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# Forest Health Conditions in Ontario 2012







# Forest Health Conditions in Ontario, 2012

Compiled by:

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For more information on forest health in Ontario visit the Natural Resources website:  
[www.ontario.ca/foresthealth](http://www.ontario.ca/foresthealth)

You can also visit the Canadian Forest Service website: [www.glfc.cfs.nrcan.gc.ca](http://www.glfc.cfs.nrcan.gc.ca)

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Birch skeletonizer larva.

## Forest Health Conditions in Ontario - 2012

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Surveying for insect damage.



## Executive Summary

The Forest Health Conditions Report 2012 provides information on the status and impact of forest disturbances on the health of Ontario's Forests. The report summarizes forest health information for the period of January 1, 2012 to December 31, 2012. The following is a summary of the key major forest health disturbances in 2012:

### Invasive Species

- Emerald ash borer continues to be a serious threat in several locations across southern Ontario (4,550ha).

### Forest Insects

- Aspen twoleaf tier increased significantly in 2012 (175,066 ha), predominately in Northeast Region.
- Spruce budworm populations have been trending lower (147,844 ha) and are at 60% of the levels reported in 2011.
- Jack pine budworm populations continue to decline (61,836 ha) with mainly two small, remnant populations in Northwest and Southern Regions.

### Forest Diseases

- Beech bark disease continues to expand its range in Southern Region.

### Abiotic- Weather Events

- Winter browning was the most significant forest health disturbance event mapped in 2012 (281,116 ha). Northwest Region had the majority of the damage.
- Drought conditions caused 174,607 ha of disturbance area across all three regions. Southern Region had the highest levels of drought in 2012.

### Minor Forest Disturbances

- A number of minor disturbances were also reported during the period. In total, 24 minor forest health concerns were identified and have been described in the report.



Winter browning in jack pine.

## Introduction

Forest health monitoring in Ontario is conducted as a partnership between the Ontario Ministry of Natural Resources (MNR) and Natural Resources Canada- Canadian Forest Service (CFS). Both organizations also collaborate extensively with the Invasive Species Centre.

Recording and reporting forest health conditions in Ontario, includes monitoring the occurrence of both native and invasive biotic (eg. insects, disease) and abiotic (e.g. snow and drought damage) disturbances and events. The monitoring program consists of permanent and temporary sample plots, plantation surveys and aerial mapping of forest disturbances. All forest areas are included; provincial Crown land, federal lands, First Nation territories, parks, private land and urban areas.

The report is a comprehensive look at biotic and abiotic disturbances and events in Ontario. However, there may be locations of minor damage or unmapped events that are not included in this report. In addition, this report does not include information about fire disturbances. To access fire information, refer to the Annual Report on Forest Management.

Insect samples are collected and sent to the CFS – Great Lakes Forestry Centre for identification of causal agents. Disease samples are sent to the Ontario Forest Research Institute. Throughout the field season, forest health updates are distributed to client groups including; forest industry, government, landowners and other interested stakeholders.

The Forest Health Conditions Report presents the results of annual surveys and monitoring activities undertaken by MNR. The report has been produced in Ontario by the MNR since 2003 and prior to that by the CFS dating back to 1995. It was preceded by annual reports of the Forest Insect and Disease Survey, also produced by CFS.

The report covers the period of January 1, 2012 to December 31, 2012. The report outlines forest health major disturbances and minor disturbances, invasive species surveys, insect pest management programs and forest health research programs. A variety of information is reported on individual species including: key provincial facts, regional distribution, summary tables of impact and specific mapping of occurrence locations. Factsheets have also been produced for a number of species which provide detailed information on life-cycle, description, hosts, control measures and symptoms or damage.

The report allows the reader to easily navigate between regions and disturbance types, using an interactive Table of Contents. Quick links are also provided in each disturbance report, allowing the reader to quickly navigate to applicable maps and factsheets. More information on forest health in Ontario is available at: <http://www.ontario.ca/forestshealth>

Additional information on trees, insects and diseases in Canada is also available on the CFS website: <http://tidcf.nrcan.gc.ca/home>



Satin moth larvae.



## Pest Index - Major Forest Disturbances

Major forest disturbances are insect, disease, or weather events that affect very large areas, are not specific to a region, or have affected more than one region in the past. These disturbances are events that are of provincial significance.

Common Name	Latin Name	Type	Page
Aspen twoleaf tier	<i>Enargia decolor</i> (Walker)	Insect	17
Beech bark disease	<i>Neonectria faginata</i> (Lohman et al) Castl.	Disease	20
Birch casebearer	<i>Coleophora serratella</i> (L.)	Insect	22
Birch skeletonizer	<i>Bucculatrix canadensisella</i> Chambers	Insect	24
Blowdown	n/a	Abiotic	26
Brown spot needle blight	<i>Mycosphaerella dearnessii</i> M.E. Barr	Disease	30
Cedar leafminer complex	Various species	Insect	32
Drought damage	n/a	Abiotic	35
Eastern larch beetle	<i>Dendroctonus simplex</i> LeConte	Insect	45
Emerald ash borer	<i>Agrilus planipennis</i> Fairmaire	Insect	39
Forest tent caterpillar	<i>Malacosoma disstria</i> Hubner	Insect	47
Gypsy moth	<i>Lymantria dispar</i> (L.)	Insect	54
Jack pine budworm	<i>Choristoneura pinus pinus</i> Freeman	Insect	57
Larch casebearer	<i>Coleophora laricella</i> (Hubner)	Insect	62
Large aspen tortrix	<i>Choristoneura conflictana</i>	Insect	65
Pine false webworm	<i>Acantholyda erythrocephala</i> (Wlk.)	Insect	68
Snow damage	n/a	Abiotic	71
Spruce budworm	<i>Choristoneura fumiferana</i> Clemens	Insect	74
Winter browning	n/a	Abiotic	77



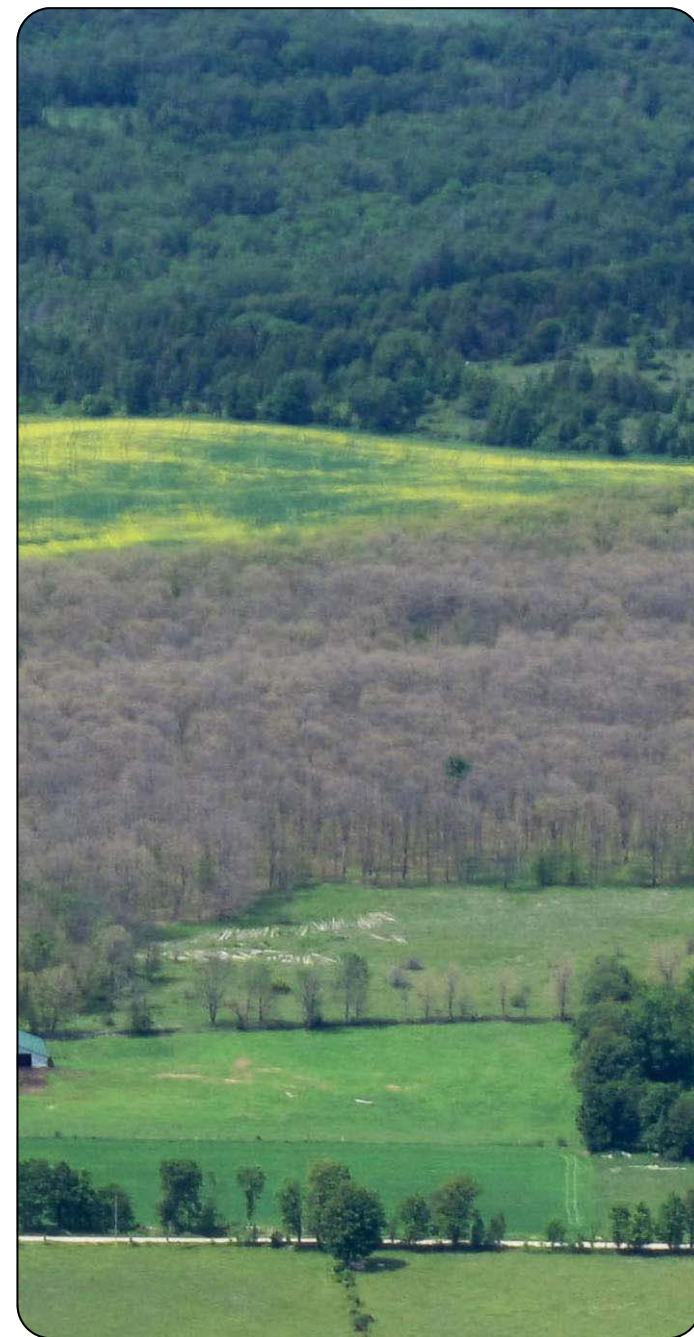
Blowdown near Red Lake.



## Pest Index - Minor Forest Disturbances

Minor forest disturbances have been identified regionally by forest health surveys. These disturbances could have local or regional significance to forest health conditions.

Common Name	Latin Name	Type	Page
American aspen beetle	<i>Gonioctena americana</i> (Schaeff)	Insect	79
Basswood leafminer	<i>Baliosus nervosus</i> (Panz.)	Insect	79
Beech scale	<i>Cryptococcus fagisuga</i> Linding.	Insect	80
Birch sawfly	<i>Arge pectoralis</i> (Leach)	Insect	80
Cherry scalloped shell moth	<i>Hydria prunivorata</i> (Fgn.)	Insect	81
Diplodia tip blight	<i>Sphaeropsis sapinea</i> (Fr.) Dyko & B.Sutton	Disease	81
Dogwood anthracnose	<i>Discula destructiva</i> Redlin	Disease	82
Dooksii needle blight	<i>Lophophacidium dooksii</i> Corlett & Shoemaker	Disease	82
Dutch elm disease	<i>Ophiostoma novo-ulmi</i> Brasier	Disease	83
Euonymus webworm	<i>Yponomeuta euonymella</i> Cham.	Insect	83
Fall cankerworm	<i>Alsophila pometaria</i> (Harr.)	Insect	84
Greenstriped mapleworm	<i>Dryocampa rubicunda</i> (F.)	Insect	84
Ink spot of aspen	<i>Cibornia whetzellii</i> (Seaver) Seaver	Disease	85
Japanese beetle	<i>Popillia japonica</i> Newman	Insect	85
Larch needle cast	<i>Mycosphaerella laracina</i> (R.Hortig) Migula	Disease	86
Mourningcloak butterfly	<i>Nymphalis antiopa</i> (L.)	Insect	86
Pine shoot beetle	<i>Tomicus piniperda</i> (L.)	Insect	87
Satin moth	<i>Leucoma salicis</i> (L.)	Insect	87
Septoria leaf spot - Birch	<i>Septoria betulae</i> Pass	Disease	88
Septoria leaf spot - Poplar	<i>Mycosphaerella populicola</i> G.E. Thomps.	Disease	88
Western gall rust	<i>Peridermium harknessii</i> J.P. Moore	Disease	89
White pine blister rust	<i>Cronartium ribicola</i> J.C. Fisch.	Disease	89
Willow flea weevil	<i>Isochnus rufipes</i> (LeConte)	Insect	90
Yellowheaded spruce sawfly	<i>Pikonema alaskensis</i> Rohwer	Insect	90



Forest tent caterpillar defoliation



## Pest Index - Invasive Forest Species

Invasive forest species are insects or diseases that are not native to Ontario. Invasive species have the potential or proven ability to have deleterious effects on forest health, tree health, ecosystem functioning, or social or economic values.

Common Name	Latin Name	Type	Page
Beech bark disease	<i>Neonectria faginata</i> (Lohman et al.) Castl.	Disease	20
Beech scale	<i>Cryptococcus fagisuga</i> Linding	Insect	80
Birch casebearer	<i>Coleophora serratella</i> (L.)	Insect	22
Dogwood anthracnose	<i>Discula destructiva</i> Redlin	Disease	82
Dutch elm disease	<i>Ophiostoma novo-ulmi</i> Brasier	Disease	82
Emerald ash borer	<i>Agrilus planipennis</i> Fairmaire	Insect	39
Euonymus webworm	<i>Yponomeuta euonymella</i> Cham.	Insect	83
Gypsy moth	<i>Lymantria dispar</i> (L.)	Insect	54
Japanese beetle	<i>Popillia japonica</i> Newman	Insect	85
Larch case bearer	<i>Coleophora laricella</i> (Hubner)	Insect	62
Larch needle cast	<i>Mycosphaerella laracina</i> (R.Hortig) Migula	Disease	86
Pine false webworm	<i>Acantholyda erythrocephala</i> (L.)	Insect	68
Pine shoot beetle	<i>Tomicus piniperda</i> (L.)	Insect	87
Satin moth	<i>Leucoma salicis</i> (L.)	Insect	87
White pine blister rust	<i>Cronartium ribicola</i> J.C. Fisch.	Disease	89



White pine blister rust.



## Mapped Area

Major forest disturbances are mapped to quantify current status and to provide trend analysis. The following table outlines the total area of mapped damage by severity class for major disturbances in 2012.

Common Name	Light	Moderate to Severe	Tree Mortality	Grand Total
Aspen twoleaf tier	411	174,655		175,066
Beech bark disease		53		53
Birch casebearer		156		156
Birch skeletonizer		5,409		5,409
Blowdown		5,327		5,327
Brown spot needle blight		167		167
Cedar leafminer		30,486		30,486
Drought damage		174,607		174,607
Eastern larch beetle			2,997	2,997
Emerald ash borer		4,550		4,550
Forest tent caterpillar	20,265	27,716		47,981
Gypsy moth		8,123		8,123
Jack pine budworm	818	61,018		61,836
Larch casebearer		4,869		4,869
Large aspen tortrix		3,521		3,521
Pine false webworm		48		48
Snow damage		1,222		1,222
Spruce budworm	135	99,797	47,911	147,844
Winter browning	72,915	208,201		281,116



Surveying for insect damage.



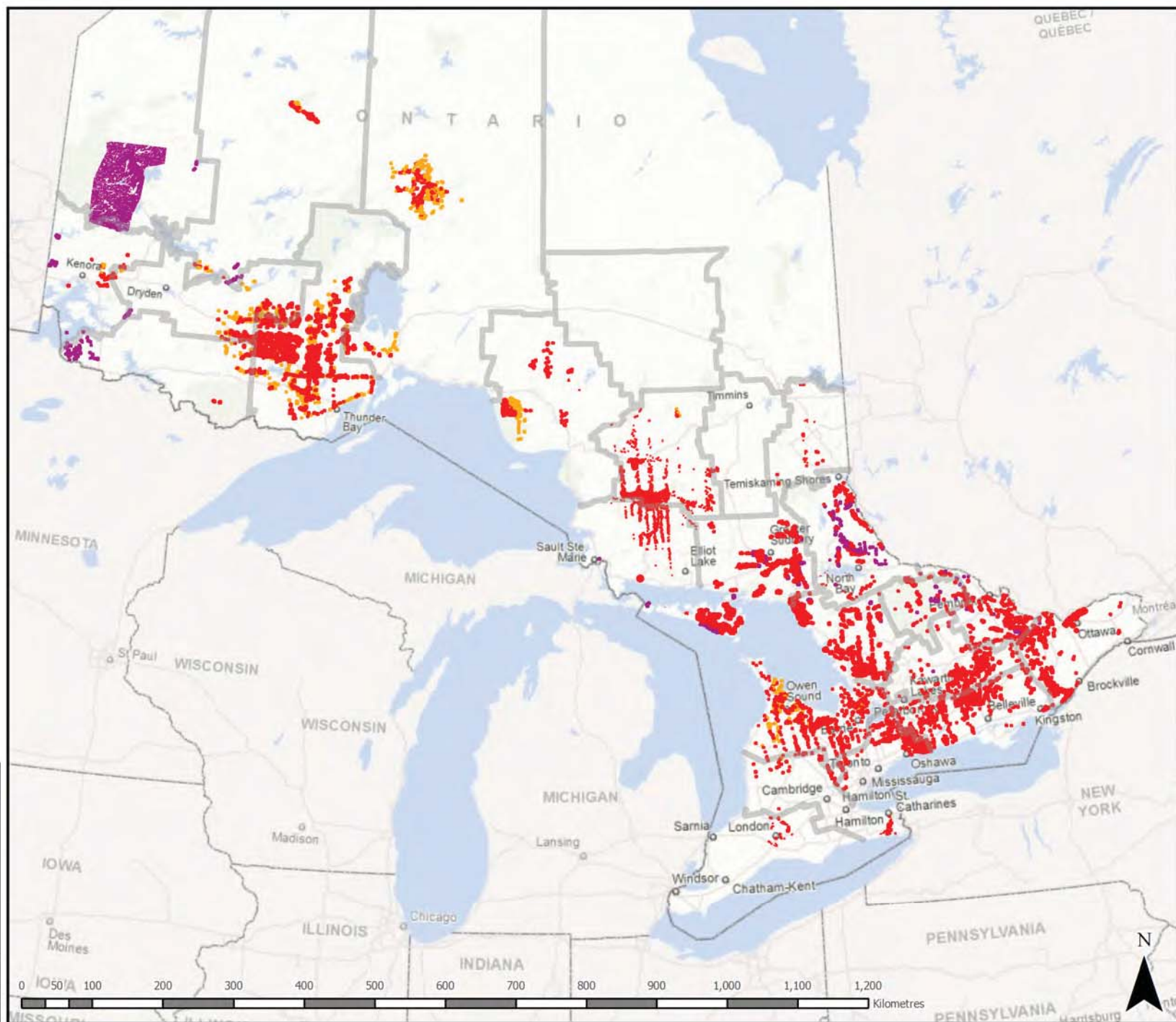
# Major Disturbance Maps

## Major Disturbances Provincial Overview

### Map 1

Areas of biotic and abiotic disturbances at a provincial level.

-  Moderate to Severe Biotic Damage (Insects and Disease)
-  Light Biotic Damage (Insects and Disease)
-  Abiotic Damage (Blowdown, Severe Weather and Drought)



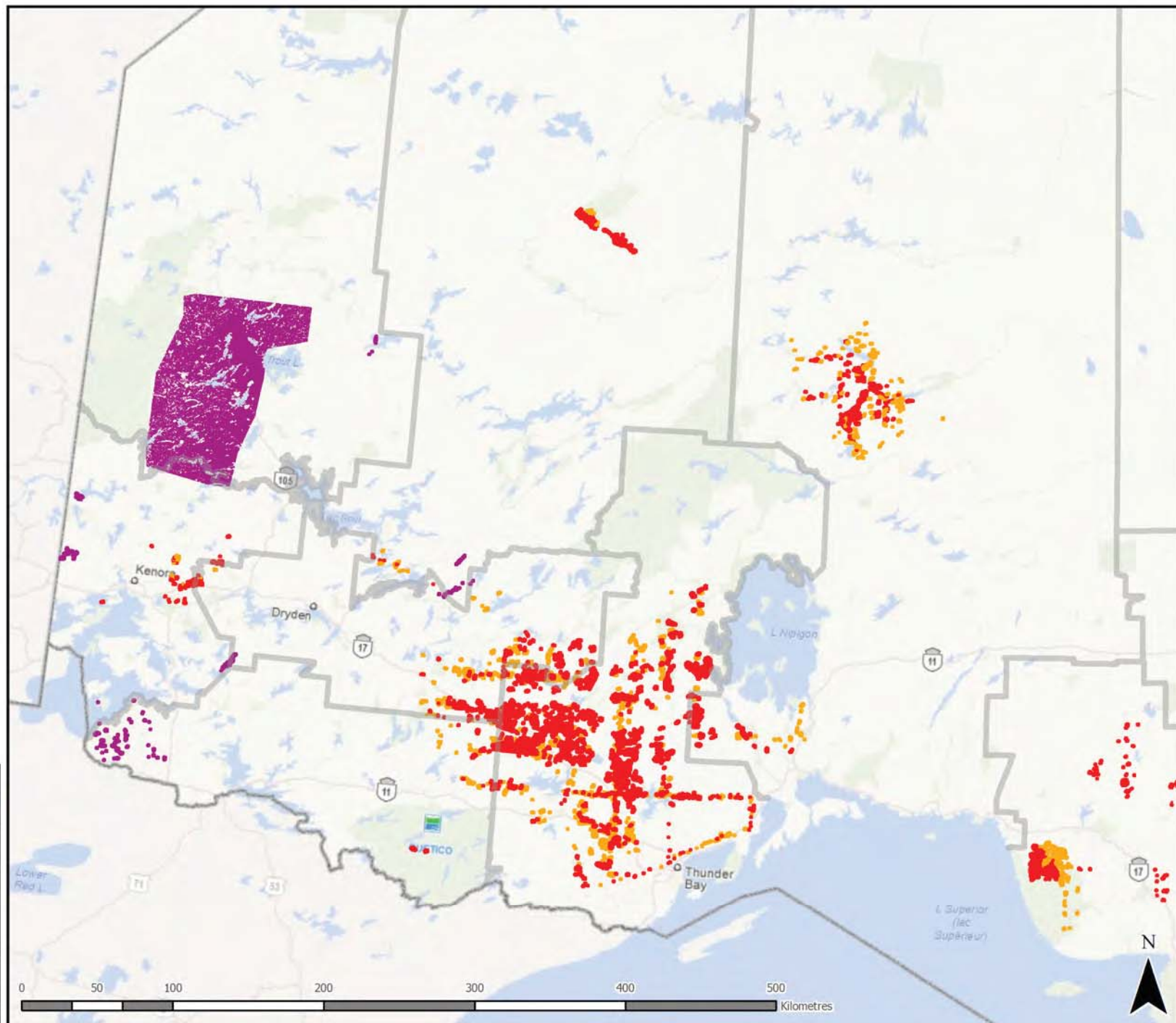
# Major Disturbance Maps

## Major Disturbances Northwest Overview

### Map 2

Areas of biotic and abiotic disturbances at a regional level.

-  Moderate to Severe Biotic Damage (Insects and Disease)
-  Light Biotic Damage (Insects and Disease)
-  Abiotic Damage (Blowdown, Severe Weather and Drought)





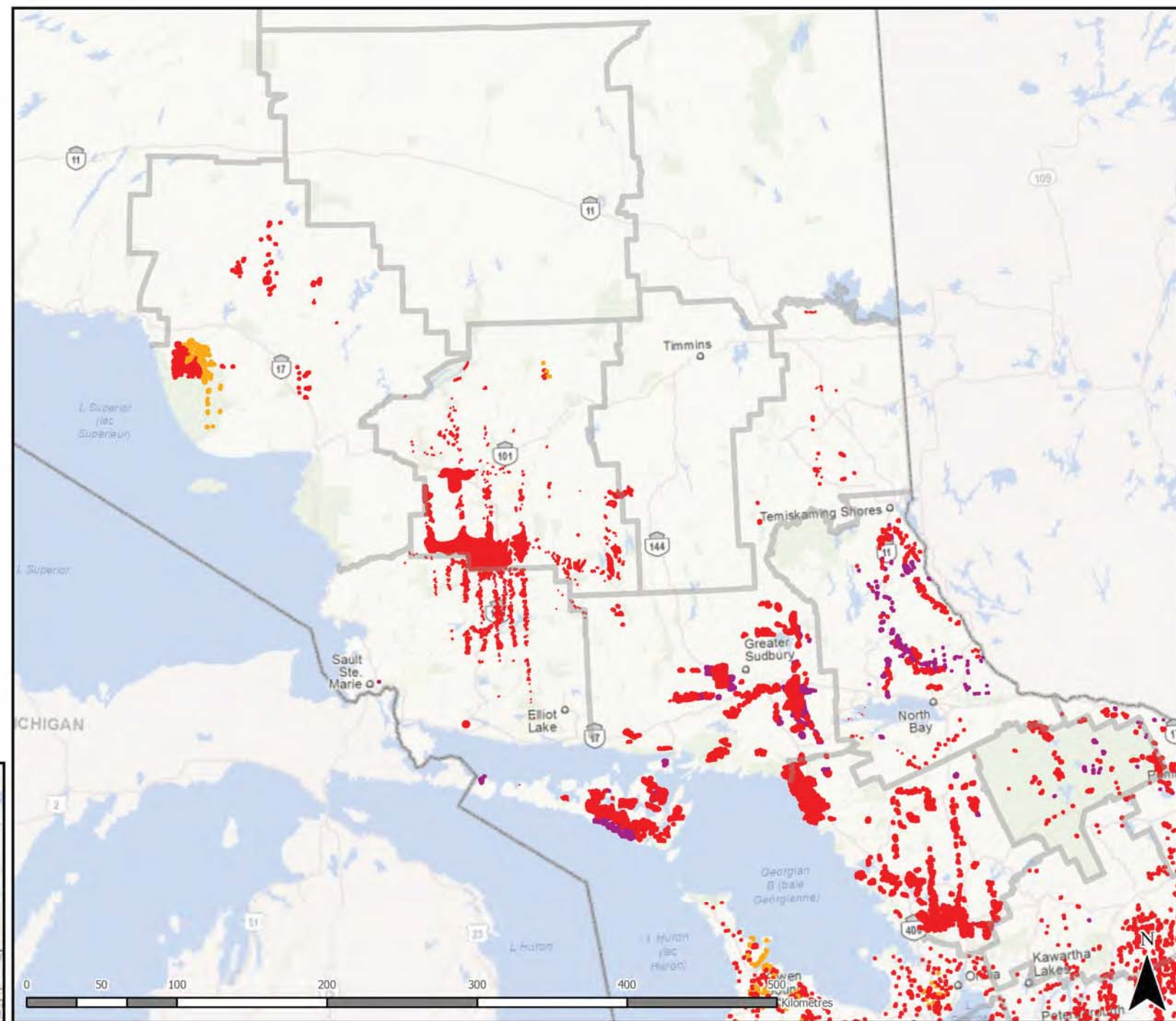
# Major Disturbance Maps

## Major Disturbances Northeast Overview

### Map 3

Areas of biotic and abiotic disturbances at a regional level.

