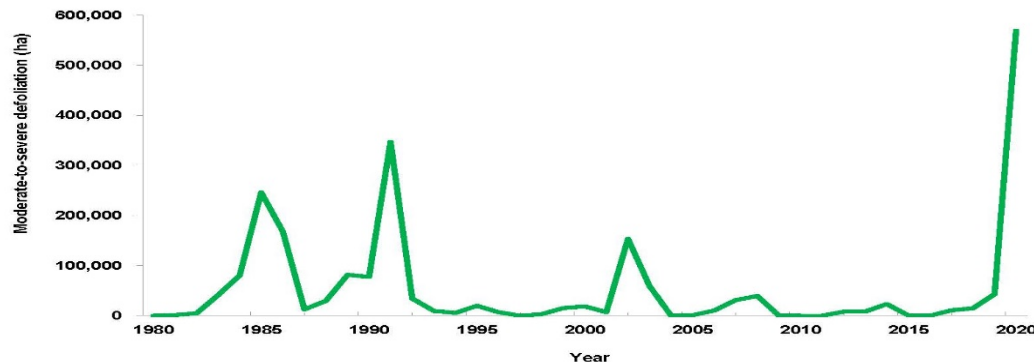


# The LDD (Gypsy Moth) in Ontario

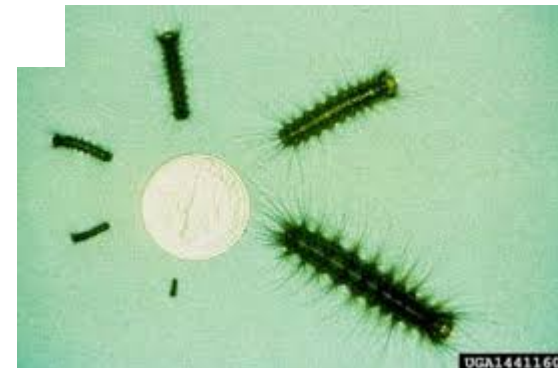
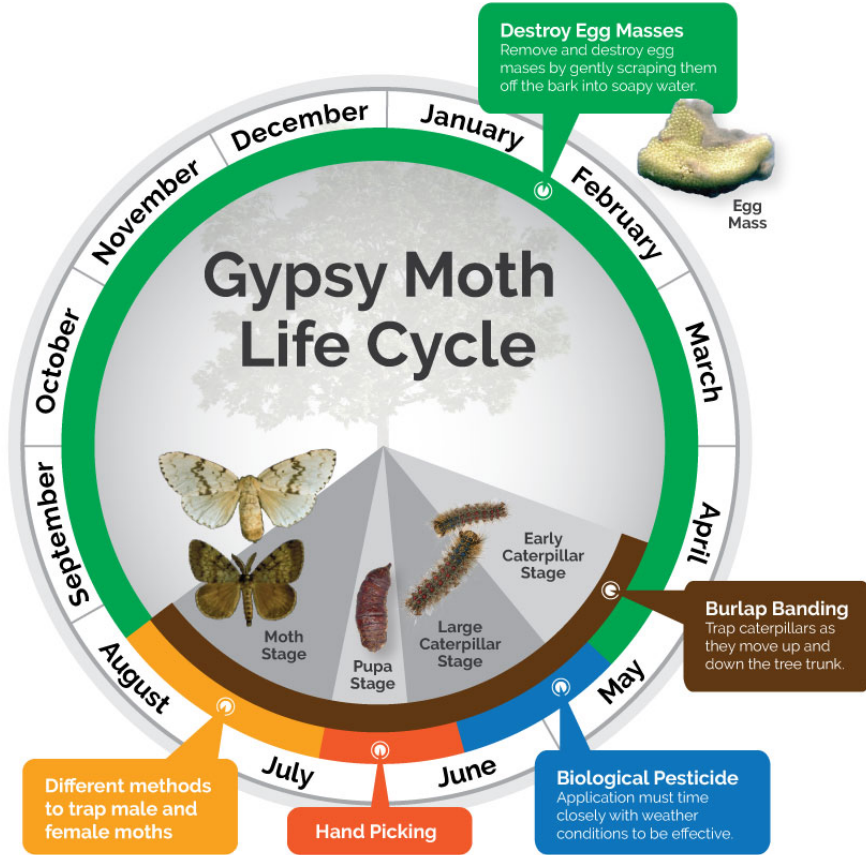
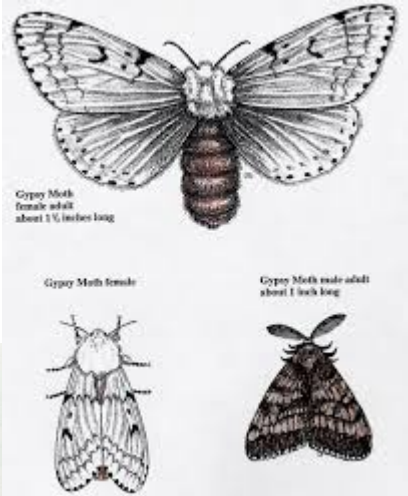
- First detected in Ontario on Wolfe Island in 1969
- First outbreak commenced in 1981 near Kaladar in eastern Ontario and by 1985 had spread throughout south eastern Ontario
- Outbreak peaks in 1985, 1991, 2002 with moderate to severe defoliation in Mississauga and Etobicoke in 2005, 2018
- Moderate to severe defoliation across southern and central Ontario in 2020

