

Natural. Valued. Protected.

Ontario's Insect and Disease Concerns

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Overview

Native pests

Introduced pests

Insects

Pathogens

An aerial photograph of a forest landscape. The top portion of the image shows a dense forest with many trees that are brown and dead, indicating a significant pest infestation. Below this, the forest transitions into a greener area with living trees. The text 'Overview' is overlaid in large yellow letters at the top, and 'Native pests' is overlaid in smaller yellow letters in the middle-left area.

Overview

Native pests

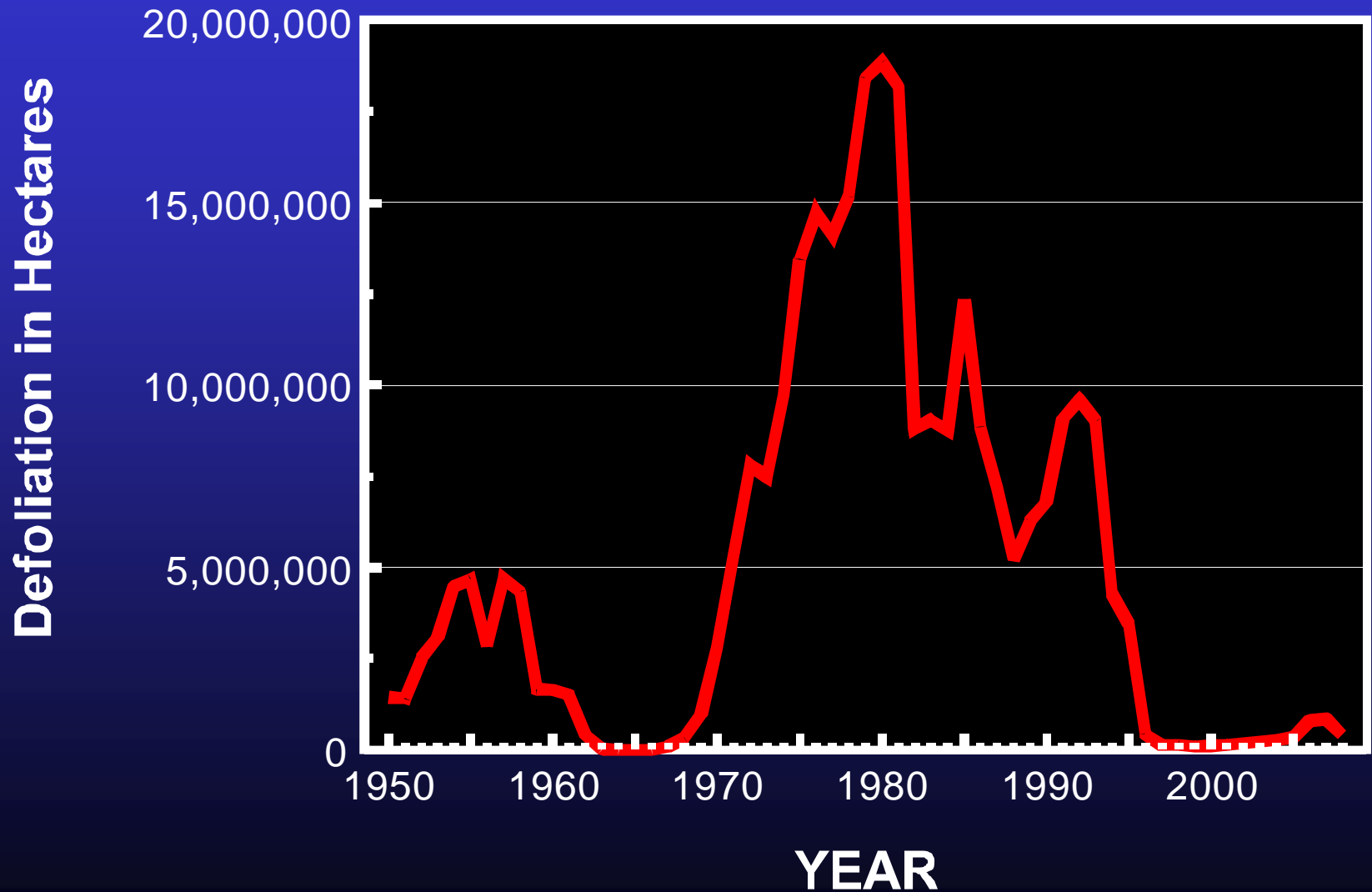


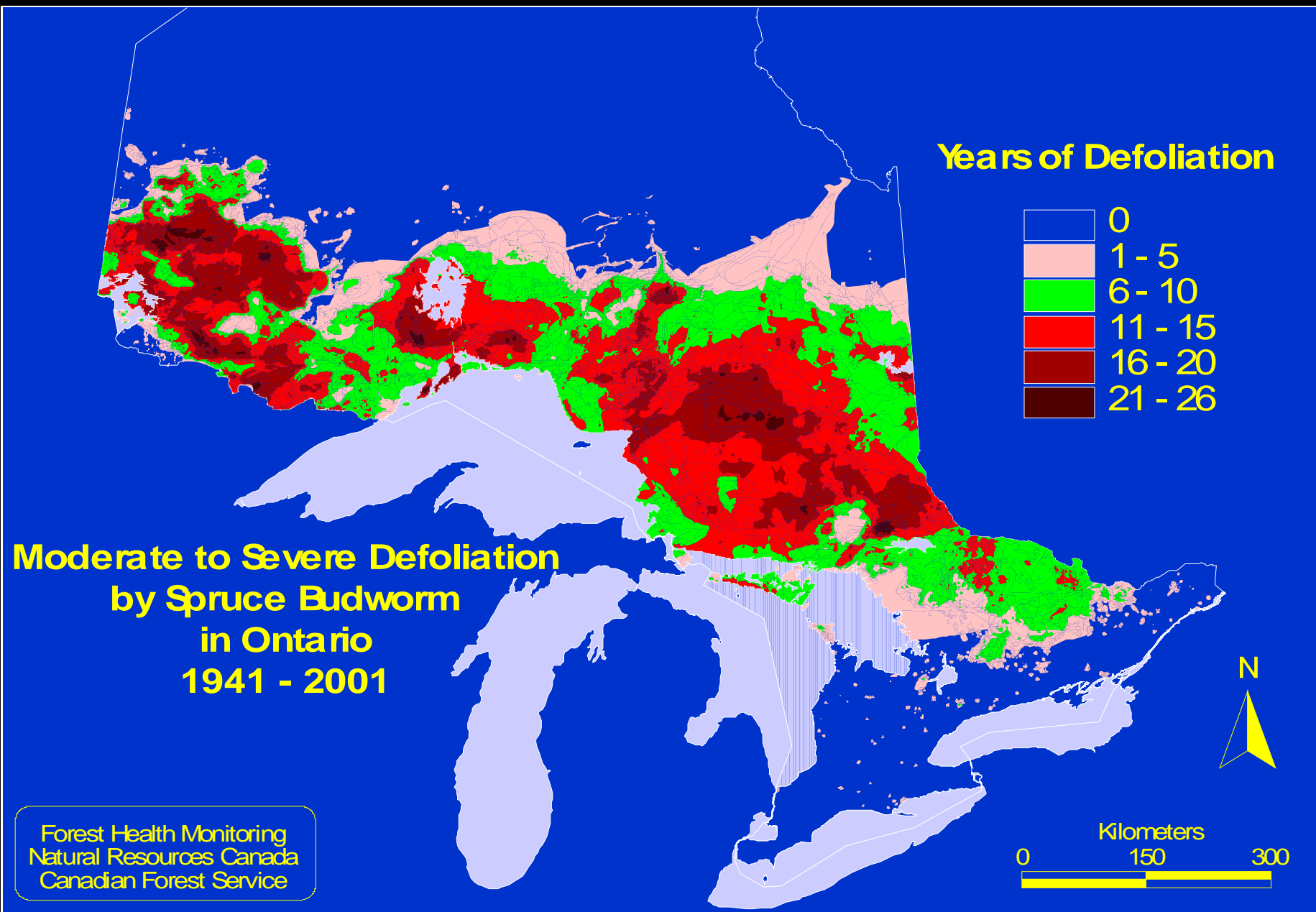
Spruce Budworm
(*Choristoneura fumiferana*)