-  Moderate to Severe Biotic Damage (Insects and Disease)
-  Light Biotic Damage (Insects and Disease)
-  Abiotic Damage (Blowdown, Severe Weather and Drought)





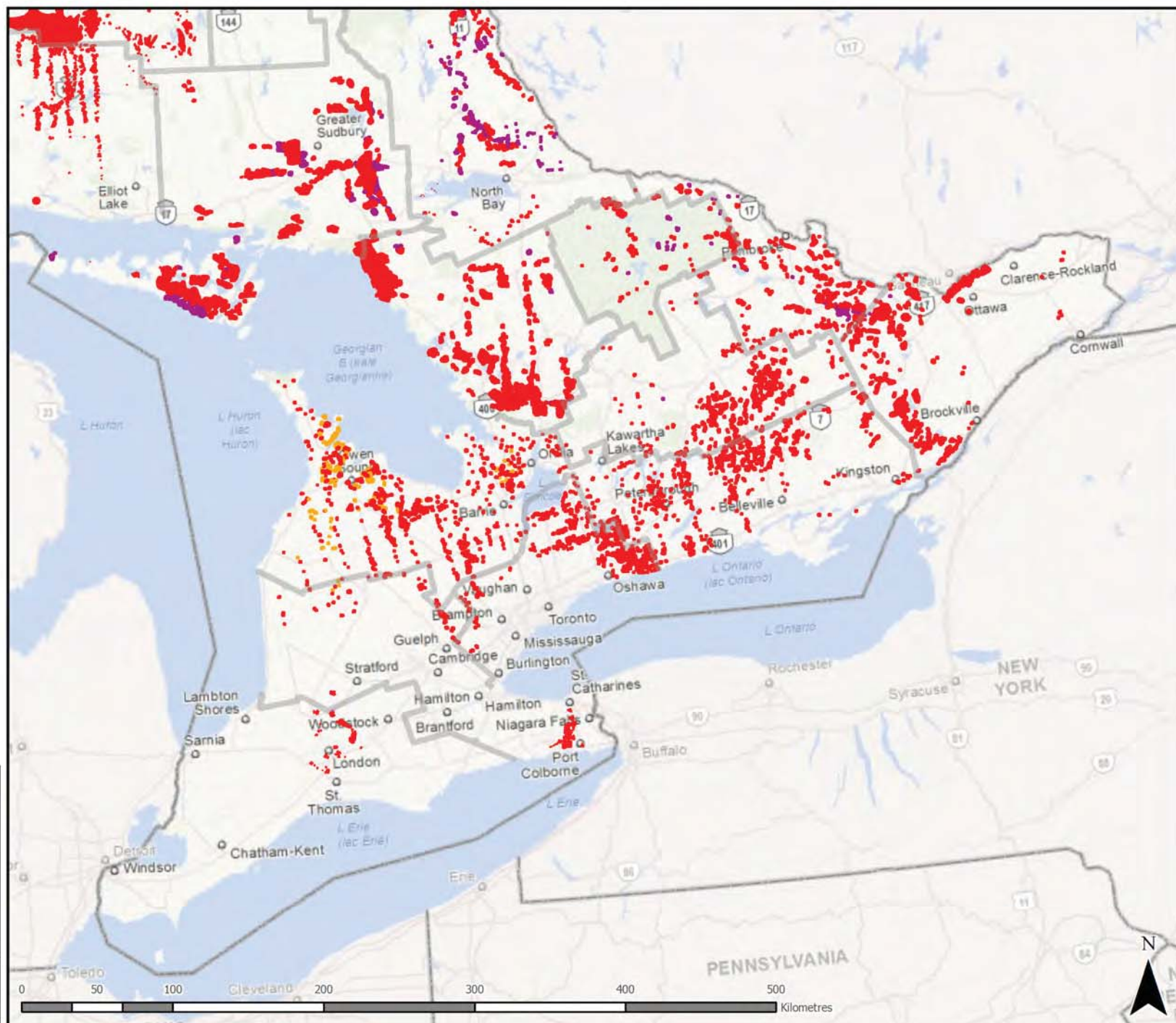
# Major Disturbance Maps

## Major Disturbances Southern Overview

Map 4

Areas of biotic and abiotic disturbances at a regional level.

-  Moderate to Severe Biotic Damage (Insects and Disease)
-  Light Biotic Damage (Insects and Disease)
-  Abiotic Damage (Blowdown, Severe Weather and Drought)





## Example Report - How to read a major disturbance report

Each forest health condition report summarizes information about an event or factor affecting the health of Ontario's forests.

**Information box** - basic information for the disturbance, including the type of disturbance, cause, area affected that year and link to a factsheet.

**Factsheet** - detailed information about the life cycle, symptoms, damage, and potential control characteristics for the disturbance.

**Provincial key facts box** - overview of the disturbance including provincial level information about the disturbance including activity in that year.

**Outlook box** - where applicable, overview of potential future implications and developments for the disturbance

**Overview map** - map that indicates the extent of the disturbance at the provincial scale (clicking on the map takes you to more detailed maps for the disturbance)

**Regional summary box** - regional summaries outline more specific information by MNR administrative regions (Northwest, Northeast, Southern)

**Photograph boxes** - photos of pests and associated damage

**Additional Information** - where applicable, additional information for a disturbance, including area summaries, trends analyses, and survey and monitoring information, often on a second

Ontario Ministry of Natural Resources

### Aspen Twoleaf Tier

**Pest Information**

Common Name: Aspen twoleaf tier  
 Latin Name: *Enargia decolor*, Walker  
 Pest Origins: Native to North America  
 Pest Type: Defoliator  
 Host Species: Trembling aspen and cottonwood  
 Infestation Area: 175,066 ha (2012)


**Provincial Key Facts**

The last large scale outbreak of aspen twoleaf tier occurred in Ontario in the mid-1990s when 3,008,502 ha of moderate-to-severe defoliation was recorded across the Northeast Region.


- In 2012 total defoliation caused by this insect was 174,655 ha of moderate-to-severe damage with an additional 411 ha of light damage.
- The current population was first detected in 2010 when a large number of adult moths were captured in pheromone traps deployed to monitor populations of jack pine budworm. No defoliation caused by this insect was mapped in 2010.
- In the second year of the outbreak (2011), there was a total of 1,482 ha of moderate-to-severe defoliation recorded in Chapleau and Sault Ste. Marie Districts.
- For more information on this pest: <http://www.ontario.ca/forestpests>

**Outlook**


- Population outbreaks of this insect are normally short-lived due to a number of natural predators.
- High numbers of aspen twoleaf tier moths were visible in September 2012 suggesting that this insect will cause defoliation again in 2013 in similar areas.



Aspen twoleaf tier larva.



Overview Map  
Click to View Detail



Aspen twoleaf tier damage.

Summary Information

Key Facts

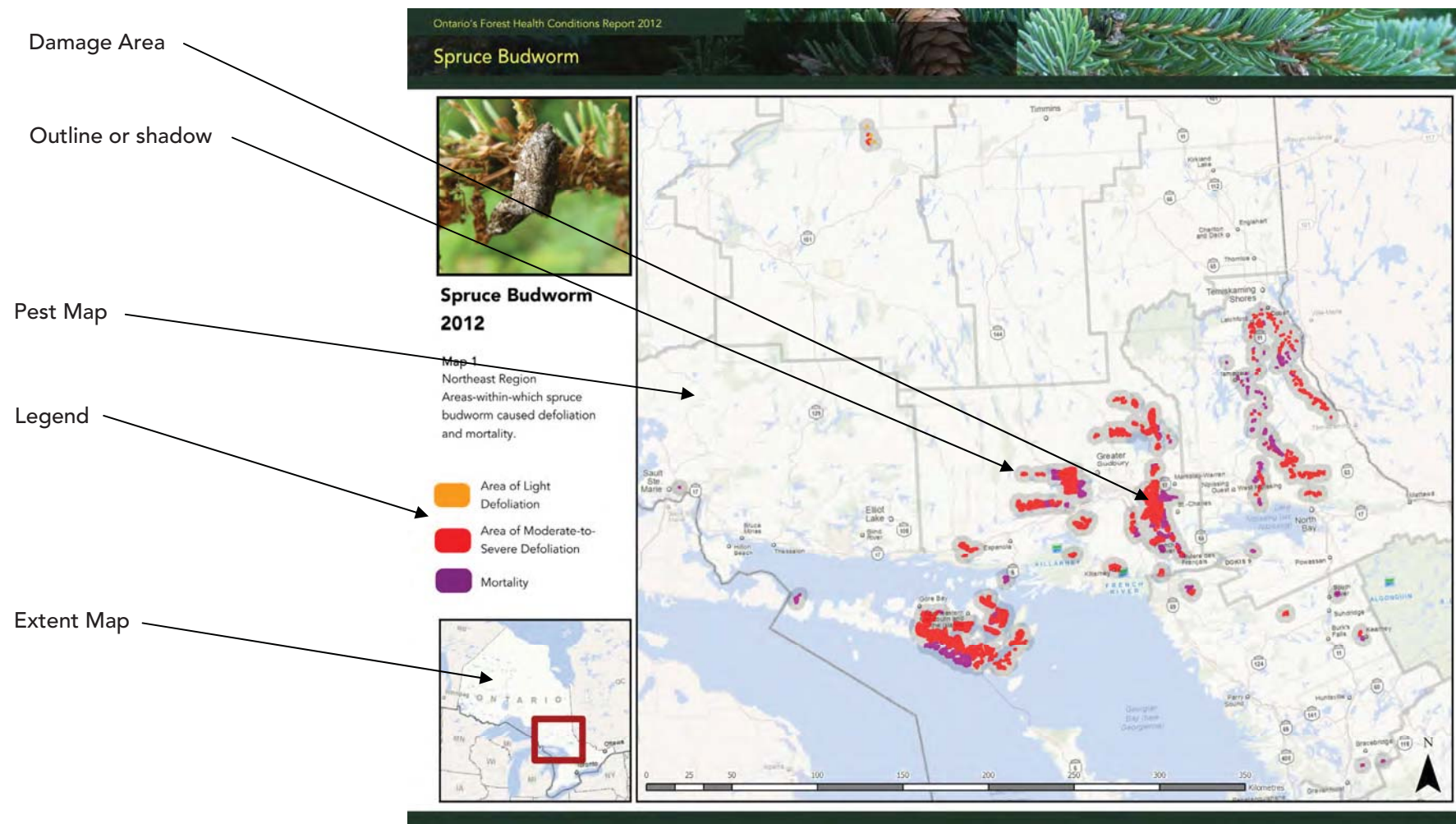
Summary trends  
(where available)

Overview Map

Pest or  
damage  
images

## Example Map - How to read maps in this report

Each forest health condition report contains a map that shows areas of infestation or damage. Light damage is typically represented in orange, moderate to severe damage is red and mortality as purple. Each damage area is also highlighted with a gray shadow or outline to help the user distinguish small damage areas. A legend on the upper left describes the map and an extent map of Ontario shows the area of focus outlined in deep red (bottom left).



Disclaimer: The forest health conditions report maps are not to be used for navigation or other purposes. The OMNR makes no guarantee concerning the data's content, accuracy, completeness, or the results obtained from queries or use of the data. Each map represents areas surveyed and is subject to revision or change in subsequent reports.



# Aspen Twoleaf Tier

## Pest Information

Common Name:	Aspen twoleaf tier
Latin Name:	<i>Enargia decolor</i> , Walker
Pest Origins:	Native to North America
Pest Type:	Defoliator
Host Species:	Trembling aspen and cottonwood
Infestation Area:	175,066 ha (2012)

## Provincial Key Facts

- The last large scale outbreak of aspen twoleaf tier occurred in Ontario in the mid-1990s when 3,008,502 ha of moderate-to-severe defoliation was recorded across the Northeast Region.
- In 2012 total defoliation caused by this insect was 174,655 ha of moderate-to-severe damage with an additional 411 ha of light damage.
- The current population was first detected in 2010 when a large number of adult moths were captured in pheromone traps deployed to monitor populations of jack pine budworm. No defoliation caused by this insect was mapped in 2010.
- In the second year of the outbreak (2011), there was a total of 1,482 ha of moderate-to-severe defoliation recorded in Chapleau and Sault Ste. Marie Districts.
- To learn more about species impacting Ontario’s forests, go to [Ontario.ca/forestpests](http://Ontario.ca/forestpests)

## Outlook

- Population outbreaks of this insect are normally short-lived due to a number of natural predators.
- High numbers of aspen twoleaf tier moths were visible in September 2012 suggesting that this insect will cause defoliation again in 2013 in similar areas.



Aspen twoleaf tier larva.



Overview Map  
[Click to View Detail](#)



Aspen twoleaf tier damage.

# Aspen Twoleaf Tier

## Regional Summary

### Northwest:

- No significant occurrence in the Northwest Region in 2012.

### Northeast:

- Approximately 80% of the moderate-to-severe defoliation occurred in Chapleau District (139,059 ha), with the remainder of defoliation mapped in Sault Ste. Marie, Kirkland Lake, Wawa, North Bay and Sudbury Districts.
- In Chapleau District, defoliation was located across the southern portion of the district from Puswawa Lake area to Biscotasi Lake.
- Defoliation was also mapped between Wangoon and Borden lakes around the town of Chapleau. Several additional pockets of defoliation were mapped between these two areas.
- Sault Ste. Marie District had defoliation between Ranger and Rocky Island lakes with several pockets being mapped north of these lakes as well.
- Kirkland Lake District had the majority of defoliation mapped around the community of Elk Lake, with additional pockets of defoliation mapped north of Sesequinika and northeast of Matheson.
- Wawa District had defoliation west of Hwy 631 between Beaton and Gourlay lakes, northwest of Kabiskagami Lake and along the south east shore Anaharea Lake.
- North Bay District mapped defoliation south of Lake Nipissing along the Little French River as well as south of Restoule Lake. In addition, along the northern end of Tilden Lake in the central portion of the district.
- Sudbury District defoliation was confined to small pockets of moderate-to-severe defoliation in the south-west corner of the district in the vicinity of Upper Bark and Arm lakes.
- Light defoliation (411ha) was also mapped in Chapleau, Kirkland Lake and Wawa Districts.

### Southern:

- No significant occurrence in the Southern Region in 2012.

## Area Summary

Total area-within-which aspen twoleaf tier caused moderate-to-severe defoliation 2008 - 2012 by MNR District (area in hectares).

Region / District	2008	2009	2010	2011	2012
<b>Northeast</b>					
Chapleau	-	-	-	650	139,059
Kirkland Lake	-	-	-	-	990
North Bay	-	-	-	-	290
Sault Ste. Marie	-	-	-	832	33,791
Sudbury	-	-	-	-	138
Timmins	-	-	92	-	-
Wawa	-	-	-	-	387
<b>Subtotal:</b>	-	-	92	1,482	174,655
<b>Provincial total</b>	-	-	92	1,482	174,655



Aspen twoleaf tier adults.



# Aspen Twoleaf Tier



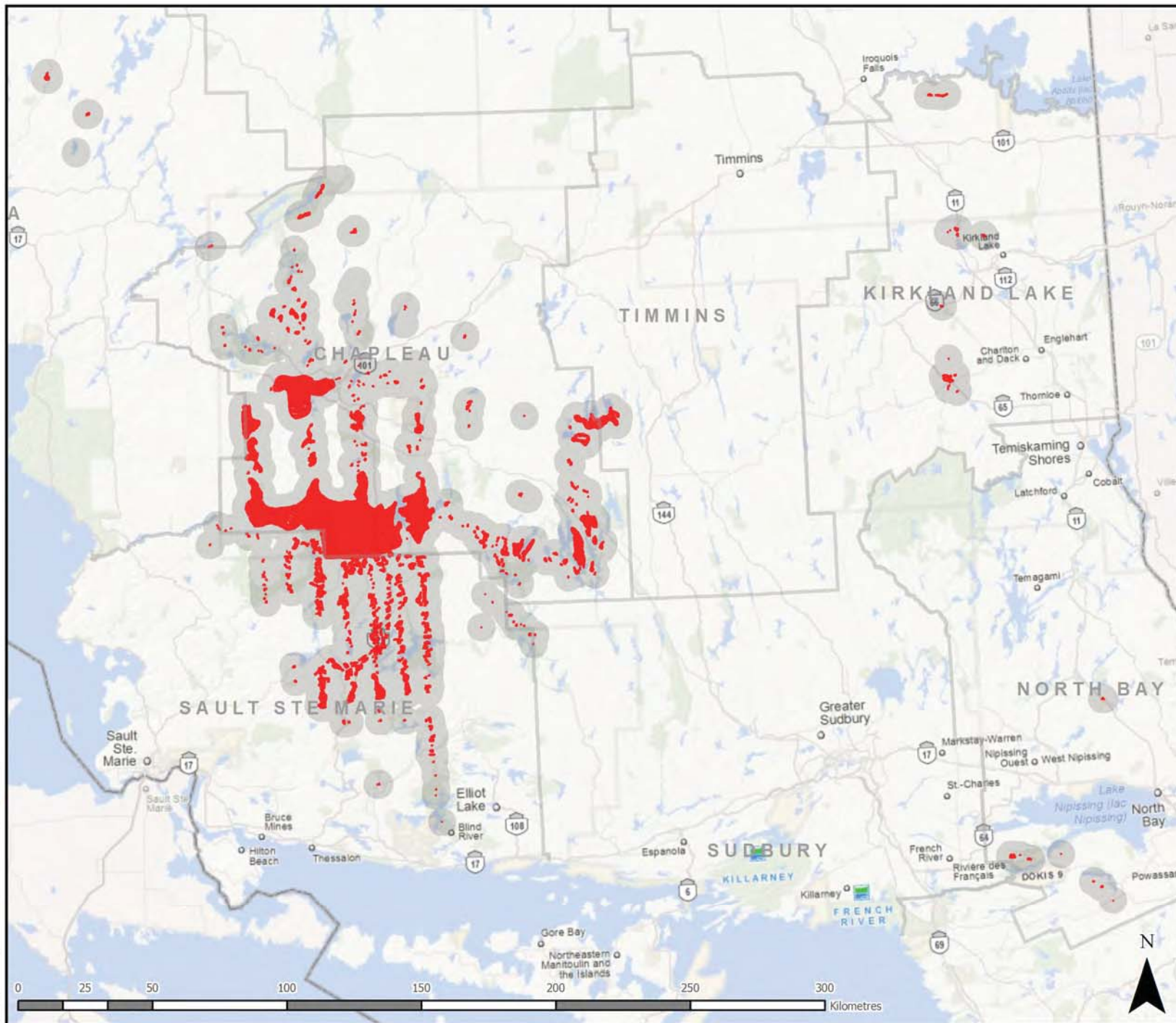
## Aspen Twoleaf Tier 2012

### Map 1

Northeast Region

Areas-within-which aspen  
twoleaf tier caused moderate  
-to-severe defoliation.

 Area of Moderate-to-  
Severe Defoliation





# Beech Bark Disease

## Pest Information

Common Name:	Beech Bark Disease
Latin Name:	Fungus- <i>Neonectria faginata</i> (Lohman et al) Castl. Insect- <i>Cryptococcus fagisuga</i> Lind.
Pest Origins:	<b>Invasive</b> • Native to Europe
Pest Type:	Insect-Disease Complex
Host Species:	American Beech
Infestation Area:	53 ha (2012) (see map for full range)

## Provincial Key Facts

- Three distinct phases of beech bark disease development can be observed across Ontario:
- The advancing front, in which beech scale populations have recently colonized unaffected beech trees. Scale infestations combined with other stressors can contribute to beech decline;
- The killing front, in which scale populations rapidly build and the fungus colonizes trees and is characterized by heavy levels of tree mortality;
- The aftermath forest, where disease has passed through and remains endemic. Large remnant trees will continue to decline and younger trees become infected, disfigured and gradually decline.
- In southwestern Ontario there are beech stands where scale infestations have been recorded for a number of years but beech bark disease has not yet developed.
- To learn more about species impacting Ontario's forests, go to [Ontario.ca/forestpests](http://Ontario.ca/forestpests)

## Outlook

- There is no known control for beech bark disease. As the disease spreads throughout the range of beech in Ontario, beech trees will continue to decline.
- Firewood movement may accelerate the spread of beech scale and the canker fungus.
- In Ontario, a few trees have been identified as potentially disease resistant as they have not been attacked by the scale insect in areas which have had high scale infestation levels. These trees may be disease resistant because the canker fungus can only infect scale-infested trees. Research indicates that approximately 1-4% of American beech may be resistant to beech bark disease. The identification, monitoring and retaining of these resistant trees will be of value in the retention on beech on the landscape.



Fruiting bodies of beech bark disease.



Overview Map  
[Click to View Detail](#)



Mortality caused by beech bark disease in Kawartha Highlands Signature Site Park, Bancroft District.

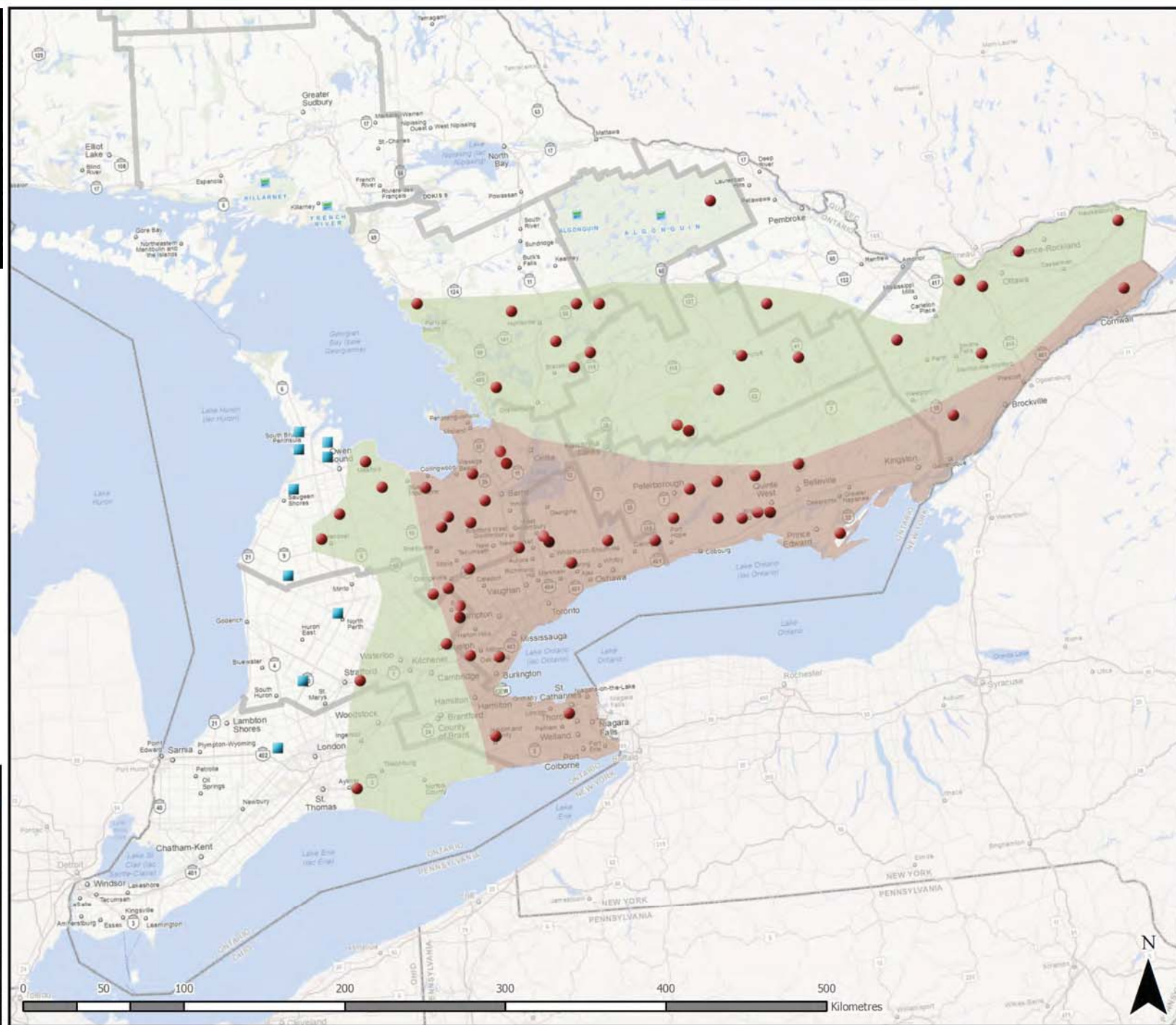


# Beech Bark Disease



## Beech Bark Disease 2012

-  Range of beech bark disease in 2004
-  Expanded range of beech bark disease in 2012
-  Scale only
-  Beech bark disease





# Birch Casebearer

## Pest Information

Common Name:	Birch Casebearer
Latin Name:	<i>Coleophora serratella</i> (L.)
Pest Origins:	Invasive - Native to Europe
Pest Type:	Defoliator
Host Species:	White birch
Infestation Area:	156 ha (2012)

## Provincial Key Facts

- In 2001, moderate-to-severe defoliation totalling 218ha occurred in Bancroft District (218ha).
- This exotic insect is commonly associated and found feeding with the native, lesser birch casebearer (*C. comptoniella* (McD.)).
- Mapped defoliation was recorded in Northeast Region in 2012, with less significant incidences occurring in Southern Region.
- To learn more about species impacting Ontario’s forests, go to [Ontario.ca/forestpests](http://Ontario.ca/forestpests)

## Regional Summary

### Northeast:

- In North Bay District, aerial surveys identified 156 ha of moderate-to-severe defoliation on white birch affecting on average 70% of the foliage.
- Additional areas were noted just north of North Bay affecting 80% of birch trees at 40% foliage damage along Hwy. 11, and 70% of birch trees at upwards to 75% foliage damage on McConnell Lake Road off Hwy. 63.
- Incidental damage was also recorded in the Mattawa and Bonfield areas of North Bay District.

