

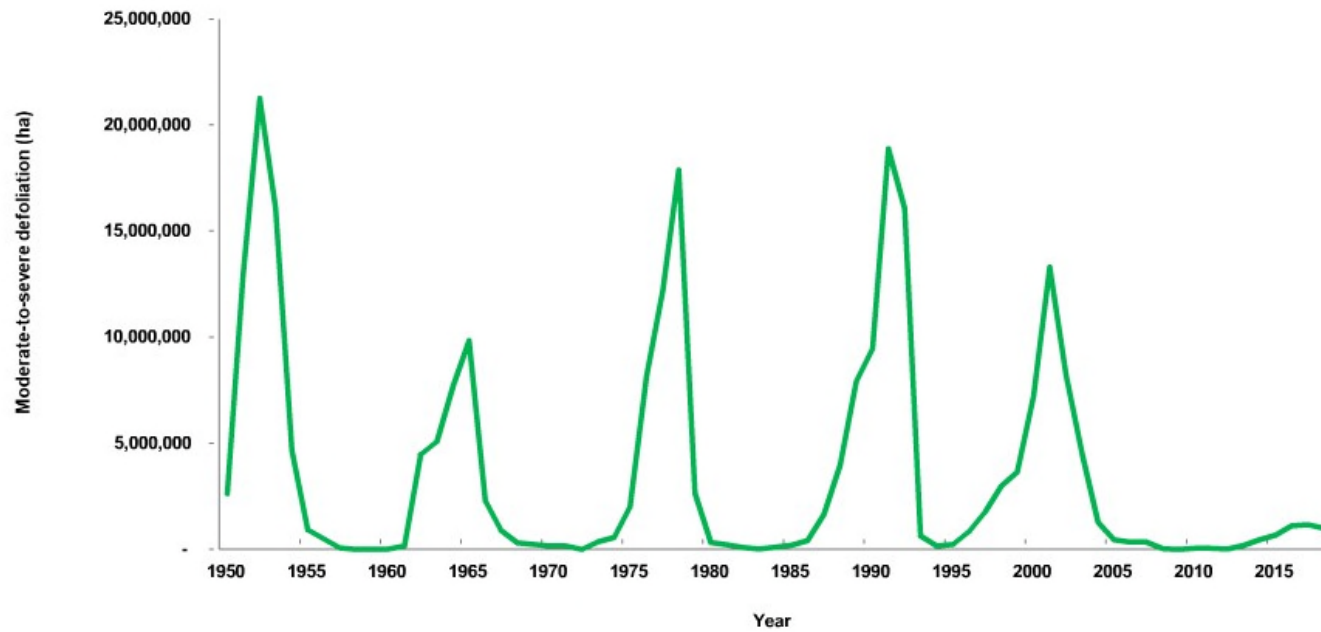
Forest Tent Caterpillar

2018 Maple Syrup Producers Control Program

Presented by Eric Boysen
New Leaf Forest Services

Forest tent caterpillar (*Malacosoma disstria* Hubner)