## Gypsy Moth (*Lymtria dispar* (L.))

Gypsy moth  
Moderate-to-severe defoliation in Ontario 1980 - 2020



# Annual Life Cycle



Credit: Gypsy Moth Life Cycle graphic adapted from USDA APHIS PPO, Bugwood.org

Larval stages:  
Males – 5  
Females – 6



# MNRF Survey 2021 Prediction



## Gypsy moth egg mass survey results

### Defoliation forecast 2021

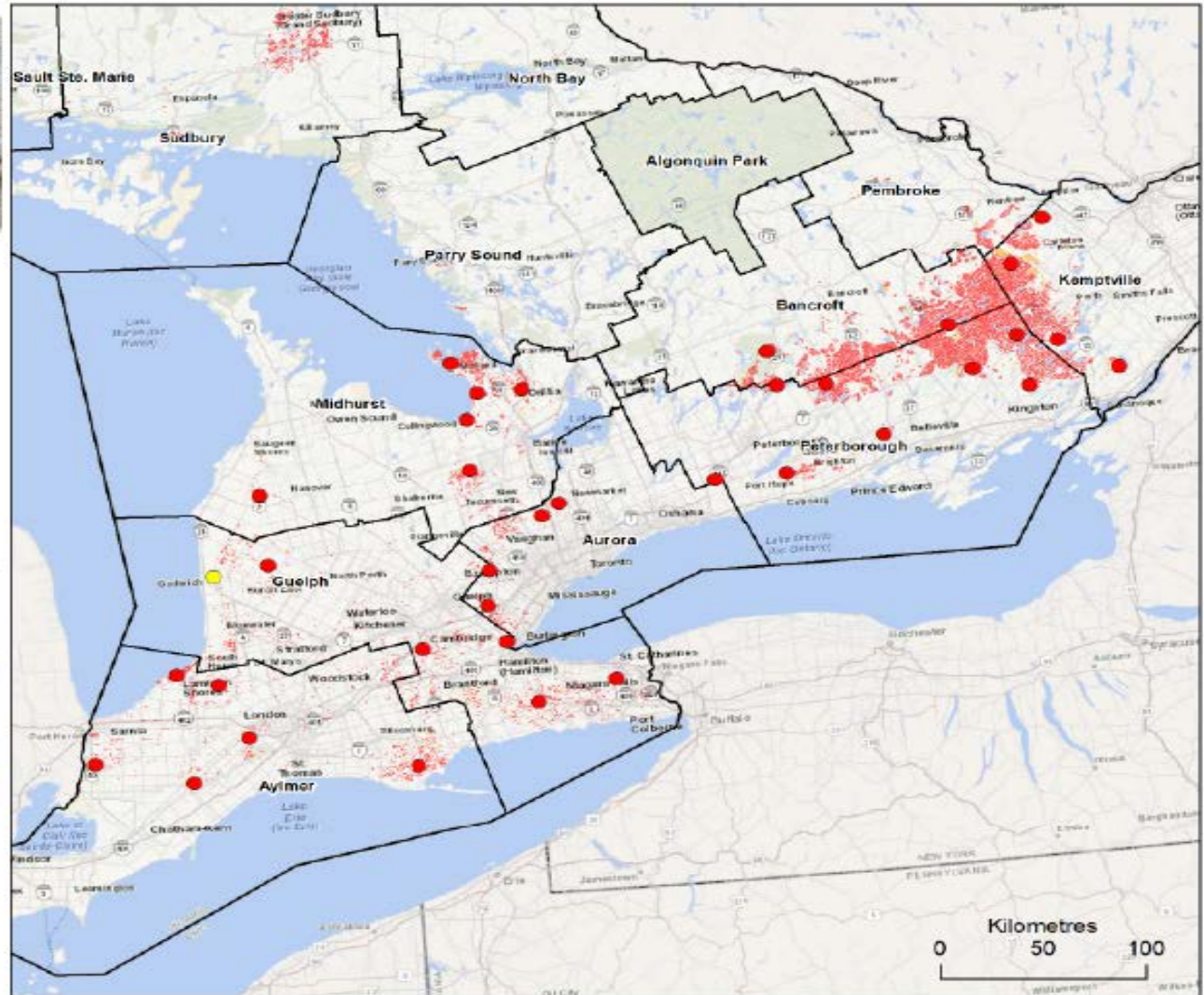
- Severe
- Moderate

### Gypsy moth damage 2020

- Area of moderate to severe damage
- Area of light damage



**Disclaimer:**  
This map is illustrative only. Do not rely on this map as being a precise indicator of routes, locations of features, nor as a guide to navigation. This map was produced for the Ministry of Natural Resources and Forestry.



# Management Options

1. Do nothing
  - Wait for the population to collapse from natural factors
2. Take local, small scale actions
  - Intervene at all GM life stages
  - Trap, remove, destroy accessible larvae and pupae as they develop
  - Protect special trees (ie close to the house, unique species, other tree health issues, etc)
  - Water your trees well during and following defoliation to reduce overall stress
  - Collect and destroy eggs
3. Pesticide options
  - Ground application
  - Aerial application



# Registered Pesticides

## **BTK** - *Bacillus thuringiensis kurstaki*

- Biological, certified organic
- Specific to larvae of moths and butterflies