### Southern:

- Light levels of defoliation consisting of less than 15% damage to all the white birch were identified on approximately 50 ha of a predominantly maple forest within the City of Kawartha Lakes in Bancroft District and in satellite pockets in the French River area, Sudbury District.
- In Aurora District, incidental damage was recorded near Anton Mills and Nobelton.



Birch casebearer larvae sheltered in casement.



Overview Map  
[Click to View Detail](#)



Birch casebearer damage on white birch.



## Birch Casebearer



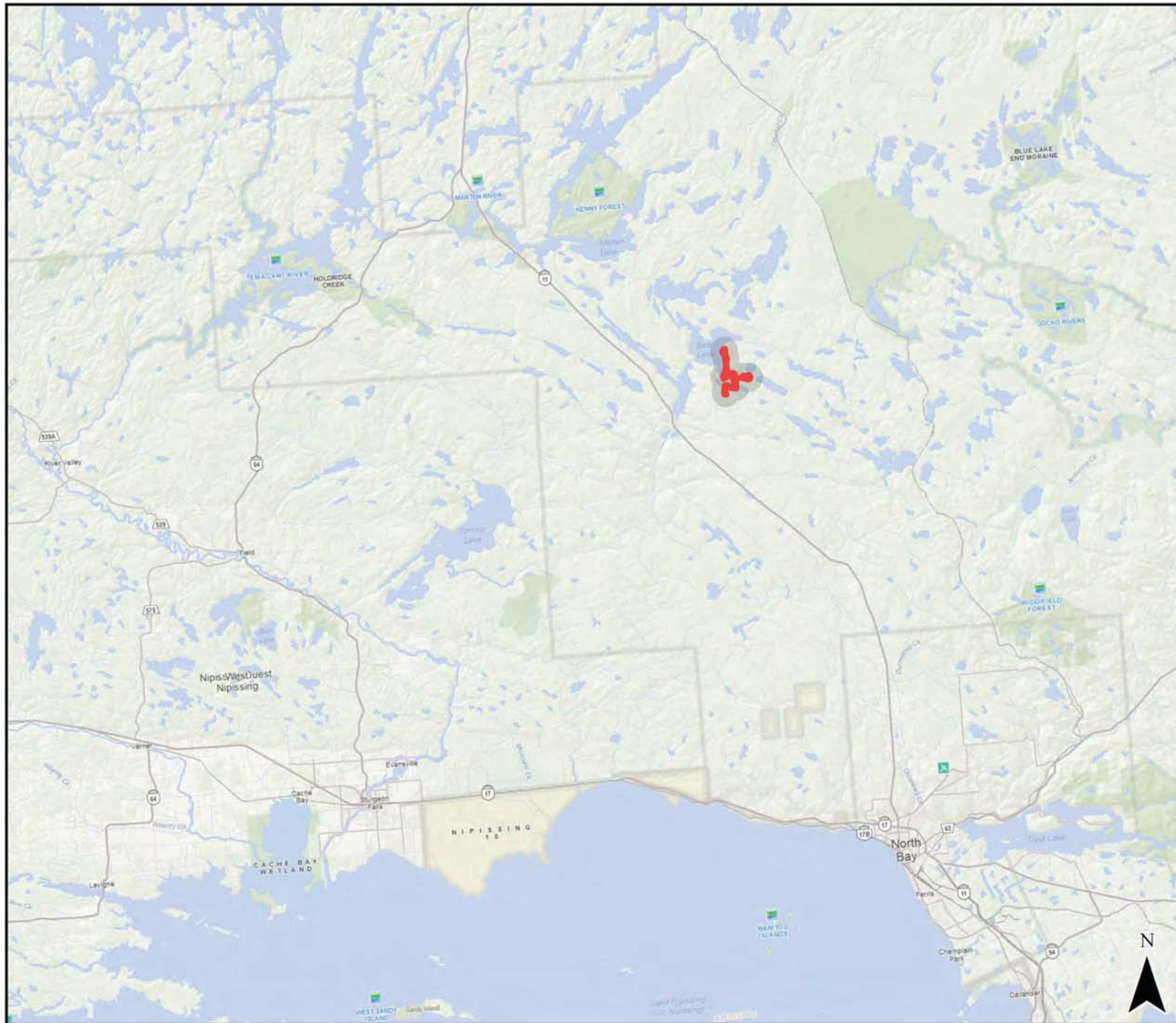
### Birch Casebearer 2012

#### Map 1

Northeast Region

Areas-within-which birch  
casebearer caused defoliation.

 Area of Moderate-to-  
Severe Defoliation





# Birch Skeletonizer

## Pest Information

Common Name:	Birch skeletonizer
Latin Name:	<i>Bucculatrix canadensisella</i> Chambers
Pest Origins:	Native to North America
Pest Type:	Defoliator
Host Species:	Birch species
Infestation Area:	5,409 ha (2012)

## Provincial Key Facts

- Current outbreak began in 2010 and damage was extensive during 2012.
- Rarely causes lasting damage to infested trees due to its late season feeding habits.
- Outbreaks are periodic and are normally short in duration (usually 2-4 years in length).
- Complete aerial mapping of this damage was not conducted because the event has occurred at the end of the forest health monitoring season after most aerial surveys have been completed.
- The current outbreak has been occurring at the same time as an outbreak of septoria leaf spot (*Septoria betulae*), with both insect and the disease on the same trees.
- To learn more about species impacting Ontario’s forests, go to [Ontario.ca/forestpests](http://Ontario.ca/forestpests)

## Regional Summary

### Northwest:

- This insect was present at high levels across much of Northwest Region in 2012.
- Almost all white birch trees were affected across much of the region, from Kenora east to Manitouwadge.

### Northeast:

- The outbreak which began in Northwest Region in 2010 expanded into the western portions of Northeast Region in 2011, and then continued to move east in 2012.
- Damage in Northeast Region is less contiguous than in Northwest Region, with gaps of little or no damage in between areas of severe damage.
- All age classes of white birch trees within this large area sustained heavy feeding damage (75-100 percent foliar damage).



Birch skeletonizer molting pads and defoliation.



Overview Map  
[Click to View Detail](#)



Birch skeletonizer damage in Wawa District.



# Birch Skeletonizer



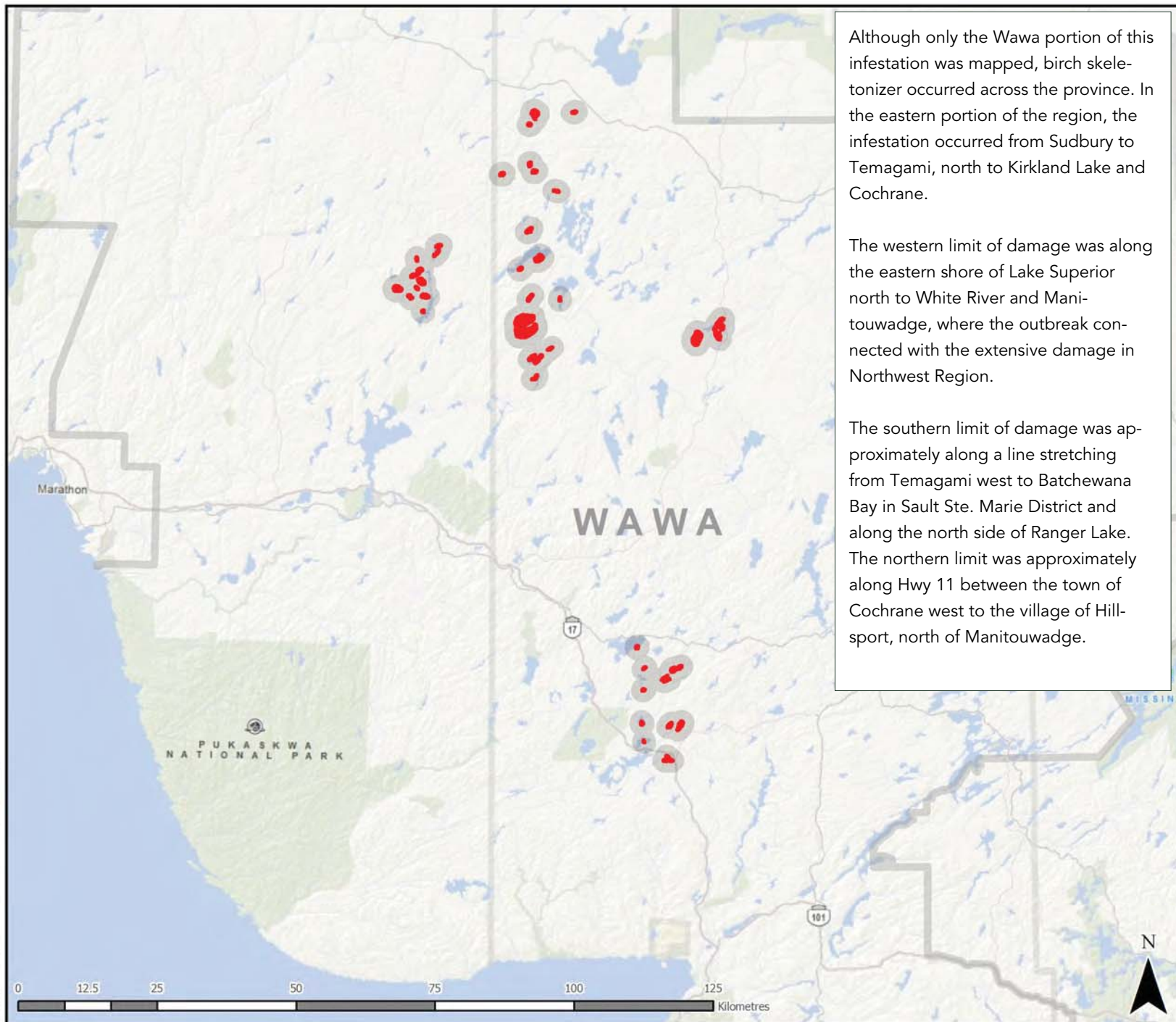
## Birch Skeletonizer 2012

### Map 1

Northeast Region

Areas-within-which birch skeletonizer caused moderate-to-severe defoliation.

 Area of Moderate-to-Severe Defoliation



Although only the Wawa portion of this infestation was mapped, birch skeletonizer occurred across the province. In the eastern portion of the region, the infestation occurred from Sudbury to Temagami, north to Kirkland Lake and Cochrane.

The western limit of damage was along the eastern shore of Lake Superior north to White River and Manitouwadge, where the outbreak connected with the extensive damage in Northwest Region.

The southern limit of damage was approximately along a line stretching from Temagami west to Batchewana Bay in Sault Ste. Marie District and along the north side of Ranger Lake. The northern limit was approximately along Hwy 11 between the town of Cochrane west to the village of Hill-sport, north of Manitouwadge.



# Blowdown

## Damage Information

Damage Name:	Blowdown
Damage Type:	Abiotic Damage - Weather Event
Damage Area:	5,326 ha (2012)

## Provincial Key Facts

- Blowdown damage mapped in 2012 (5,326ha) was half as extensive as in 2011 (9,082ha).
- The extent and frequency of blowdown events are sporadic and result from extreme weather events.
- The majority of the damage was mapped in the Northwest and Southern Regions.
- A decrease in blowdown damage occurred in the Northeast Region (see summary table next page).
- To learn more about species impacting Ontario’s forests, go to [Ontario.ca/forestpests](http://Ontario.ca/forestpests)

## Outlook

- Blowdown is part of natural processes in Ontario’s forests.
- Following a dramatic blowdown event, secondary pest populations (such as bark beetles, wood borers and armillaria root rot) are expected to increase.
- Timely salvage operations can be effective in utilizing blowdown material.
- Climate change is predicted to result in more frequent and severe weather events which have the potential to cause damage to forests.



Blowdown in Southern Region near Renfrew.



Overview Map  
[Click to View Detail](#)



Blowdown in Northwest Region, near Red Lake.



Blowdown in Southern Region near Renfrew.



# Blowdown

## Regional Summary

### Northwest:

- The largest area of damage was recorded in Kenora District (1,651ha), between Oak Lake and Unexpected Lake, south of the Red Lake District boundary.
- In Red Lake District, a suspected tornado cut through the forest on the western peninsula of Birch Lake.
- Two blowdown areas were recorded east of the town of Sioux Lookout (622ha).

### Northeast:

- Severe weather occurred in July and August 2012.
- The majority of damage occurred in low-lying areas along waterways in North Bay District (363ha).
- Scattered pockets of damage were mapped northeast of Lake Nipissing and one small satellite location directly north of North Bay along the Quebec border.
- In Sudbury District, a small pocket was mapped northwest of Spanish River Provincial Park.

### Southern:

- Severe weather occurred in mid-July.
- Pembroke District sustained the largest amount of damage (1,765ha).
- A few small patches near Bonnechere Provincial Park were mapped with the majority of damage occurring in a patchy swath in the southeast portion of Pembroke District beginning around Norway Lake and moving east towards White lake.
- Two small areas were mapped in Kemptville District (37ha).
- In Bancroft District, a small area was recorded along the Irondale River, north of Hadlington Lake.
- In Midhurst District, three small areas were mapped totalling 71ha.

## Area Summary

Total area-within-which blowdown caused moderate-to-severe damage 2008 - 2012 by MNR District (area in hectares)

Region / District	2008	2009	2010	2011	2012
<b>Northwest</b>					
Dryden	-	898		1,078	538
Fort Frances	-	-	413	1,956	-
Kenora	-	339		-	1,651
Nipigon	-	10	47	89	-
Red Lake	6,167	3,553	284	1,124	213
Sioux Lookout	-	2,470	-	451	622
Thunder Bay	444	-	-	363	-
<b>Subtotal:</b>	<b>6,611</b>	<b>7,270</b>	<b>744</b>	<b>5,061</b>	<b>3,024</b>
<b>Northeast</b>					
Hearst	-	-	-	1,996	-
North Bay	-	329	-	14	363
Sault Ste. Marie	-	-	-	32	-
Sudbury	-	-	-	11	47
Timmins	-	-	-	60	-
<b>Subtotal:</b>	<b>-</b>	<b>329</b>	<b>-</b>	<b>2,113</b>	<b>410</b>
<b>Southern</b>					
Bancroft	-	-	-	156	19
Guelph	-	-	-	1,751	-
Kemptville	-	-	-	-	37
Midhurst	-	348	-	1	71
Pembroke	-	-	-	-	1,765
<b>Subtotal:</b>	<b>-</b>	<b>348</b>	<b>-</b>	<b>1,908</b>	<b>1,892</b>
<b>Provincial total</b>	<b>6,611</b>	<b>7,947</b>	<b>744</b>	<b>9,082</b>	<b>5,326</b>

# Blowdown




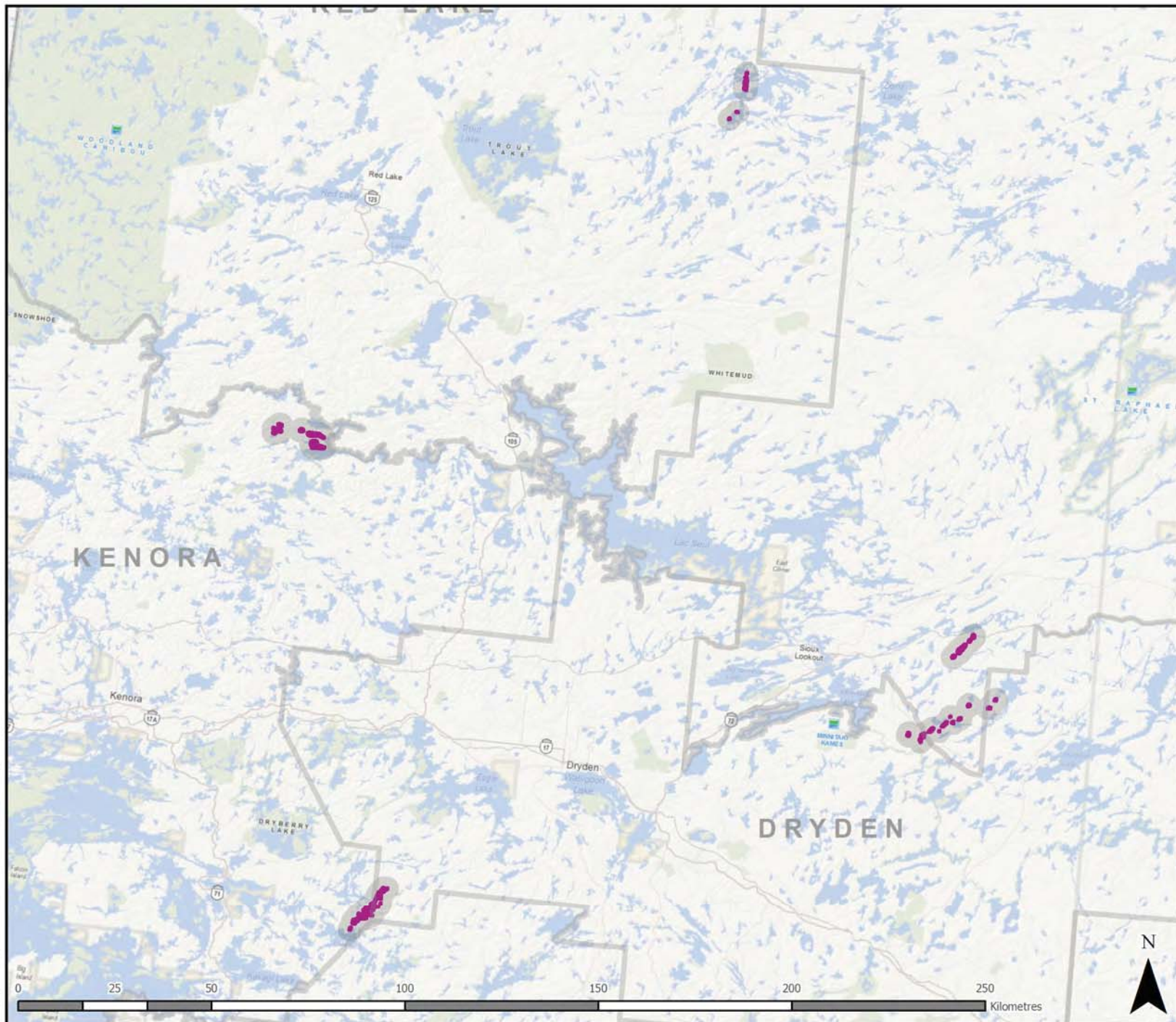
## Blowdown Damage 2012

### Map 1

Northwest Region

Areas-within-which blowdown caused forest damage.

 Area of Blowdown Damage






# Blowdown

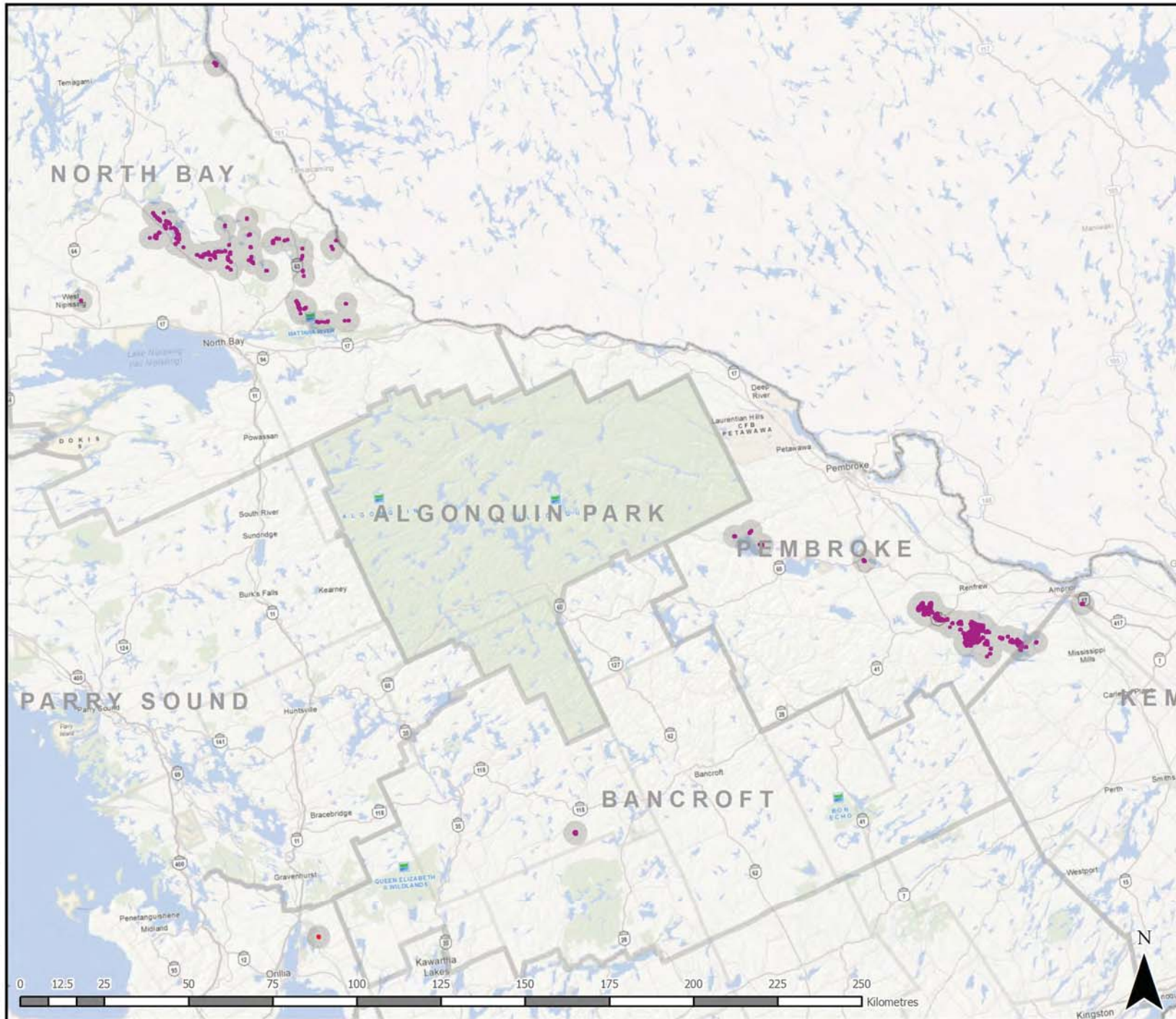


## Blowdown Damage 2012

### Map 2

Northeast and Southern Region  
Areas-within-which Blowdown  
caused forest damage.

 Area of Blowdown  
Damage





# Brown Spot Needle Blight

## Pest Information

Common Name:	Brown Spot Needle Blight
Latin Name:	<i>Mycosphaerella dearnessii</i> M.E. Barr
Pest Origins:	Native to North America
Pest Type:	Needle Blight
Host Species:	Pine species
Infestation Area:	167 ha (2012)

## Provincial Key Facts

- In 2012, this disease caused 167ha of damage, down significantly from 1435ha in 2011.
- This disease affects trees of all ages but is most damaging on seedlings and smaller trees such as nursery stock and Christmas tree plantations.
- Several years of infection causes reduced growth and coupled with other factors such as drought and secondary insect attack, may result in tree mortality.
- To learn more about species impacting Ontario's forests, go to [Ontario.ca/forestpests](http://Ontario.ca/forestpests)

## Regional Summary

### Northeast:

- Moderate-to-severe damage was mapped on Scots pine trees north of Thessalon, Sault Ste. Marie District (26ha).

### Southern:

- In 2011 and in 2012, brown spot needle blight caused 25 % browning and needle drop on all eastern white pine along a 2km section of Barron Canyon Road in Algonquin Provincial Park.
- In Kemptville District west of Kemptville and at Fitzroy Provincial Park along the Ottawa River, several white pine trees displayed browning on 25% of the foliage caused by brown spot needle blight.
- In Parry Sound District, north of Huntsville, 141 ha of damage was mapped, on mature Scots pine with the area affected being reduced from 2011 (1,348ha).
- Midhurst District saw a massive reduction in infection rates on Scots pine due to warm dry weather and no damage was mapped from the air.



