Forest Health

Forest Health Program
March 22nd
2017
"Then and Now"

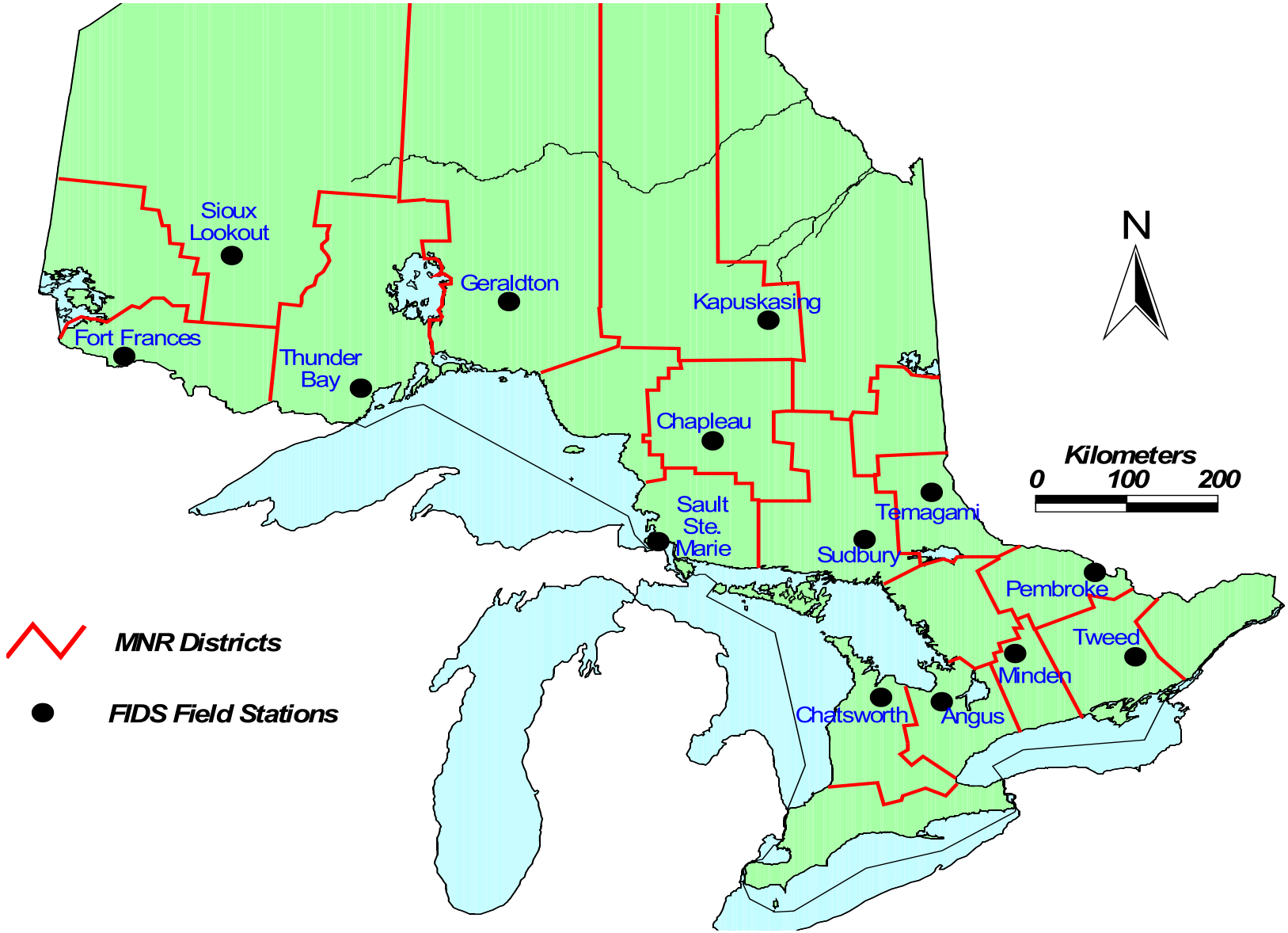
Biodiversity and Monitoring Section
Forest Health
Dan Rowlinson

Forest Health – Historical overview

- **Federal –Provincial partnership since the 1930's**
- MOU since 1944
- 1995 – actual 50th anniversary of FIDS
- 1995 – Program review
- MNR 1998 began transition to FH surveys.
- National forest pest strategy (early 2000's)
- IMA realignment in 2010
- **Transformation 2013, 2015 – SRB**
- 2016 first full field season transformed delivery model


CANADA
DEPT OF AGRICULTURE

FIDS Field Stations in the 1970's



Forest Health Program – Current Resources

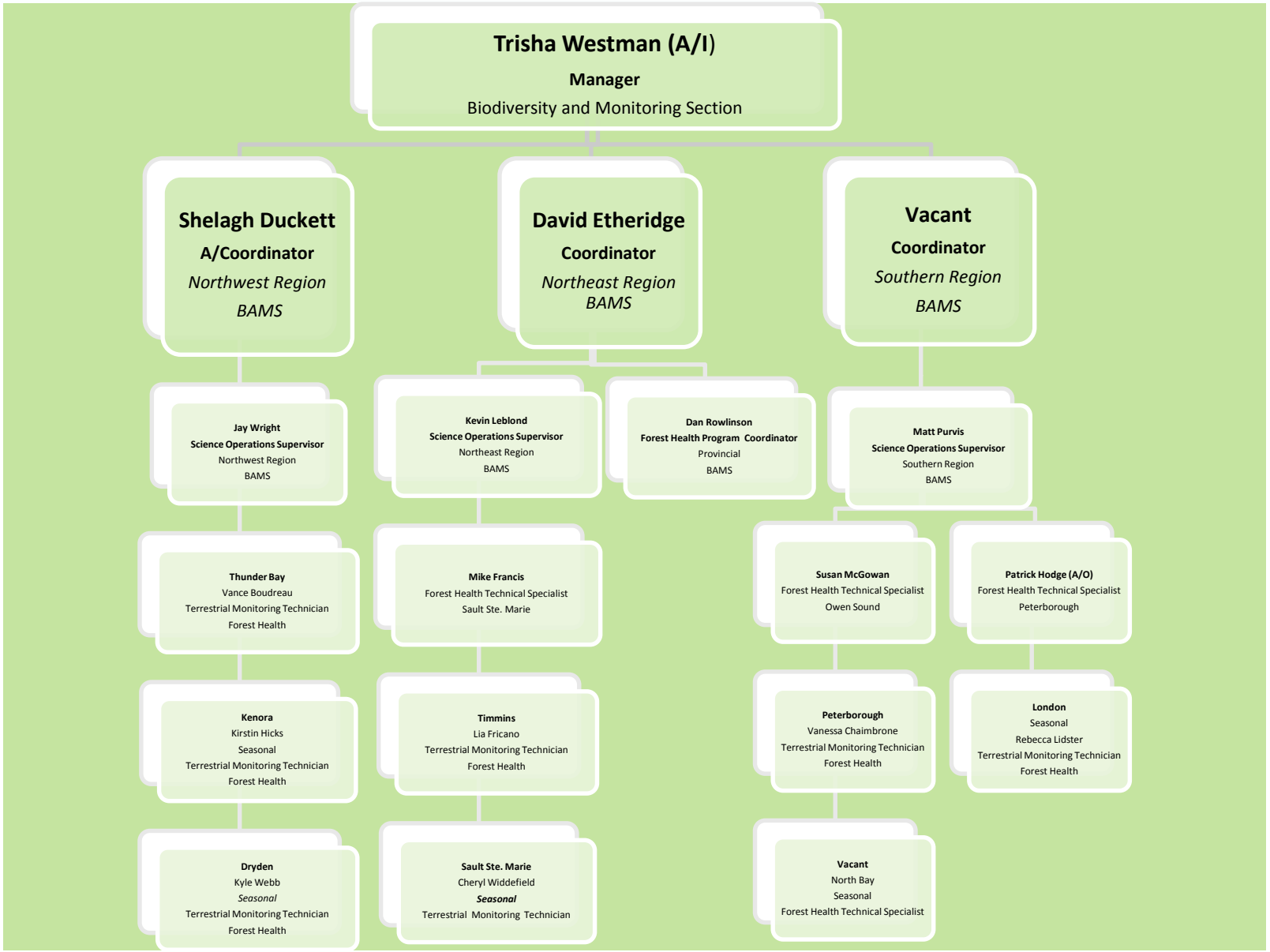
Operational Staffing

6 - full time positions

5 – Group 3 seasonal positions

1 seasonal vacancy

Forest Health Program – Program Structure



Forest Health Program – Drivers

- Development of forest policy
- SORR requirements
- EA terms and conditions (annual volume depletions)
- Ontario Biodiversity strategy
- National Forest Pest Strategy (CCFM)
- ISAP / IMF
- Invasive species legislation
- MNRF's strategic direction (Horizons 2020)