**Forest tent caterpillar
Moderate-to-severe defoliation in Ontario 1950 - 2018**




2017 Defoliation Map

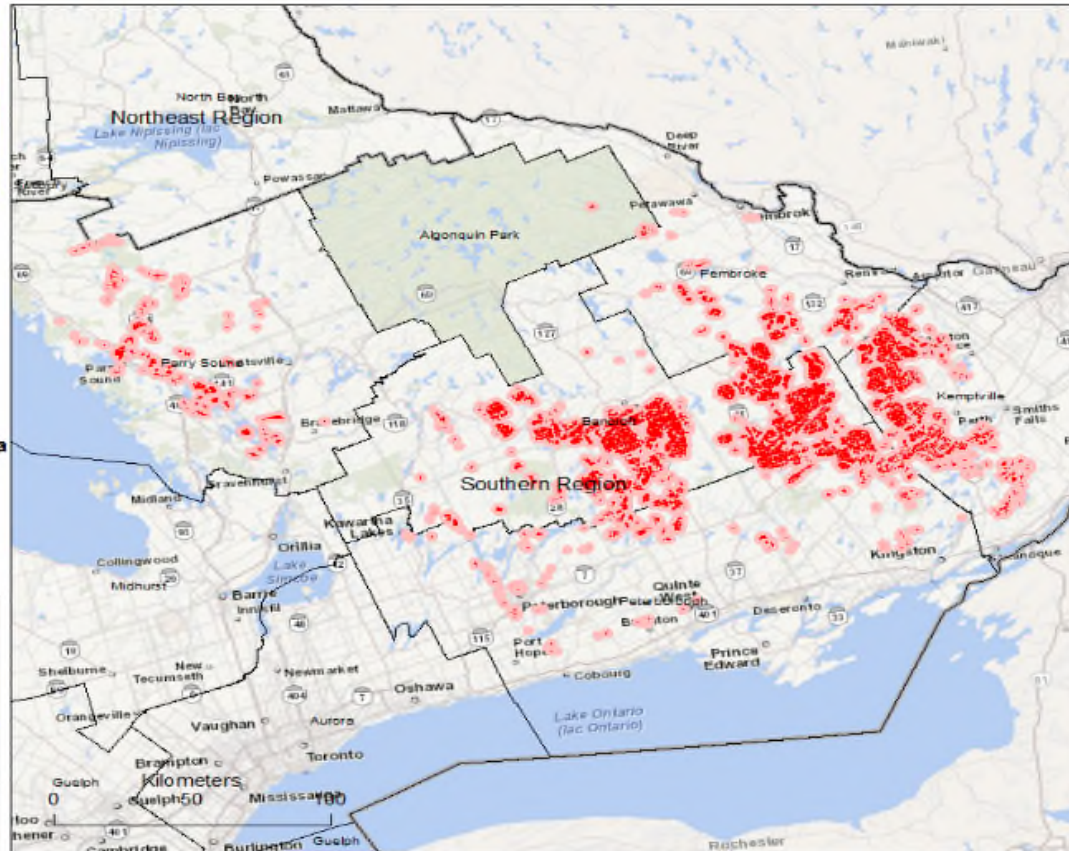


Forest Tent Caterpillar 2017

Southern Region
Areas within which forest tent
caterpillar caused defoliation

Moderate-to-severe = 272,893 ha

 Area of moderate-to-severe
defoliation





2018 Defoliation Map

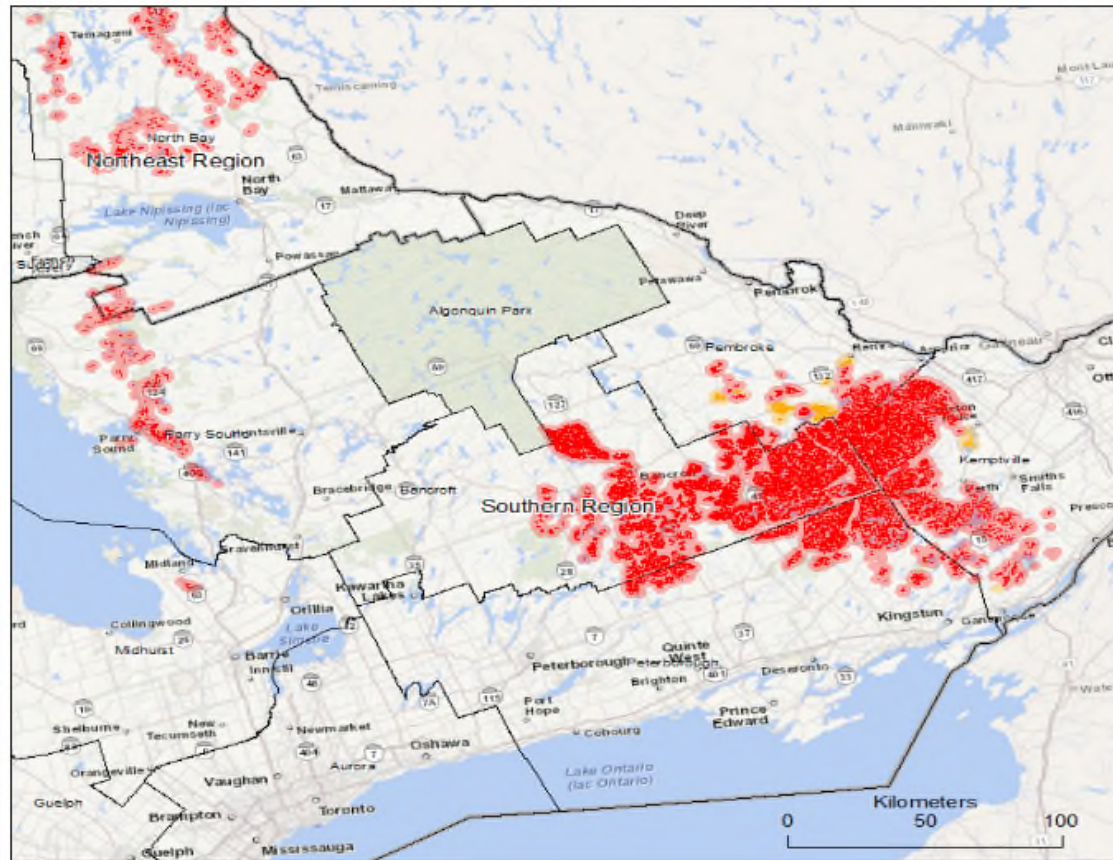


Forest tent caterpillar 2018

Southern Region
Areas within which forest tent caterpillar caused defoliation

Light = 10,337 ha
Moderate-to-severe = 473,337 ha

-  Area of light defoliation
-  Area of moderate-to-severe defoliation



Concerns and issues from Maple Syrup producers

- Sugar in sap is created by photosynthesis in healthy foliage
 - Most producers manage their forest health by following tapping guidelines, spacing trees to promote full crown development, and by sustaining biodiversity – a sustainable food product
- While forest tent caterpillars are a native pest that follows a cyclical outbreak pattern, most producers can not remember such complete defoliation in their lifetimes