Brown spot needle blight on Scots pine.



Overview Map  
[Click to View Detail](#)



Brown spot needle blight on Scots pine in Southern Region.



# Brown Spot Needle Blight




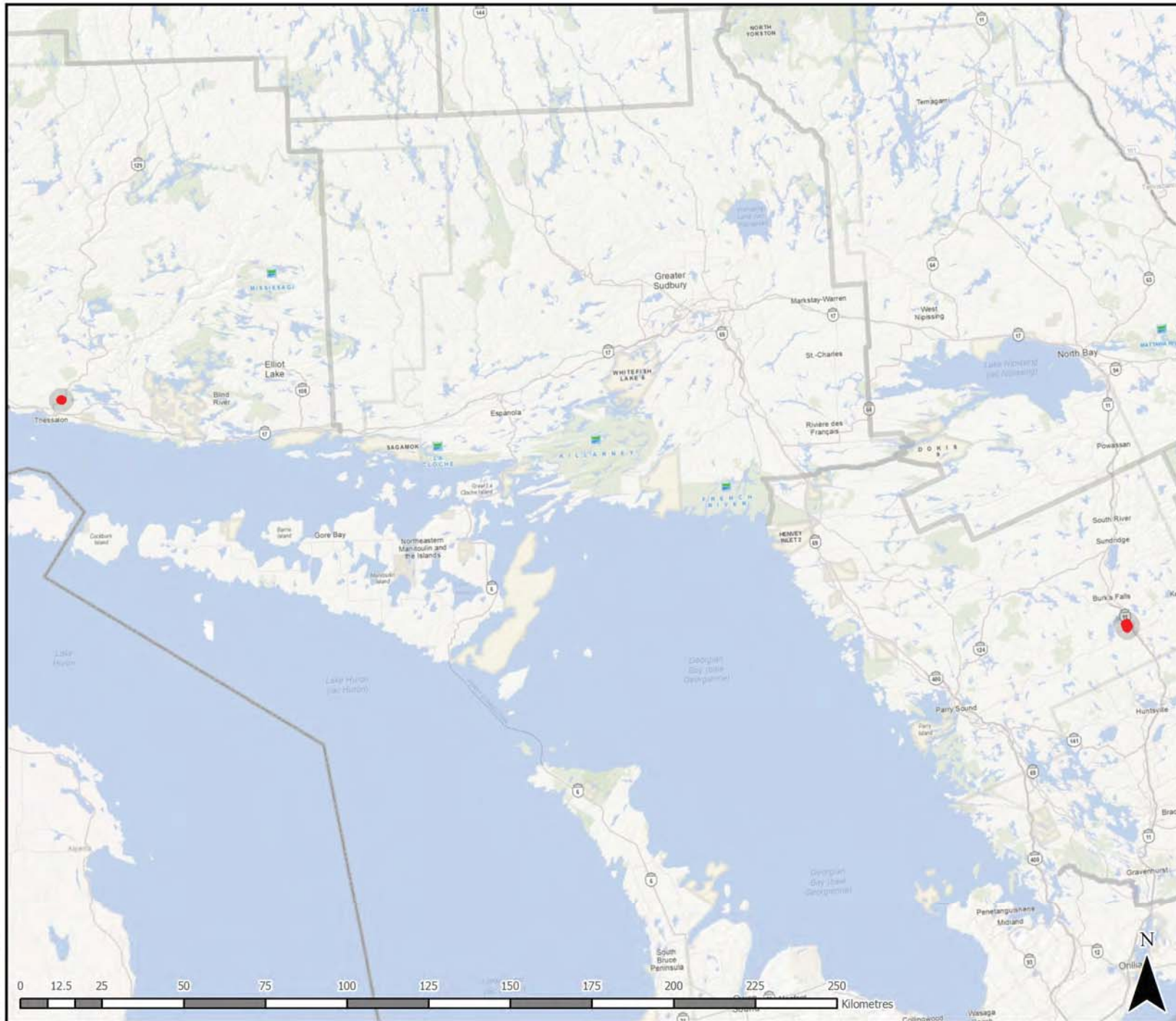
## Brown Spot Needle Blight

### Map 1

Northeast and Southern  
Regional Overview

Areas-within-which brown spot  
needle blight caused  
damage.

 Area of Moderate-to-  
Severe Damage





## Cedar Leafminer Complex

### Pest Information

Common Name:	Cedar Leafminer Complex
Latin Name:	<i>Various species</i>
Pest Origins:	Native to North America
Pest Type:	Defoliator
Host Species:	Eastern white cedar
Infestation Area:	30,486 ha (2012)

### Provincial Key Facts

- Moderate-to-severe damage increased significantly from 2011(2,822 ha) to 2012 (30,486 ha) .
- Mapped damage occurred in Southern Region with less severe damage occurring in Northeast Region.
- The infestation began in 2010 in Peterborough District.
- The last large scale cedar leafminer outbreak occurred in Kemptville District from 2002-2007 resulting in excessive top-kill and whole tree mortality.
- Cedar leafminer complex is a group of insects that mine the cedar foliage, including:
  - *Argyresthia aureoargentella* Brower,
  - *Argyresthia canadensis* Freeman,
  - *Argyresthia thuiella* (Pack), and
  - *Coleotechnites thujaella* (Kft.).
- To learn more about species impacting Ontario's forests, go to [Ontario.ca/forestpests](http://Ontario.ca/forestpests)



Severe damage to cedar foliage caused by cedar leafminer.



Overview Map  
Click to View Detail



New growth on cedar after cedar leafminer infestation.



Damage caused by cedar leafminer along Hwy 7 west of Peterborough.



# Cedar Leafminer Complex

## Regional Summary

### Northeast:

- In North Bay District, approximately 15% of the trees were damaged along the east shore of Hangstone Lake in Olive Township.

### Southern:

- Approximately 80% of all mapped damage occurred in Aurora and Midhurst Districts.
- Individual trees were damaged on average from 70% to 90% throughout Southern Region where cedar leafminer complex occurred.
- Large tracts of damaged cedar were recorded in the eastern portion of Aurora District extending throughout the western portion of Peterborough District.
- Other large tracts of damaged cedar were recorded in satellite pockets from central Midhurst District and north-eastern Guelph District extending to Lake Simcoe and north to Georgian Bay.
- Smaller tracts of cedar damage were recorded in western Midhurst District extending south into north-western Guelph District and in north-eastern Bancroft District extending into south-western Pembroke District.
- All other areas mapped consisted of small, isolated pockets of cedar (not on map).
- Cedar leafminer damage recorded from ground surveys included areas in Norfolk and Oxford Counties.
- In Peterborough, Midhurst and Aurora Districts, cedar trees showed upwards of 75% refoilation by late-August.

## Trend Analysis

- Below average snowfall in winter 2011-12 combined with a lack of spring precipitation in 2012 produced drought-like conditions contributing to the overall stress to eastern white cedar in Southern Region.
- A secondary pest, northern cedar bark beetle (*Phloeosinus canadensis*) has been identified in large numbers in recently cut or felled cedar in Peterborough District.
- Live, standing cedar adjacent to northern cedar bark beetle populations have been documented with signs of beetle attack however, these trees are showing signs of good vigour as they pitch the insect out.
- There have been no recent reports of live, standing cedar infested with northern cedar bark beetle in Southern Region.

## Area Summary

Total area-within-which cedar leafminer caused moderate-to-severe damage 2008 - 2012 by MNR District.

Region / District	2008	2009	2010	2011	2012
<b>Southern</b>					
Algonquin	-	-	157	-	-
Aurora	-	-	-	81	14,051
Bancroft	-	-	-	261	713
Guelph	-	-	-	4	1,020
Kemptville	-	-	632	-	32
Midhurst	-	-	-	622	10,307
Pembroke	148	-	3,984	80	197
Peterborough	-	-	-	1,774	4,165
<b>Subtotal:</b>	<b>148</b>	<b>-</b>	<b>4,773</b>	<b>2,822</b>	<b>30,486</b>
<b>Provincial Total</b>	<b>148</b>	<b>-</b>	<b>4,773</b>	<b>2,822</b>	<b>30,486</b>



Eastern white cedar tree preventing northern cedar bark beetle from entering by pitching sap from the entrance wound.



# Cedar Leafminer Complex



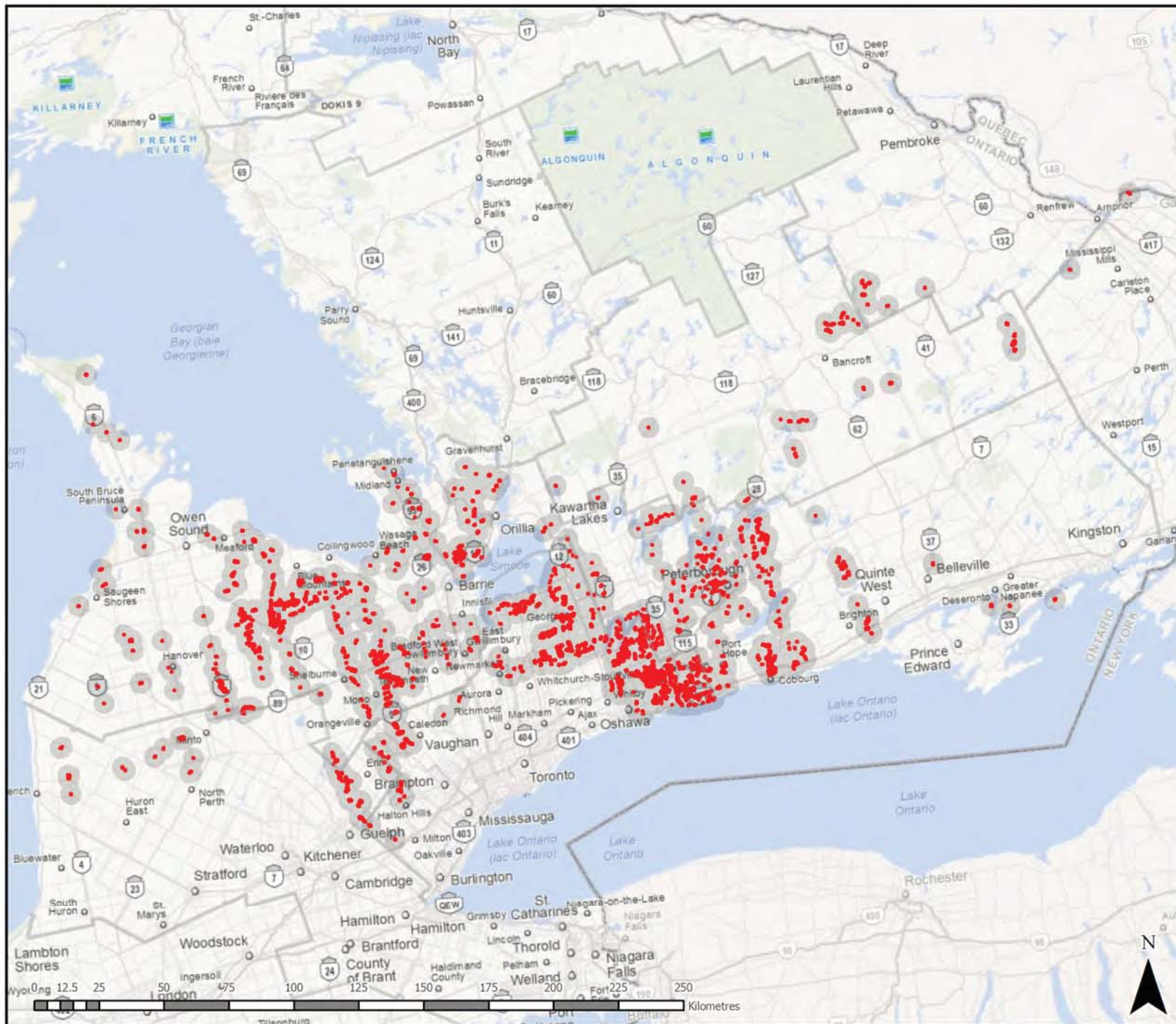
## Cedar Leaf Miner Complex 2012

### Map 1

Southern Region

Areas-within-which cedar leaf miner complex caused defoliation.

 Area of Moderate-to-Severe Defoliation





# Drought

## Damage Information

Damage Type:	Abiotic Damage
Host Species:	All tree species
Damage Area:	174,607 ha (2012)

## Provincial Key Facts

- Below average snowfall in winter 2011-12 combined with a lack of spring precipitation in 2012, produced drought conditions affecting conifer and deciduous tree species.
- The drought in 2012 had a significant impact on trees in Ontario. Moderate-to-severe drought damage occurred in all three regions.
- Southern Region contained the largest area affected by drought (165,534ha)
- Sites containing rocky out-crops, ridges, thin soils and in some cases wetlands incurred drought.
- This damage consisting of brown, dry foliage, wilting leaves, scorch, pre-mature leaf fall, branch and limb die-back, affected 70-100% of the tree on average. In some cases, tree mortality occurred.
- To learn more about species impacting Ontario’s forests, go to [Ontario.ca/forestpests](http://Ontario.ca/forestpests)

## Outlook

- Following drought events, numerous secondary pests typically increase in abundance.
- Drought events can stress trees to a point where root disease can take hold and begin to spread from tree to tree
- Stressed pine trees may attract bark beetles which may heavily colonize the trees and cause mortality.
- Climate change may result in more frequent and severe drought events which have the potential to cause damage to forests.



Needle discoloration caused by drought in jack pine.



Overview Map  
[Click to View Detail](#)



Drought-induced damage on red pine in Pembroke District.



# Drought

## Regional Summary

### Northwest:

- In Kenora District, drought induced mortality of jack pine occurred on bedrock exposed sites.
- All sites where mortality was mapped were predominantly bedrock outcrops with very low stocking.

### Northeast:

- In North Bay and Kirkland Lake districts, drought conditions affected oak, ash, poplar, maple, pine and white birch growing on ridges or rocky outcrops.

### Southern:

- Drought damaged forest stands were observed in Southern Region by mid-July.
- Drought damage was mapped in Parry Sound, Algonquin, Peterborough, Bancroft, Pembroke, and Kemptville districts. The majority of damage occurred in Parry Sound and Kemptville districts.
- In Parry Sound District, drought events caused several large satellite pockets of affected trees. Main species impacted were oak, maple, poplar and pine.
- In Algonquin Park, the main trees affected were eastern white pine, largely in the central and eastern portions of the park.
- In Kemptville and Pembroke districts, the majority of damage was found on deciduous tree species including ash, oak and others growing on rocky outcrops. All pine species were also affected.
- In Peterborough and Bancroft districts, drought impacts were less severe than those recorded elsewhere as the damage did not appear until late-August. The main tree species impacted were sugar maple, oak, pine and birch.
- In addition, mortality and severe decline of pine species was noted in numerous, scattered areas across Southern Region.

## Area Summary

Total area-within-which drought caused moderate-to-severe damage 2008 - 2012 by MNR District (area in hectares).

Region / District	2008	2009	2010	2011	2012
<b>Northwest</b>					
Dryden	-	-	-	56,622	-
Fort Frances	-	-	-	-	70
Kenora	-	-	-	21,205	2,215
Red Lake	-	-	-	177,645	-
Sioux Lookout	-	-	-	360,900	-
Subtotal:	-	-	-	616,372	2,285
<b>Northeast</b>					
Kirkland Lake	-	-	-	-	458
North Bay	-	-	-	-	1,150
Sudbury	-	-	-	-	5,180
Subtotal:	-	-	-	-	6,788
<b>Southern</b>					
Algonquin	-	-	-	-	7,411
Bancroft	-	-	-	-	21,290
Kemptville	-	-	-	-	29,367
Parry Sound	-	-	-	-	76,039
Pembroke	-	-	-	-	18,407
Peterborough	-	-	-	-	13,020
Subtotal:	-	-	-	-	165,534
<b>Provincial total</b>	-	-	-	616,372	174,607



Needle discolouration and mortality caused by drought.



# Drought




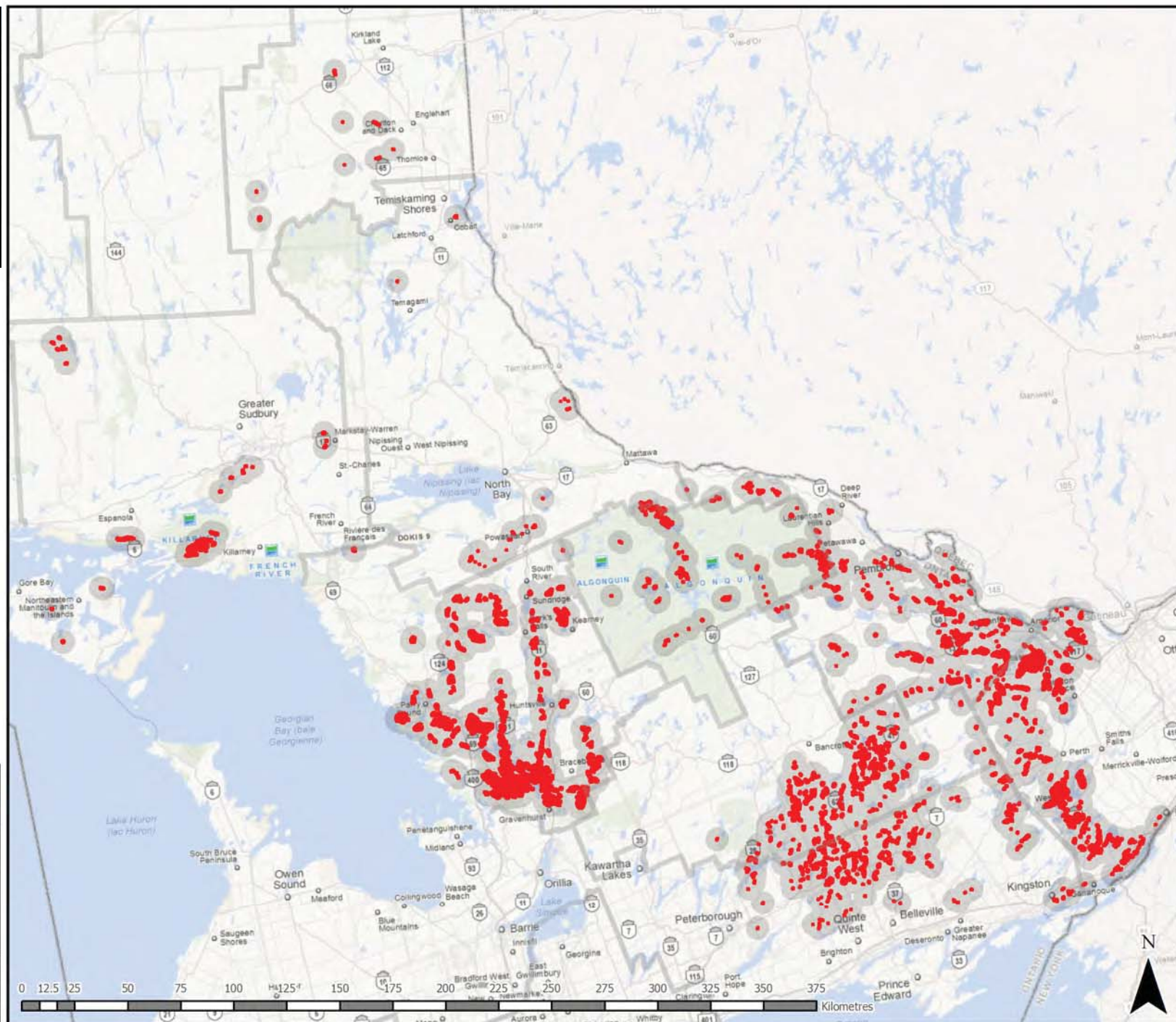
## Drought Damage 2012

### Map 1

Southern and Northeast  
Region Overview

Areas-within-which drought  
caused moderate-to-severe  
damage

 Area of Moderate-to-  
Severe Damage





# Drought




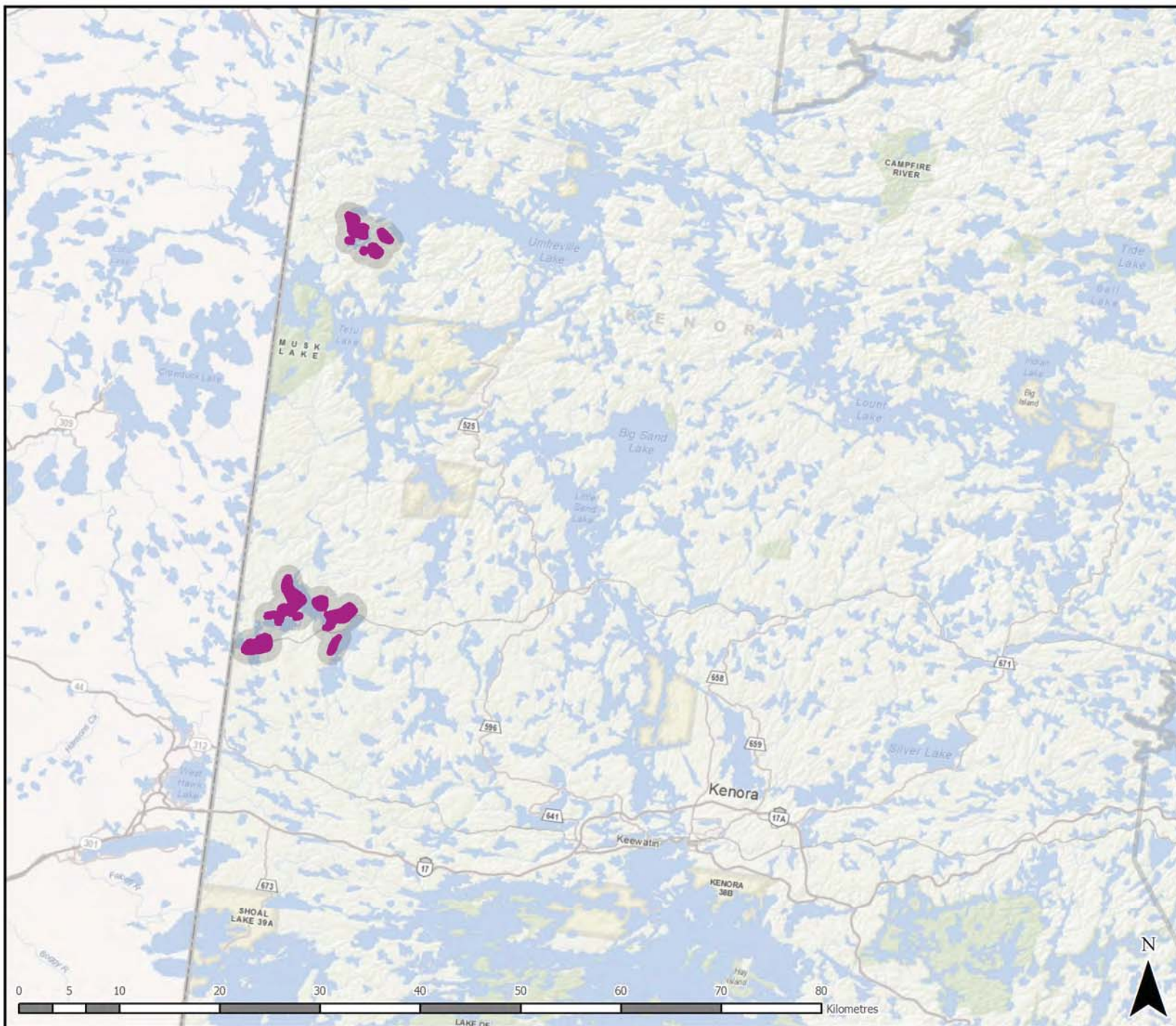
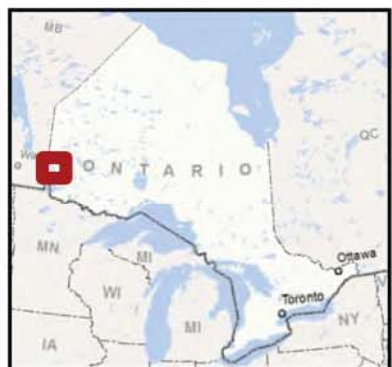
## Drought Damage 2012

### Map 2

Northwest Region

Areas-within-which drought  
caused damage or mortality.