"Conducting science and monitoring to support the decision making process"

Forest Health Program- Process #1 Planning

Planning

- Review of previous years program
- Forest health technical committee (Concept)

Field Manual/Protocols

- Developed by Field coordinator with regional BAMS consultation

Work plans

- Provincial in Scope
- Regional in delivery

Forest Health Program – Process #2 Data Collection Design

Protocol

- Developed during planning
  Provincial training delivered

Detection

Measurement

- Quantify/Qualify or plot evaluation
- Voucher specimen collection and submission

Documentation

- Aerial survey (map) or plot evaluation (form)


C-GOGL


C-FOPA

Disturbance Mapping Technology

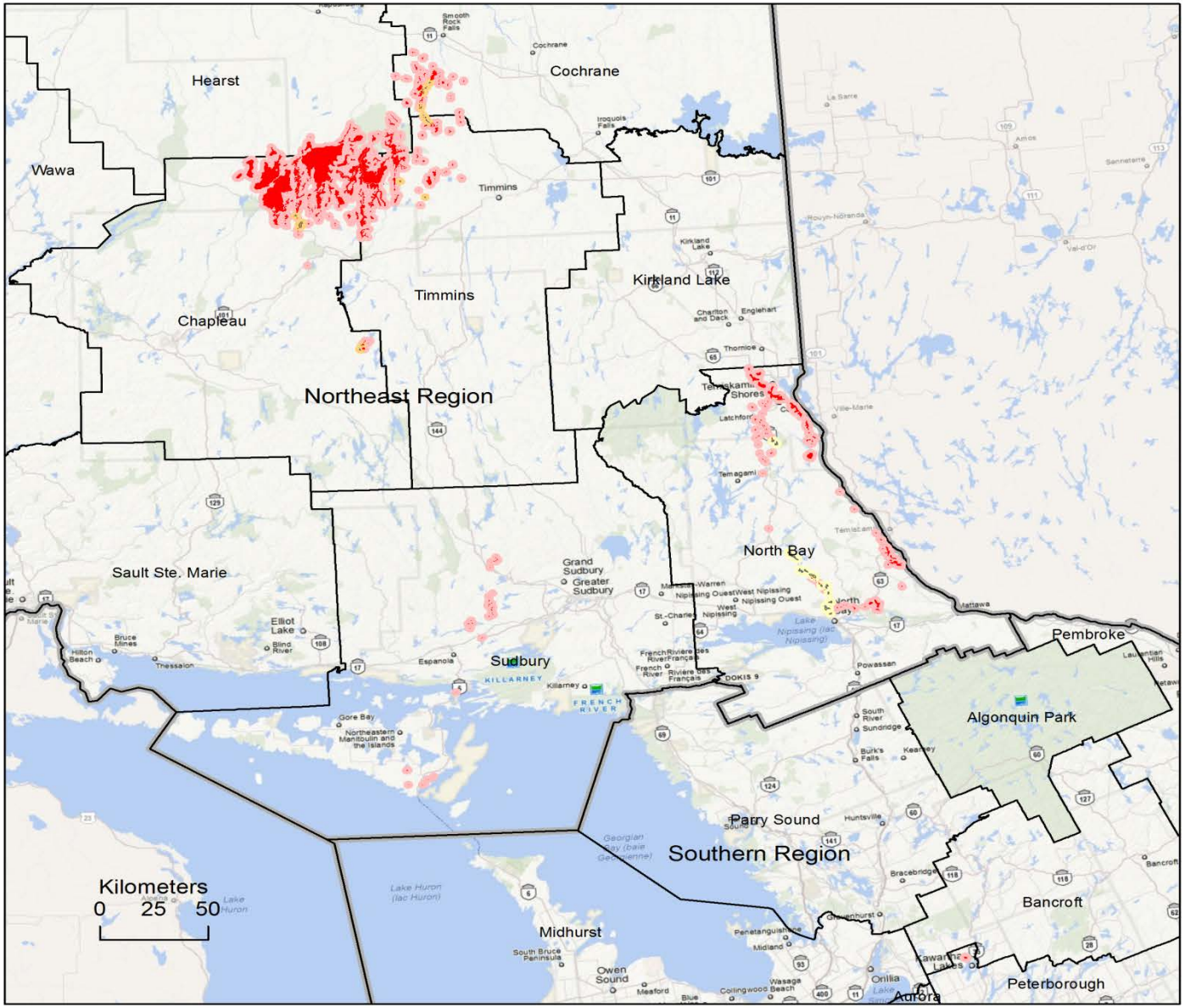
Spruce budworm (*Choristoneura fumiferana* Clemens)

Spruce budworm 2016

Northeast Region
Areas-within-which spruce budworm caused defoliation and mortality.

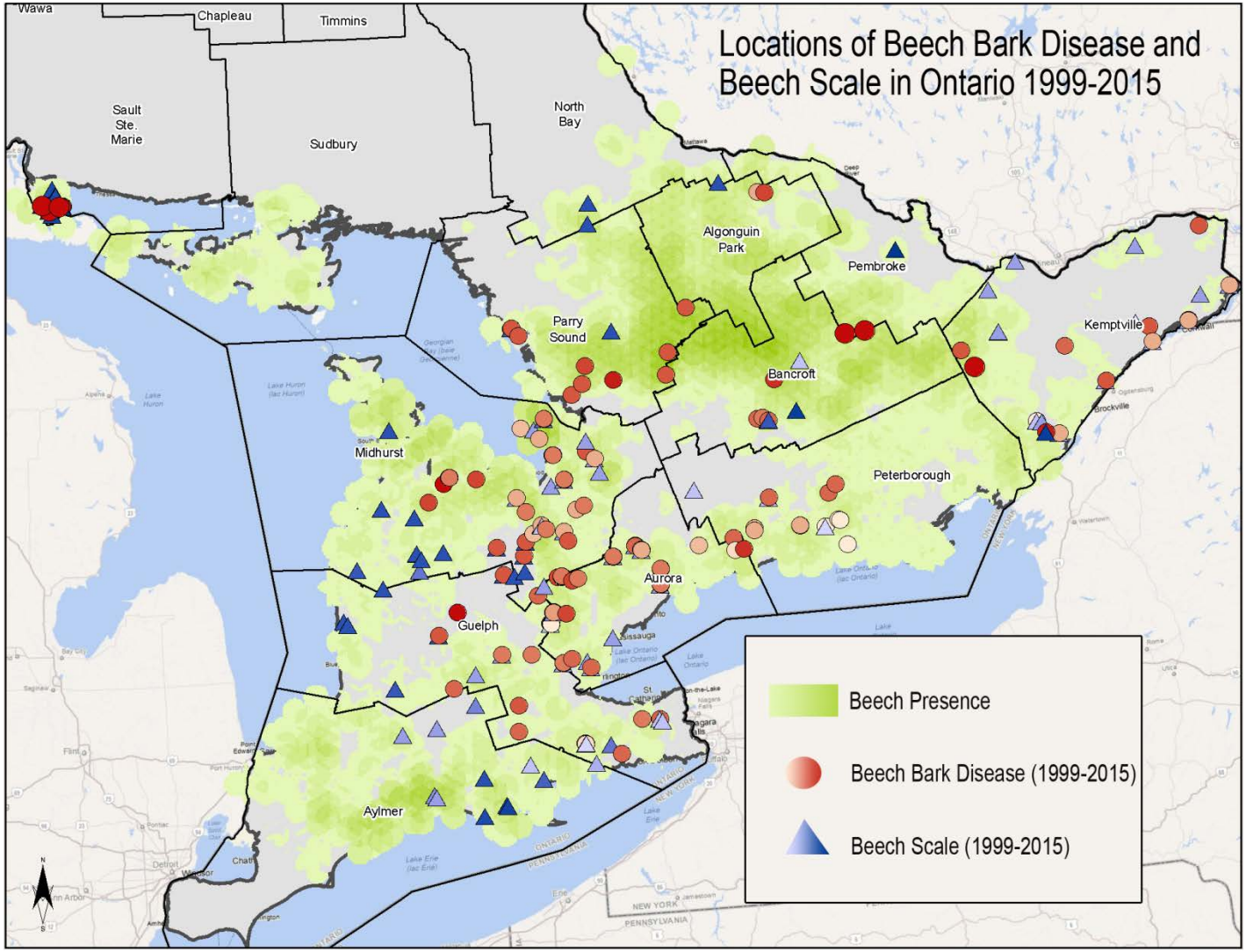
Light = 360 ha
Moderate-to-severe = 116,023 ha
Mortality = 1,165 ha

