

## LENNOX-ADDINGTON COUNTY FOREST

### GYPSY MOTH EGG MASS SURVEY SEPTEMBER 2020

#### Introduction

The Lennox-Addington County Forest (LACF) consists of 6 compartments (properties) with a total area of 456 hectares, 88% of which are forested. The remaining 12% of the area consists of small waterbodies and wetlands. Conifer plantations and white cedar stands account for 60% of the forested area while deciduous and mixed forest communities dominated by sugar maple and silver maple account for the remaining 40%.

Silv-Econ Ltd. has conducted the annual forest health assessments in the Lennox-Addington County Forest (LACF) since 2010. Forests throughout southern and central Ontario are being affected by numerous pests and a regular forest health assessment is important to determine the extent and potential impacts of pests, and to help decide whether steps should be taken to try to reduce pest populations and associated negative impacts. Fortunately, the LACF has remained relatively free of many of the insect pests such as Emerald ash borer (EAB), European pine shoot beetle, Fall cankerworm, and Gypsy moth that are commonly found in southern Ontario forests.

#### Interim Gypsy Moth Feeding Assessment July 2020

Silv-Econ foresters have noticed an increase in Gypsy moth feeding activity across southern and central Ontario this summer compared to more recent years. Early reports suggest that Gypsy moth populations are on the increase this year and that extensive defoliation can be expected. As a result, an interim assessment of Gypsy moth feeding activity was undertaken in selected LACF compartments (3, 5, 6) on July 8, 2020 to determine the extent of the impact on the health of the forest. The assessment approach involved walking through forest stands that are likely to provide suitable habitat and preferred food species, inspecting foliage for evidence of feeding activity and looking for Gypsy moth larvae (caterpillars). The assessment indicated evidence of very light to light Gypsy moth feeding activity in all stands that were inspected. It appeared to be selective – feeding was more common on red oak and white birch. There was some feeding on sugar maple. There was no evidence of widespread defoliation. No Gypsy moth larvae were found.

#### Gypsy Moth Egg Mass Survey September 2020

Assessments for Gypsy moth are typically conducted in the fall when egg masses are most visible. Silv-Econ completed a formal survey of gypsy moth egg masses in compartments 3, 5 and 6 on September 17, 2020.

The survey approach involved establishing 1/100 hectare circular sample plots in forest stands that are likely to provide suitable habitat and preferred food species in the overstory canopy and/or understory regeneration (oak, poplar, birch), counting the number of egg masses on the stems and crowns of all trees in the plots as well as on woody debris found on the ground within the plots. The procedures followed those described in Liebhold et al. (1994).

#### Results

The results of the survey are presented in the Table 1. The results suggest that the distribution of egg masses varies across the LACF and even within individual stands. Stands with a higher proportion of preferred food species (oak, poplar, birch) in the overstory (e.g. compartments 5-4 and 6-1) contain a higher number of egg masses per hectare.

Table 1. LACF Gypsy moth egg mass survey results.

Compartment	Plot #	Egg Masses								
		Ground & Lower Trunk			Crown			Total	Total/ha	Avg/ha
		Old	New	Total	All	% New <sup>1</sup>	New <sup>2</sup>			
3-3	1	0	0	0	0	0%	0	0	0	
3-4	2	3	4	7	0	57%	0	4	400	
3-5	3	0	1	1	0	100%	0	1	100	
<b>Total</b>		<b>3</b>	<b>5</b>	<b>8</b>	<b>0</b>		<b>0</b>	<b>5</b>	<b>500</b>	<b>167</b>
				0						
5-4	1	0	1	1	0	100%	0	1	100	
5-4	2	0	8	8	0	100%	0	8	800	
5-4	3	3	18	21	14	86%	12	33	3300	
<b>Total</b>		<b>3</b>	<b>27</b>	<b>30</b>	<b>14</b>		<b>12</b>	<b>42</b>	<b>4200</b>	<b>1400</b>
				0						
6-1	1	0	14	14	52	100%	52	66	6600	
6-1	2	1	9	10	31	90%	28	38	3790	
6-1	3	0	1	1	0	100%	0	1	100	
<b>Total</b>		<b>1</b>	<b>24</b>	<b>25</b>	<b>83</b>		<b>79.9</b>	<b>105</b>	<b>10490</b>	<b>3497</b>

1. % New egg masses in the crown is based on the ratio of old:new egg masses on the ground and lower trunk.
2. New egg masses in the crown is estimated by multiplying the number of all egg masses (old + new) observed in the crown by the % New.

## Potential Impacts

Table 2 provides defoliation forecast parameters. The survey results suggest that feeding activity is expected to be light to moderate in 2021 with some areas within individual stands experiencing heavy feeding. If the level of feeding activity remains light to moderate, the potential impact to the tree species composition, vigour, and health of the forest is expected to be minimal.

Table 2. Expected defoliation forecast parameters.

Expected Defoliation	Egg Masses/Ha
Nil (0%)	0
Light (1-40%)	1 - 1235
Moderate (40-75%)	1236 - 6175
Severe (>75%)	> 6175

Source: Ministry of Natural Resources & Forests

## Managing Gypsy Moth Populations

Bacillus thuringiensis (Btk), a native bacterium commonly found in soil and on plants, is the most common commercial product used to control large-scale gypsy moth infestations and has been extensively used in previous aerial control programs against gypsy moth in both Canada and the United States. Btk specifically targets immature larvae in the Lepidoptera family. Stands to be treated with Btk must be sprayed soon after the gypsy moth eggs hatch when the

larvae begin actively feeding. The use of Btk is a cost-effective approach for treating large forested areas or high value (timber value and non-timber value) stands that are threatened by gypsy moth.

Silvicultural management is an alternative approach to managing gypsy moth populations that focuses on reducing stand susceptibility and vulnerability to pests such as Gypsy moth and others. Gottschalk (2015) provides silvicultural guidelines for forest stands threatened by the gypsy moth. Silvicultural treatments are based on several factors including stand vulnerability, gypsy moth population, and stand value among other factors.

Conifer dominated stands account for 60% of the LACF forest area while deciduous and mixed stands, such as 5-4 and 6-1, account for the remaining 40% of the forested area. It is this latter group of stands that are most susceptible to the gypsy moth. Silvicultural management in deciduous and mixed stands is not scheduled during the current 5-year operating plan as many of these stands have limited access or are growing on lowland sites. However, it would be possible to include some sections of more susceptible stands in the silvicultural schedule at the time when nearby conifer plantations are being thinned.

### Recommendations

We are not recommending an aerial spray with Btk in 2021. The forecast is for low to moderate defoliation in a sub-set of the LACF. These stands have relatively low commercial timber value but are important contributors to the biodiversity and wildlife habitat of the LACF and surrounding landscape. We recommend monitoring of the gypsy moth populations in these forest types with another egg mass survey in the fall of 2021.

We are also recommending revising the current 5-year schedule of silvicultural management to include portions of vulnerable stands that can be thinned at the time nearby conifer plantations are thinned.

### References

Gottschalk, K. W. 2015. Silvicultural guidelines for forest stands threatened by the gypsy moth. USDA Forest Service. Northeastern Forest Experiment Station. General Technical Report NE-171. 49p.

Liebold, A., K. Thorpe, J. Ghent, and D. B. Lyons. 1994. Gypsy moth egg mass sampling for decision making: A user's guide. USDA Forest Service. Southern Region. Forest Health Protection. NA-TP-04-94. 21p.

For more information of Gypsy moth and other non-native forest insects please visit our website: [www.invasiveinsects.ca](http://www.invasiveinsects.ca) .

Respectfully,



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