 Area of Mortality





# Emerald Ash Borer

## Pest Information

Common Name:	Emerald ash borer
Latin Name:	<i>Agrilus planipennis</i> Fairmaire
Pest Origins:	<b>Invasive</b> - Native to Asia
Pest Type:	Wood Borer
Host Species:	Ash spp.
Infestation Area:	4,550 ha (2012)

## Provincial Key Facts

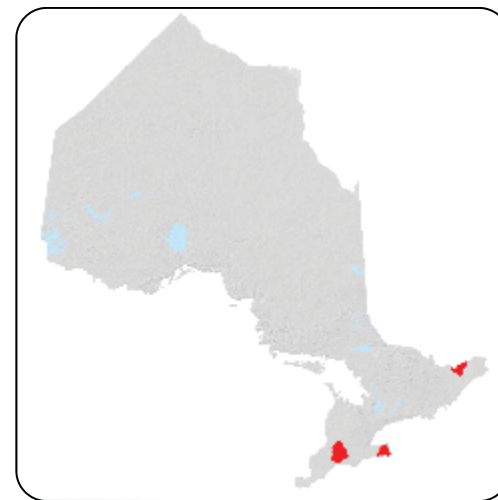
- Emerald ash borer is a significant threat to ash in Ontario.
- Emerald ash borer (EAB) was first discovered in Ontario in 2002 in Windsor.
- By early 2011, EAB infestations had been discovered in numerous municipalities within Aylmer and Guelph Districts; throughout the Greater Toronto Area, Aurora District; the City of Sault Ste. Marie; as well as Leeds and Grenville County and the United Counties of Prescott and Russell in Kemptville District.
- Several new areas of infestation were confirmed and in some cases quarantined by the Canadian Food Inspection Agency (CFIA) in late 2011 and 2012:
  - November 2011 CFIA caught single EAB in a trap on Manitoulin Island
  - April 2012- CFIA regulated Manitoulin District for EAB
  - July 2012- CFIA confirmed EAB in Bruce County at Waterworks Park in Lucknow on the Huron-Bruce border.
  - August 2012- CFIA confirmed EAB in Frontenac County at a private campground near Mountain Grove.
  - August – November 2012- CFIA confirmed 5 new locations for EAB in Quebec including: Laval, L'Ange-Gardien, Chelsea, Longueuil and Papineau.

## Outlook

- As EAB continues to spread eastward in south-western Ontario, it is expanding from forests with a high percentage composition of ash spp. (>30%) to more diverse forests with lower compositions. As a result, the perceived impact is lessened, damage remains severe however on a much smaller percentage of the forest composition (5-10%).
- If not effectively controlled, the emerald ash borer is expect to spread across the entire range of ash, causing widespread ash mortality.



Typical S-shaped galleries caused by the larvae of emerald ash borer.



Overview Map  
Click to View Detail



Severe decline and mortality of ash trees in a south-western Ontario woodlot.



# Emerald Ash Borer

## Regional Summary

### Southern

- Aerial surveys across Southern Region revealed a total of 4,550 ha of new EAB associated decline in 2012.
- In Aylmer District, 1,410 ha of new decline and mortality was mapped primarily in Middlesex, Oxford and Elgin counties. This was likely the result of outward spread from the well-established population in the London area.
- Guelph District recorded the largest expansion in 2012 with a total of 2,812 ha of decline primarily in Niagara Region and eastern Haldimand County. In Welland, where EAB was discovered in 2009, populations have now developed and extended outward in all directions leading to a landscape level decline of ash.
- Moderate-to-severe decline was also mapped for the first time in Perth County, Guelph District, north of the town of St. Mary's.
- In 2012, 328 ha of decline were mapped in Kemptville District, primarily in the wooded areas surrounding and within Ottawa and south along the Hwy 416 corridor.
- EAB was discovered on 3 urban trees in the town of Lucknow, Bruce County on the Huron County border in 2012. CFIA delimitation surveys did not reveal any additional infested trees.

## Trapping Program

- EAB is a regulated pest for which CFIA conducts surveys and imposes regulatory controls to restrict movement of ash material from infested areas.
- In 2012 MNR conducted a EAB detection program which was coordinated with CFIA. MNR's program focused on provincial parks. It also included trapping around the Manitoulin Island site where CFIA found a single beetle in 2011.
- Green prism traps baited with pheromone lure 3Z-dodecen-12-olide were deployed in early June and collected in August. From the 45 trapping locations a total of 6 *Agri-lus* spp. were submitted to the CFS insect diagnostics lab and all results proved negative for emerald ash borer.
- To learn more about species impacting Ontario's forests, go to [Ontario.ca/forestpests](http://Ontario.ca/forestpests)

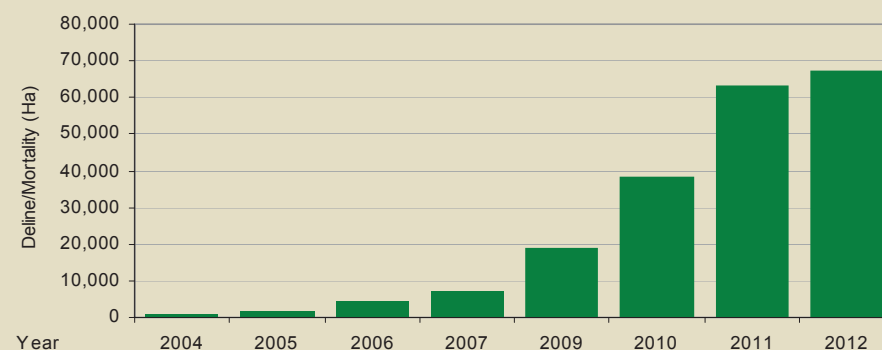
## Area Summary

Total area-within-which emerald ash borer caused moderate-to-severe defoliation and decline 2004 - 2012 by MNR District (area in hectares)

District	2004-2007	2009	2010	2011	2012	Total
<b>Southern</b>						
Aylmer	7,122	11,734	19,436	24,324	1,410	64,026
Guelph	0	0	0	177	2,812	2,989
Kemptville	0	0	0	628	328	956
<b>Provincial Total</b>	<b>7,122</b>	<b>11,734</b>	<b>19,436</b>	<b>25,129</b>	<b>4,550</b>	<b>67,971</b>

*\*Area calculations for 2009 include damage that occurred in 2008*

Cumulative area-within-which emerald ash borer caused moderate-to-severe decline and mortality 2004-2012 (area in hectares)



Thinning crown of white ash tree due to larval feeding damage by emerald ash borer.



Adult emerald ash borer.



# Emerald Ash Borer




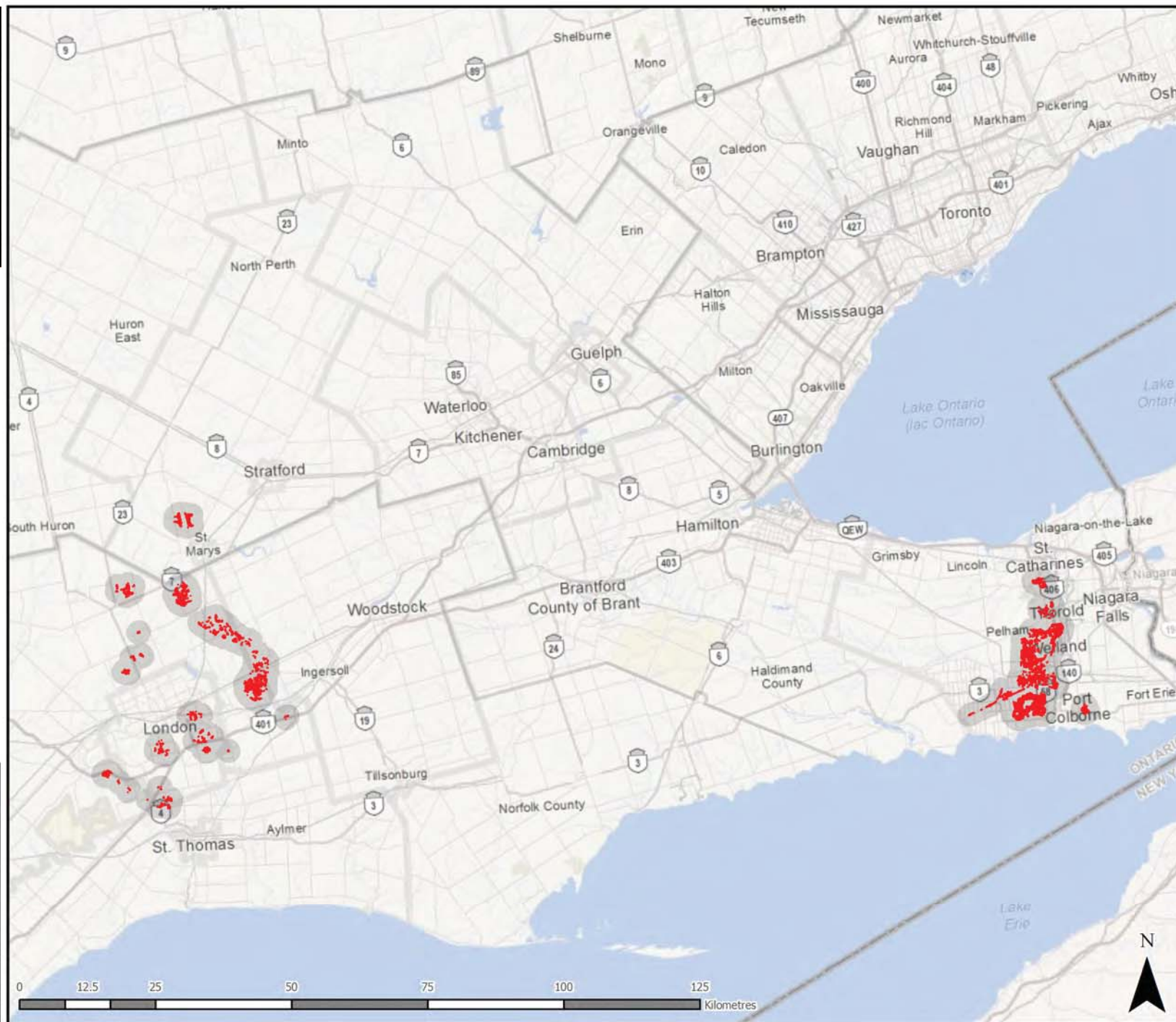
## Emerald Ash Borer 2012

### Map 1

Southern Region

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

 Area of Moderate-to-Severe Decline and Mortality





# Emerald Ash Borer




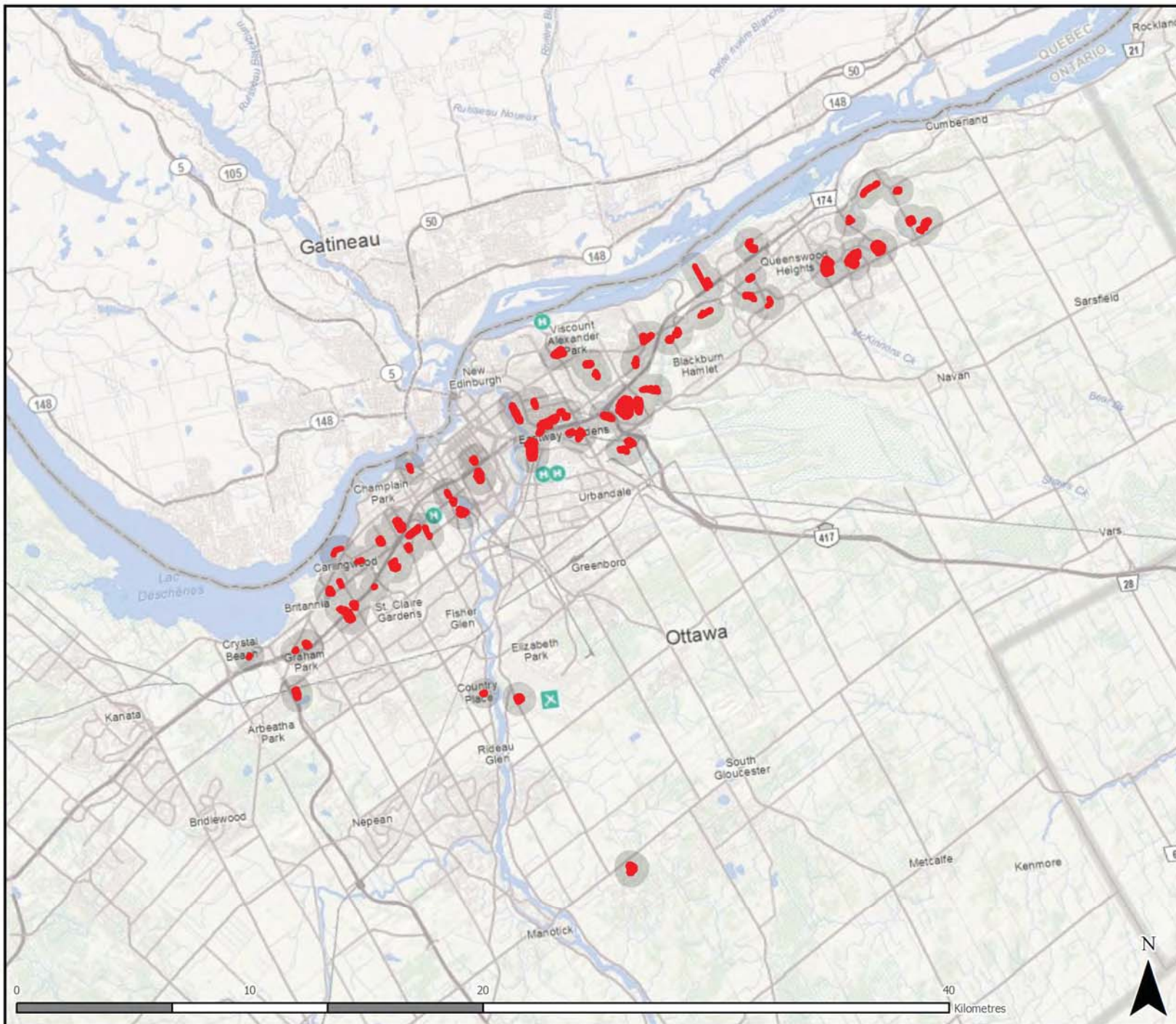
## Emerald Ash Borer 2012

### Map 2

Southern Region

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

 Area of Moderate-to-Severe Decline and Mortality





# Emerald Ash Borer





## Emerald Ash Borer 2012

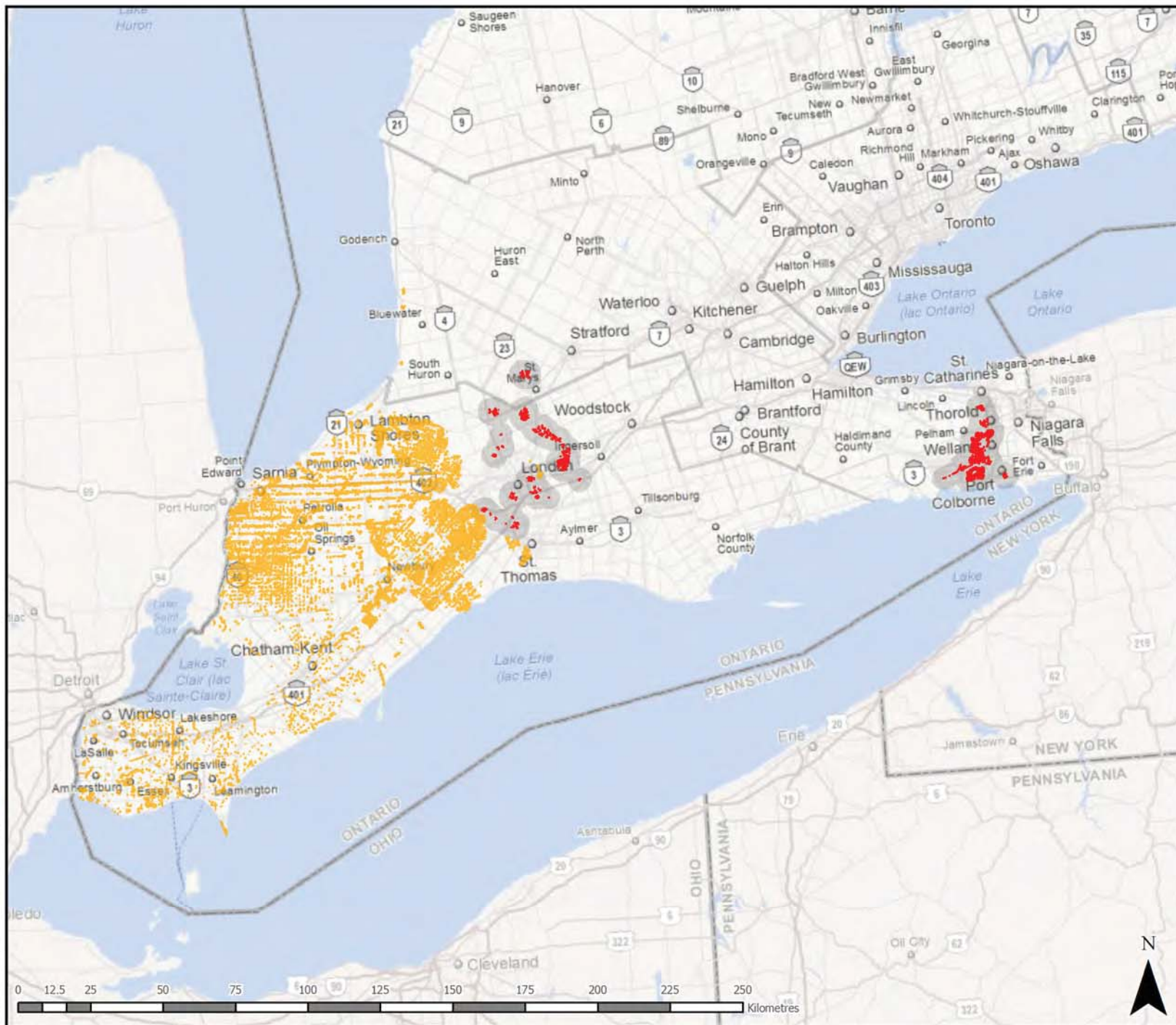
### Map 3

Southern Region

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

 Area of Moderate-to-Severe Decline and Mortality

 Cumulative 2004-2011 Mortality





## Emerald Ash Borer



### Emerald Ash Borer 2012

#### Map 4

Ontario Overview  
Emerald ash borer trap  
locations 2012.

● Trap Locations





# Eastern Larch Beetle

## Pest Information

Common Name:	Eastern Larch Beetle
Latin Name:	<i>Dendroctonus simplex</i> LeConte
Pest Origins:	Native to North America
Pest Type:	Borer
Host Species:	Larch (Tamarack)
Infestation Area:	2,997 ha (2012)

## Provincial Key Facts

- Damage and mortality occurred in the Fort Frances District on tamarack (*Larix laricina*).
- To learn more about species impacting Ontario’s forests, go to [Ontario.ca/forestpests](http://Ontario.ca/forestpests)

## Regional Summary

### Northwest:

- Eastern larch beetle caused pockets of mortality to tamarack within Fort Frances District in 2012.
- The mortality was confined to the south-western end of Fort Frances District in the area north of the town of Rainy River and south of Morson.
- Infestation was evident by tamarack trees with yellow and red foliage.
- Beetle numbers were very high with as many as 40 in a 15cm x 15cm sample of bark.
- Living trees in the area showed signs of attack as large amounts of pitch flowing down the trunk from attempted beetle entry.
- Dead trees had bark falling off and the trunks were covered with exit holes from adult beetles.



Eastern larch beetle adult and larvae.




Overview Map  
[Click to View Detail](#)

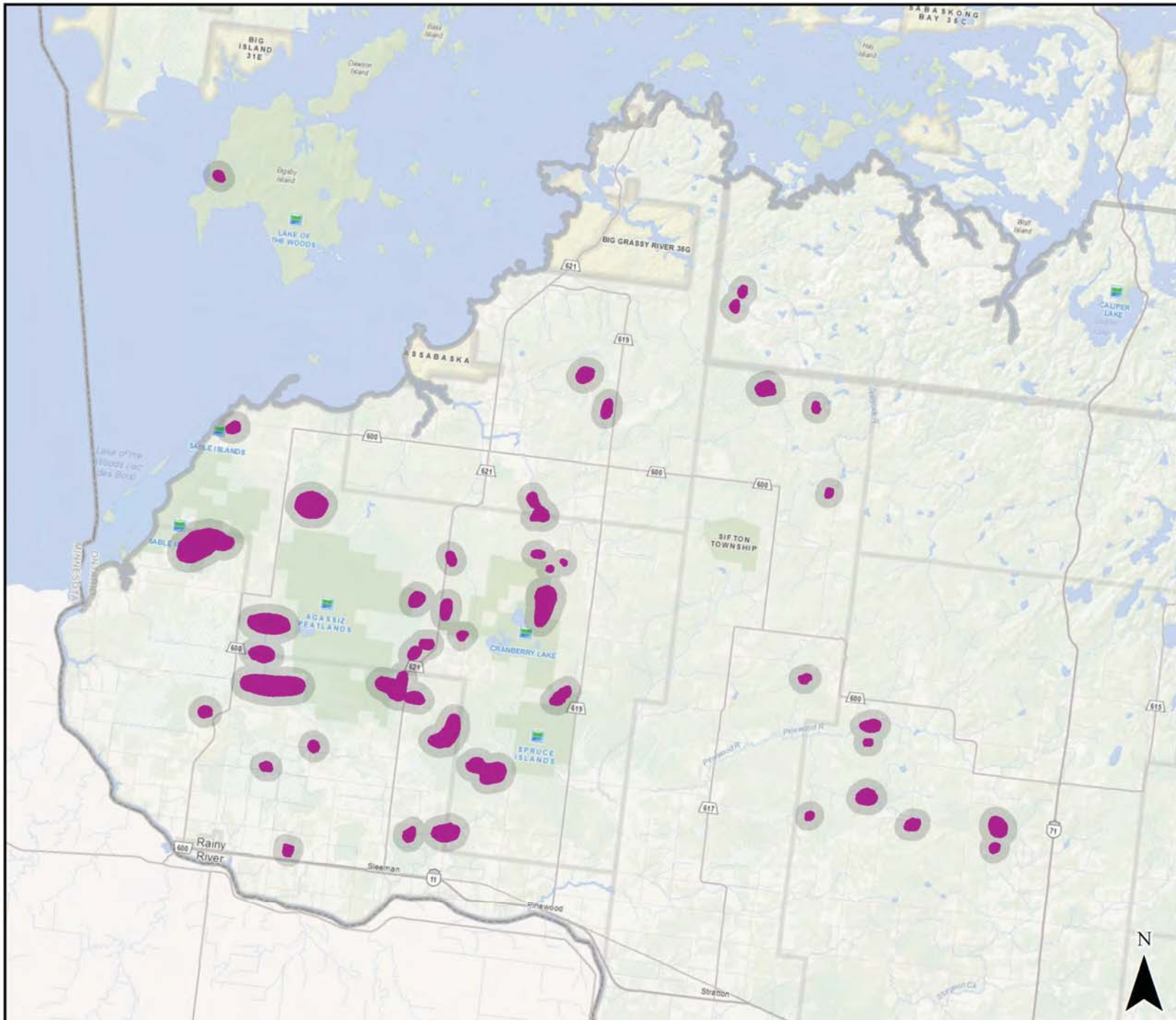


Eastern larch beetle damage in Fort Frances District.





 Area of Mortality





# Forest Tent Caterpillar

## Pest Information

Common Name:	Forest tent caterpillar
Latin Name:	<i>Malacosoma disstria</i> Hubner
Pest Origins:	Native to North America
Pest Type:	Defoliator
Host Species:	Hardwoods
Infestation Area:	47,981 ha (2012)

## Provincial Key Facts

- Forest tent caterpillar outbreaks in Ontario occur every 10-12 years.
- Defoliation was mapped in both the Southern and Northwest Regions in 2012.
- The outbreak is collapsing in Southern Region. A new infestation has now started in Northwest Region.
- Forest tent caterpillar prefers sugar maple and oak in the southern part of the province and trembling aspen in northern areas.
- To learn more about species impacting Ontario’s forests, go to [Ontario.ca/forestpests](http://Ontario.ca/forestpests)

## Outlook

- Populations are expected to build in Northwest Region into a large scale outbreak.
- A small scale egg band survey was done in Northwest Region to forecast forest tent caterpillar defoliation in 2013 (22 locations) see Map 4 and Trend Analysis.
- Populations are expected to collapse in Southern Region.

### Defoliation Forecast 2013

District	Nil	Light	Moderate	Severe	Total
Dryden	1	3	1	1	6
Kenora	2	5		1	8
Nipigon	3				3
Sioux Lookout	2	2	1		5
Total Plots	8	10	2	2	22



Forest tent caterpillar feeding on white birch leaves.



Overview Map  
[Click to View Detail](#)



Forest tent caterpillar defoliation in Southern Ontario.



# Forest Tent Caterpillar

## Regional Summary

### Northwest:

- New outbreak, last infestation was 2004.
- Forest tent caterpillar defoliation aerially mapped in 4 districts (Nipigon, Kenora, Dryden and Sioux Lookout) totalling 18,178 ha of moderate-to-severe defoliation and 12,243 ha of light defoliation.
- Majority of defoliation was on the west central side of Nipigon District north of Kagi-anagami Lake to Eabamet Lake at Fort Hope.
- Defoliation in Kenora District was between Favel and Highwind.
- Over 1,500 ha of defoliation was recorded in the northwest (moderate-to-severe) and northeast portion (light) of Dryden District.
- A relatively small area was observed in the southwest corner of Sioux Lookout District area between Hudson and the town of Sioux Lookout.