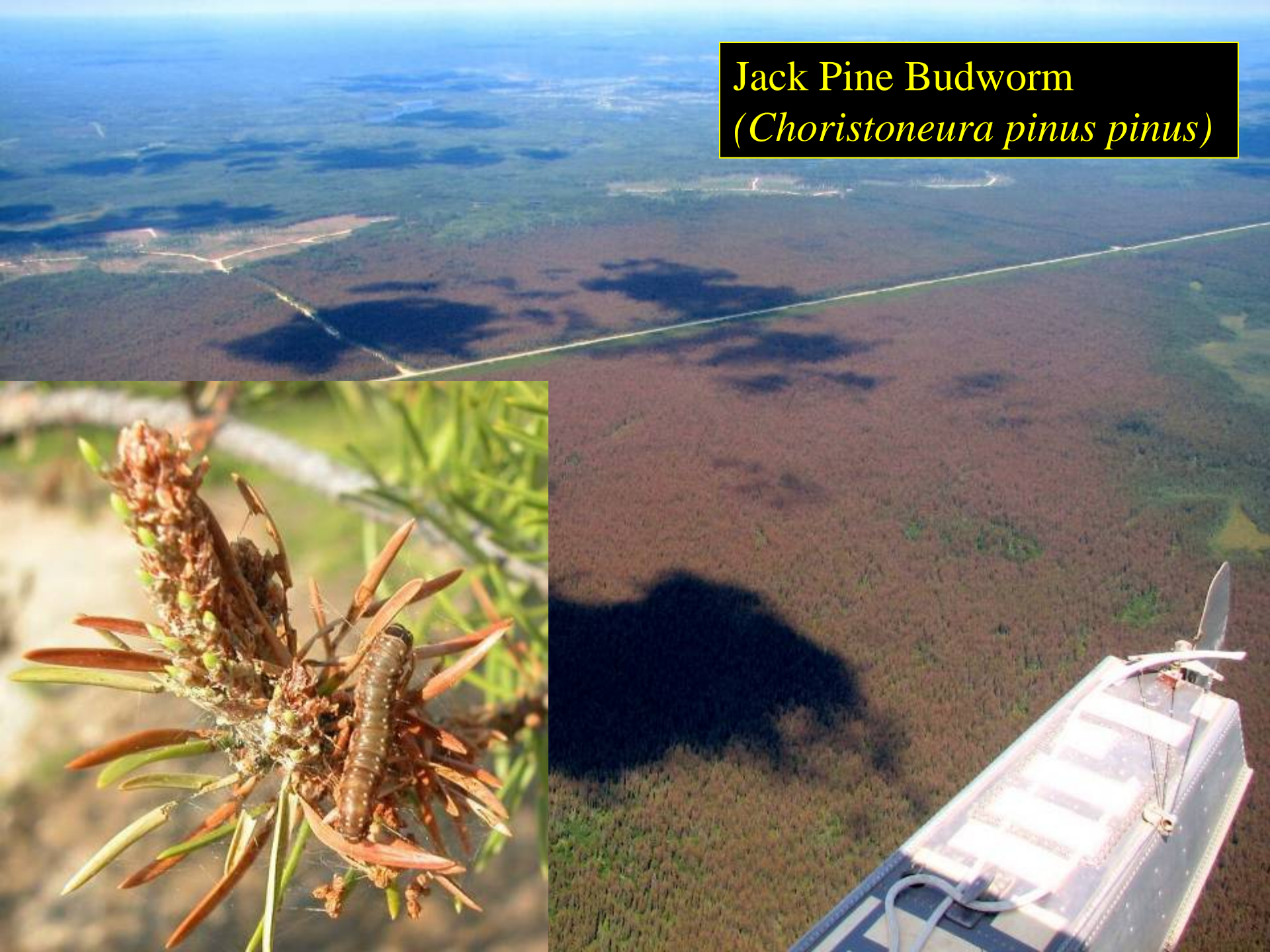
Ontario Spruce Budworm

Moderate to Severe Defoliation



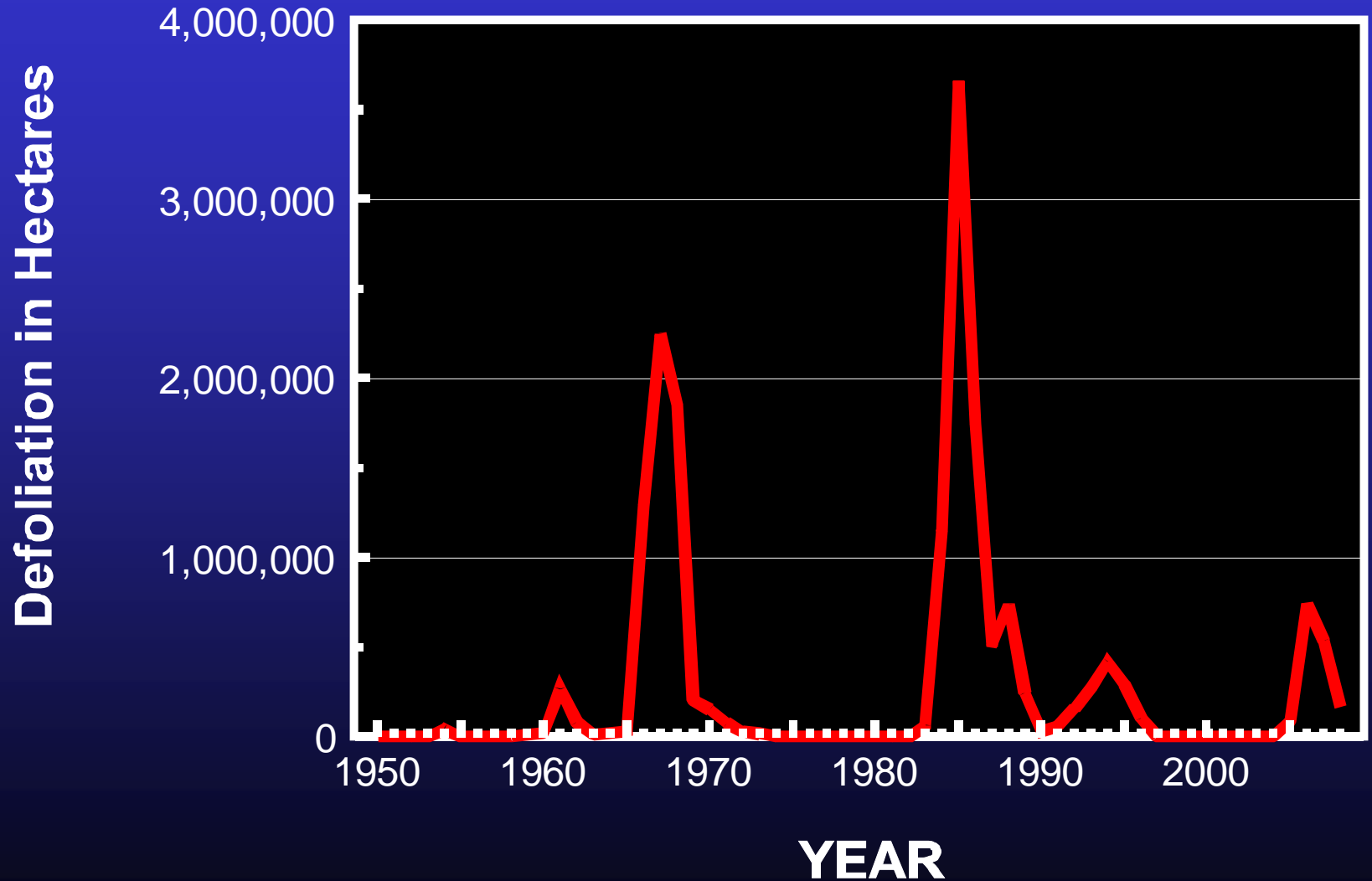


Jack Pine Budworm
(*Choristoneura pinus pinus*)



