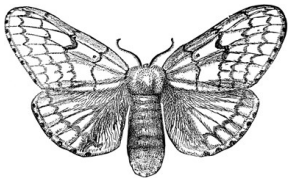
Gypsy Moth in the Town of Pelham

2019 Population Surveys and 2020 Defoliation Forecasts



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BioForest

- Founded by former Canadian Forest Service rangers in 1996
- Specializing in
  - Commercial and urban forest pest management
  - Tree care product development and distribution

BioForest & Gypsy Moth

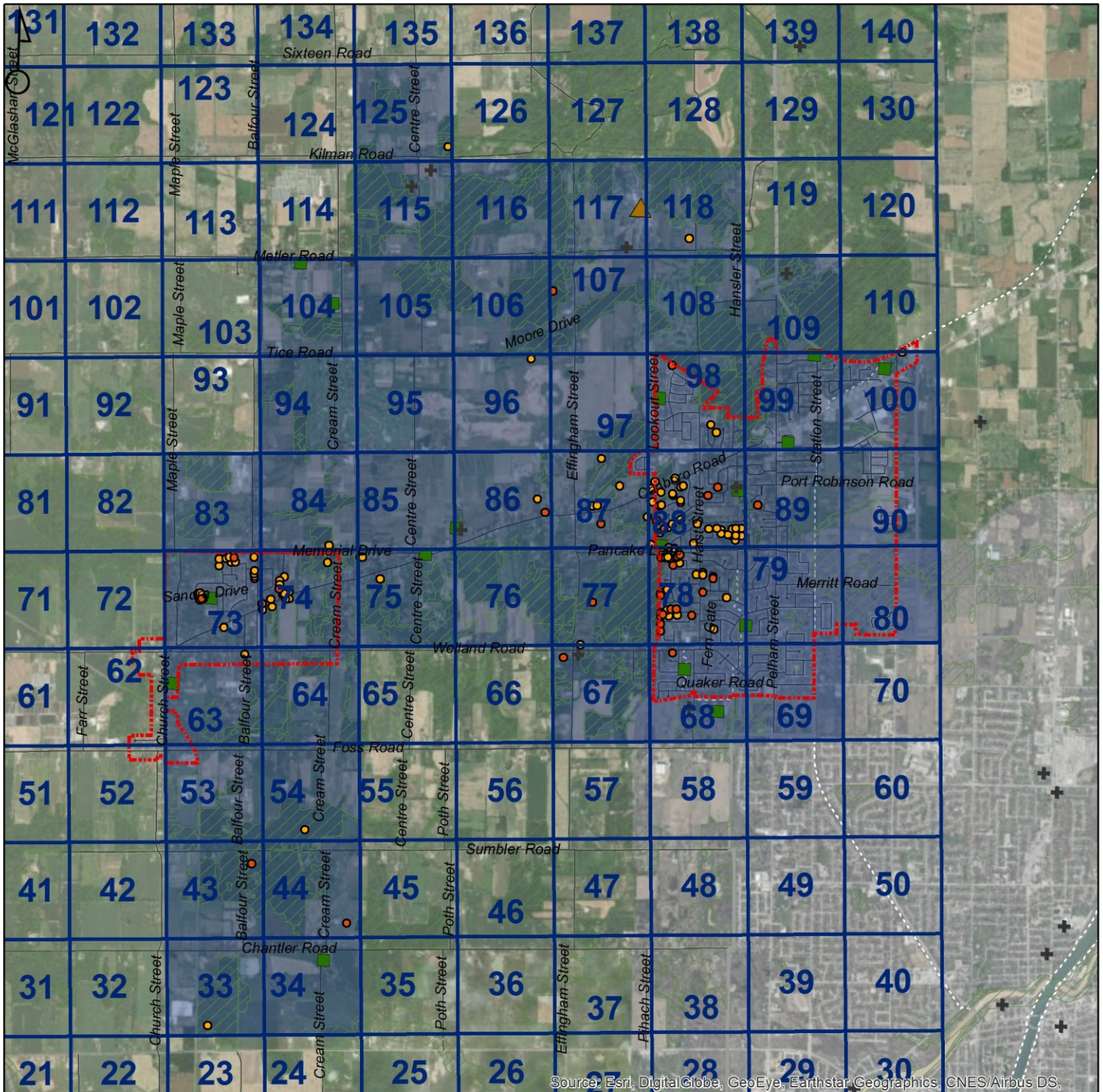
- Egg mass surveys in Southern Ontario:
  - Oakville, 2012 to present
  - Mississauga, 2013 to present
  - Hamilton, 2016 to present
  - Burlington, 2017 to present
  - Barrie, 2019
  - London, 2019
  - Sarnia, 2019
  - York Region, 2019