- Area of Light Defoliation
- Area of Moderate-to-Severe Defoliation
- Area of Mortality



Beech bark disease Outputs – Range Maps

Beech bark disease and beech scale positive sites 1999-2015



Forest Health Program –Outputs SCIENCE SUPPORT

Forest Health – Data (collection,entry,analysis)

Data Collected (throughout the core field season April - September)

- Point sample data (collections verified through diagnostic support)
- Health plot evaluations
- Disturbance maps

Data Entry (Mapping products are priority Mid September)

- Data from point sample collections currently entered through diagnostic support
- Health plot evaluations are summarized in the annual conditions report.
- Disturbance maps are managed by NRIS (LIO)

Data Analysis

- capacity to analyze data (summarize)
- Data analysis has been handled by supporting science interested in using our data.

Forest Health Program – Process # 3 Reporting

Bi-weekly reporting

- Work progress and updates in the form of calls and form completion.

Seasonal reporting

- Mid and End of Season reporting
- Development of presentation material to be approved

Annual Forest Health Conditions report

Disturbance map submissions

- Annual report on the condition of Ontario's Forests
- Disturbance maps loaded to LIO


UNITY-STRENGTH-SUCCESS
Next Steps

Forest Health – Transfer of Information

Information Transfer

- Forest Health Review
- WEBEX
- Social media – Twitter, Facebook
- Annual Forest Health Conditions Report
- LCC
- District/contacts
- Information on the website
- Training of our own staff
- Forest health technical committee (vision)

Management Response

- Procedure is defined in the Forest Management Planning Manual (FMPM)
- Part D section 6 “Insect Pest Management Programs”
- Procedure for a “Forest Health Response” is currently being reviewed within ROD.