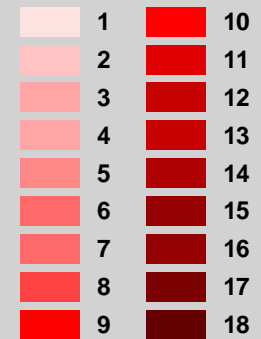
Ontario Jack Pine Budworm

Moderate to Severe Defoliation

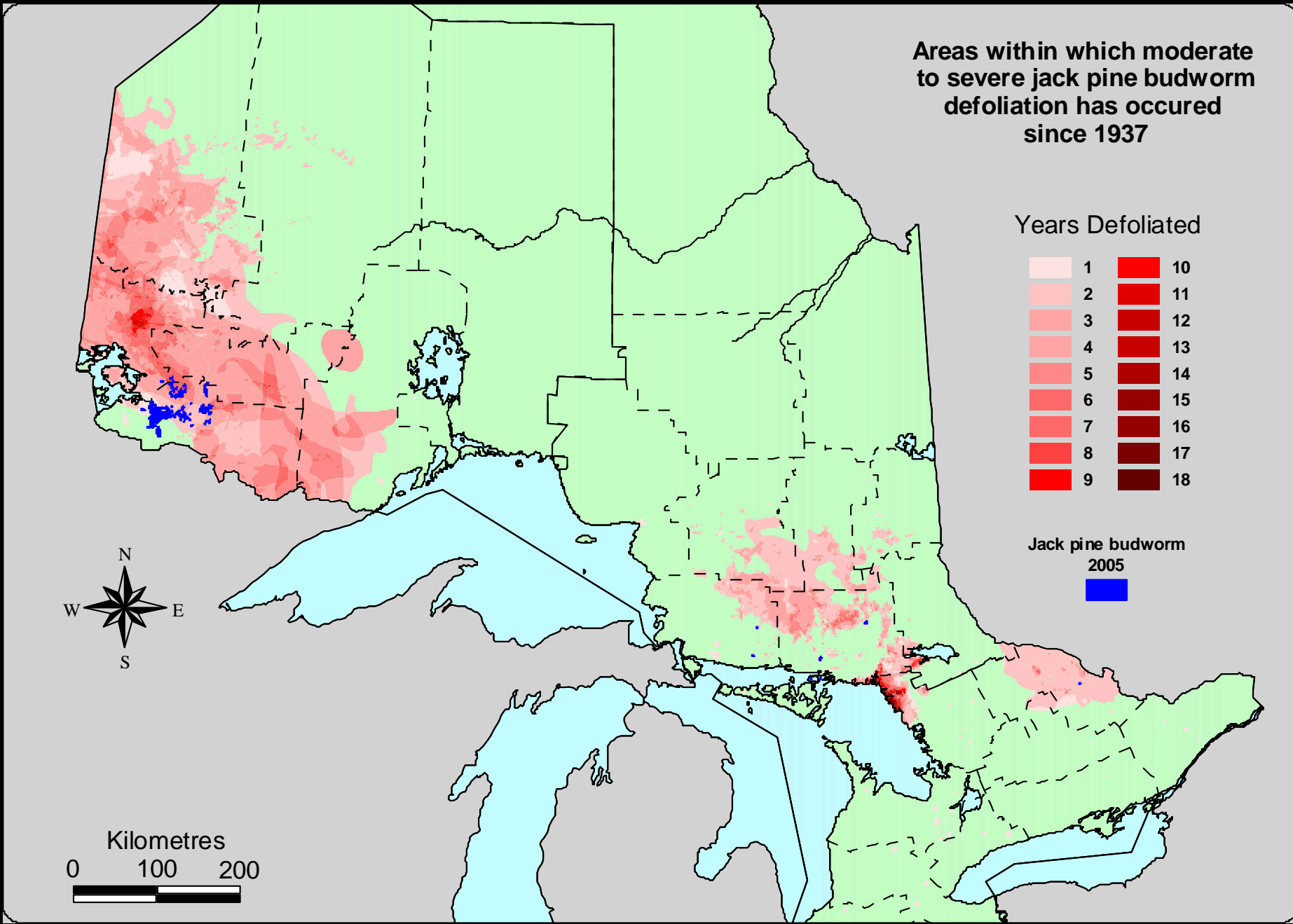
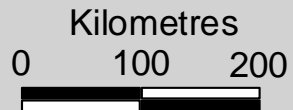


Areas within which moderate to severe jack pine budworm defoliation has occurred since 1937

Years Defoliated



Jack pine budworm 2005



Jack Pine Budworm Mortality



Area within which Jack Pine Budworm caused mortality of jack pine in Ontario in 2008.



137 624 ha

Red Lake

Kenora

Dryden

Fort Frances

Thunder Bay

Timmins

Sault Ste Marie

Sudbury

North Bay

Ottawa

Toronto



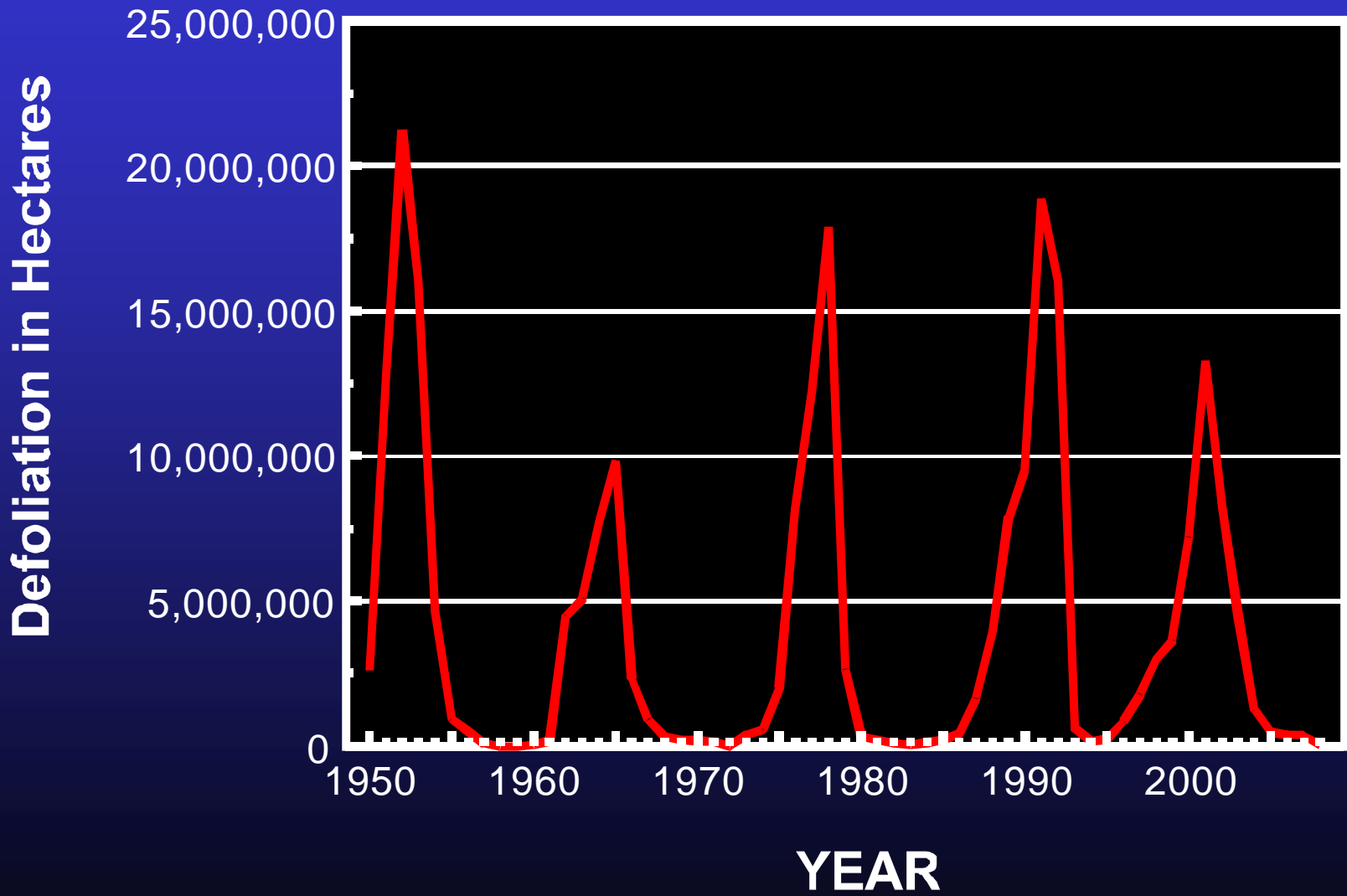
Kilometres

0 50 100 200 300



Forest Tent Caterpillar (*Malacosoma disstria*)

