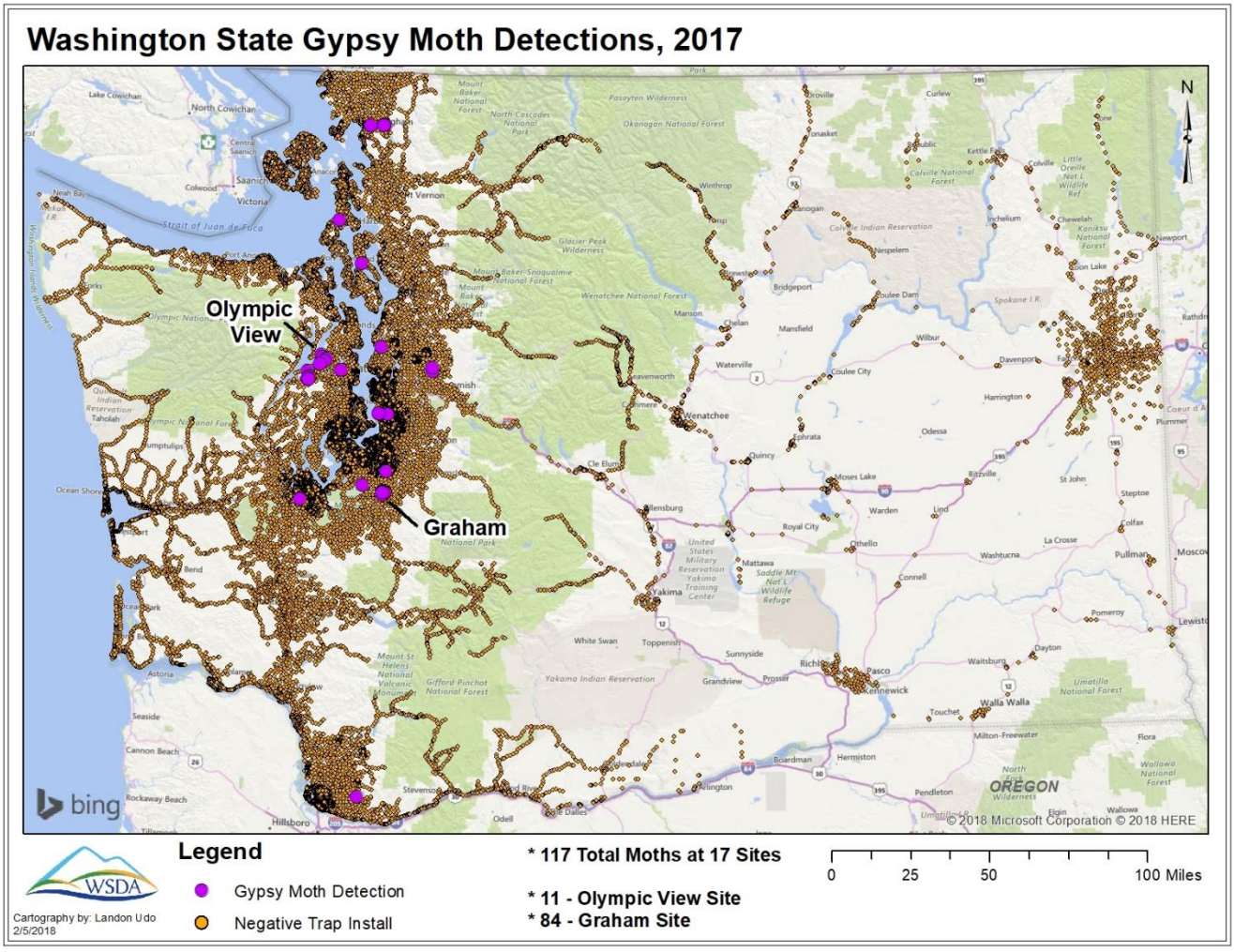
A total of 117 gypsy moths were captured in 2017. Seven moths were captured in the EGM detection traps; all were confirmed through molecular analysis to be the North American variety of EGM.

| | Positive | Negative | Total Number |
|---|---|---|---|
| **Total Traps** | 7 | 10,381 | 10,388 |

*2017 WSDA GYPSY MOTH CAPTURES IN EGM DETECTION TRAPS*

| County | Trap ID | Detection Date | Total Moths | Moth Species |
|---|---|---|---|---|
| Clark | 1551384 | 8/15/2017 | 1 | *Lymantria dispar dispar* |
| Whatcom | 1499655 | 8/15/2017 | 1 | *Lymantria dispar dispar* |
| Kitsap | 1660512 | 8/22/2017 | 1 | *Lymantria dispar dispar* |
| King | 1654723 | 8/24/2017 | 1 | *Lymantria dispar dispar* |
| Pierce | 1649468 | 8/28/2017 | 1 | *Lymantria dispar dispar* |
| King | 1654866 | 8/29/2017 | 1 | *Lymantria dispar dispar* |
| King | 1654868 | 8/29/2017 | 1 | *Lymantria dispar dispar* |

*Figure 2. STATEWIDE DISTRIBUTION OF GYPSY MOTH CAPTURES IN 2017*




**4. <u>Database submissions</u>:**

European gypsy moth detection data was entered in NAPIS on January 8, 2018. All records were entered at the subspecies level – *Lymantria dispar dispar.*

**B. If appropriate, explain why objectives were not met.***

All objectives of the survey were met by the end of the award, April 30, 2018.

***C.* Where appropriate, explain any cost overruns or unobligated funds in excess of $1,000. ***

All award

**indicates information is required per 7 CFR 3016.40 and 7 CFR 3019.51*