Gypsy Moth Services in Pelham

- November 2019
  - Contract No. 2019-PW-19: Gypsy Moth Services
- Tasks
  1. Develop gypsy moth monitoring plots
  2. Conduct gypsy moth egg mass surveys throughout the Town
  3. Technical report

Plot Development

- Grid-based approach to cover a large area in a systematic way
- Prioritized survey areas based on:
  - Historical gypsy moth activity and reports
  - Connectivity through natural areas or continuous forest canopy
  - Good coverage of both urban and rural areas



2019

TOWN OF PELHAM

Gypsy Moth Monitoring Program

- Pelham Grid
- Pelham Urban Boundary
- 2019 Gypsy Moth Reports - Residential
- 2018 Gypsy Moth Reports - Residential
- Cemeteries
- Campgrounds
- 2018 Gypsy Moth Reports - Parks
- Core Natural Heritage Environmental Conservation Areas
- Pelham Grid - Selected
- Municipal Boundaries
- Roads
- Niagara Trails

Parcel Ownership

- Private
- Niagara Peninsual Conservation Authority
- Nature Conservancy of Canada
- Niagara Regional Municipality
- Town of Pelham
- Province of Ontario (Infrastructure)

0 400 800 1,600 2,400 3,200

Gypsy Moth Egg Mass Surveys

- Methodology
  - Established a total of **133 plots**
  - Five trees per plot
  - Survey focused on mature oak trees **or** alternative host trees representative of area (minimum 20cm DBH)
    - Apple, aspen, beech, birch, black walnut, hickory and maple
  - Entire tree examined using binoculars
  - All egg masses counted
  - Old/new egg masses tallied and measured