Ontario Forest Tent Caterpillar Moderate to Severe Defoliation





B.t. spray

No B.t. spray

Area within which Forest Tent Caterpillar caused moderate to severe defoliation in Ontario in 2007



371 494 ha

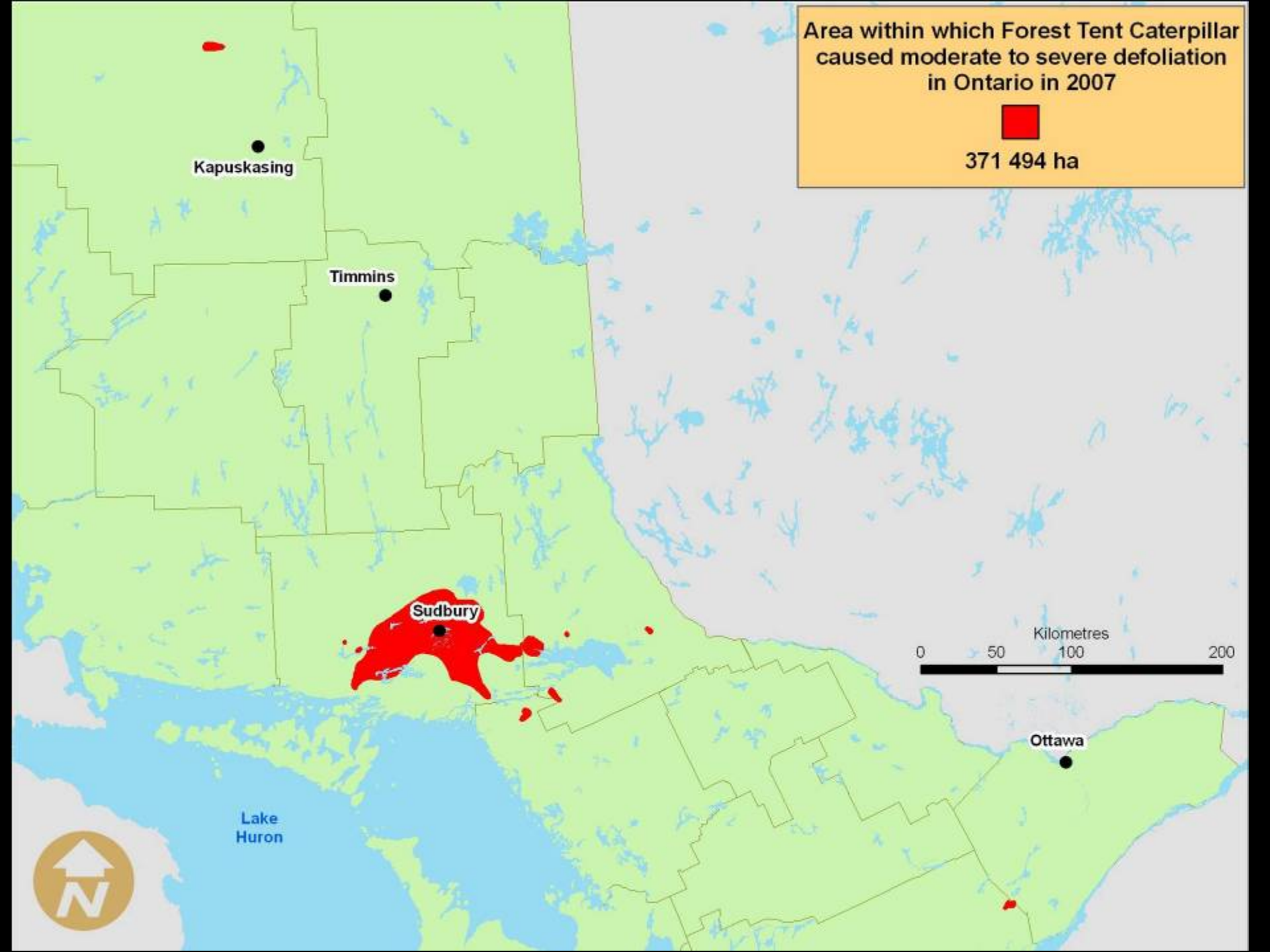
Kapuskasing

Timmins

Sudbury

Ottawa

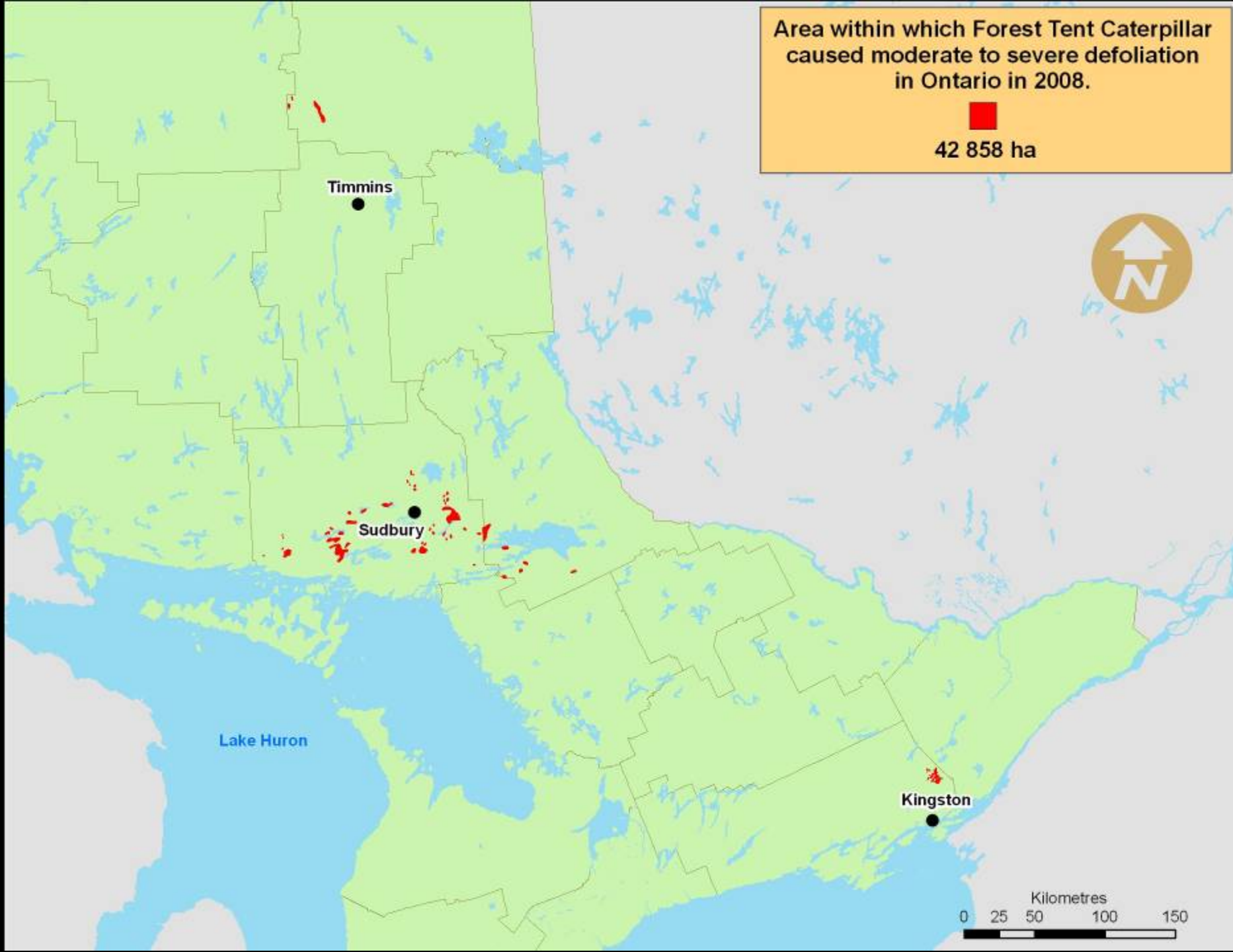
Lake Huron



Area within which Forest Tent Caterpillar caused moderate to severe defoliation in Ontario in 2008.