### Southern:

- Dramatic decrease of almost 50,000 ha of aerially mapped defoliation from 2011.
- Observed in two districts, Midhurst and Guelph, totalling 9,660 ha of moderate-to-severe defoliation and 8,107 ha of light defoliation.
- Majority of defoliation was in northern portion of Midhurst District, northwest of Owen Sound to Orillia.
- Defoliation mapped in northern portion of Guelph District between Wingham and Harriston.
- Collapsing populations due to:
  - Early hatch starvation in the spring, when cold weather followed warm temperatures and leaf flush stopped. Emerging forest tent caterpillars had no foliage on which to feed.
  - Naturally occurring biological controls: the fungus *Furia gastropachae*, the virus nucleopolyhedrosis virus (NPV) and the parasitic fly *Sarcophaga aldrichi* also known as the friendly fly were all prevalent in 2012.

## Area Summary

Area-within-which forest tent caterpillar caused moderate-to-severe defoliation  
2008 - 2012 by MNR district (area in hectares).

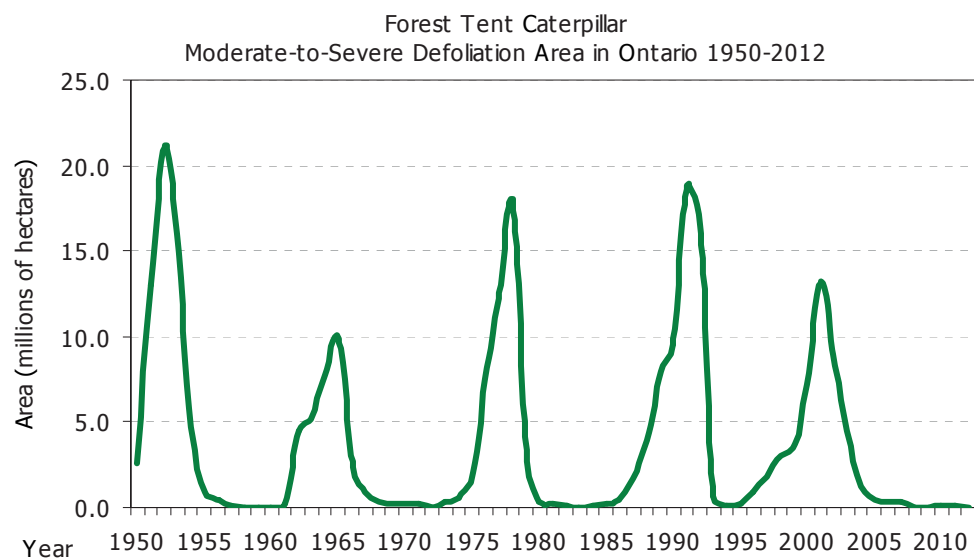
Region / District	2008	2009	2010	2011	2012
<b>Northwest</b>					
Dryden	-	-	-	-	1,638
Kenora	-	-	-	-	2,381
Nipigon	-	-	-	-	25,325
Sioux Lookout	-	-	-	-	871
<b>Subtotal:</b>	-	-	-	-	30,214
<b>Northeast</b>					
Ochrane	3,958	-	-	-	-
North Bay	6,209	-	-	-	-
Sudbury	29,963	-	-	-	-
<b>Subtotal:</b>	40,130	-	-	-	-
<b>Southern</b>					
Bancroft	-	-	30,074	12,551	-
Guelph	-	-	3,073	975	102
Kemptville	-	-	-	-	-
Midhurst	-	-	20,755	49,658	17,665
Parry Sound	224	-	141	-	-
Peterborough	2,505	8,912	6,381	3,755	-
<b>Subtotal:</b>	2,729	8,912	60,424	66,939	17,767
<b>Provincial total</b>	42,859	8,912	60,424	66,939	47,981



# Forest Tent Caterpillar

## Trend Analysis

- Forest tent caterpillar outbreaks are a natural part of the forest ecosystem. They occur on a cycle of every 10-12 years and typically last 3-4 years in a given location.
- Populations in one area of the province often increase to outbreak levels and coalesce with populations in other regions to form very large outbreaks causing severe defoliation across several million hectares.
- Significant defoliation in Southern Region began in 2010 with scattered pockets totaling 60,424ha. By 2012, the defoliation in the region was greatly reduced, and was almost entirely in Midhurst District (17,665ha). The outbreak collapse in this part of Ontario will likely continue in 2013 with limited defoliation expected in this area.
- Based on historic patterns, a large scale provincial level outbreak is likely within the next few years. The 30,214ha of defoliation in 2012 in Northwest Region is probably the beginning of such an outbreak and can be expected to expand in 2013.



## Forest Tent Caterpillar Egg Band Survey Plots

- Forest tent caterpillar egg band counts provide a basis for determining population trends and for making defoliation forecasts in the upcoming year.
- Egg bands are laid in mid to late-July. The tiny larvae emerge the following spring to feed on expanding leaves.
- Egg band surveys are done in the fall by sampling three, widely separated, co-dominant aspen trees. The trees are tallied and new egg bands on the branches are counted. Forecasting is done separately for trees 10-15 cm dbh and trees greater than 15 cm dbh (see table below).
- The average number of new egg bands per tree, results in a defoliation forecast of nil, light, moderate or severe.
- At the beginning of an infestation this scale tends to underestimate the intensity of the forecasted depletion and tends to over-estimate defoliation in declining infesta-

Average number of egg bands / tree	Average number of egg bands / tree	Defoliation Forecast
10-15cm DBH	15cm+ DBH	
0	0	Nil
1	1-5	Light
2-5	6-9	Moderate
6+	10+	Severe



Dead forest tent caterpillar due to nucleopolyhedrosis virus.



Oak leaves defoliated by forest tent caterpillar.





# Forest Tent Caterpillar

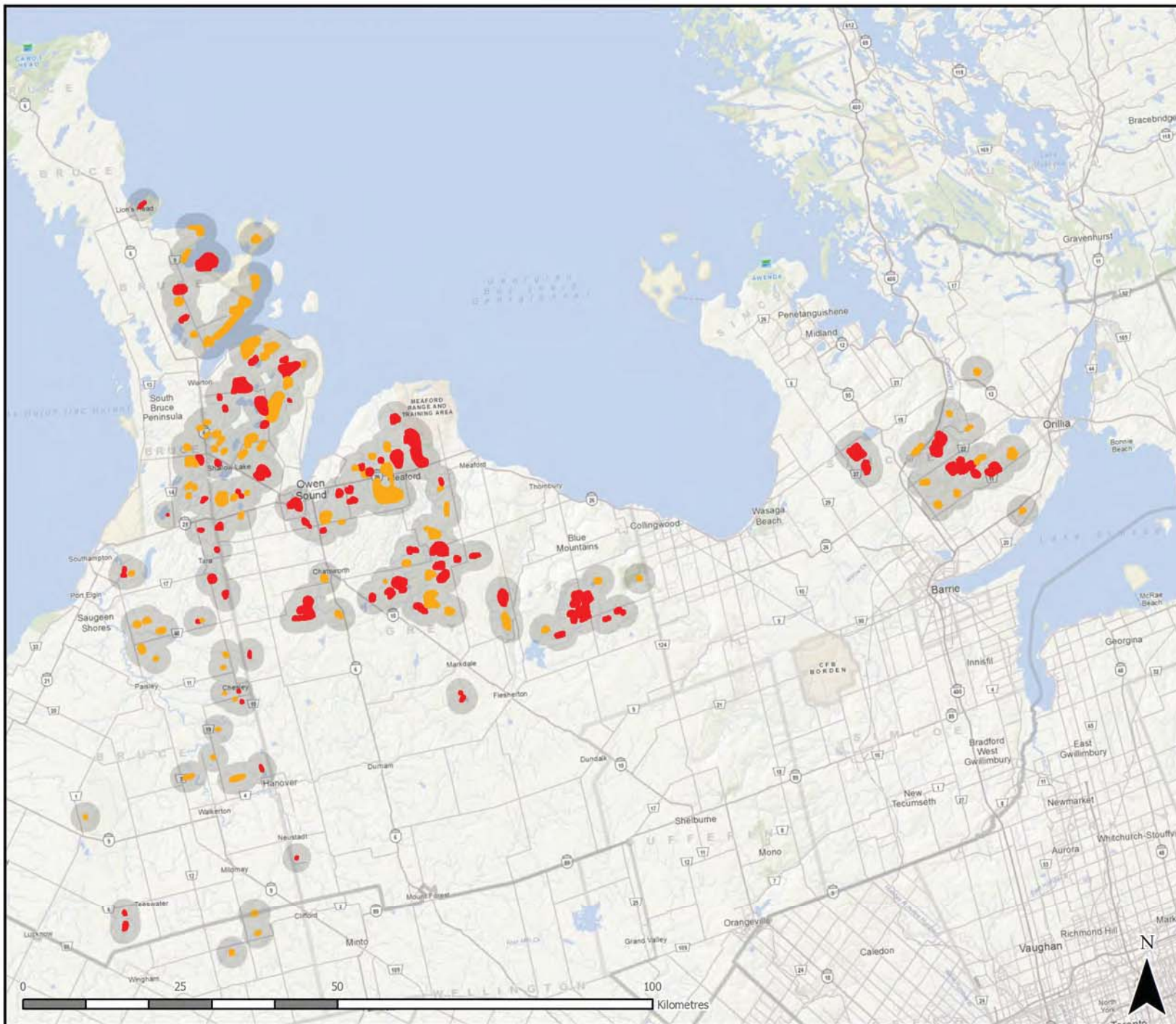


## Forest Tent Caterpillar 2012

### Map 1

Southern Region  
Areas-within-which forest tent caterpillar caused defoliation.

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







## Forest Tent Caterpillar

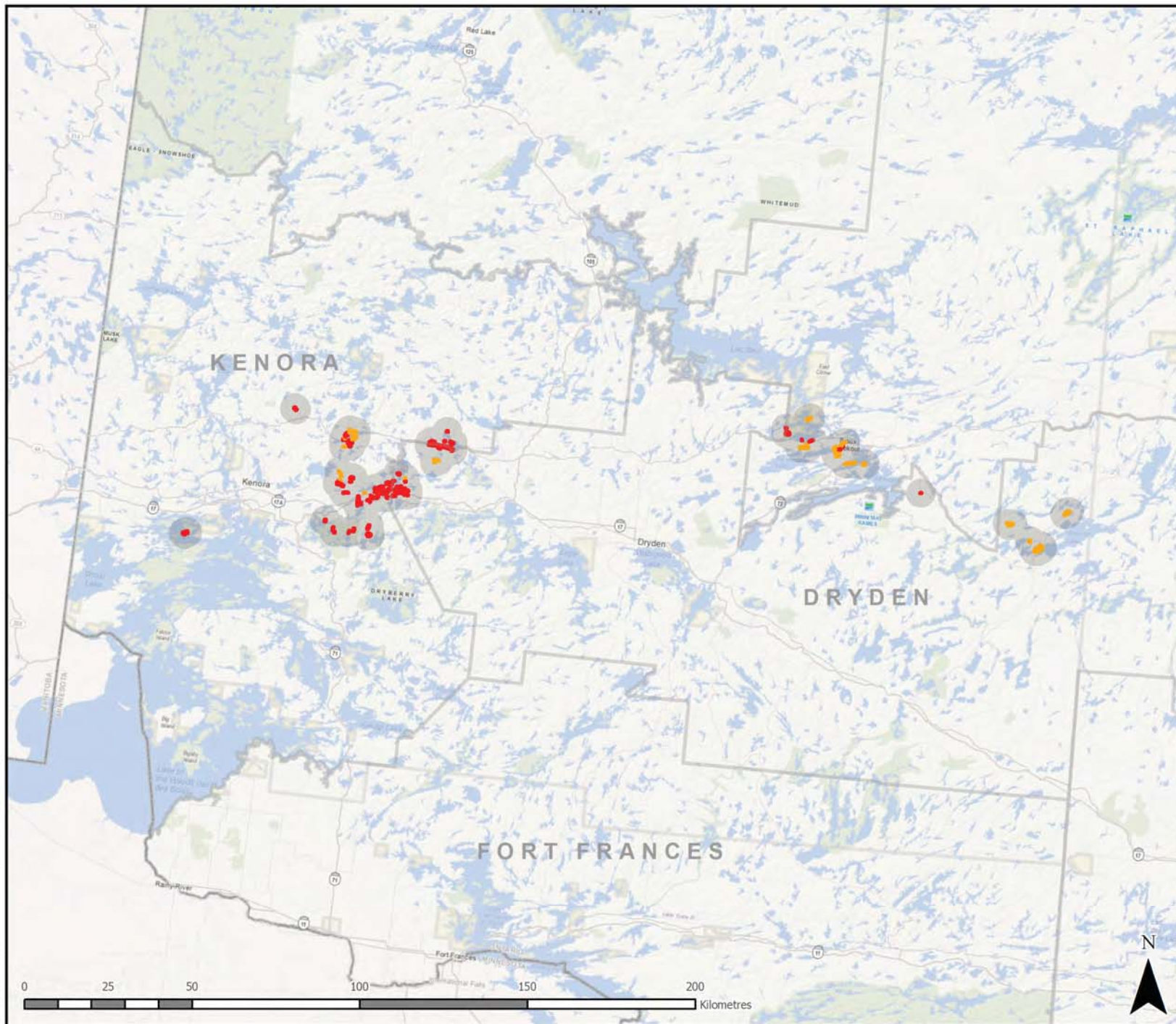


### Forest Tent Caterpillar 2012

#### Map 2

Northwest Region  
Areas-within-which forest tent caterpillar caused defoliation.

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





## Forest Tent Caterpillar





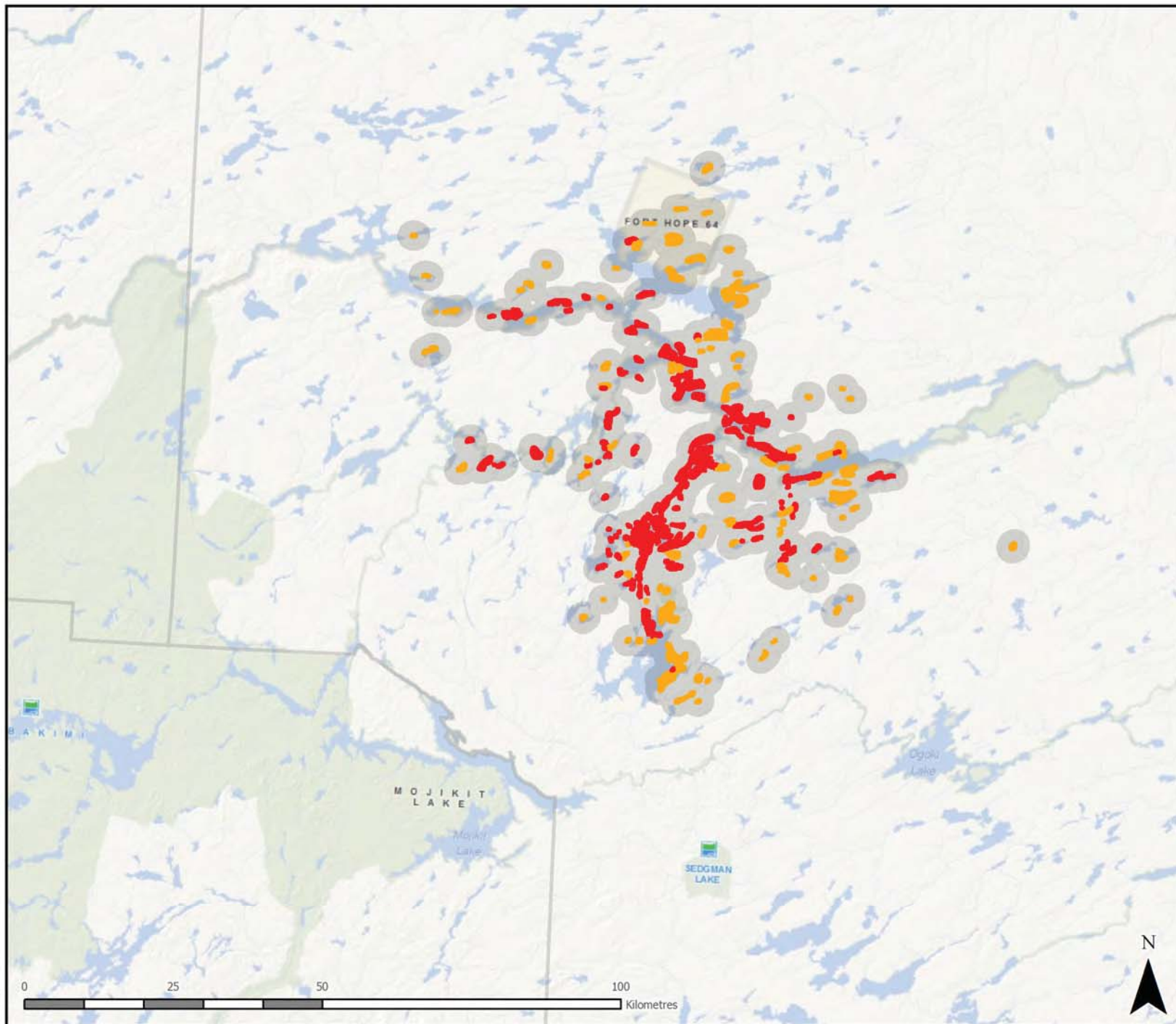
### Forest Tent Caterpillar 2012

#### Map 3

Northwest Region

Areas-within-which forest tent caterpillar caused defoliation.

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





# Forest Tent Caterpillar

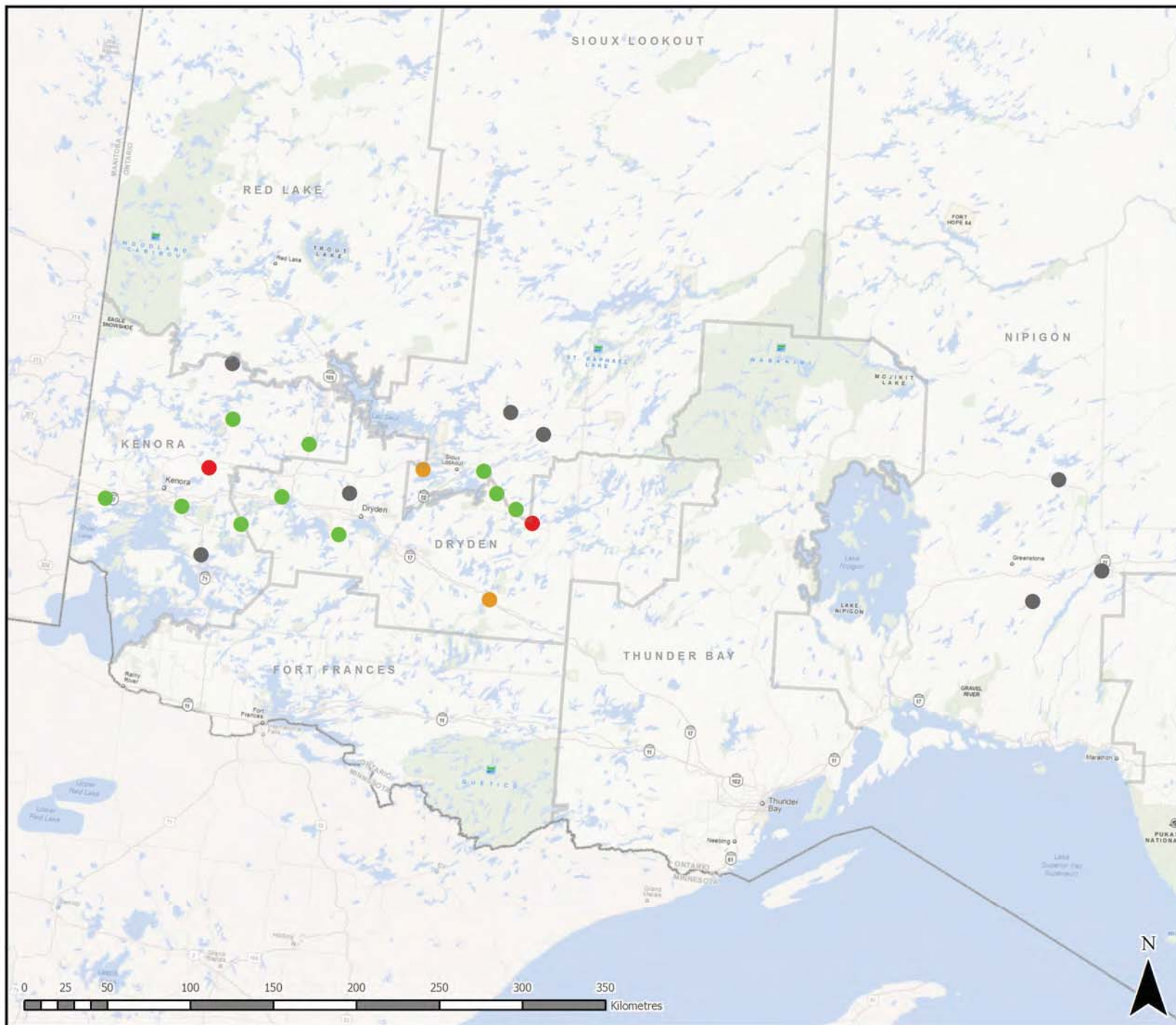


## Forest Tent Caterpillar 2012

Map 4  
Northwest Region  
Egg Band Survey Locations

Forecast:

- Nil
- Light
- Moderate
- Severe





# Gypsy Moth

## Pest Information

Common Name:	Gypsy Moth
Latin Name:	<i>Lymantria dispar</i> (L.)
Pest Origins:	<b>Invasive</b> - Native to Europe
Pest Type:	Defoliator
Host Species:	Oak, birch, aspen and various hardwoods
Infestation Area:	8,123 ha (2012)

## Provincial Key Facts

- Gypsy moth outbreaks occur periodically.
- Major outbreaks in Ontario have peaked in 1985, 1991 and 2002.
- In 2009 and 2010, moist, cool spring and early summer weather favoured the proliferation of the fungus *Entomophaga maimaiga* (Humber, Shimazu & R.S. Soper). The fungus caused widespread and extensive mortality of gypsy moth larvae, resulting in a collapse of the insects population.
- Low levels of gypsy moth populations continued in 2012 over most of Ontario. The only exception was Sudbury District where 8,123ha of defoliation was mapped from the air.
- Populations also increased above trace levels in a few scattered locations in Southern Region.
- To learn more about species impacting Ontario’s forests, go to [Ontario.ca/forestpests](http://Ontario.ca/forestpests)

## Outlook

- Populations of gypsy moth are increasing in Northeast and Southern regions, but are expected to remain at relatively low levels over most of the insect’s range in Ontario.



Gypsy moth larvae on oak.



Overview Map  
[Click to View Detail](#)



Gypsy Moth defoliation north of Richard Lake in Sudbury District.



# Gypsy Moth

## Regional Summary

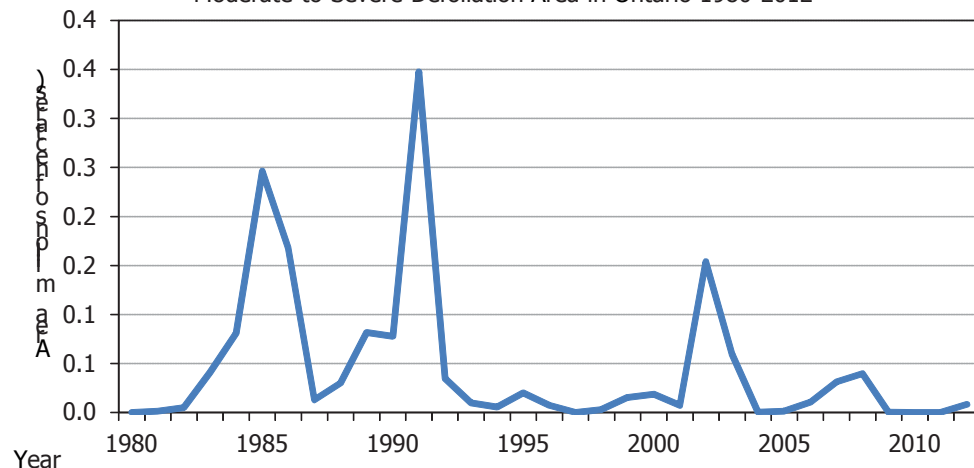
### Northeast:

- In 2012, 8,123 ha of moderate-to-severe defoliation were aerially mapped in Sudbury District.
- Large pockets occurred south of Greater Sudbury on rocky ridges.
- Several small pockets were mapped on Manitoulin Island near Sheguiandah.
- White birch (*Betula papyrifera*) and red oak (*Quercus rubra*) were typical hosts.

### Southern:

- Gypsy moth was observed in five districts in 2012.
- In Aurora District, a localized outbreak occurred in Etobicoke with severe defoliation on white oak. Larve were also reported in the Burlington area.
- In Owen Sound area, gypsy moth was reported feeding with forest tent caterpillars in 2011 on mixed hardwoods and low numbers of larvae were still present in 2012.
- In Peterborough District, trace level defoliation occurred north of Pigeon Lake and larvae were observed in the east of the district near Marmora.
- In Aylmer District, a pocket of moderate defoliation on white oak (*Quercus alba*) occurred in a woodlot south of Samia.
- In Guelph District, low numbers of larvae were feeding on red oak, and large toothed aspen (*Populus grandidentata*) in the aftermath of a forest tent caterpillar infestation.