23


MULTI-PHER
7


2
Cam
Katr
Via Do

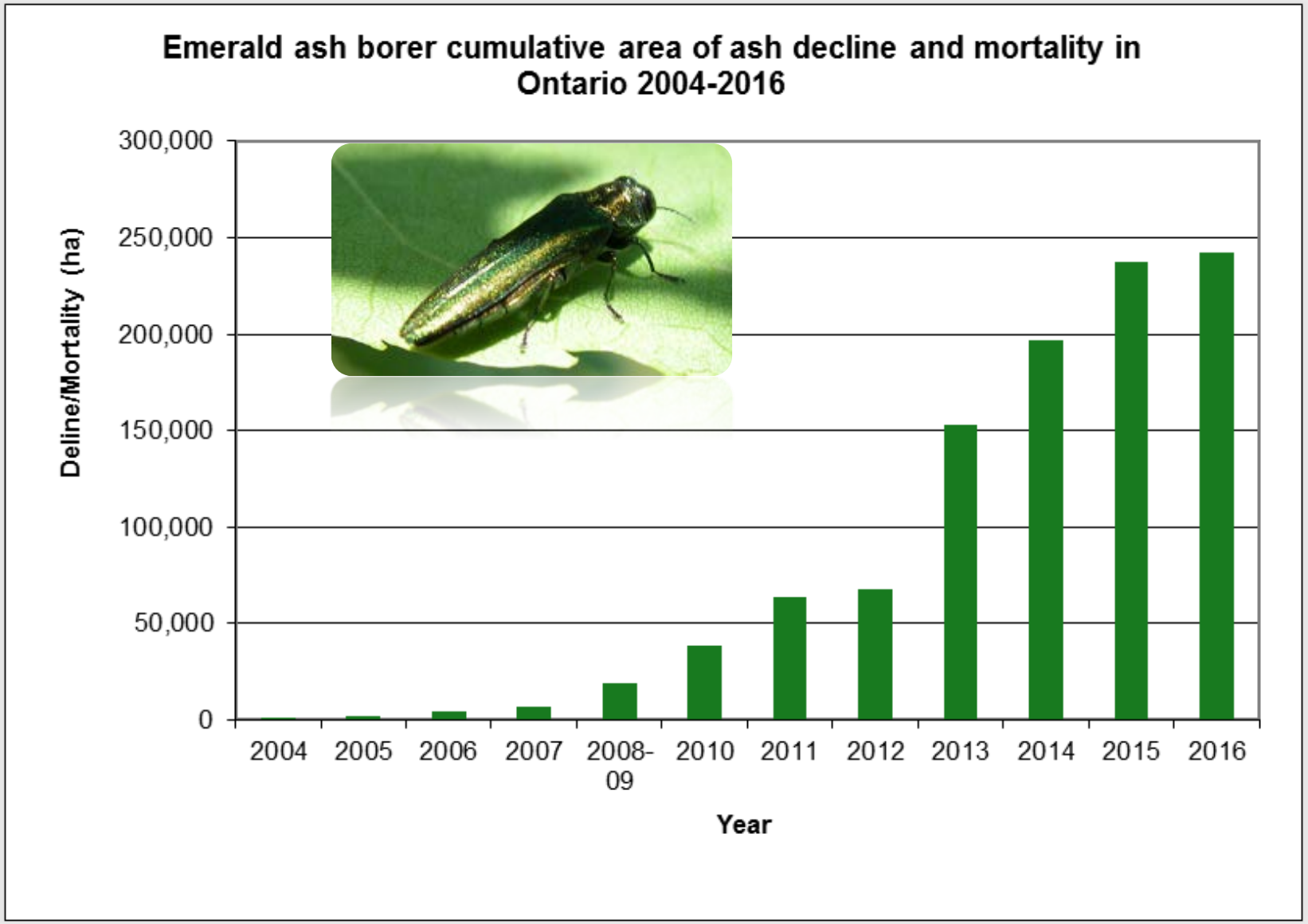
Ontario Invasives

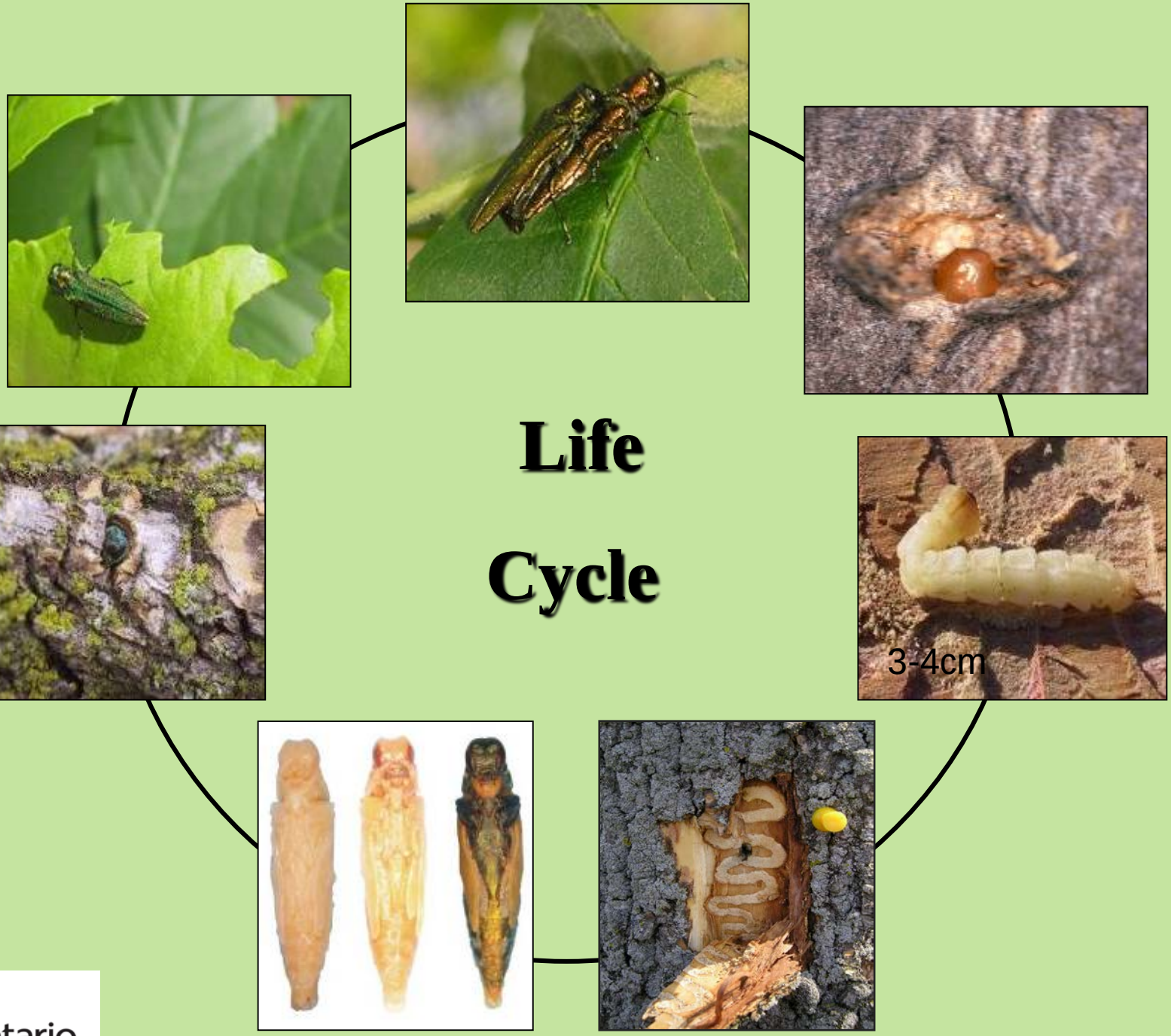
- **MSC Oscar 400 m long can hold 19,100 containers (2014)**
- **17,000,000 shipping containers in the world making 200 trips/year**
- **1 sweater can travel 4800 km by sea ……2.5 cents**

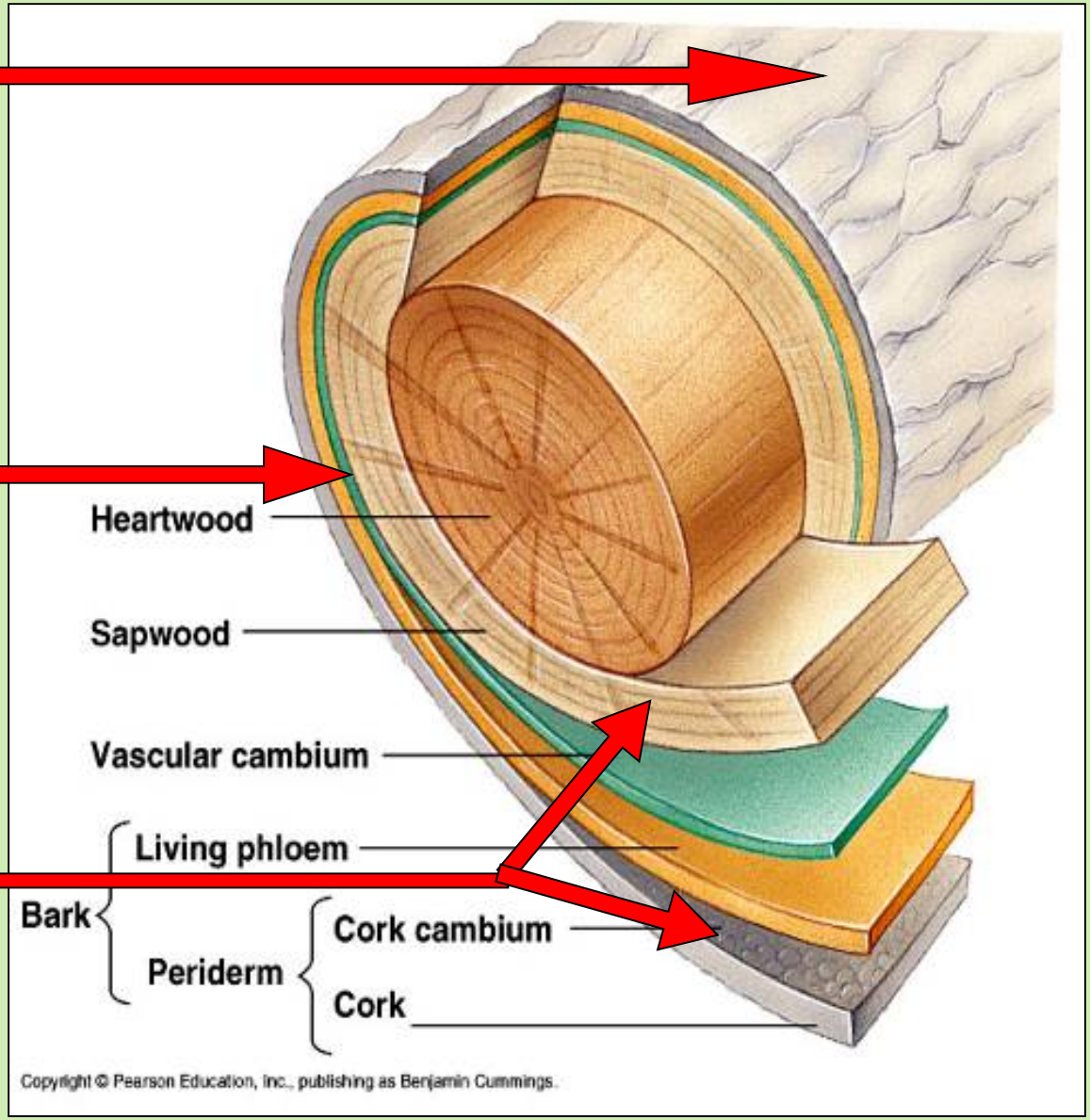

World Shipping Lanes
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

Ontario Invasive Insects/Disease

Emerald Ash Borer (*Agrilus planipennis* Fairmaire)