42 858 ha



Timmins

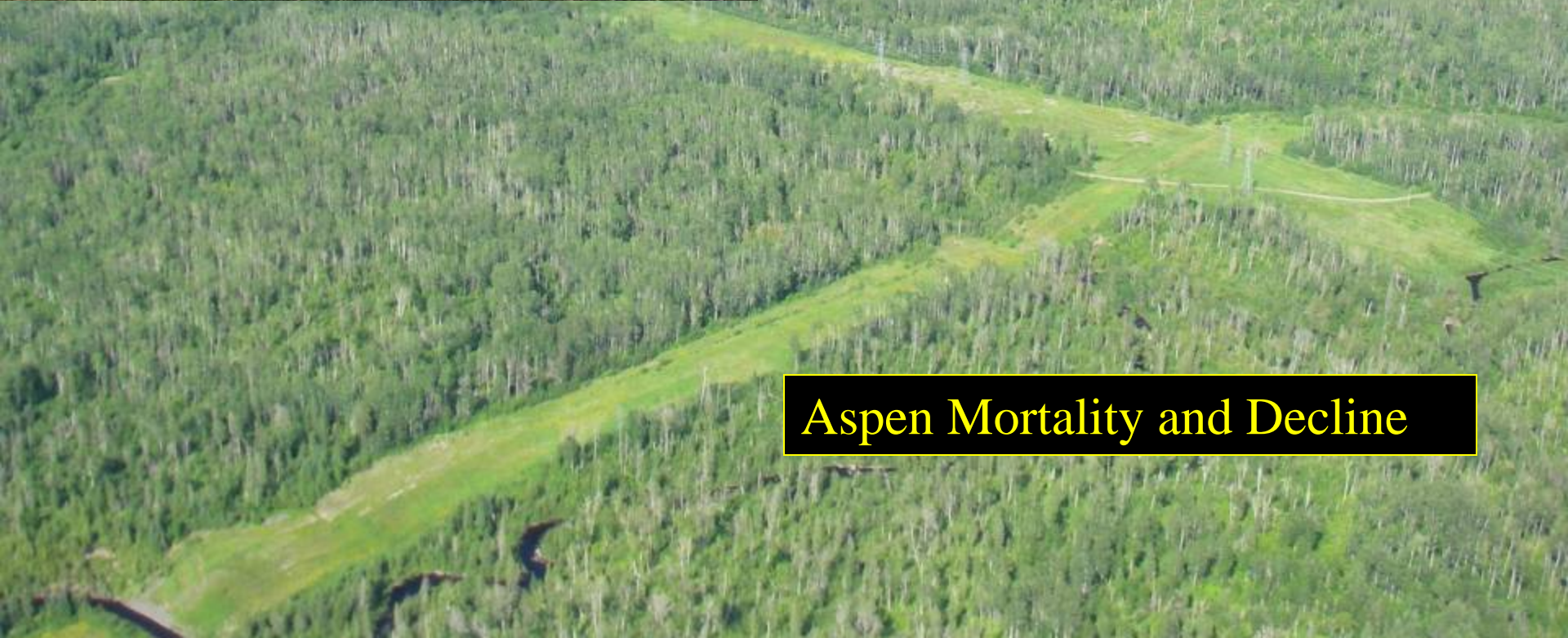
Sudbury

Lake Huron

Kingston

Kilometres

0 25 50 100 150



Aspen Mortality and Decline



Aspen Mortality

Blowdown



An aerial photograph of a forest landscape. The top portion of the image shows a dense forest of trees that are mostly brown and dead, indicating a significant pest infestation. Below this, the forest transitions into a greener area with more living trees. The text 'Overview' is centered in the upper part of the image.

Overview

Introduced pests

Insects

Established and emerging insects

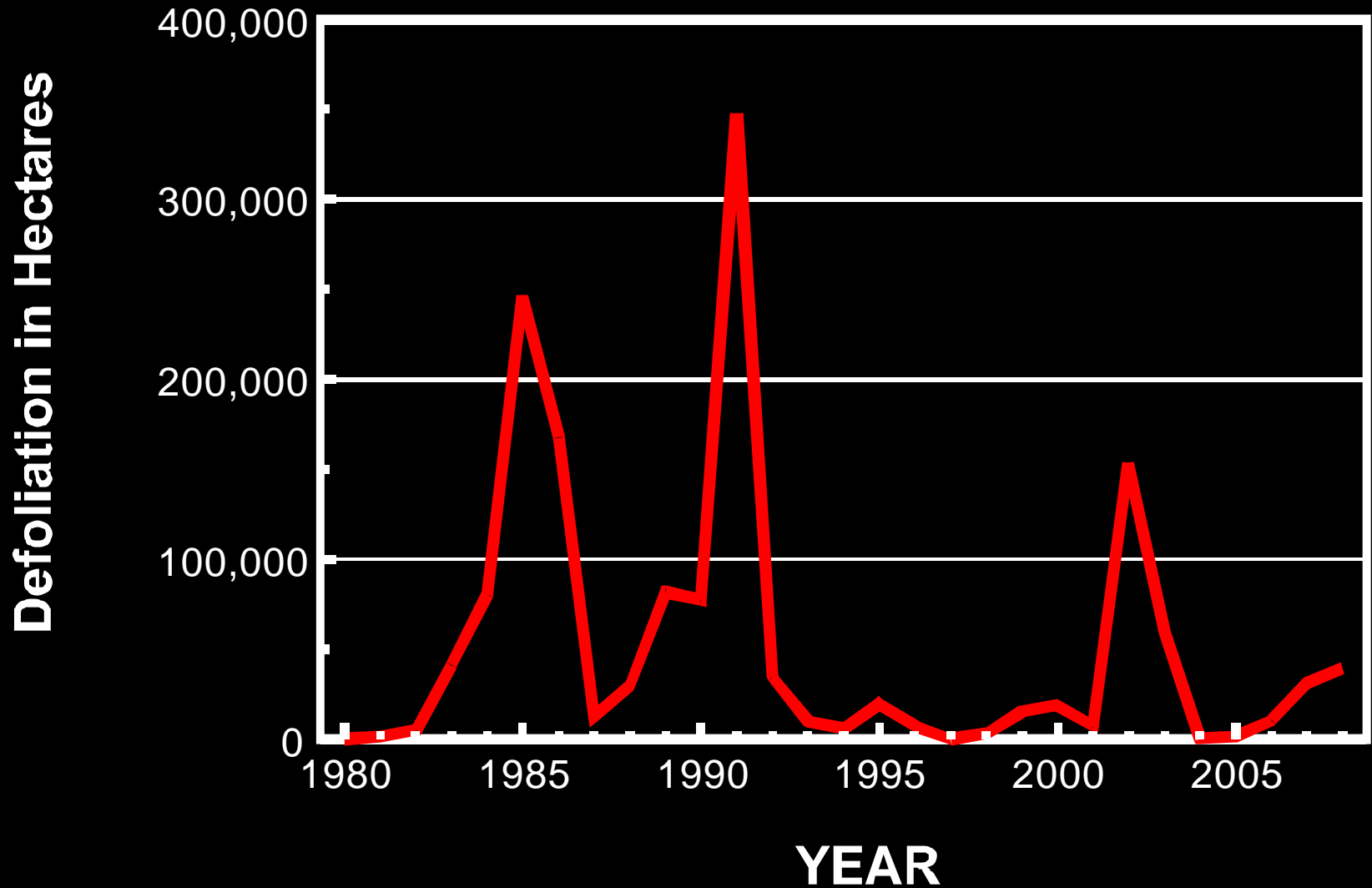
Insect	Originated from:	Ontario	Introduced by:
Gypsy Moth	Eurasia	1969	Science Transportation
Pine Shoot Beetle	Eurasia	1993	Imported wooden packing material
Emerald Ash Borer	Asia	2002	Imported wooden packing material
Asian Long-horned Beetle	Asia	2003	Imported wooden packing material
Sirex Woodwasp	Eurasia	2005	Imported wooden packing material