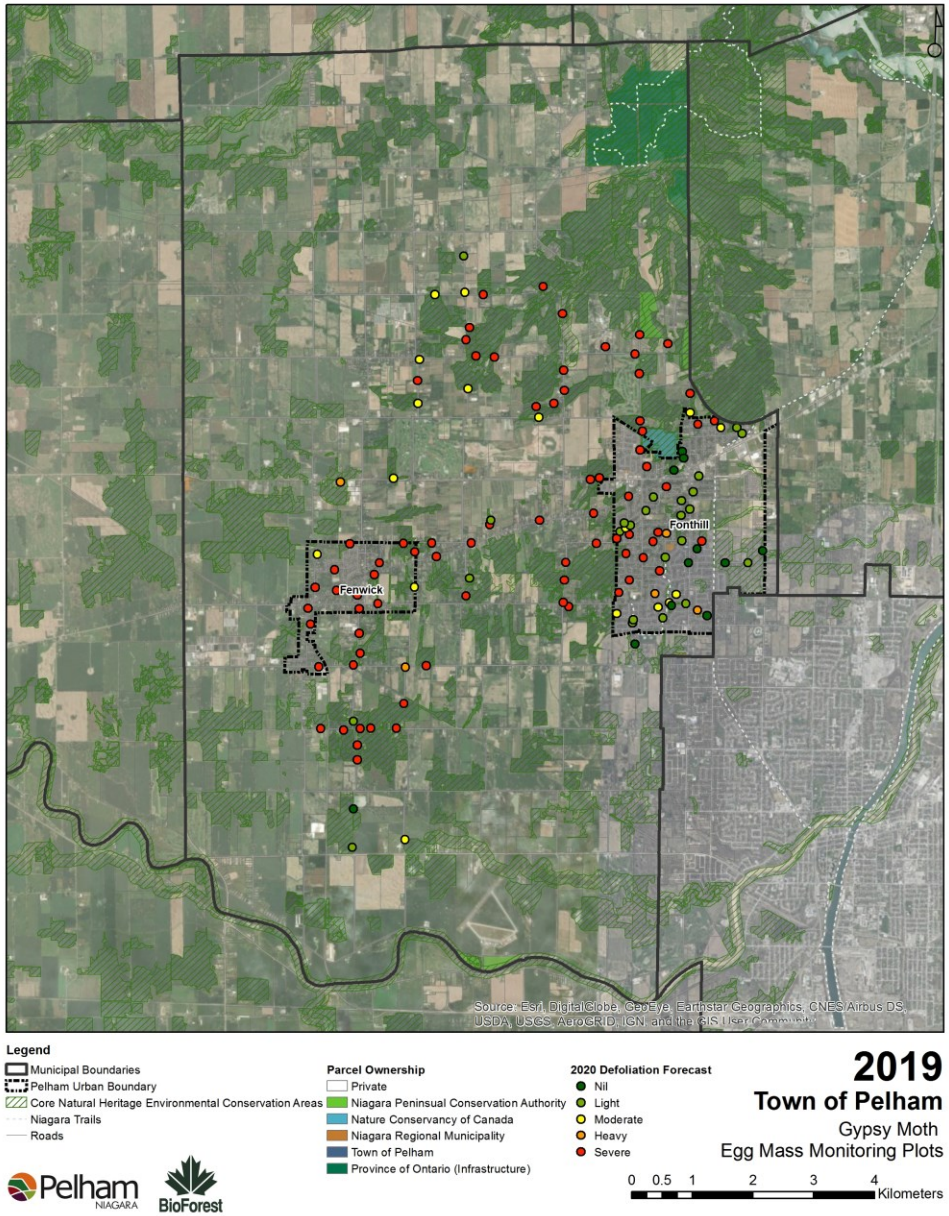
Gypsy Moth Egg Mass Surveys

- Thresholds
  - Derived from USDA defoliation prediction model

Egg Mass Density (Egg Masses per Hectare)	Defoliation Forecast	Defoliation Forecast Range (%)	Management Impacts
0	Nil	0 to 5	None
1 to 1,250	Light	6 to 25	Up to 20% Defoliation
1,251 to 3,750	Moderate	26 to 65	Nuisance and Aesthetics; Noticeable Defoliation
3,751 to 5,000	Heavy	66 to 90	Wildlife and Recreation; Growth Loss
> 5,001	Severe	91 to 100	Tree Mortality