Life
Cycle
3-4cm


Heartwood
Sapwood
Vascular cambium
Living phloem
Bark
Periderm
Cork cambium
Cork
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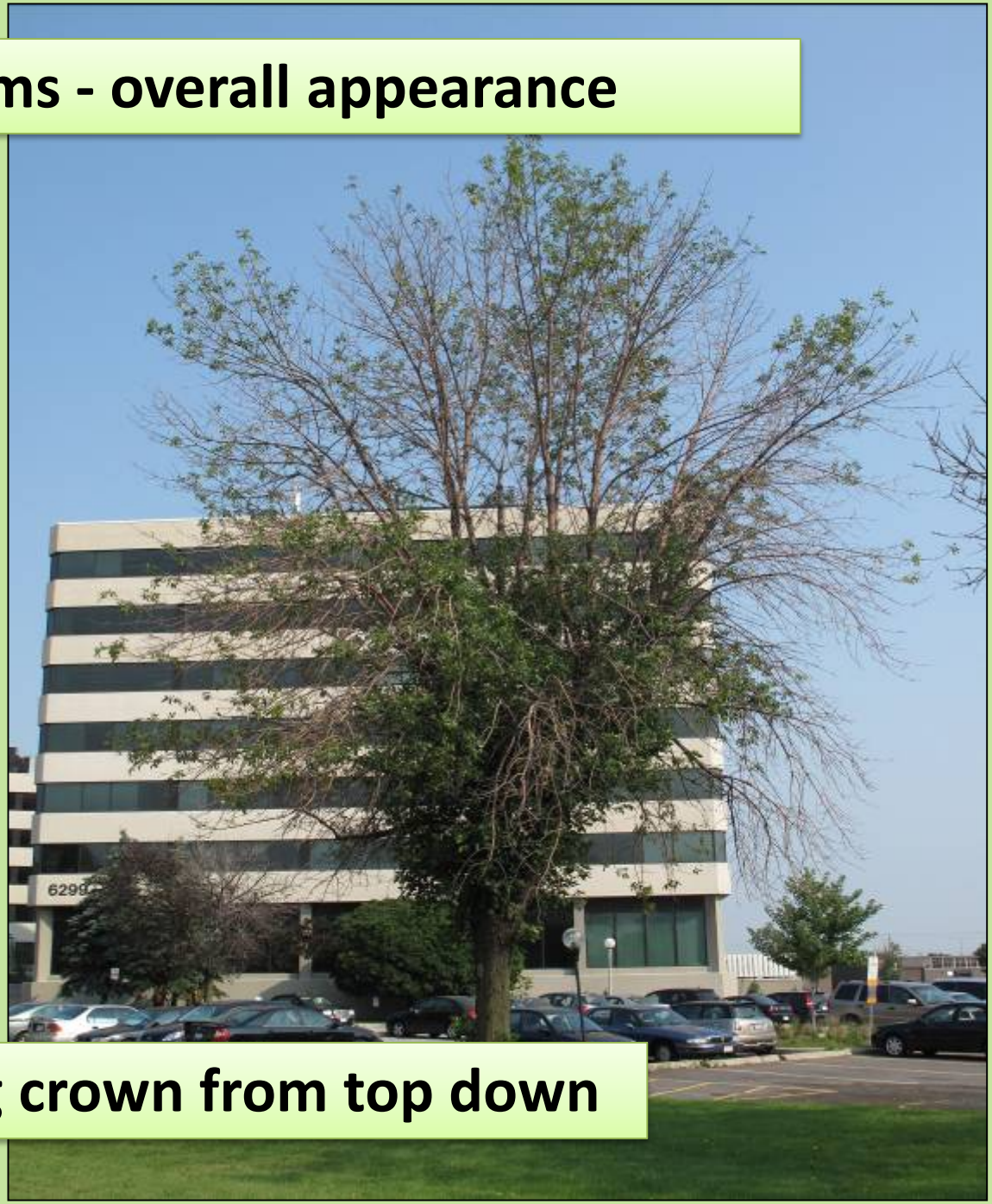
Ontario