- Best applied to early stages of larvae development
- The choice of most homeowners and applicators
- Formulations include Foray 48B, Dipel

**Mimic<sup>®</sup> 240LV** is an insect growth regulator (IGR) that was developed to control specific caterpillar pests that defoliate trees and forests. The active ingredient of **Mimic 2LV/ Mimic 240 LV** is tebufenozide (not available to the homeowner).

**Sevin<sup>®</sup>** brand carbaryl insecticide provides broad-spectrum control of dozens of important pests including beetles, weevils and worms in tree fruit, nut, vine, citrus vegetable and other crops (not available to the homeowner).

**Disparvirus** is a multiple nucleopolyhedrovirus (MNPV) preparation for the biological control larvae of the gypsy moth larvae. It was developed in Canada by the CFS and MNR, but is not available to the homeowner

Others - Pyrethrins , permethrins, Malathion

**READ THE LABEL AND USE APPROPRIATELY!!!**



# Aerial Spraying results



Sprayed



Unsprayed





## Outbreaks collapse from:

- Cold temps < -20C
- Starvation, competition
- Host tree induced defenses
  - Tougher, less nutritious leaves
- Predation, parasitism
- NPV (nucleopolyhedrosis virus)
  - Density dependent mortality
  - Greater effect at higher populations
- Fungus *Entomophaga maimaiga*
  - Density independent mortality
  - Greater effect in wet cool spring weather