Gypsy Moth (*Lymantria dispar*)

Ontario Gypsy Moth

Moderate to Severe Defoliation



Area within which Gypsy Moth caused moderate to severe defoliation in Ontario in 2006.



10 350 ha

Sault Ste Marie

Sudbury

North Bay

Ottawa

Kingston

Barrie

Toronto

London

Windsor



Area within which Gypsy Moth caused moderate to severe defoliation in Ontario in 2007.



31 094 ha

Sault Ste Marie

Sudbury

North Bay

Ottawa

Kingston

Barrie

Toronto

London

Windsor



Area within which Gypsy Moth caused moderate to severe defoliation in Ontario in 2008.


39 476 ha

Sault Ste Marie

Sudbury

North Bay

Ottawa

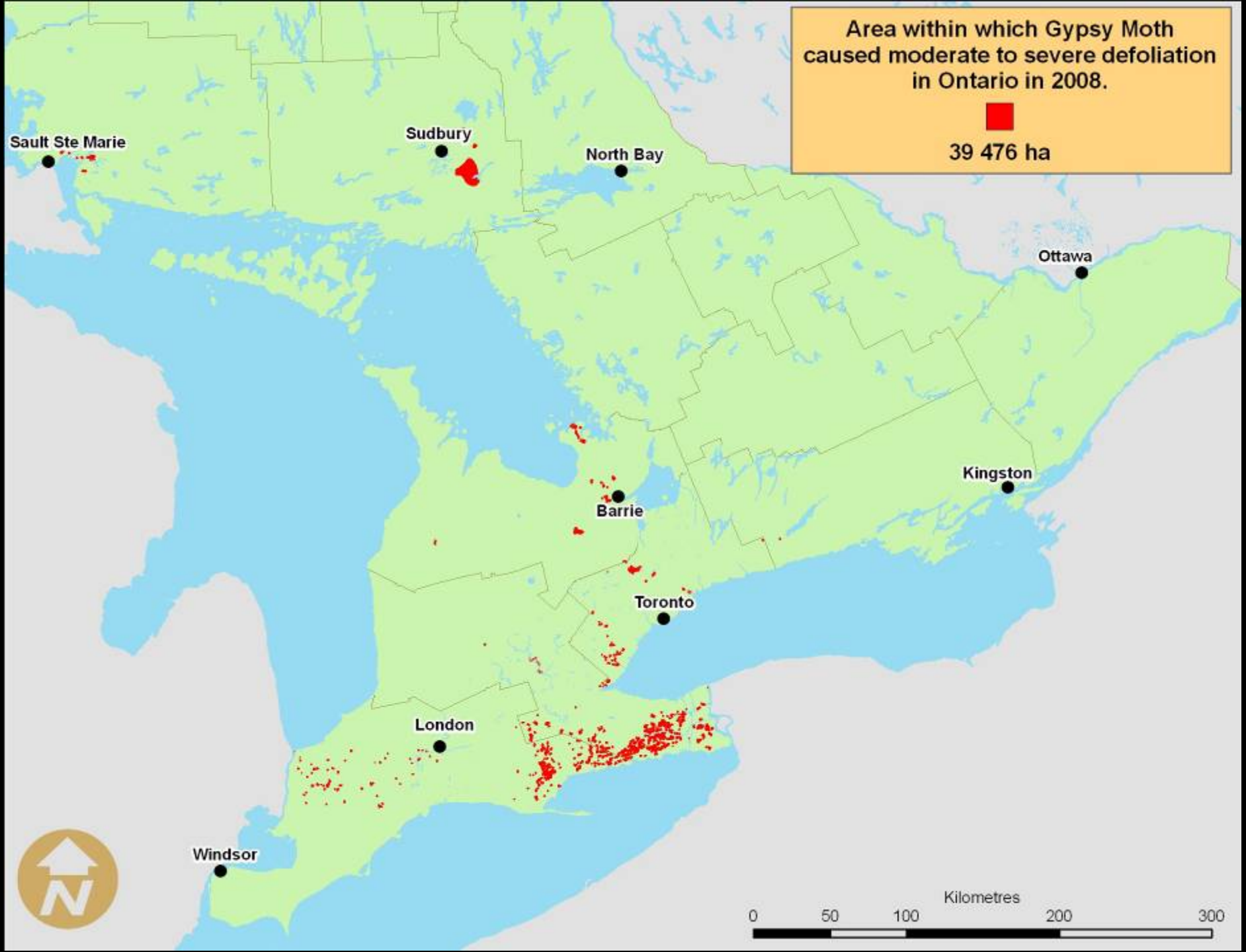
Kingston

Barrie

Toronto

London

Windsor



Gypsy Moth Fungus
(Entomophaga maimaiga)



Nucleopolyhedrosis virus (NPV)



Emerald Ash Borer
(*Agrilus planipennis*)

Why the concern?



Why the concern?