Signs and Symptoms - overall appearance



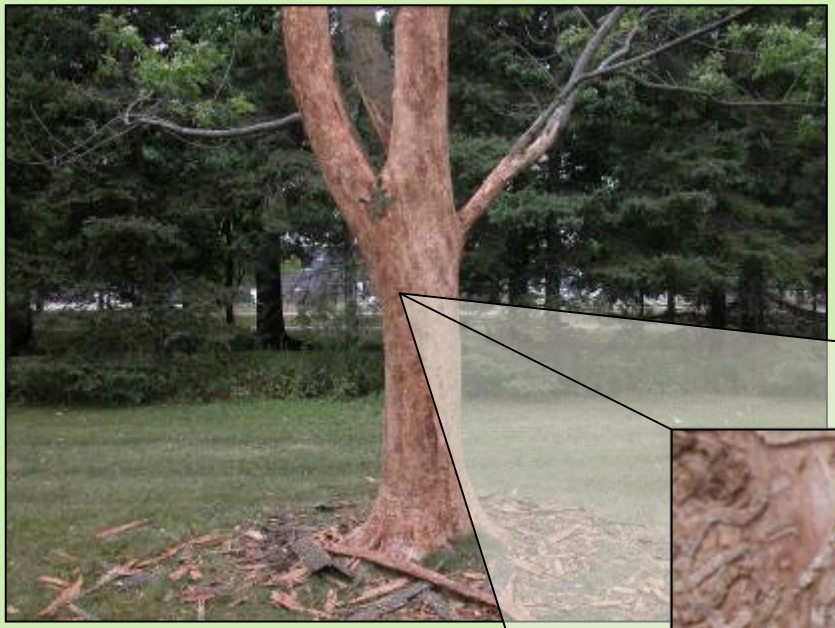
- Thinning crown from top down

Ontario

Signs and Symptoms larval galleries

- Galleries are typically S-shaped or serpentine

Ontario

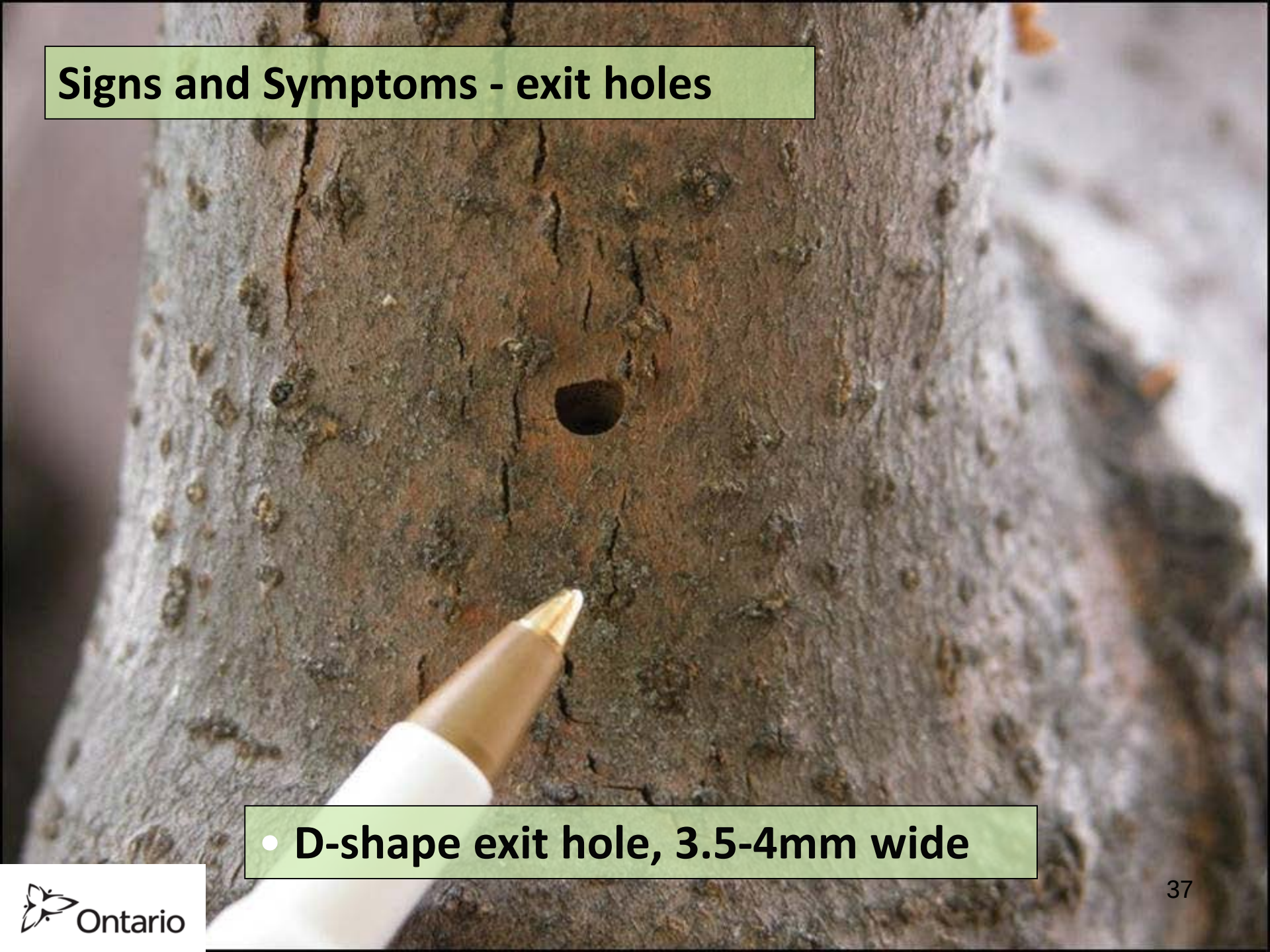


- Galleries become more random as populations increase

- High populations girdle the tree

Ontario

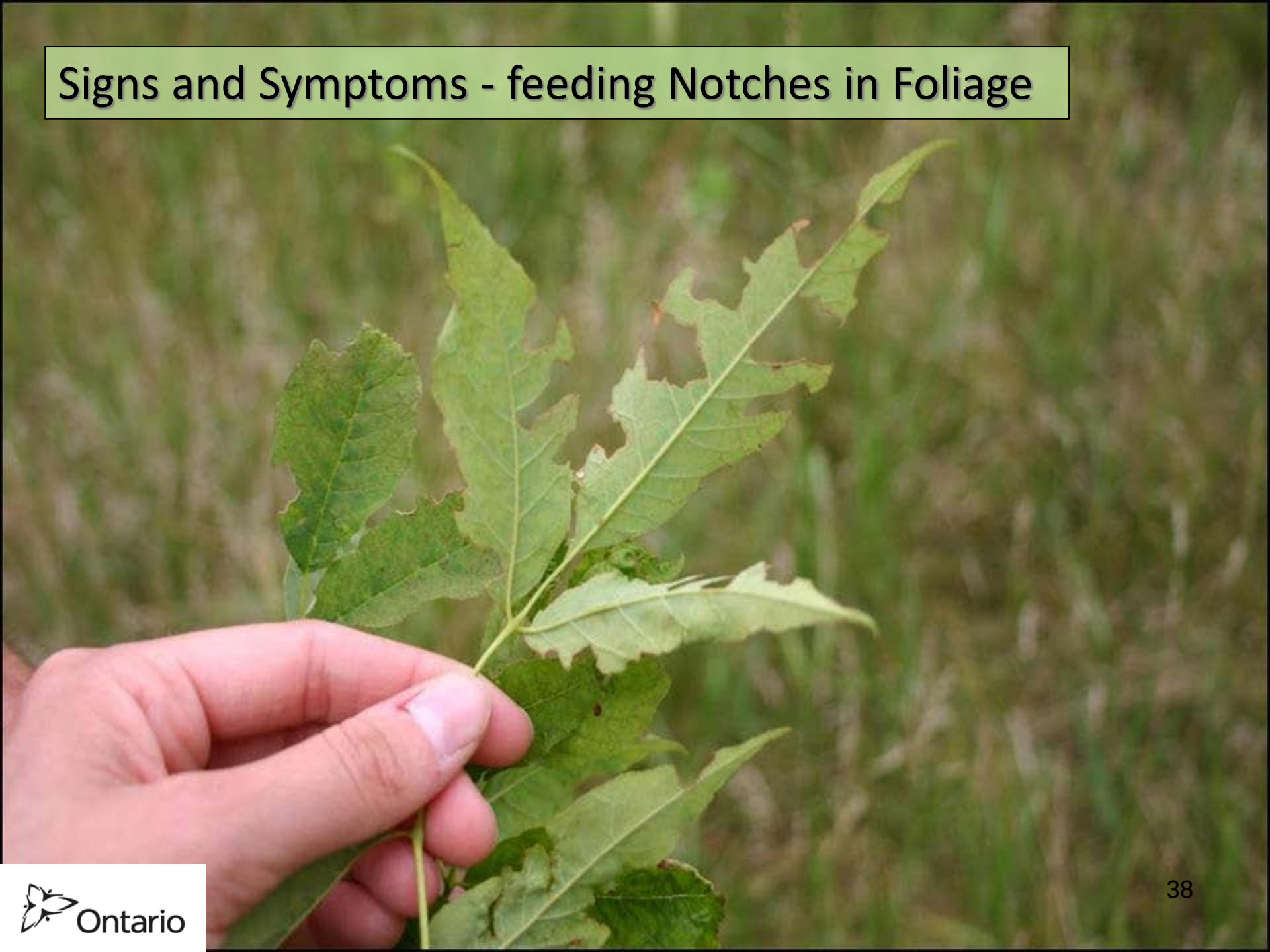
Signs and Symptoms - exit holes



- D-shape exit hole, 3.5-4mm wide

Ontario

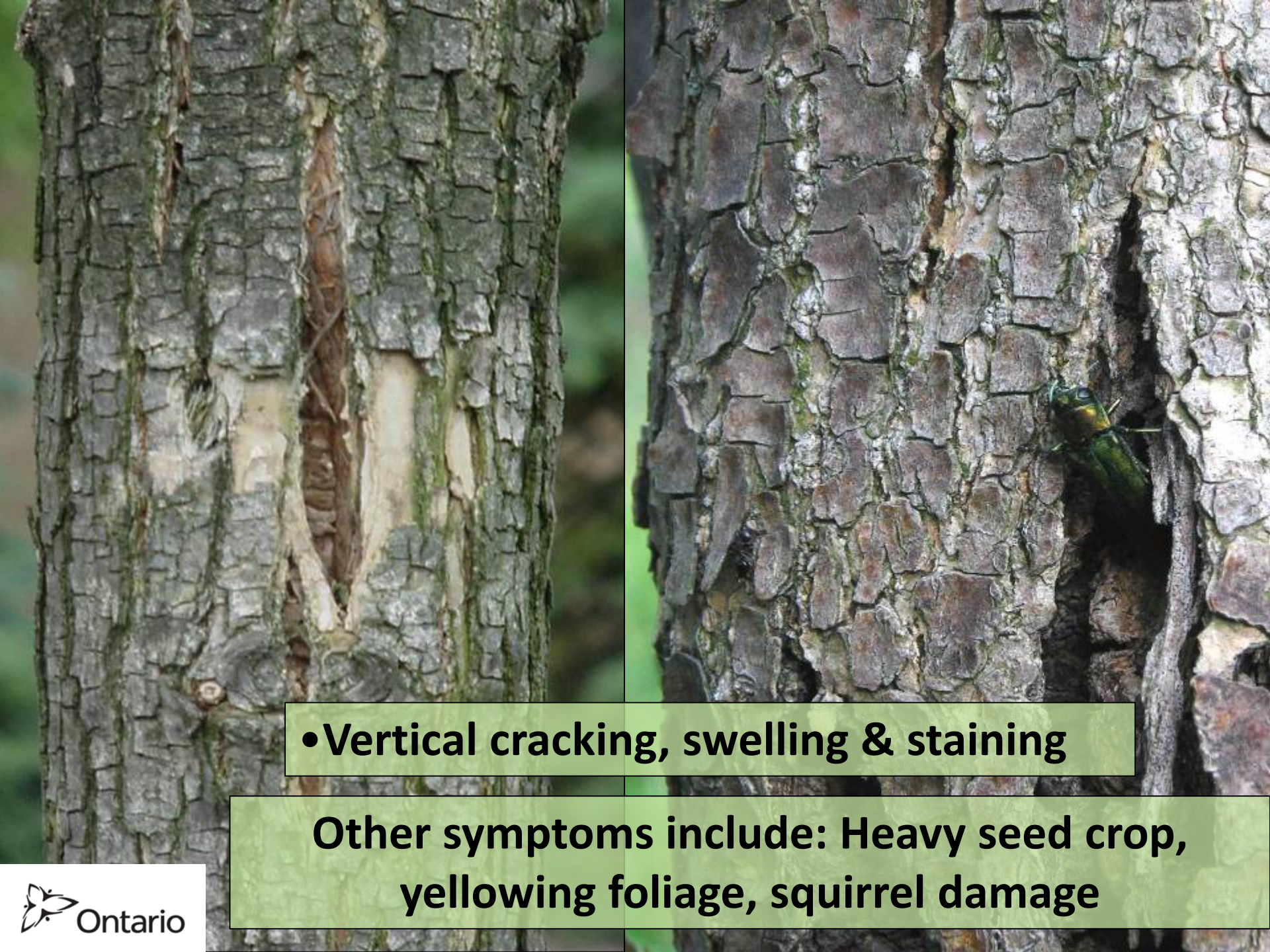
Signs and Symptoms - feeding Notches in Foliage