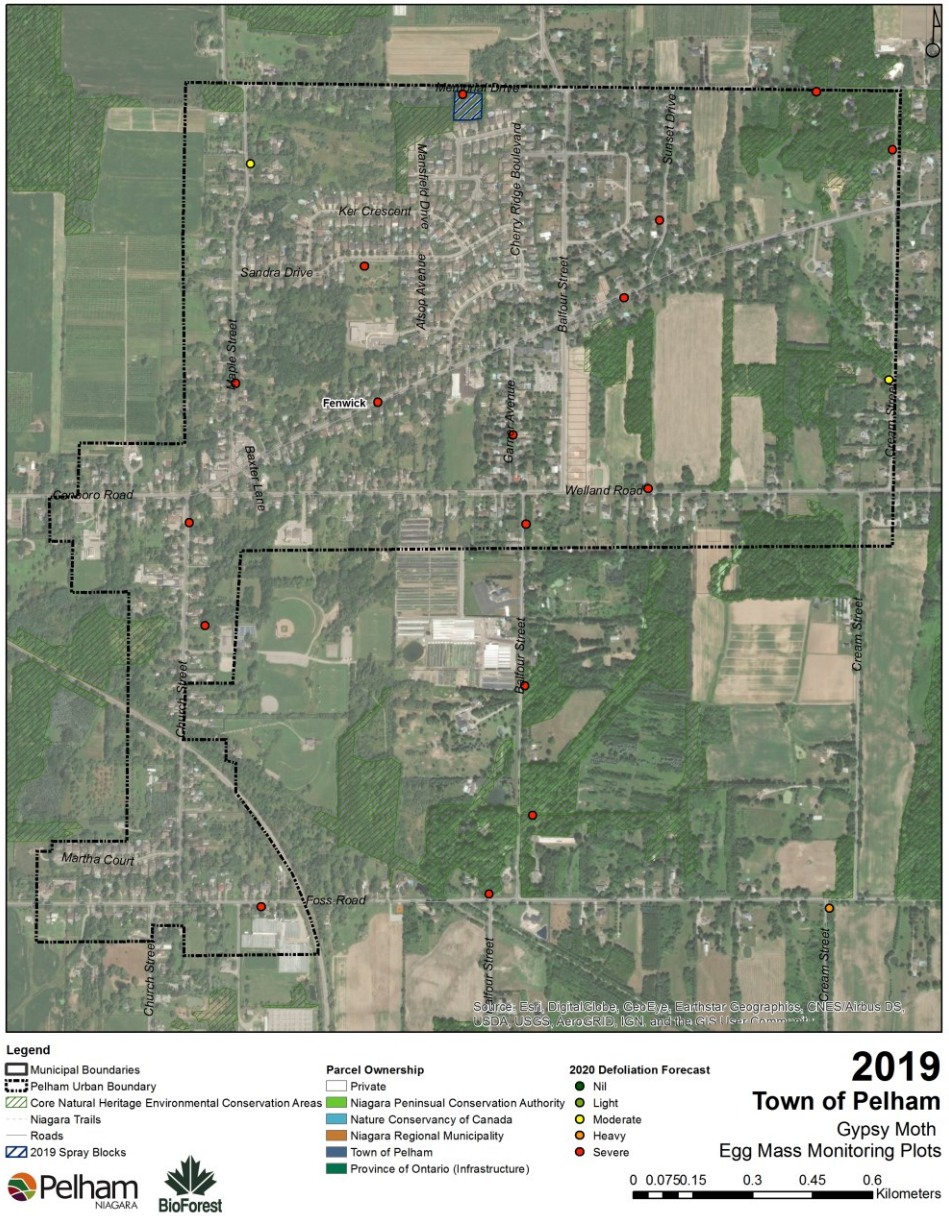
Results

- 2020 defoliation forecasts
  - **Severe** = 57% of plots
  - **Heavy** = 4% of plots
  - **Moderate** = 13% of plots
  - **Light** = 18% of plots
  - **No defoliation** = 8% of plots
- Areas with heaviest populations
  - Fenwick and south of Fenwick
    - Balfour Road, Foss Road, Sumbler Road
  - Along Canboro Road, Effingham Street and Pancake Lane
  - West side of Fonthill and areas north and west of Fonthill
    - Centre Street, Effingham Street, Haist Street, Kilman Road, Metler Road and Moore Drive