Major forest species

Valuable resource

Several species rare or at risk in Ontario

Early successional hardwoods

Urban street tree throughout Ontario

Shelter belts

Degradation of air quality

Carbon sequestering

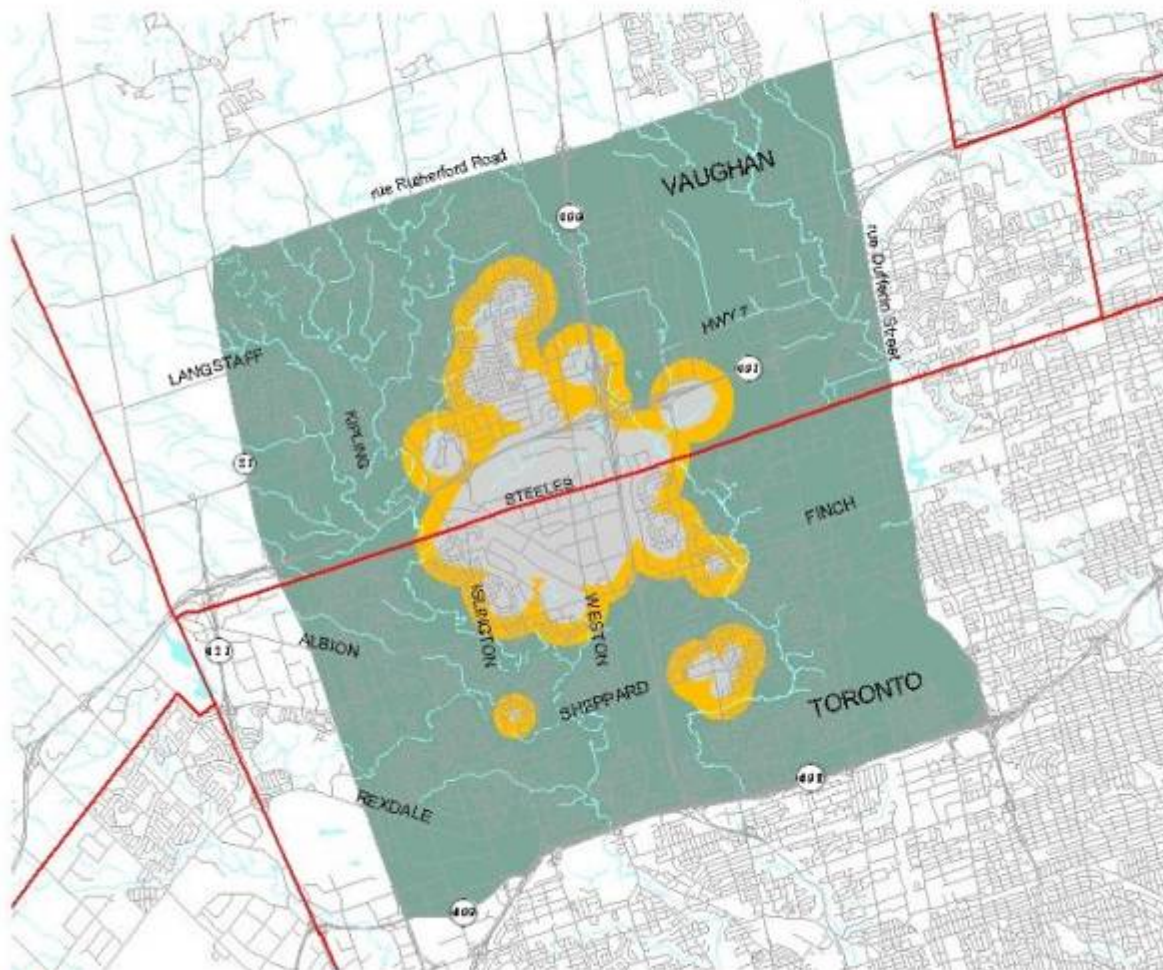
Loss of biodiversity

**Regulated Areas and Confirmed Locations
of Emerald Ash Borer, *Agrilus planipennis*,
in Canada in 2009**





Asian long-horned beetle / Longicorne asiatique Toronto - Vaughan, Ontario



This information is subject to change pending survey results

L'information est sujette à changement selon les résultats des enquêtes de dépistage



2008-02-25

-  Tree Removal Zone / Zone d'enlèvement des arbres
-  Buffer Zone / Zone de protection
-  Regulated Area / Zone réglementée
-  Water / Eau
-  Roads / Rues



Canadian Food Inspection Agency / Agence canadienne d'inspection des aliments

4000 0 4000 Metres / Mètres

Canada

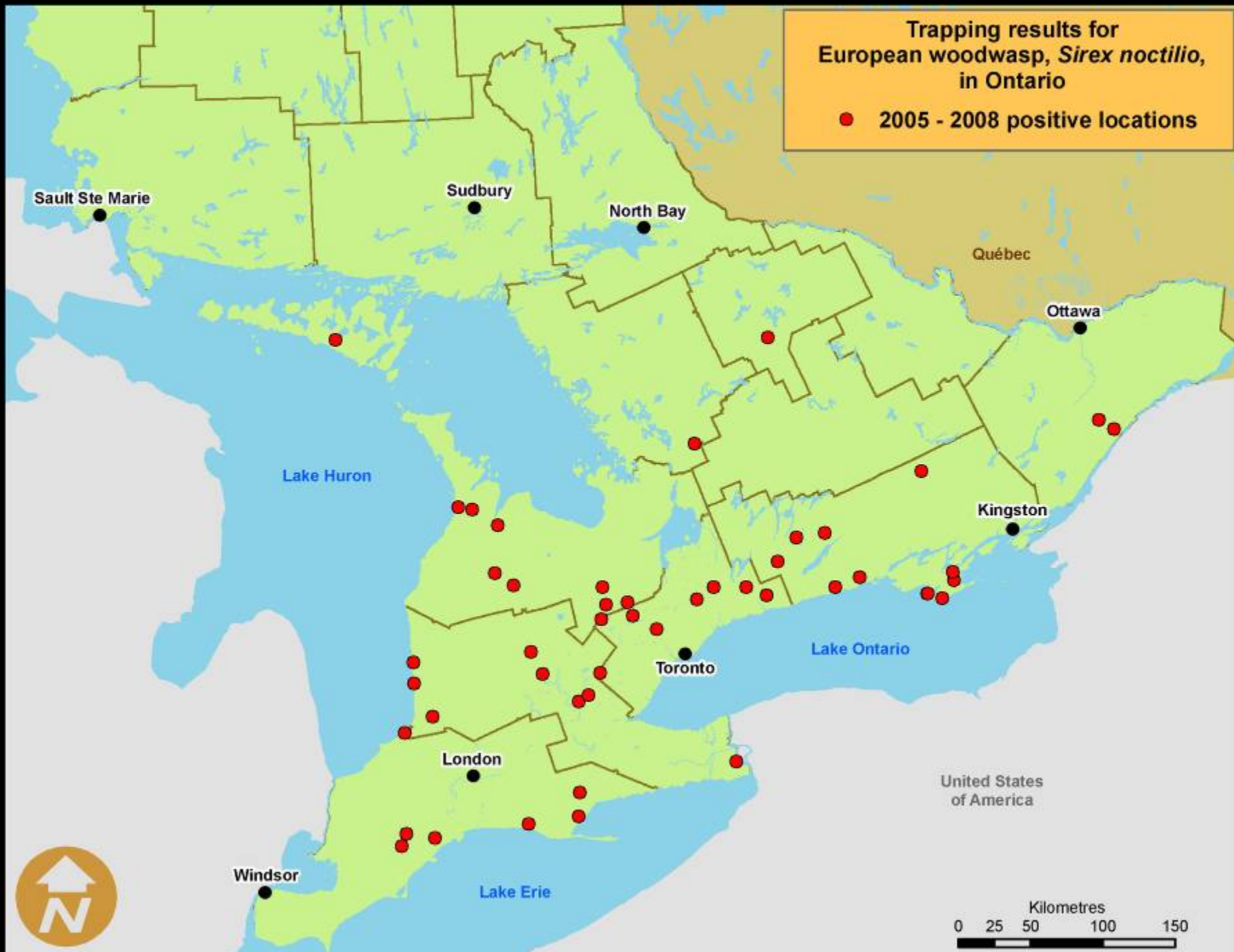


Sirex Woodwasp (*Sirex noctilio*)



Trapping results for
European woodwasp, *Sirex noctilio*,
in Ontario

● 2005 - 2008 positive locations



Mortality in Southern Ontario Red Pine Plantations





Alkaline Upper Soil Horizons causing...

nutrient (Fe) deficiency





Fomes root rot (*Heterobasidion annosum*)



Armillaria root rot (*Armillaria* spp.)

An Insect Pest

black pineleaf scale (*Nuculaspis californica*)



Abiotic/biotic Interaction

H₂O deficit/bark beetles



An aerial photograph of a forest landscape. The top half of the image shows a dense forest of dead, brown trees, indicating a significant die-off. The bottom half shows a healthier forest of green trees. The text is overlaid on the image.