- Loss of foliage = loss of sugar production = impact on forest health = increased production costs / decreased product = impacts on businesses
- Defoliation followed by drought and heat, or by other stressors can cause mortality, especially of mature or over-mature trees

Concerns and issues - continued

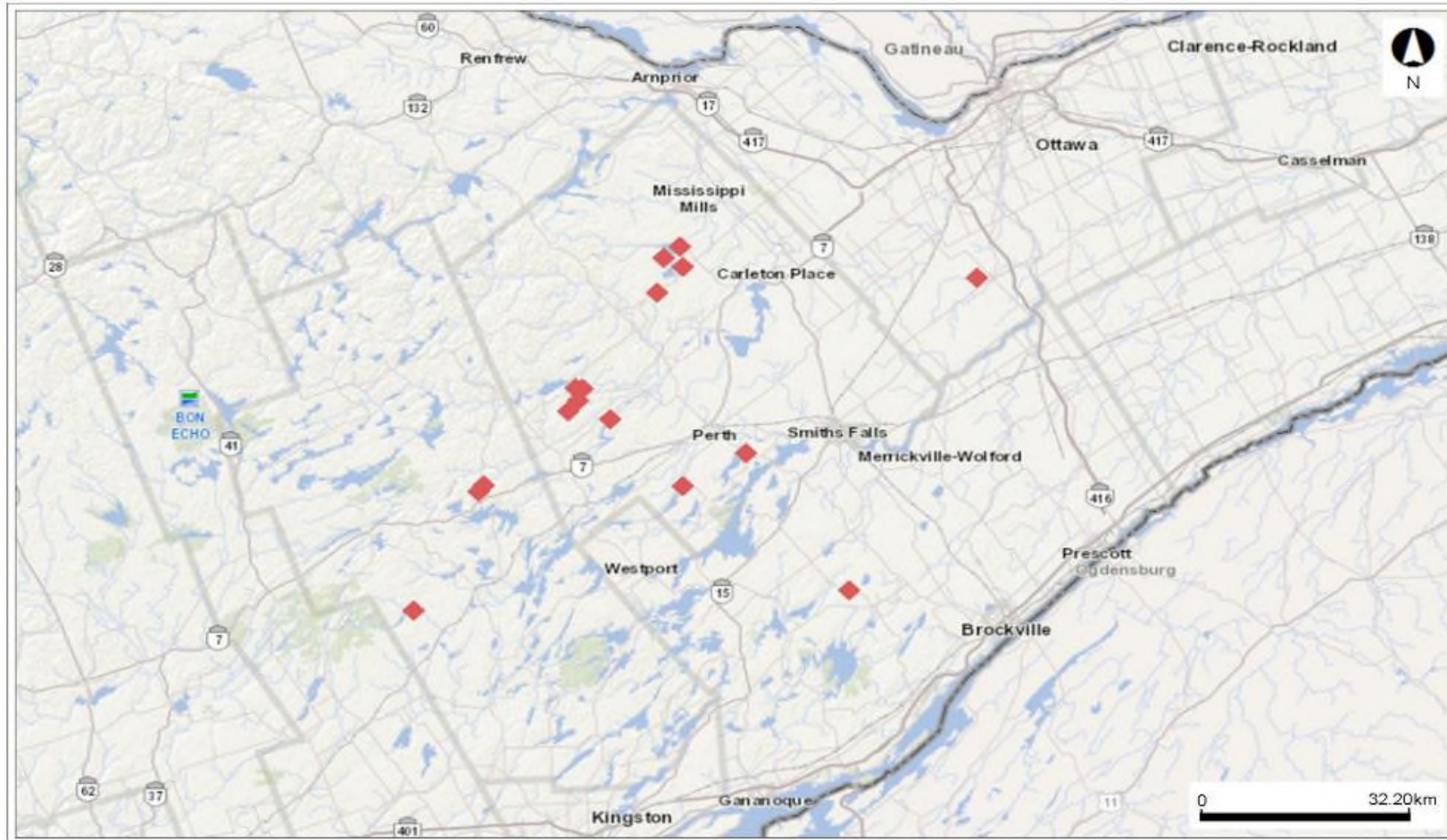
- Little to no government support in terms of assessing potential defoliation, or impact on forest health
- No financial assistance – spraying and coordination costs can be significant, especially when the defoliation cycle lasts for 3 or more years
- Local Association provided initial awareness and communication assistance, and connected individual producers to the spray contractor
- However, the Association was not equipped to provide any coordination function for on-the-ground control measures, or post-spray efficacy assessment
- Spray contractor relied on local larval growth reports to time control measures