Ontario

Signs and Symptoms - epicormic shoots

Ontario



- Vertical cracking, swelling & staining

Other symptoms include: Heavy seed crop, yellowing foliage, squirrel damage

Ontario

- **Woodpecker Damage**

Emerald ash borer (*Agrilus planipennis* Fairmaire)

Pest Information

Pest Origins:	**Invasive** – Native to Asia
Pest Type:	Wood Borer
Host Species:	Ash spp.
Infestation Area:	4,843 ha (2016)


CIELAND
xplore
GENERIC


Ontario
MNR Science
Ministry of Natural Resources
MRN Sciences

Ash Decline Mortality

Emerald ash borer 2004-2015 and 2016

Overview

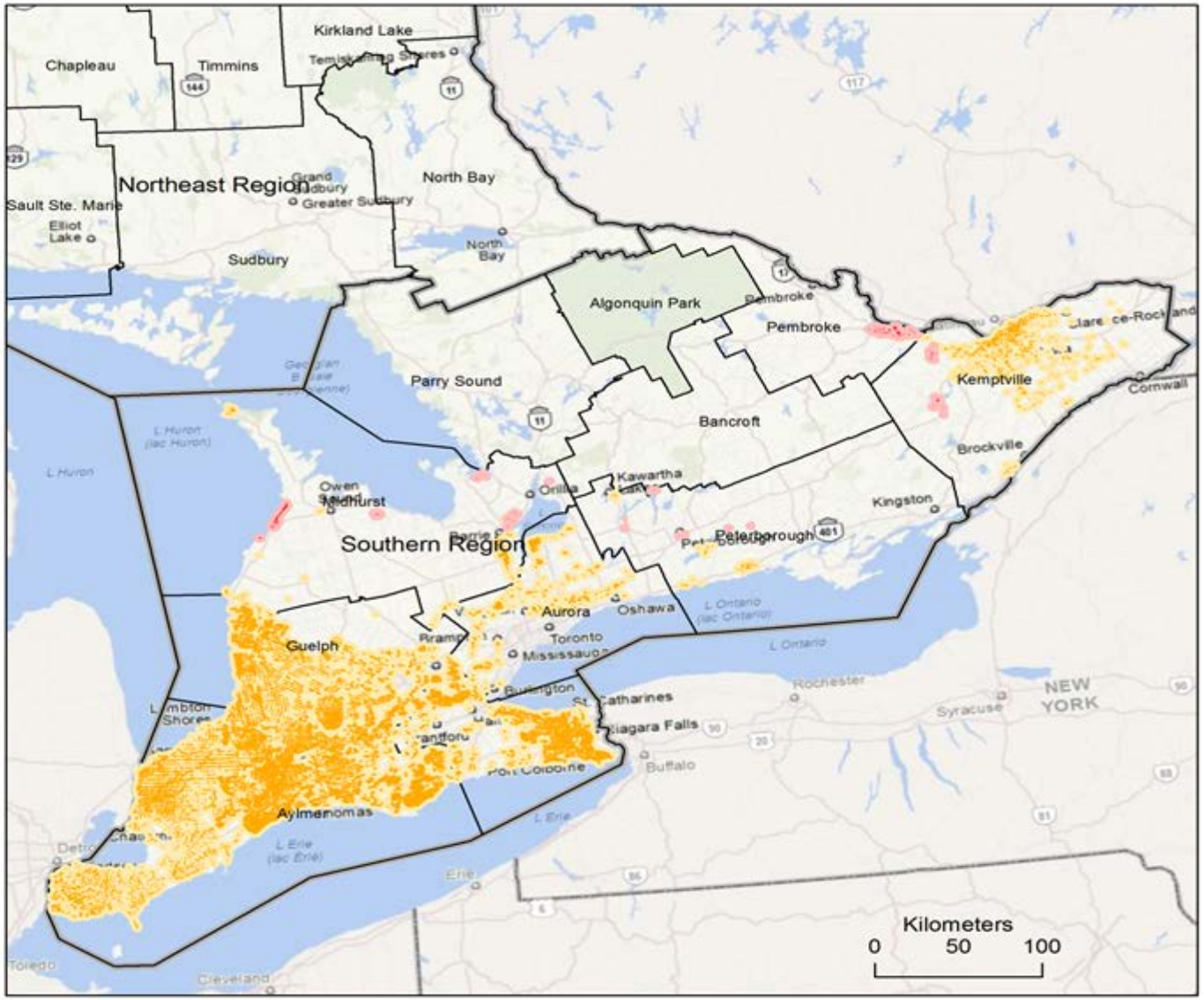
Areas-within-which emerald ash borer caused decline and mortality to ash species.

237,595 ha (2004-2015 cumulative)

4,688 ha 2016

Area of moderate-to-severe decline and mortality 2004-2015

Area of moderate-to-severe decline and mortality 2016



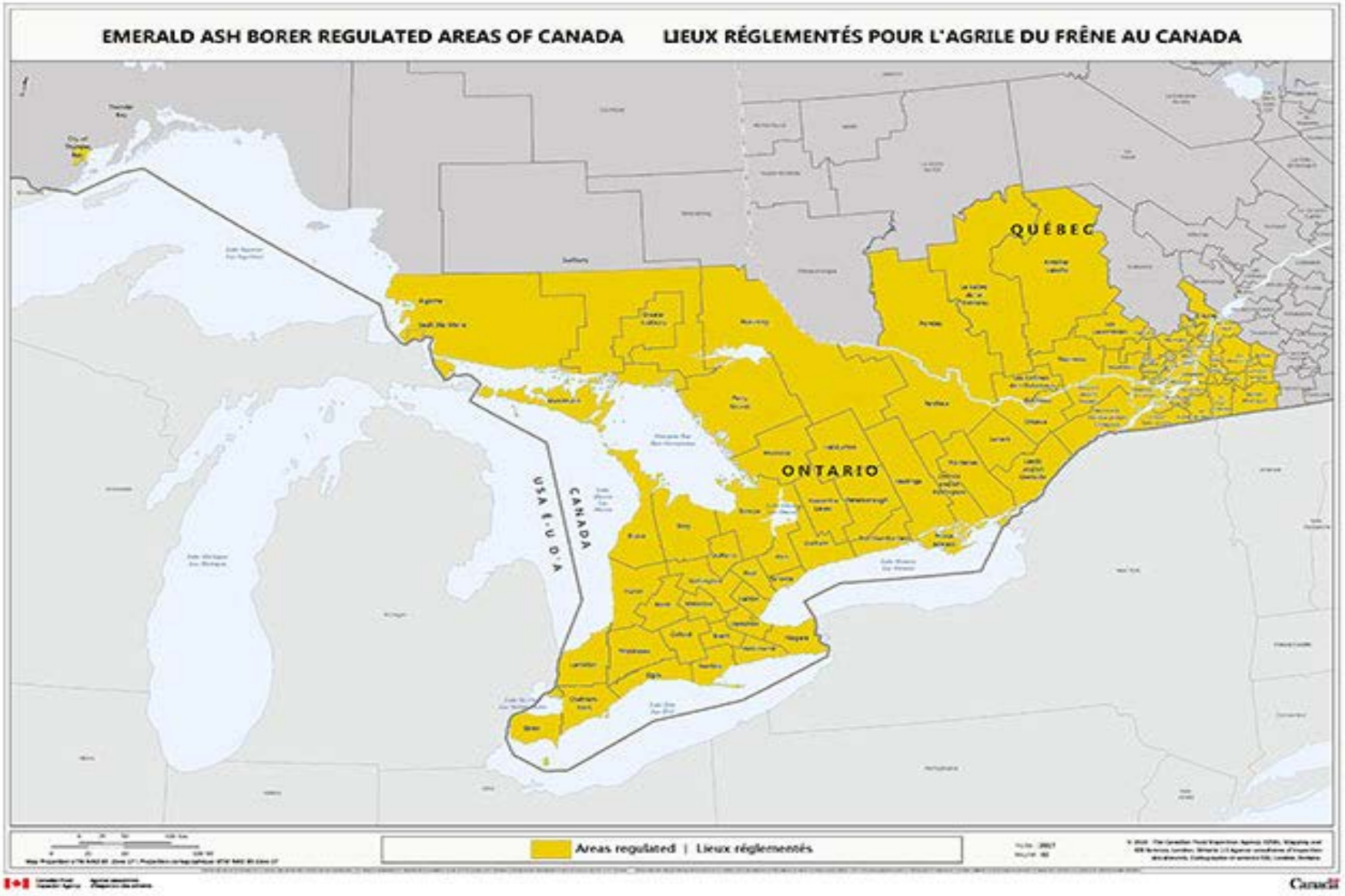
Emerald ash borer tool box

- Surveys and monitoring
- Tree injections
- Branch sampling
- Trapping programs
- Parasitoid program
- Continued research
- Public Awareness
- Regulated areas