Gypsy Moth  
Moderate-to-Severe Defoliation Area in Ontario 1980-2012



## Area Summary

Total area-within-which gypsy moth caused moderate-to-severe defoliation 2008 - 2012 by MNR District (area in hectares)

Region / District	2008	2009	2010	2011	2012
<b>Northeast</b>					
Sault Ste. Marie	1,212	-	-	-	-
Sudbury	15,507	-	-	-	8,123
Subtotal:	16,719	-	-	-	8,123
<b>Southern</b>					
Aurora	2,292	-	-	-	-
Aylmer	6,854	84	-	-	-
Guelph	11,136	97	-	-	-
Midhurst	2,459	204	-	-	-
Peterborough	16	-	-	-	-
Subtotal:	22,757	385	-	-	-
<b>Provincial total</b>	<b>39,476</b>	<b>385</b>	<b>-</b>	<b>-</b>	<b>8,123</b>



Gypsy moth adults laying eggs on a trembling aspen.




# Gypsy Moth

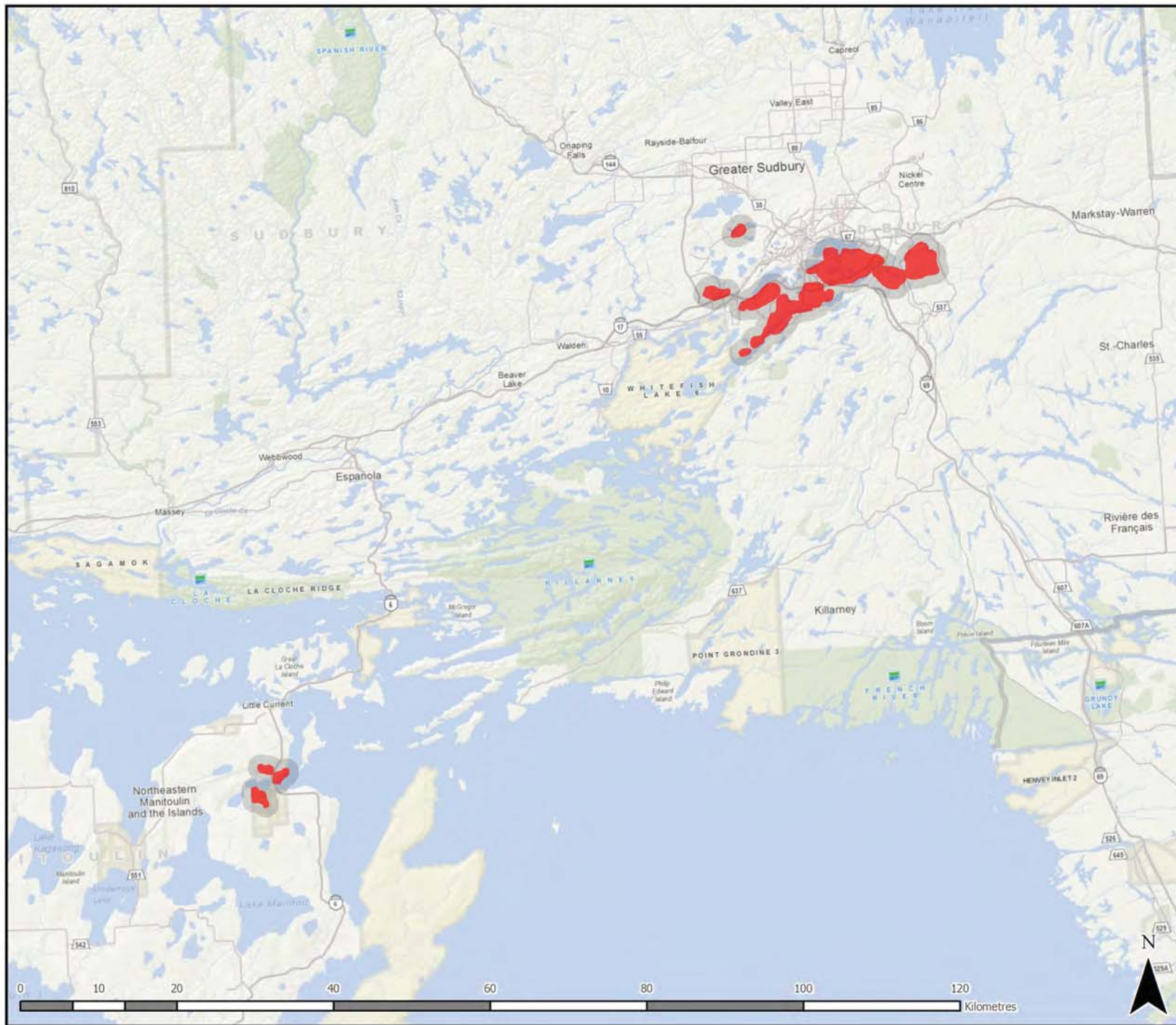


## Gypsy Moth 2012

### Map 1

Northeast Region  
Areas-within-which gypsy moth  
caused defoliation.

 Area of Moderate-to-Severe Defoliation





## Jack Pine Budworm

### Pest Information

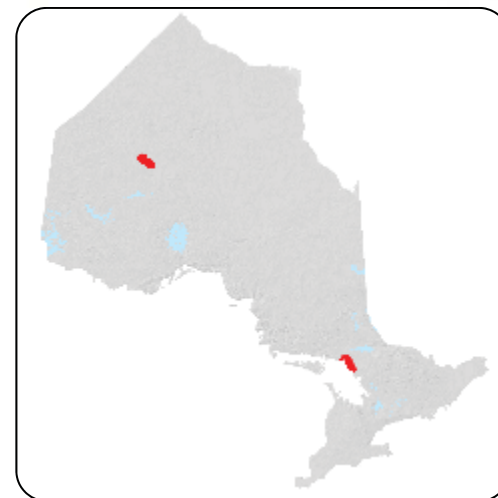
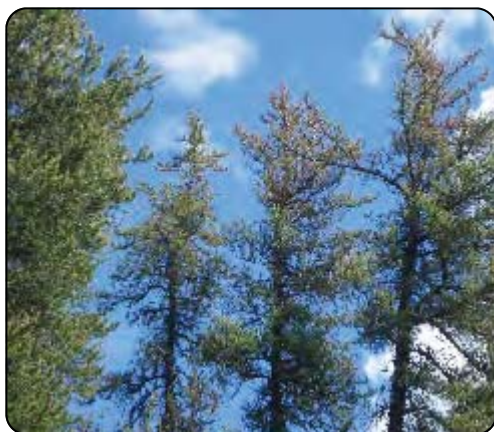
Common Name:	Jack Pine Budworm
Latin Name:	<i>Choristoneura pinus pinus</i> Freeman
Pest Origins:	Native to North America
Pest Type:	Defoliator
Host Species:	Jack pine, red pine, Scots pine, white pine
Infestation Area:	61,018 ha (2012)

### Provincial Key Facts

- In 2012, approximately 61,000 ha of conifer forest were defoliated by jack pine budworm.
- The current infestation began in 2004, peaked in 2006 at approximately 740,000 ha and has been gradually declining.
- Outbreaks occur in Ontario every 8-10 years.
- Large-scale control programs have been undertaken to protect high value jack pine stands during the current outbreak. The last year these were conducted was 2009 (control programs are reported in the Annual Report on Forest Management).
- Although a few pockets of defoliation may continue in 2013, jack pine budworm populations are expected to remain at low levels over most of the insect's range for the next several years.
- To learn more about species impacting Ontario's forests, go to [Ontario.ca/forestpests](http://Ontario.ca/forestpests)



Jack pine budworm larvae feeding.

Overview Map  
[Click to View Detail](#)

Jack pine budworm defoliation.



Jack pine budworm larvae.



Jack pine budworm defoliation.



# Jack Pine Budworm

## Regional Summary

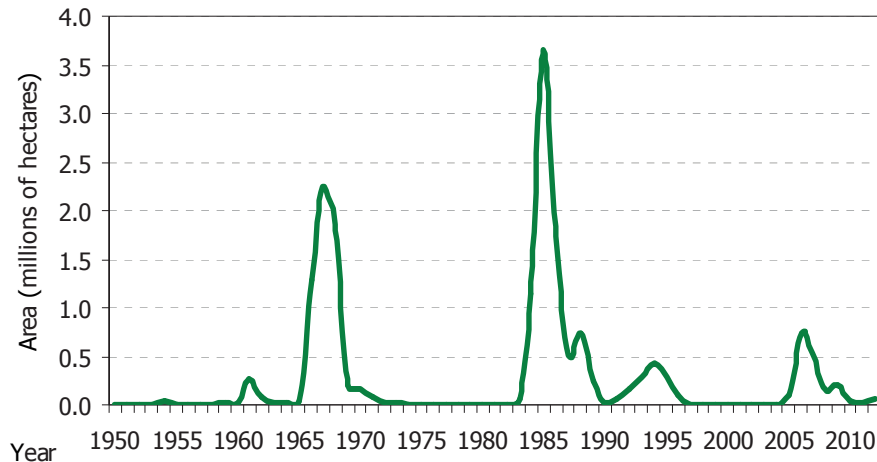
### Northwest:

- Populations of jack pine budworm have collapsed in most of the region, with only pockets of defoliation in 2012.
- In Sioux Lookout District, jack pine budworm caused approximately 12,800 ha of severe-to-moderate defoliation along the North Road approximately 100 km north of Pickle Lake. 800 ha were mapped as light defoliation.
- This location has seen defoliation since 2010 with the area affected almost doubling in 2012.
- This population is relatively contained as this area transitions into lowland spruce to the north and east combined with several large wildfires that have burned near this area in the past few years reducing suitable host material.

### Southern:

- Jack pine budworm caused over 44,000 ha of moderate-to-severe defoliation along the Georgian Bay coast in the northwest portion of Parry Sound District, with 4,356 ha of defoliation extending into Sudbury District, Northeast Region.
- In 2012, the area of moderate-to-severe mapped defoliation approximately doubled in size from 2011, but is similar to levels in 2009.

Jack Pine Budworm  
Moderate-to-Severe Defoliation Area in Ontario 1950-2012



## Area Summary

Total area-within-which moderate-to-severe defoliation was caused by jack pine budworm 2008 - 2012 by MNR District (area in hectares).

Region / District	2008	2009	2010	2011	2012
<b>Northwest</b>					
Kenora	12,292	-	-	-	-
Red Lake	115,041	147,204	1,633	-	-
Sioux Lookout	7,926	7,350	3,987	6,904	11,955
<b>Subtotal:</b>	<b>135,259</b>	<b>154,554</b>	<b>5,619</b>	<b>6,904</b>	<b>11,955</b>
<b>Northeast</b>					
Chapleau	-	98	23	-	-
North Bay	-	195	3	-	-
Sault Ste. Marie	2,356	-	-	-	-
Sudbury	4,092	2,426	14,667	1,793	4,356
Timmins	20,240	6,682	365	1,048	-
<b>Subtotal:</b>	<b>26,688</b>	<b>9,401</b>	<b>15,058</b>	<b>2,841</b>	<b>4,356</b>
<b>Southern</b>					
Algonquin	1,484	-	350	451	-
Aurora	-	1,703	-	-	-
Parry Sound	4,760	-	23,762	17,537	44,708
Pembroke	262	39,701	138	32	-
Peterborough	-	75	-	-	-
<b>Subtotal:</b>	<b>6,506</b>	<b>41,479</b>	<b>24,249</b>	<b>18,021</b>	<b>44,708</b>
<b>Provincial total</b>	<b>168,453</b>	<b>205,434</b>	<b>44,927</b>	<b>27,765</b>	<b>61,018</b>



# Jack Pine Budworm

## Jack Pine Forest Health Plots

In the mid 1990s, jack pine plots were established across Northeast and Northwest regions to monitor and study the impacts of jack pine budworm and the health of jack pine forests across northern Ontario.

A total of 124 plots, comprising 6,200 trees (60 plots in Northeast Region, 64 plots in Northwest Region) were assessed in 2012. The trees were rated for the presence of any pest, disease or abiotic factors that affect jack pine as well as the abundance of male flowers.

### Regional Plot Summary:

- In both regions, 50% of the jack pine trees had less than 25% total defoliation.
- A total of 75 jack pine plot trees in Northeast Region died in 2012. Almost 75% of this mortality was caused by armillaria root rot. Western gall rust and wood borers likely contributed to the remaining mortality.
- A total of 53 jack pine plot trees in Northwest Region died in 2012. Mortality was caused by armillaria root rot (90%) and blowdown (8%).
- The tops of live jack pine trees were relatively healthy in both regions.
- Surveys revealed a large number of jack pine male flowers in Northeast Region in 2012. In Northeast Region over 60% of the live jack pine trees assessed in 2012 had moderate-to-high levels of male flowers. In contrast, Northwest Region male flower abundance decreased significantly in 2012 as over 70% of the trees assessed had nil-to-light levels compared to 49% in 2012.
- In 2012, there was only one plot tree with jack pine budworm defoliation (5% needle loss) in Northeast Region. Northwest Region likewise had only one plot tree with jack pine budworm defoliation (30% needle loss).
- A total of 624 trees had other forest health factors affecting jack pine during the assessment which included: western gall rust, sweet fern blister rust and abiotic factors such as drought, blowdown and snow damage.
- The most damaging agent in both regions was western gall rust. A total of 373 trees had some level of gall rust, the majority of which were in Northeast Region (318 trees). The majority of the western gall rust in Northeast region was light in severity. In Northwest region 47% of the live jack pine also had light damage by western gall rust.
- Armillaria root rot was the second most damaging agent with 79 trees affected across both regions.

## Plot Summary

Condition of all trees in jack pine forest health plots in Ontario, 2012.

Region	Tree Condition (% of trees)					
	Total defoliation (%)				Mortality	
	<25	25-50	51-75	>75	New	Old
Northeast (3000 trees)	50.7	9.8	1.5	0.9	2.5	34.7
Northwest (3200 trees)	49.3	11.8	1.8	0.4	1.7	35.1

Condition of all tree tops and abundance of flowers of live trees in jack pine forest health plots in Ontario, 2012.

Region	Tree Condition (% of trees)						
	Tree Top			Abundance of Flowers			
	Live	Bare	Dead	Nil	Light	Moderate	High
Northeast (1890 trees)	97.1	1.4	1.5	7.4	29.3	19.1	44.2
Northwest (2072 trees)	98.2	0.0	1.8	25.9	48.2	19.1	6.8



Pheromone trap in jack pine.



## Jack Pine Budworm



### Jack Pine Budworm 2012

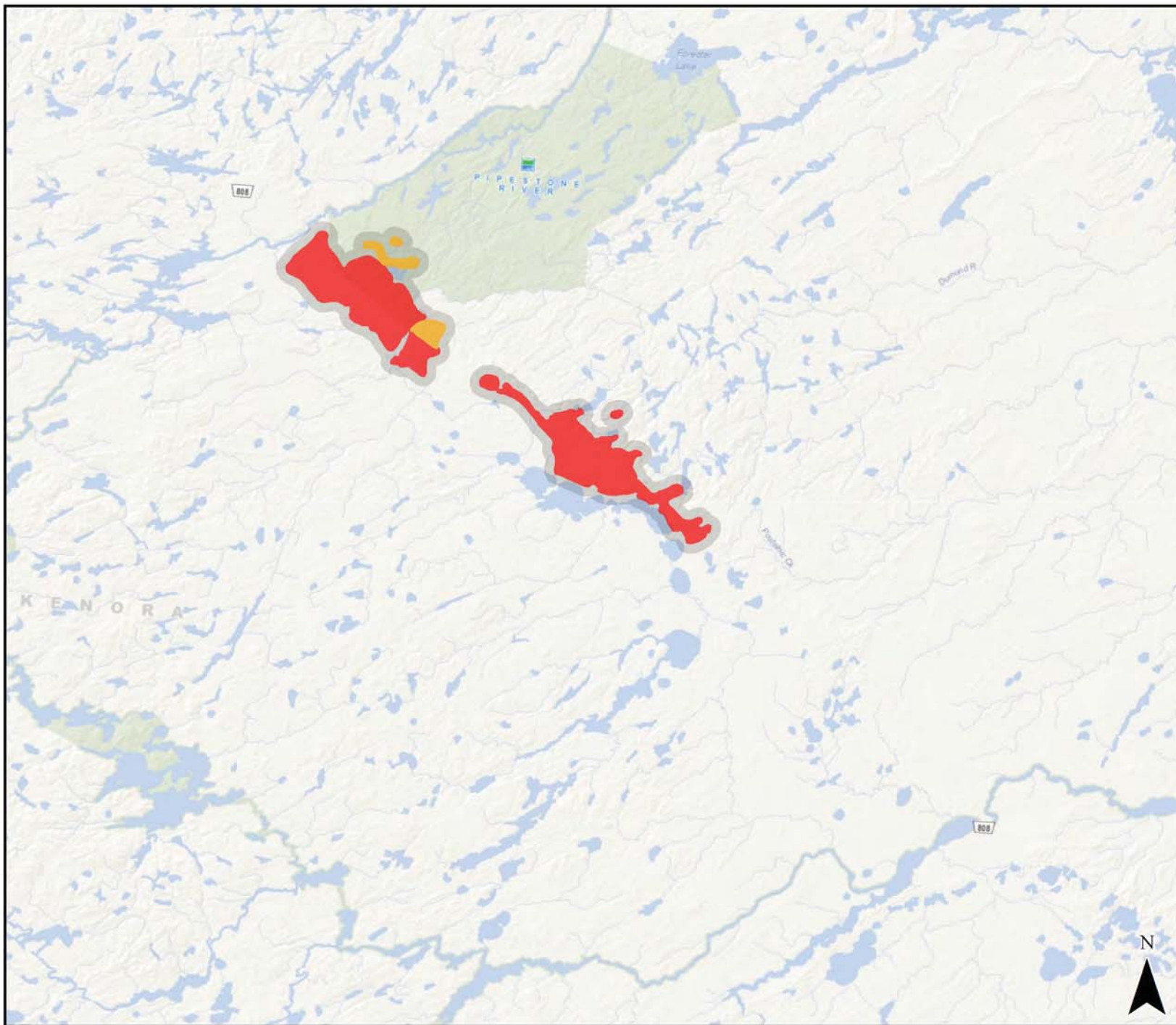
#### Map 1

Northwest Region

Areas-within-which jack pine  
budworm caused defoliation.

 Area of Light  
Defoliation

 Area of Moderate-to-  
Severe Defoliation





## Jack Pine Budworm



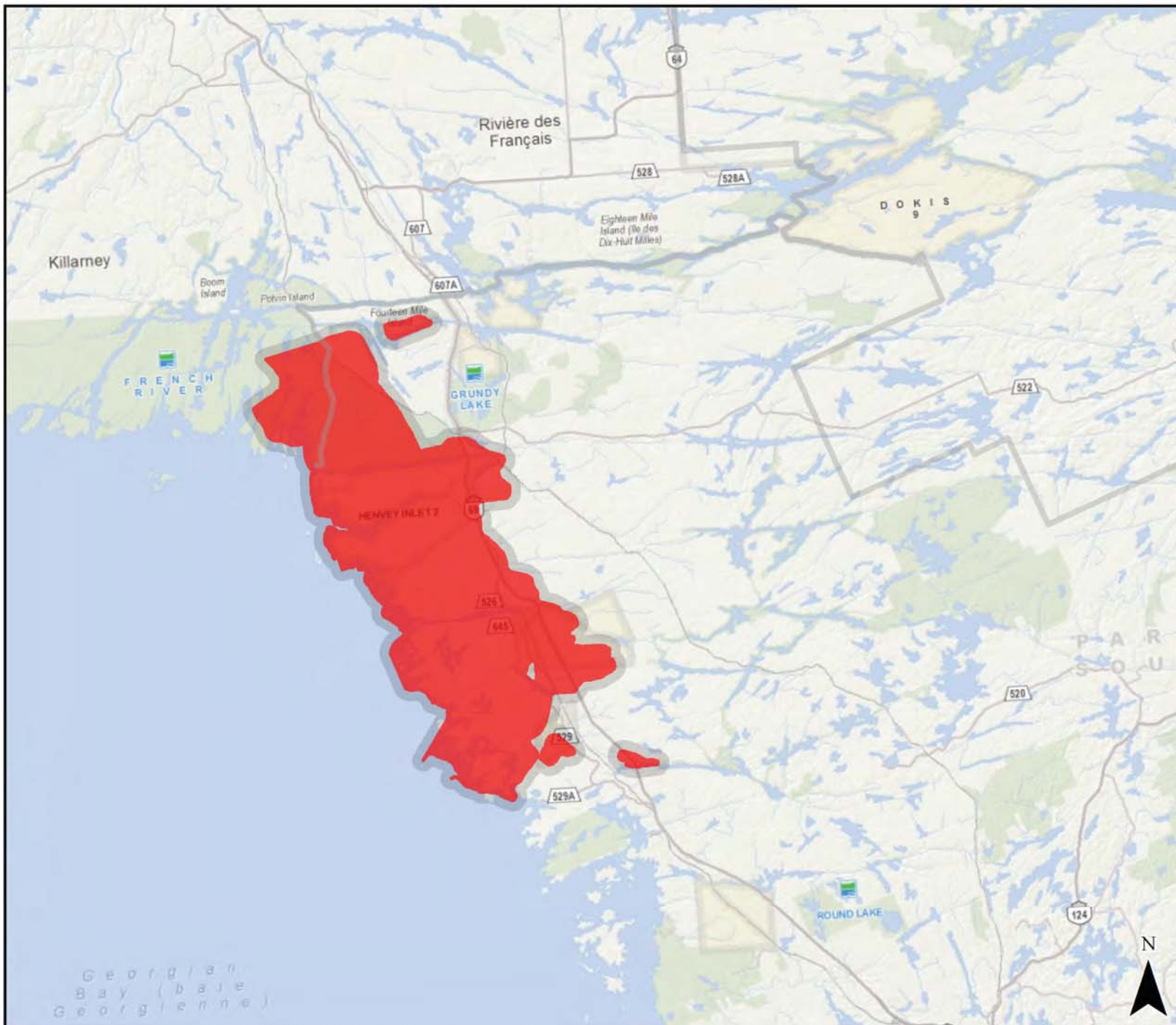
### Jack Pine Budworm 2012

#### Map 2

Southern Region

Areas-within-which jack pine  
budworm caused defoliation.

 Area of Moderate-to-  
Severe Defoliation





# Larch Casebearer

## Pest Information

Common Name:	Larch Casebearer
Latin Name:	<i>Coleophora laricella</i> (Hubner)
Pest Origins:	Invasive - Native to Europe
Pest Type:	Defoliator
Host Species:	Larch (Tamarack)
Infestation Area:	4,869 ha (2012)

## Provincial Key Facts

- Mapped in Southern Region since 2001.
- In 2003 defoliation in Ontario peaked at 16,839 ha.
- Defoliation in 2012 reached 4,869 ha, triple that of 2011 when 1,591 ha of moderate-to-severe defoliation were mapped .
- Majority of defoliation occurred in Southern Region.
- Defoliation often occurred in small scattered pockets.
- Several new areas of infestation were observed in 2012.
- To learn more about species impacting Ontario’s forests, go to [Ontario.ca/forestpests](http://Ontario.ca/forestpests)



Larch casebearer larvae



Overview Map  
[Click to View Detail](#)



Larch casebearer damage



# Larch Casebearer

## Regional Summary

### Northeast:

- Only found in North Bay District in 2012.
- Second time in three years found in North Bay District.
- Small areas in the south-eastern portion of the district.

### Southern:

- Area of defoliation almost tripled in 2012.
- Fifth consecutive year in Midhurst District, with defoliation more than doubled from that of 2011, mostly as a result of a large increase in affected area on the east side of district.
- In 2012, there was almost four times as much defoliation in Pembroke District compared to 2011 with much of the increase in the central and eastern portions of the district in the area of Golden, Dore and Mink lakes and a larger area between the towns of Westmeath and Beachburg.
- The majority of the defoliation in Peterborough District was on the west side of the district from Lake Scugog to Madoc with scattered pockets of defoliation, averaging 85% defoliation over these areas.
- Guelph District infestations were recorded in the northern portion of the district around Luther Lake.
- Bancroft District also had scattered pockets of defoliation on larch in 2012, and was a considerable increase from the small area mapped in 2011.
- Larch casebearer defoliation more than doubled in 2012 in Kemptville District, with several small pockets from the Appleton area down to New Dublin, north of Brockville, as well as near Hawksbury and Cornwall.
- A new infestation was recorded in Aurora District from Cooks Bay on Lake Simcoe to the Lake Scugog area near Port Perry.
- Another new smaller infestation of larch casebearer was observed in Algonquin Park, southwest of Whitney.

## Area Summary

Total area-within-which larch casebearer caused moderate-to-severe defoliation 2008 - 2012 by MNR District (area in hectares).

Region / District	2008	2009	2010	2011	2012
<b>Northeast</b>					
North Bay	-	-	115	-	146
<b>Subtotal:</b>	-	-	115	-	146
<b>Southern</b>					
Algonquin	-	-	-	-	34
Aurora	-	-	-	-	449
Bancroft	-	-	-	67	526
Guelph	14	-	-	-	563
Kemptville	-	10	-	227	478
Midhurst	259	132	316	503	1,163
Parry Sound	-	-	1,289	-	-
Pembroke	-	-	-	232	805
Peterborough	-	-	-	562	705
<b>Subtotal:</b>	273	142	1,605	1,591	4,723
<b>Provincial total</b>	273	142	1,720	1,591	4,869



Larch casebearer larvae.