2017 Spray program

- Some producers were defoliated in 2016, which led them to consider spray control options.
- Initial spray program implemented in 2017
 - Zimmer Air Services was contracted to spray Foray (Bacillus thuringiensis - Bt)
 - Use highly mobile helicopter mounted equipment
- Initial results from 2017 were variable
 - Some producers had very good control, while others experienced very little
 - Egg mass counts continued to be high, indicating that 2018 would also be a year of high defoliation

2018 Spray program

- 26 woodlot owners from Frontenac, Lanark, Leeds & Grenville and Ottawa participated
 - Several maple producers also enlisted their neighbours into the program to provide buffer zones surrounding their maple bush
- 1,200 acres sprayed with Foray (Bt) by Zimmer Air Service
- Timing – in and around the May long weekend
- Cost to producers = \$40 / acre
- Results again ranged from very good, to not as good, but most producers were pleased with the results
- Many producers reported caterpillar mortality within hours of spray
- All producers felt they made sound business decisions regarding control (some regretted not spraying either in 2017 or 2018)



This map should not be relied on as a precise indicator of routes or locations, nor as a guide to navigation. The Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) shall not be liable in any way for the use or any information on this map, of, or reliance upon, this map.



**Zimmer Air Services
helicopter in action, and
on transport trailer to
move between spray
locations**



Observations and further concerns

- Timing of spraying is critical
 - Early morning with high humidity best time, as it allows spray droplets to reach the foliage
 - Should not rain within 6 hours of spraying
 - Timing of larval development is also critical – some producers suggested that there seemed to be an early and a later hatch. This may explain the variable results in some sugar bushes
- Control in adjacent properties also critical
 - Some producers found that while the initial spray may have controlled the hatch in their forest, that caterpillars from surrounding forests migrated in afterwards
- Some tree mortality is expected
 - Trees under stress from site conditions, drought, impacts from other pests, and lingering impacts of 1998 Ice Storm
- Need better assessment tools to predict defoliation for next year
 - Egg mass count (tools and techniques) translated to defoliation, complete with training
 - Assess population of predators (Black billed cuckoo, Friendly Fly, viruses, etc)

Defoliation Impacts

Hardwood Trees affected

- Sugar & black maple
- Red, white and burr oak
- White, black and green ash
- White birch
- Poplar – all kinds
- Willows
- Basswood
- White elm, slippery elm
- Black cherry
- Hawthorne
- (Ironwood)

Hardwood Trees not affected

- Beech
- Yellow birch
- Red maple
- Sumac
- Buckthorn
- Butternut

2019 and beyond?

- Need assessment protocols to identify and count FTC egg masses
- Increased observation of gypsy moth larvae and egg masses in the same forests that were sprayed
- For further study:
 - General concerns about the impacts of lower bat populations (which normally feed on adult moths)
 - Concerns about interaction between EAB and FTC or gypsy moth
- Are we done yet??

Tapping considerations

- Heavily defoliated maple trees will likely re-foliate, although the leaves will be smaller, and the canopy will be sparse
- This drains the starch energy reserves of the trees, and will reduce the sugar concentration in the following years (by as much as 0.5 degrees Brix, for up to 5 years)
- Tap holes may take longer to heal over
- Producers may reduce tapping pressure (no more than one tap per tree), or no tapping at all on trees showing obvious stress
- Consider reducing vacuum pressure as well

Bottom line – defoliation will impact maple sap and syrup production



