



Report: Gypsy Moth in Rhode Island 2014 - 2016 Executive Summary



Background/Status

- Wet Springs activate “bio-controls that regulate gypsy moth populations.
- The current “outbreak” was triggered by below average Spring precipitation in 2013, followed by dry Springs each year thereafter.
- 226,765 acres of forestland were defoliated in 2016 by gypsy moth caterpillar feeding.
- The last such outbreak occurred in the early-mid 1980s. At its peak (1985) 411,000 acres were defoliated
- Egg masses counted in the fall of 2016 indicate very high numbers counted throughout the area defoliated in 2016, and some egg masses found in most all other parts of the State as well.
- The “bio-controls” that usually control gypsy moth populations were scarce or not present in samples analyzed in 2016. However under optimum conditions they can reproduce and spread quite rapidly.

Options

- Human interventions have proven ineffective at impacting gypsy moth populations when they have reached “outbreak” status.
- Activities (e.g. egg mass destruction, pesticide applications) *may* protect foliage of individual trees, or isolated groups of trees, but are not effective at preventing defoliations of large areas.

Conclusion

- The substantial number and distribution of egg masses throughout the State, together with the scarcity of natural pathogens, suggest that there is a high probability for a significant defoliation event this coming season (April – July, 2017).
- The more or less statewide distribution of egg masses indicates that the area affected in 2017 will be larger, and will expand into previously unscathed suburban and urban areas.
- To end the current outbreak frequent periods of rainfall are needed from May through June. Even then we expect, and should prepare for another season of coping with gypsy moth.



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The Gypsy moth (*Lymantria dispar*) is a non-native invasive species that has naturalized in the United States, particularly in the northeast. Gypsy moth populations are kept in check by environmental conditions and naturally occurring bio-controls, especially by a fungus (*Entomophaga maimaiga*) and a virus (NPV). Both require consistent spring precipitation to reproduce and disperse. Rhode Island received below average precipitation each spring/early summer from 2013 through 2016.

Samples analyzed by the Connecticut Agricultural Experiment Station found little to no inoculum of *Entomophaga* detected in 2015 or 2016; no NPV was detected in 2015, and little detected in 2016. This allowed gypsy moth population to increase exponentially resulting in the current outbreak. The extent (226,765 acres in RI) and intensity of the 2016 defoliation that occurred in 2016 was captured by USDA Forest Service “Forewarn” satellite imagery (Figure 1).

RIDEM Division of Forest Environment (DFE) monitors gypsy moth populations in forest habitats using fixed point ground sampling where gypsy moth egg masses are counted on 142 plots. In 2016 additional ground surveys were made in suitable treed habitats located in urban communities not typically surveyed (Figure 2).

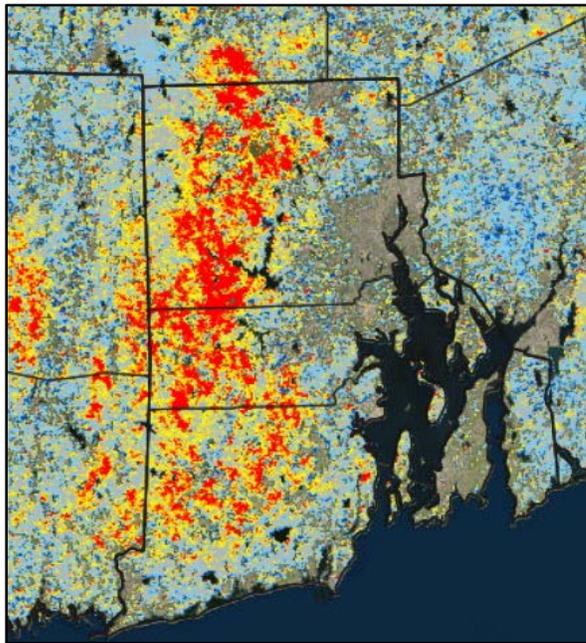


Figure 1. Area of forest canopy affected by forest defoliators (2016). As colors deepen from yellow to red, the intensity of canopy change (defoliation) increases.

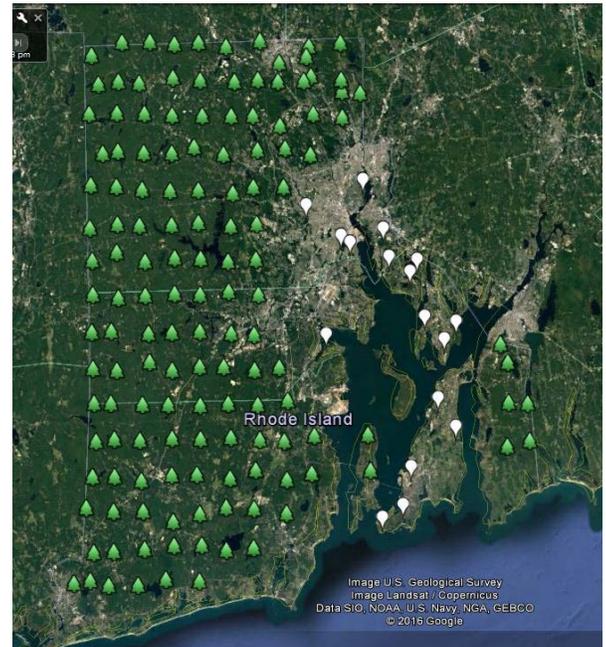


Figure 2. Gypsy moth fixed plot and supplemental survey locations, 2016.