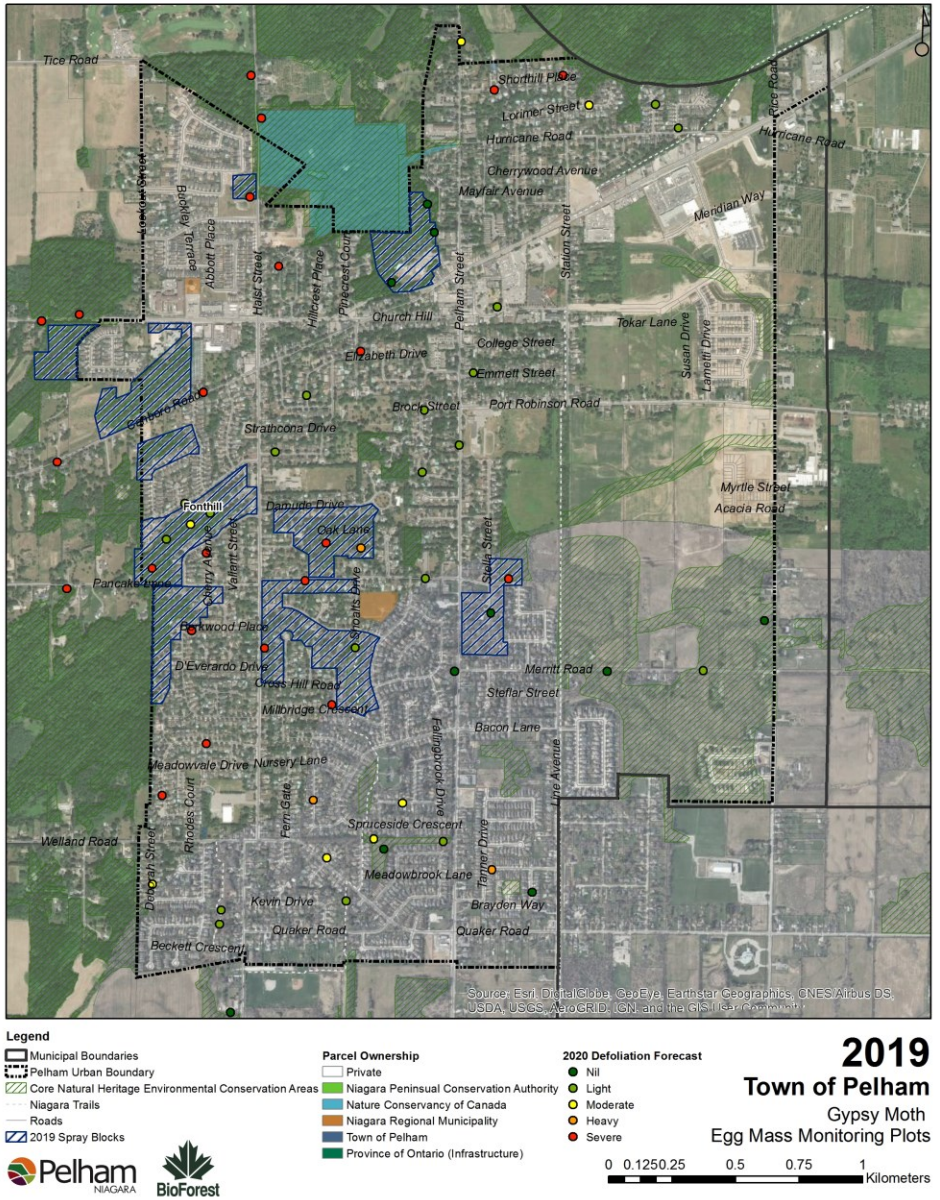
Fenwick

- 14 out of 16 plots within Town boundary have **Severe** defoliation forecast for 2020
- Counts ranged from 1,700 to 94,000 egg masses per hectare



Fonthill

- 19 out of 54 plots have **Severe** or **Heavy** defoliation forecast
- Numerous plots with 0 egg masses per hectare, ranging up to 79,000



Results

58% of all egg masses within reach were new

Average egg mass size = 33.5mm

84% of all new egg masses measured were large (>25mm)