PRE-OWNED
OUTFRONT

TREEAZIN®
SYSTEMIC INSECTICIDE
Trees Saving Trees™

EAB Regulated Area



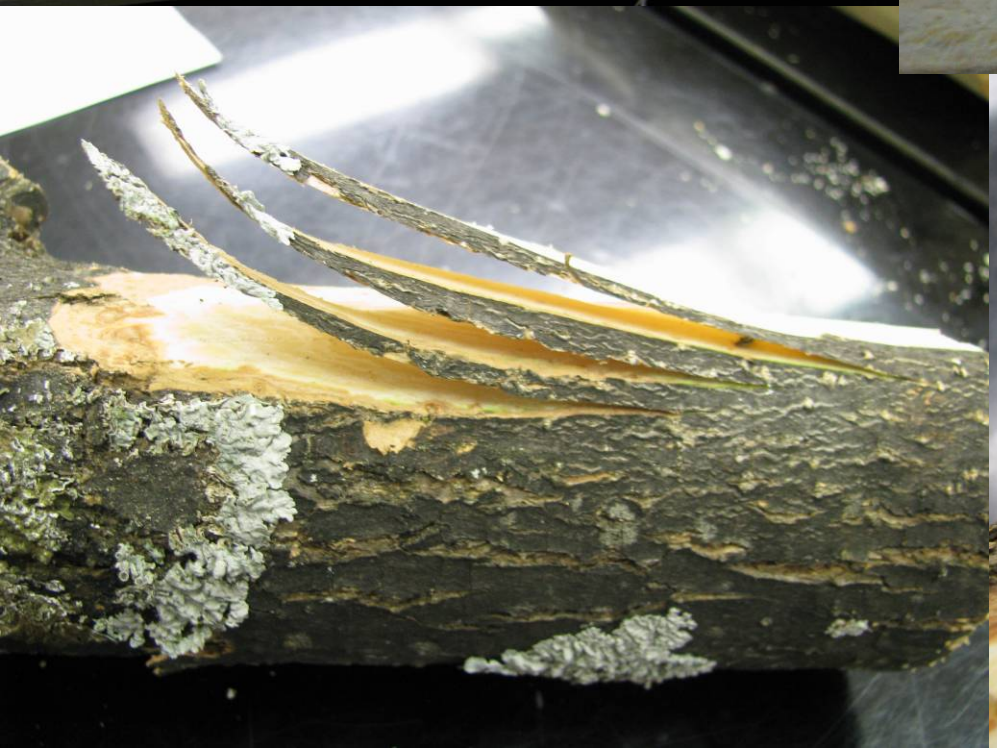
Development of the Branch Sampling Technique

Sampled trees in:

- Toronto
- Pickering
- Sault Ste Marie
- Most with NO signs of EAB

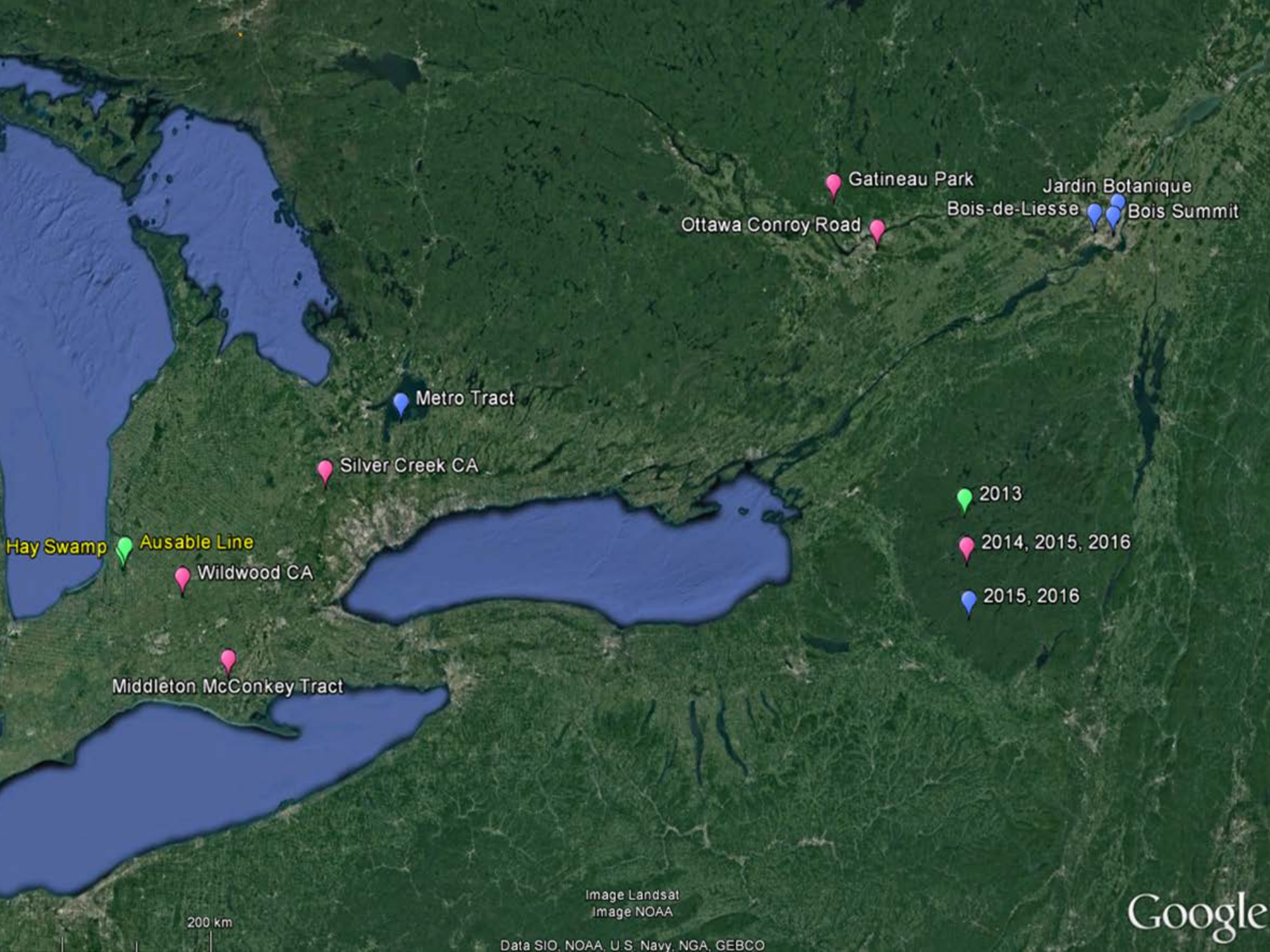

Manitex M2210S


LANSING SQ




mm
1 cm 2
3
4

Parasitoid Research Canadian Forest Service
Dr. Krista Ryall


Gatineau Park
Jardin Botanique
Bois-de-Liesse
Bois Summit
Ottawa Conroy Road
Metro Tract
Silver Creek CA
2013
2014, 2015, 2016
2015, 2016
Hay Swamp
Ausable Line
Wildwood CA
Middleton McConkey Tract
Image Landsat
Image NOAA
200 km
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Google


“Thank You”