Overview

Introduced pests

Pathogens

Established and emerging diseases

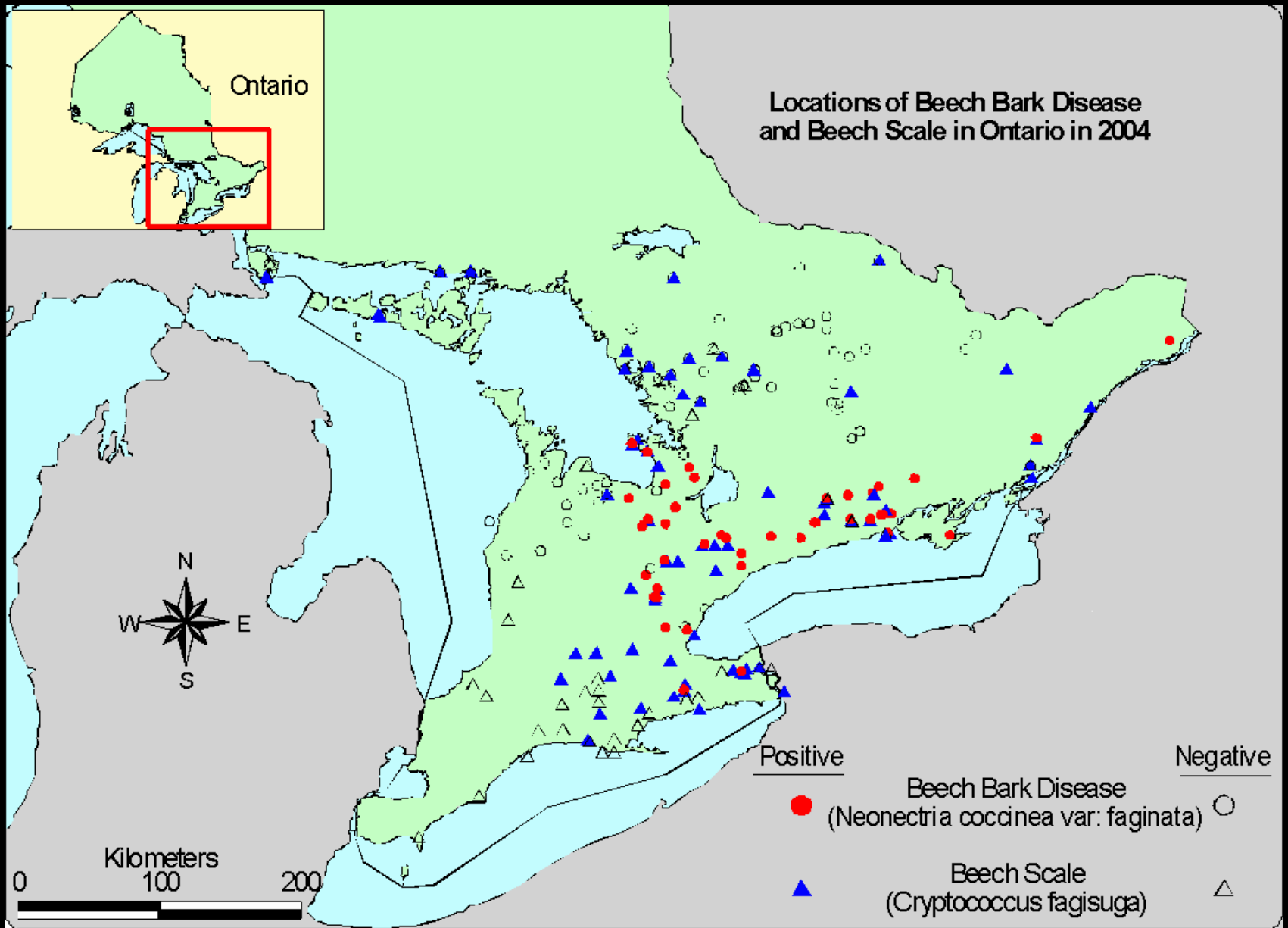
Disease	Europe	North America	Introduced by:
White pine blister rust	1865 Estonia	1800's	Infected nursery stock
Beech bark disease	Native	~ 1890 Nova Scotia	Infected nursery stock
American chestnut blight	1938 Italy	1904 New York	Infected nursery stock
Dutch elm disease	1918 Holland	1930 Ohio 1945 Quebec	Infected wood
Oak wilt		1944	?
Butternut canker		1967	?
Sudden oak death	1994	1995 California	Infected nursery stock?

Beech Bark Disease



Background

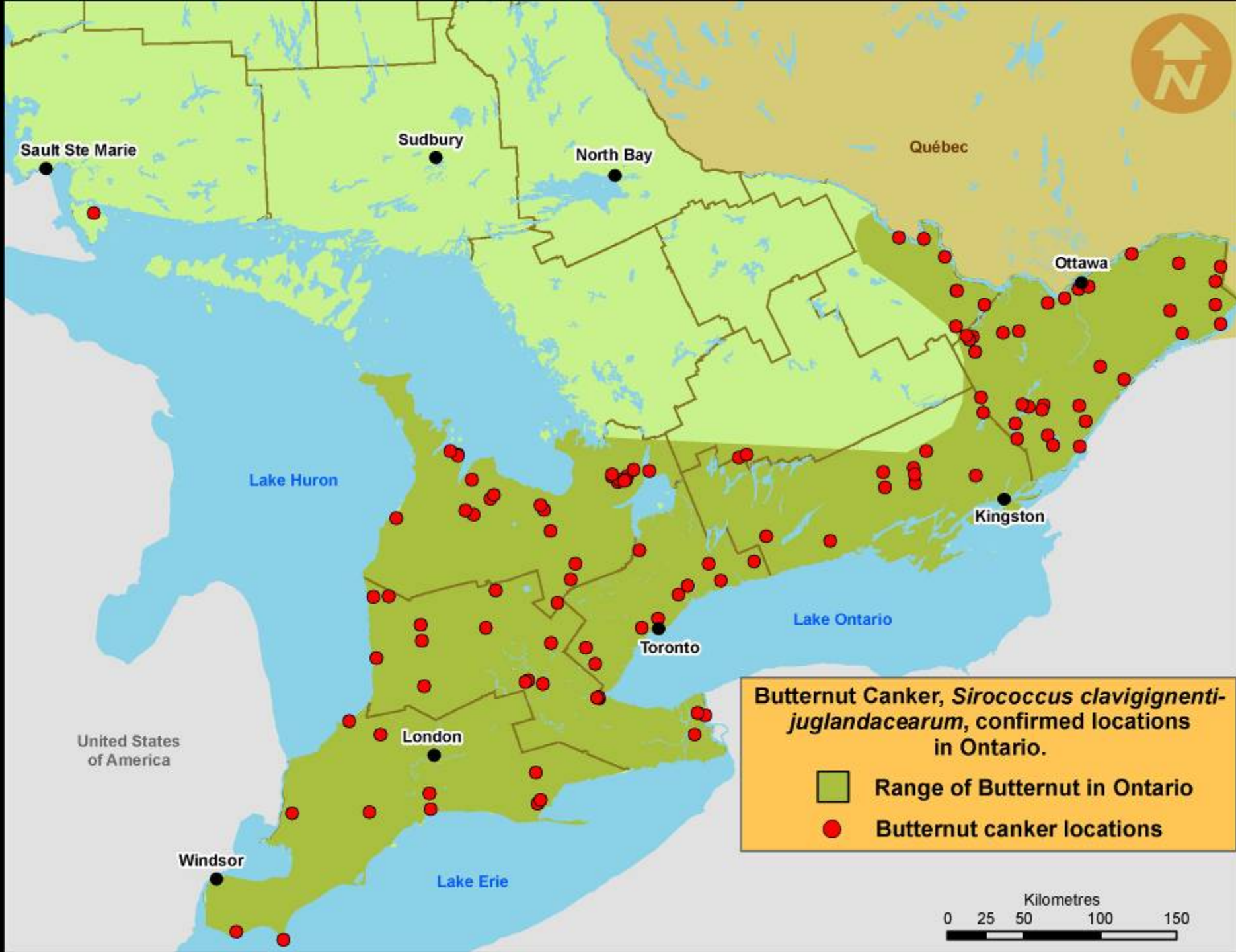
- **Both scale insect and fungus are introduced**
 - beech scale insect (*Cryptococcus fagisuga*)
 - fungus (*Neonectria coccinea* var. *faginata*)
- **Why little initial alarm with BBD?**
 - Historically, economic importance of yellow birch and sugar maple
 - Unofficially BBD acted as a bio-control for beech
- **Why the interest today?**
 - Wood utilization practices
 - Forest management
 - Biodiversity objectives
 - Wildlife
 - Urban forestry





Butternut Canker (*Sirococcus clavignenti-juglandacearum*)





An aerial photograph of a forest showing a clear color gradient. The top portion of the image is dominated by trees with brown and tan foliage, indicating a higher elevation or a different forest type. The bottom portion shows a dense forest of vibrant green trees, likely at a lower elevation. The transition between the two is gradual. The word "Questions?" is overlaid in the center in a yellow, serif font.

Questions?