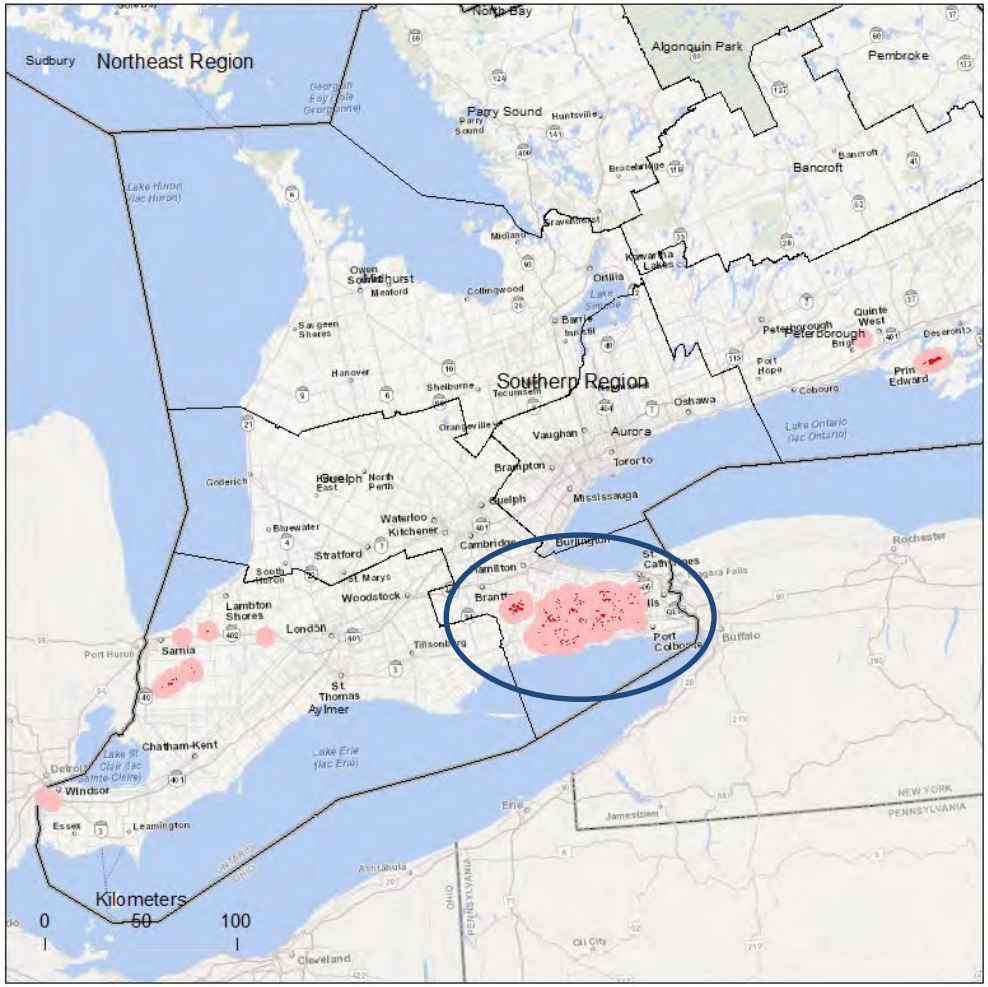
OMNRF Gypsy Moth Defoliation - 2017

Gypsy Moth
2017

Southern Region
Areas-within-which gypsy moth caused defoliation

Moderate-to-severe = 10,856 ha

Area of moderate-to-severe defoliation



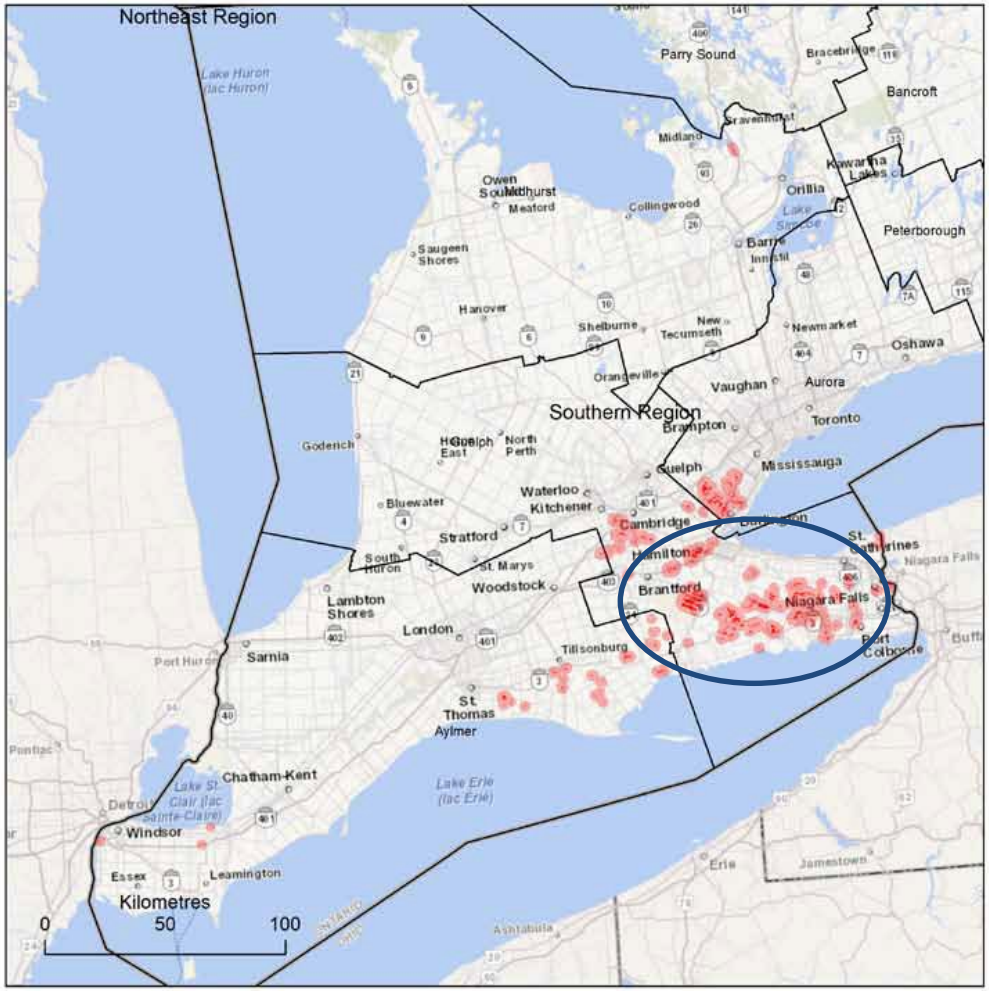
OMNRF Gypsy Moth Defoliation - 2018

Gypsy moth
2018

Areas in the Southern Region where gypsy moth caused defoliation

Moderate to severe = 14,937 ha

Area of moderate to severe defoliation



OMNRF Gypsy Moth Defoliation - 2019

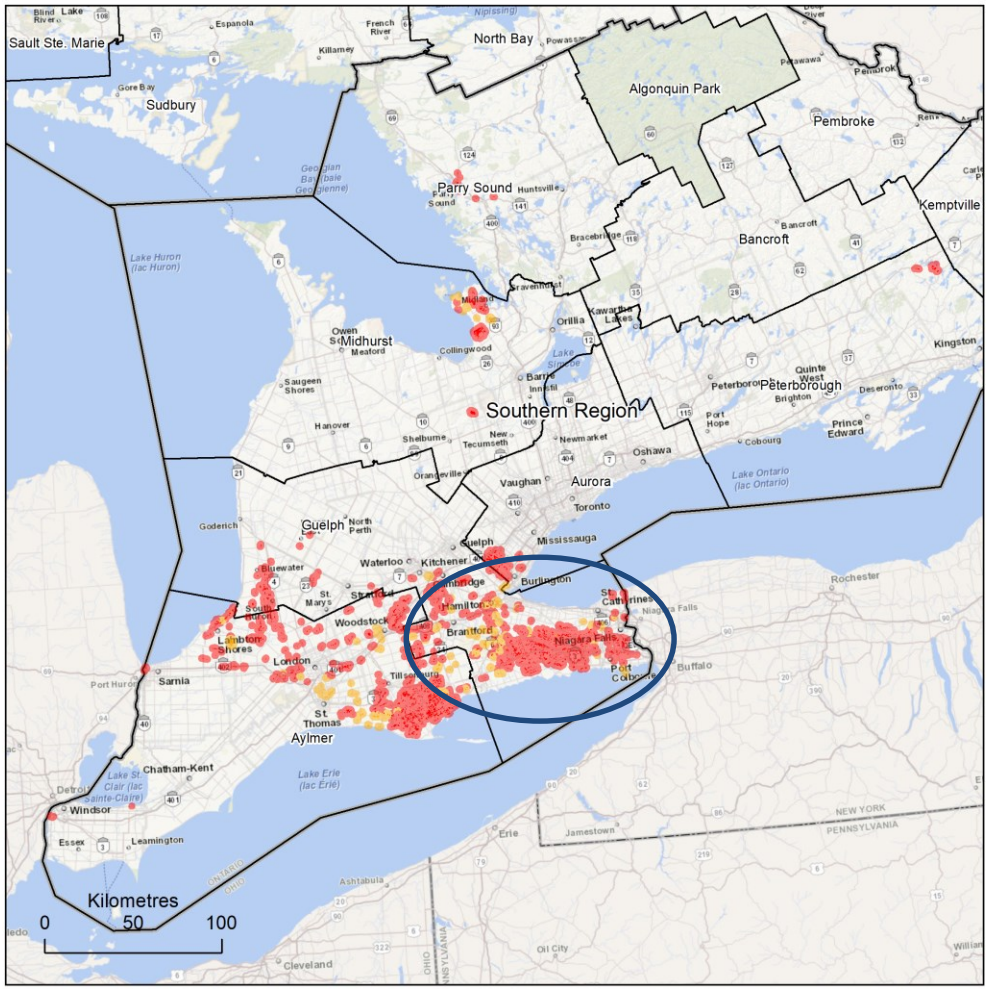
Gypsy moth
2019

Areas in the Southern Region where gypsy moth caused defoliation

Light = 4,046 ha
Moderate to severe = 43,064 ha

Area of light defoliation

Area of moderate to severe defoliation



Management Options

1. Town takes no action on public trees. Implements a strong communications and outreach program to educate residents and encourage private landowners to undertake treatment.
2. Town implements a treatment program targeted at urban areas and adjacent forested properties with plots exceeding the 2,500 egg mass/hectare threshold. Supported by a strong communications program for private landowners not included in treatment areas.
3. Town implements comprehensive treatment program including all urban and rural areas with plots exceeding the 2,500 egg mass/hectare threshold.

For all options, communication is KEY

Considerations

- Healthy natural forests are resilient
- Confluence of stressors on urban trees
  - Previous defoliation
  - Soil compaction, poor sites/nutrients, high salinity
  - Drought, storm events (wind, ice)
  - Construction, line clearing
  - Other pests – cankerworm (increased susceptibility)
- Importance of protecting valuable natural assets – street trees, parks, etc.
  - Aesthetic, recreation, economic, environmental

BioForest

Thank you!

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