Entomophaga  
maimaiga



Gypsy moth virus  
NPV



Upside down V





# Forecast for 2022

- **The Good News:** In the “severe” zone of 2020, we saw a mass die-off of maturing caterpillars in June 2021 meant few females survived to mate
- **The Bad News:** Healthy reproduction in the advancing zone
- Look for abundance of egg masses
- Look for egg mass size – smaller egg masses could indicate stress / lack of nutrition in females
- Do your egg mass count
- Plan accordingly



# Egg Mass Counts Can Provide a Defoliation Forecast

Egg Mass per Hectare	Defoliation Forecast
0	Nil
1 to 1235	Light (1 to 40%)
1236 to 6175	Moderate (41 to 75%)
6176+	Severe (>75%)

In terms of individual susceptible trees, 5 to 8 egg masses per tree could result in 40% + defoliation

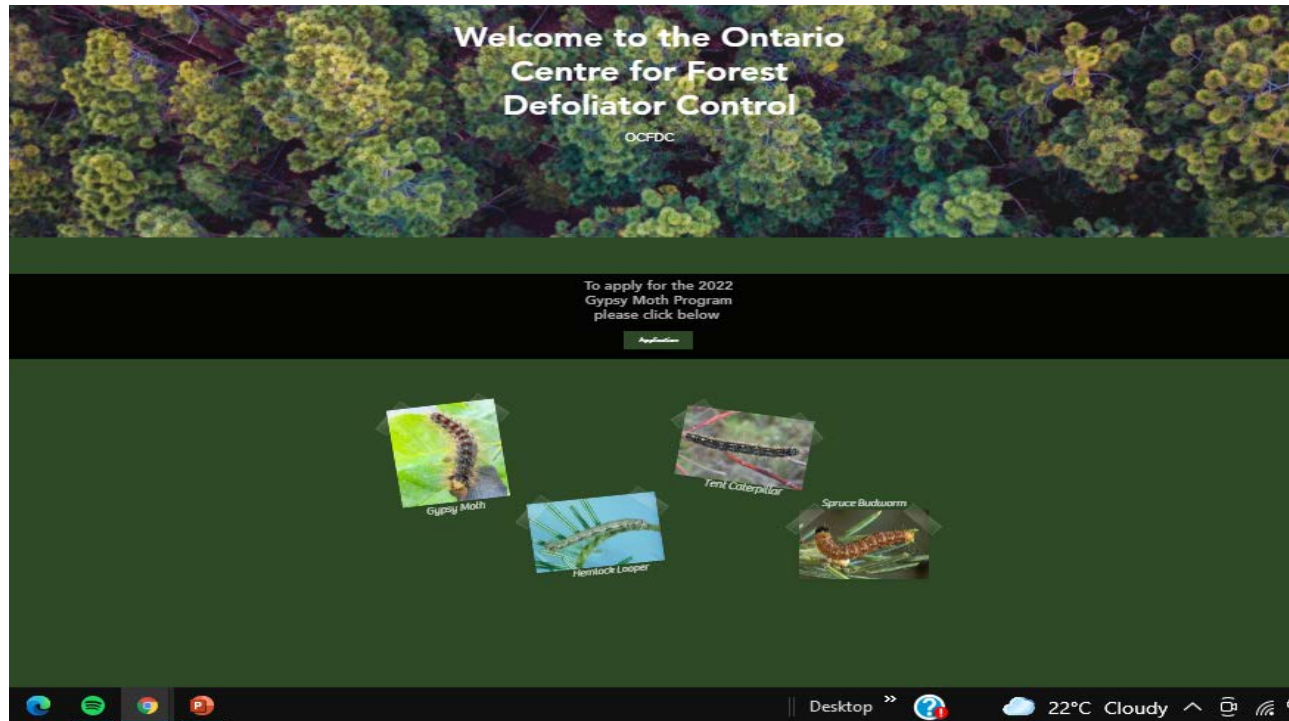






# Aerial spraying, 2022

- Zimmer Air Services, Inc. has introduced a new application process / website
- <https://www.ocfdc.com/>





# Forest Health Report

- The Ontario Ministry of Northern Development, Mines, Natural Resources and Forestry has completed aerial surveys of defoliation
- They will be conducting egg mass surveys to provide a 2022 prediction
- See: <https://www.ontario.ca/page/lymantria-dispar-dispar-ldd-moth>