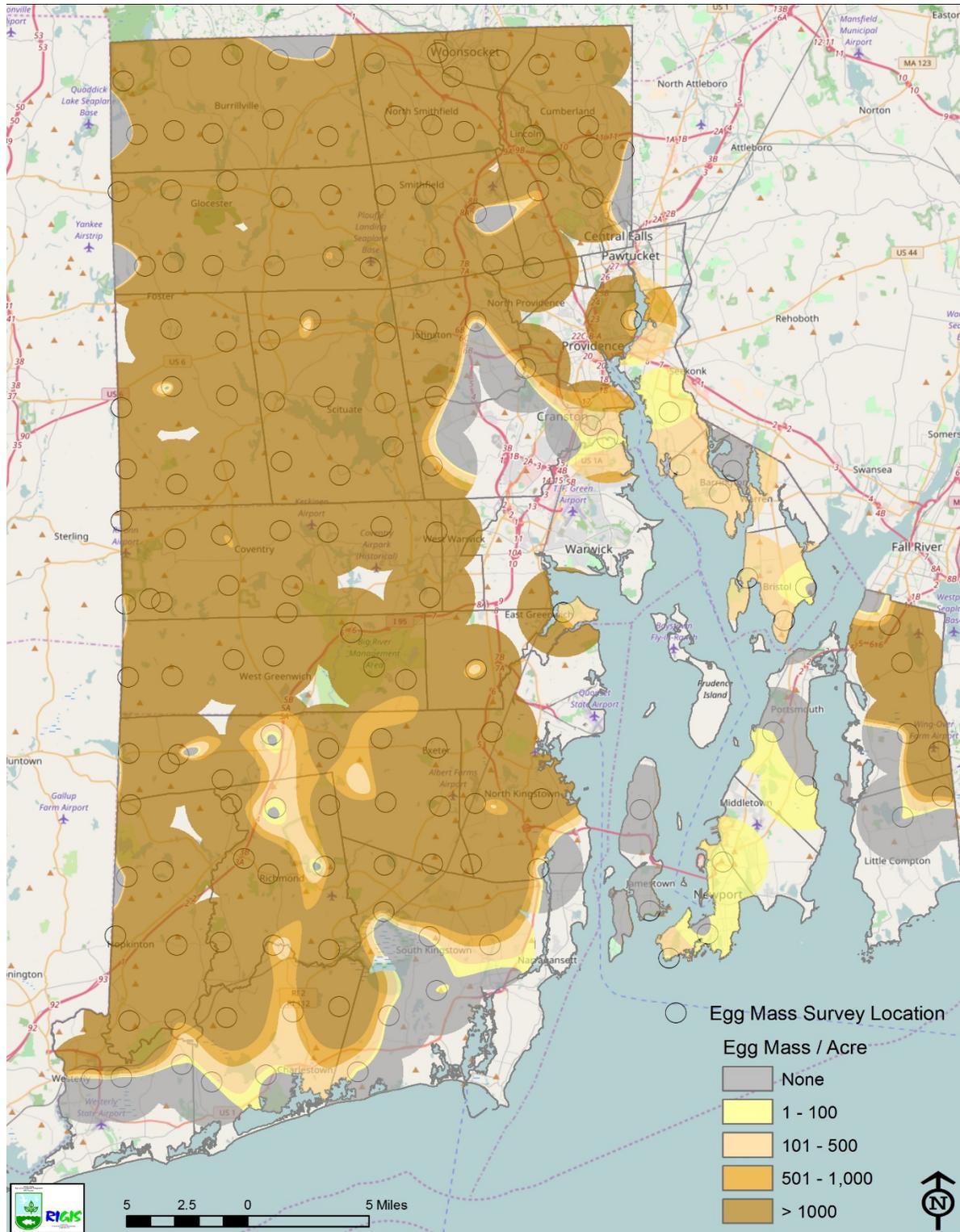


Figure 3. Relative abundance and distribution of gypsy moth egg masses counted or observed during surveys conducted in 2016.

Conclusion.

The substantial number and distribution of egg masses throughout the State, together with the scarcity of natural pathogens, suggest that there is a high probability for a significant defoliation event this coming season (April – July, 2017).

The more or less statewide distribution of egg masses indicates that the area affected in 2017 will be larger, and will expand into the previously unscathed suburban and urban areas and east bay communities.

Even if conditions are perfect this spring, we would not see widespread gypsy moth caterpillar mortality caused by *Entomophaga* and NPV until mid-late June.