# Larch Casebearer



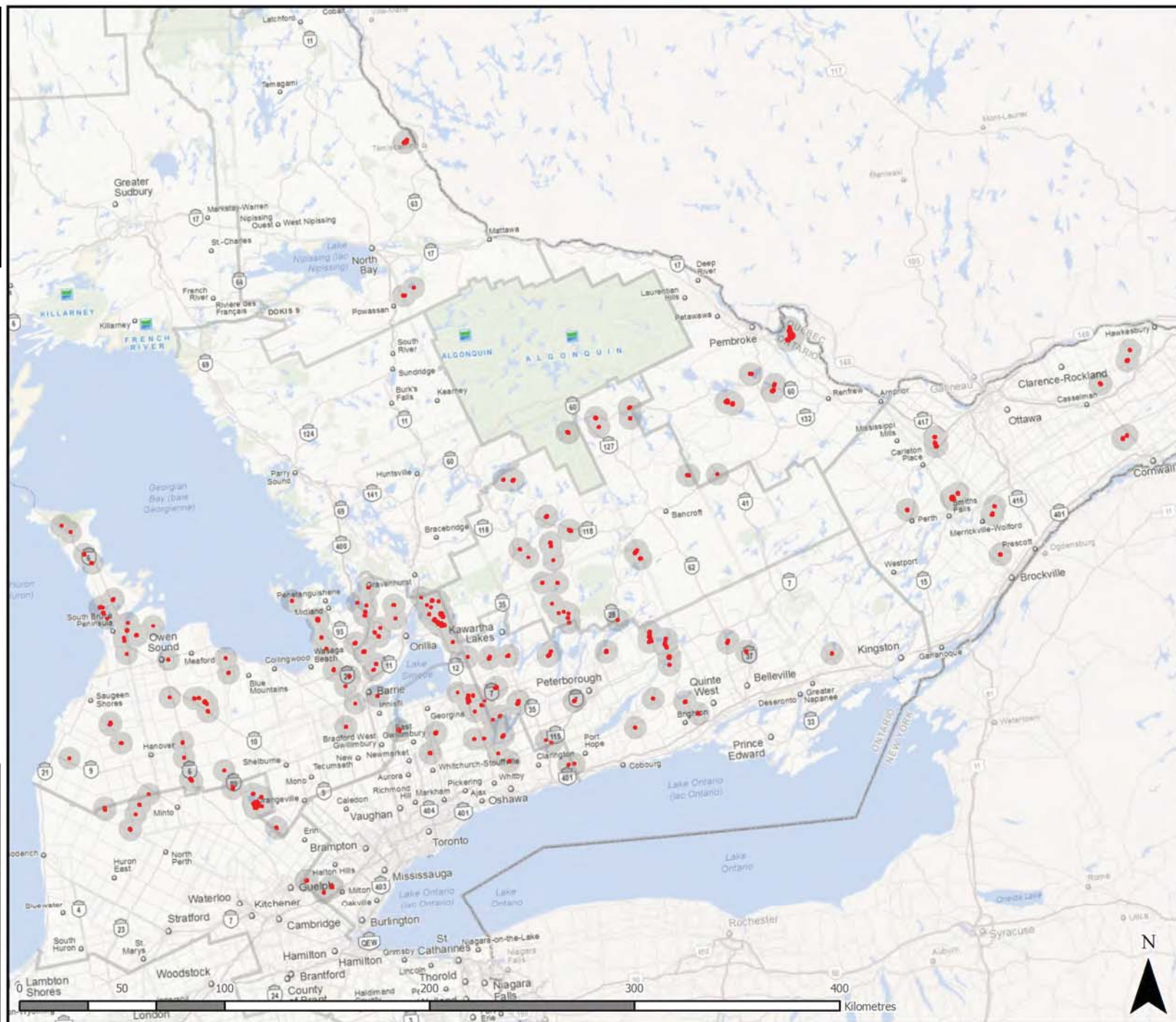
## Larch Casebearer 2012

### Map 1

Southern Region

Areas-within-which larch  
casebearer caused defoliation.

 Area of Moderate-to-Severe Defoliation





# Large Aspen Tortrix

## Pest Information

Common Name:	Large aspen tortrix
Latin Name:	<i>Choristoneura conflictana</i> (Wlk.)
Pest Origins:	Native to North America
Insect Type:	Defoliator
Host Species:	Trembling aspen, white birch, willow and alder
Infestation Area:	3,521 ha (2012)

## Provincial Key Facts

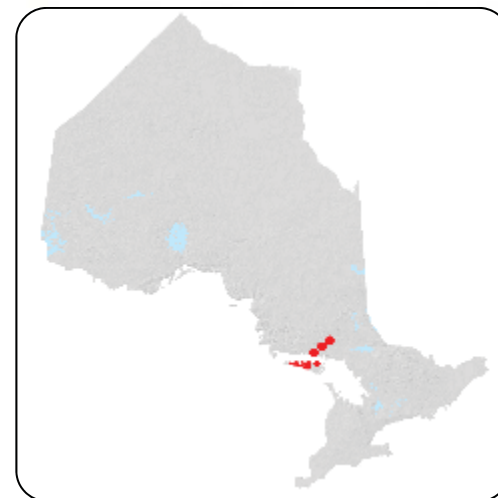
- Second only to forest tent caterpillar as an aspen defoliator.
- Periodic outbreaks with sharp increases and decreases after two-three years of moderate-to-severe defoliation.
- There are many natural parasites, predators and diseases associated with declining large aspen tortrix populations.
- Infestation has been declining since 2009, with a decrease of over 9,000 ha of defoliation in 2012 compared to 2011.
- Only found in Northeast Region in 2012.
- To learn more about species impacting Ontario's forests, go to [Ontario.ca/forestpests](http://Ontario.ca/forestpests)

## Outlook

- Although the infestation appears to be collapsing in Northeast Region, this insect often exhibits population collapse in one area followed by population increases in other areas.
- Infestation will probably continue to decline in Sudbury District in areas defoliated more than two consecutive years.
- New infestation on St Joseph Island may be localized as it has collapsed on the mainland in Sault Ste. Marie District.
- New infestation in North Bay District may be building.



Large aspen tortrix larva.



Overview Map  
[Click to View Detail](#)



Damage caused by large aspen tortrix on trembling aspen.



# Large Aspen Tortrix

## Regional Summary

### Northeast:

- Sudbury district had the only aerially mapped defoliation from large aspen tortrix.
- Small pockets of defoliation in the southwest portion of Sudbury District west of Sudbury and Espanola. As well, several pockets were located on the north and west side of Manitoulin Island.
- In Sault Ste. Marie District, there was a new defoliation area on the south end of St Joseph Island. It was located in a small stand of intermediate and semi-mature trembling aspen, with an average of 30% defoliation.
- Light-to-moderate defoliation occurred in two locations in the south end of North Bay District near the town of Bonfield, south of North Bay and the town of Loring in the southwest corner of the district. At both locations semi-mature trembling aspen trees had defoliation on the top third of the trees.

Total area-within-which large aspen tortrix caused moderate-to-severe defoliation 2008 - 2012 by MNR District (area in hectares).

Region / District	2008	2009	2010	2011	2012
<b>Northeast</b>					
Chapleau	-	7,326	-	3,892	-
North Bay	10,606	1,032	-	-	-
Sault Ste. Marie	11,075	34,293	4,483	31	-
Sudbury	-	46,092	9,845	5,498	3,521
Timmins	-	-	-	3,298	-
Wawa	-	-	-	263	-
<b>Provincial Total:</b>	<b>21,681</b>	<b>88,743</b>	<b>14,328</b>	<b>12,982</b>	<b>3,521</b>



Aerial view of large aspen tortrix defoliation in a trembling aspen stand.



Large aspen tortrix defoliation on trembling aspen.



## Large Aspen Tortrix




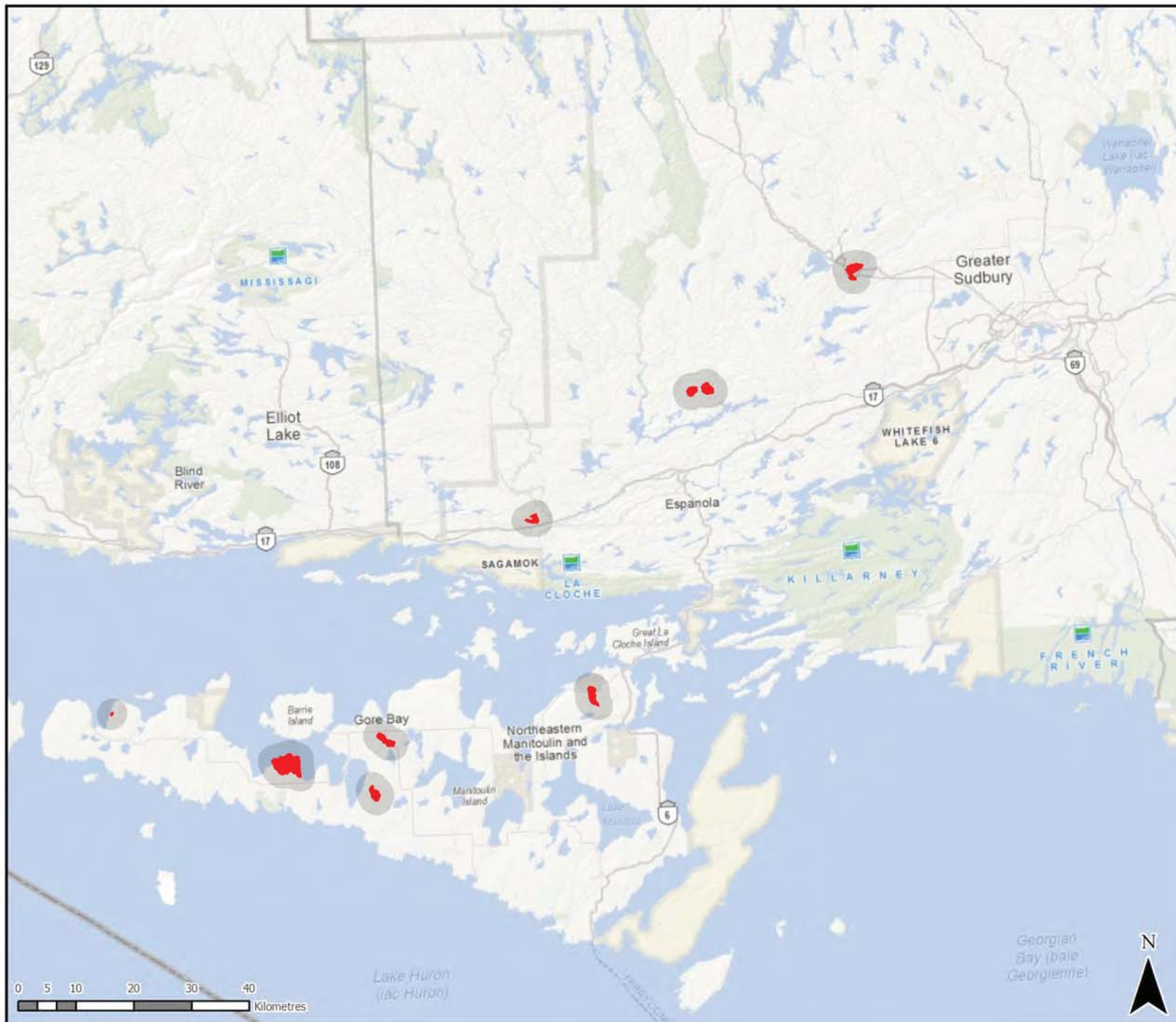
### Large Aspen Tortrix 2012

#### Map 1

Northeast Region

Areas-within-which large aspen  
tortrix caused defoliation.

 Area of Moderate-to-  
Severe Defoliation





# Pine False Webworm

## Pest Information

Common Name:	Pine false webworm
Latin Name:	<i>Acantholyda erythrocephala</i> (L.)
Pest Origins:	<b>Invasive</b> - Native to Europe and Asia
Pest Type:	Defoliator
Host Species:	White pine, red pine, Scots pine, jack pine
Infestation Area:	48 ha (2012)

## Provincial Key Facts

- First collected in Ontario in 1961, it was initially a pest of young pine plantations. Starting in 1993 severe defoliation was recorded on semi-mature and mature pine near Peterborough and Simcoe.
- Infestation peaked in 1997 with almost 9,000 ha of moderate-to-severe defoliation.
- Since 2008, low levels of defoliation have been aerially mapped in Ontario.
- In 2012, moderate-to-severe defoliation was limited to a small plantation and small islands in Lake Nipissing, Northeast Region.
- To learn more about species impacting Ontario's forests, go to [Ontario.ca/forestpests](http://Ontario.ca/forestpests)

## Regional Summary

### Northeast:

- The only aerially mapped defoliation occurred on western side of North Bay District on small islands predominantly on the west arm of Lake Nipissing. This was the fourth consecutive year of defoliation of semi-mature and mature eastern white pine and red pine in this area.
- Moderate-to-severe defoliation found in small five-needle pine plantations at arboretum in Sault Ste. Marie, Sault Ste. Marie District.
  - 90% of trees affected, with an average defoliation of 40%.
  - Eastern white pine and Macedonian pine most severely affected.
- Light defoliation on eastern white pine in Kirkwood Forest north of Thessalon, Sault Ste. Marie District. Lower and mid-crown branches had moderate-to-severe defoliation on the stand edges, but overall only 10% defoliation.



Pine false webworm larva.



Overview Map  
[Click to View Detail](#)



Damage caused by pine false webworm on white pine in Sault Ste. Marie.



# Pine False Webworm

## Trap Results

- Pheromone trapping for pine false webworm was conducted in infested or historically infested areas.
- Sault Ste. Marie District: 679 males found in infested plantation in four baited traps, with over 300 in one trap.
- North Bay District: 14 males collected in one trap.
- Midhurst District: 2 males collected, 36 traps at historically defoliated sites.
- Peterborough District: 0 males collected, 3 traps at historically defoliated sites.

## Area Summary

Area-within-which pine false webworm caused moderate-to-severe defoliation  
2008 - 2012 by MNR District (area in hectares).

Region / District	2008	2009	2010	2011	2012
<b>Northeast</b>					
North Bay	-	12	10	55	48
Sault Ste. Marie	-	179	26	-	-
Subtotal:		191	36	55	48
<b>Southern</b>					
Midhurst	26	11	-	-	-
Subtotal:	26	11	-	-	-
<b>Provincial total</b>	26	202	36	55	48



Male (left) and female (right) pine false webworm adults laying eggs on white pine needles.



# Pine False Webworm




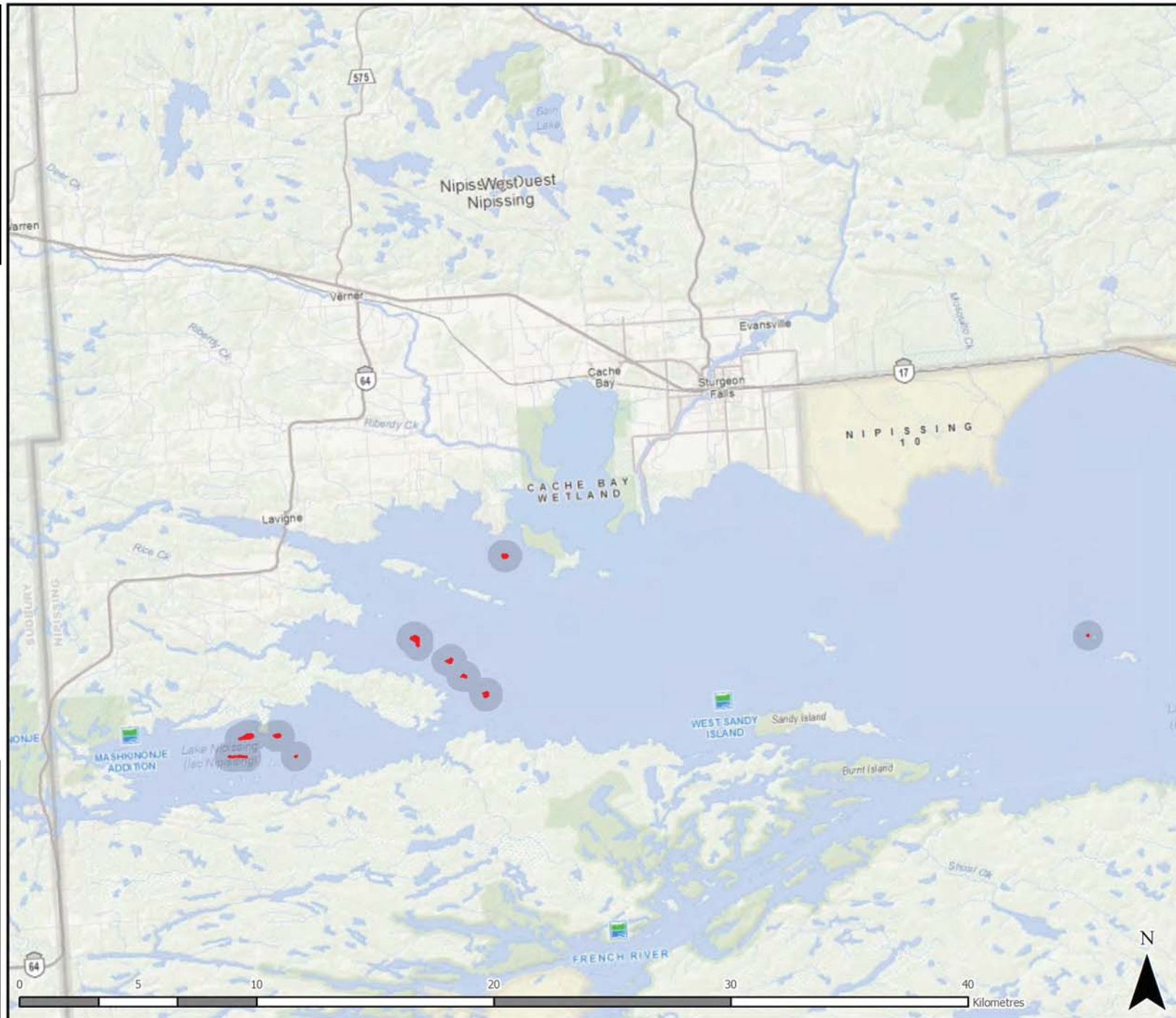
## Pine False Webworm 2012

### Map 1

Northeast Region

Areas-within-which pine false webworm caused defoliation.

 Area of Moderate-to-Severe Defoliation





## Snow Damage

### Damage Information

Damage Name:	Snow Damage
Damage Type:	Abiotic Damage - Weather Event
Damage Area:	565 ha (Southern Region)
	708,307 (Northwest Region Preliminary)

### Provincial Key Facts

- Heavy snowfall and freezing rain accumulation caused damage to forest stands in the Southern and Northwest Regions in separate events in 2011 and 2012.
- Damage consisted of trees being pushed down under the snow load, up-rooted or stems snapped off.
- To learn more about species impacting Ontario's forests, go to [Ontario.ca/forestpests](http://Ontario.ca/forestpests)

### Regional Summary

#### Northwest:

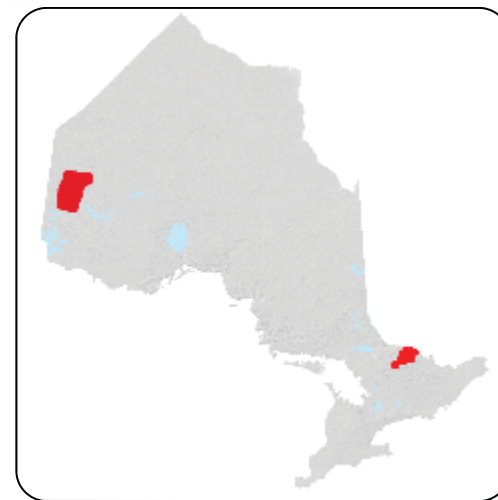
- In 2012, an early October snowfall produced accumulations of 0.5 m, severely damaging over 700,000 ha of trees east of Woodland Caribou Provincial Park.
- The damage extended from Shoal Lake, Kenora District, north to Woodland Caribou Provincial Park towards Pikangikum First Nation and northeast to Trout Lake.
- Damage occurred in conifer and aspen stands, of various ages and heights. Trees were bent over, snapped off at mid stem or within the crown, or were up-rooted.
- Damage varied from the occasional tree and edge trees, to 100% of the stand being affected by snow damage.

#### Southern:

- In Algonquin Park, wet snow accumulation and ice storms in December 2011 caused significant damage to smaller jack pine and recently thinned areas.
- Damage consisted of broken stems, and broken tops as well as bent over trees. The stands affected were in central and eastern areas of the park.
- Driftwood Provincial Park also had significant damage to young jack pine plantations; the park is located on Highway 17 west of Deep River. Small populations of white spotted sawyer beetle (*Monochamus scutellatus*) were in these areas on dead and dying trees.
- In total, 565 ha were aerially mapped in 26 scattered locations.



Snow damage in conifer stand.



Overview Map  
Click to View Detail



Snow damage in pine stand.



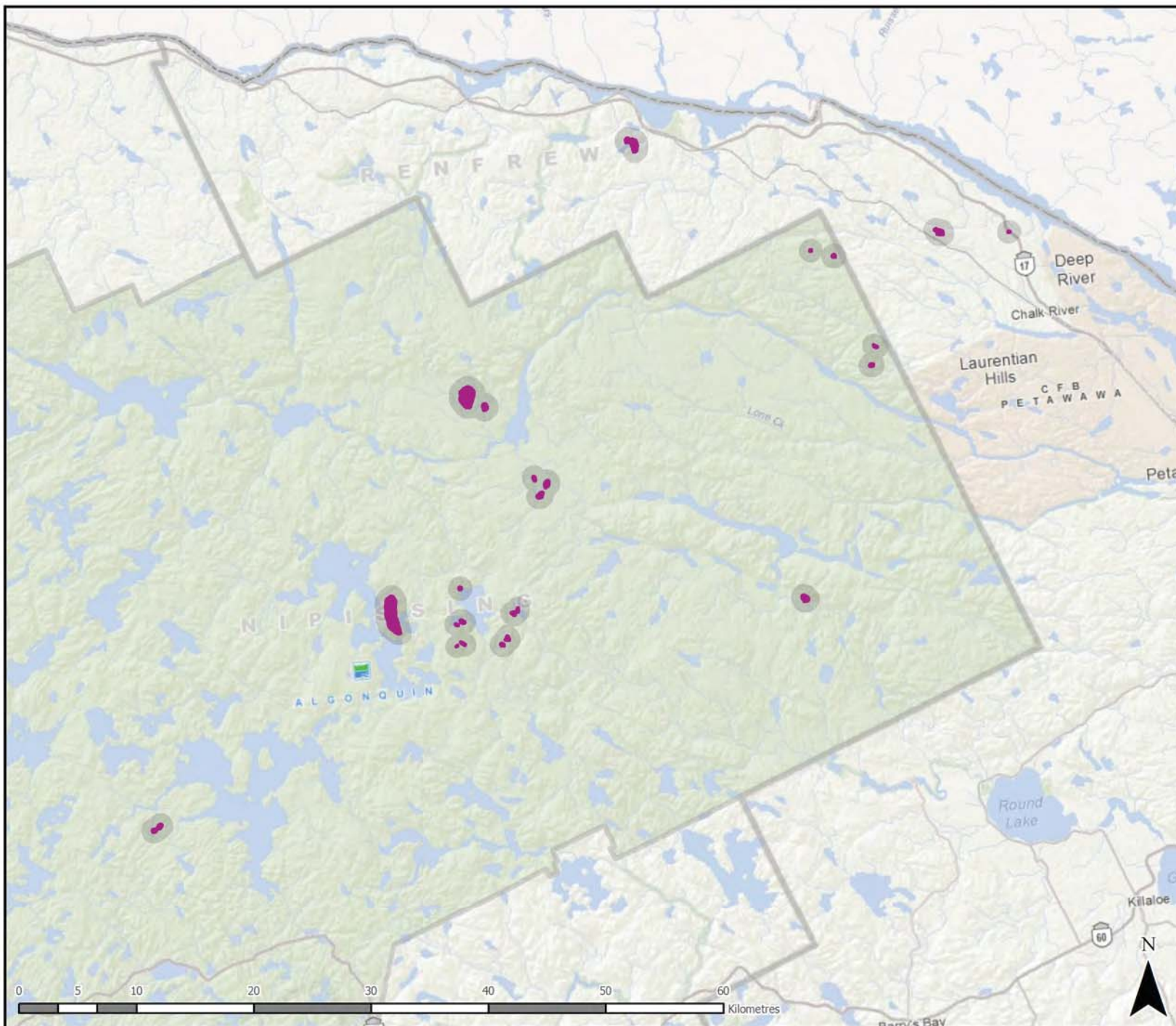
## Snow Damage



### Snow Damage 2012

Map 1  
Southern Region  
Areas-within-which snow  
caused forest damage.

 Area of Damage






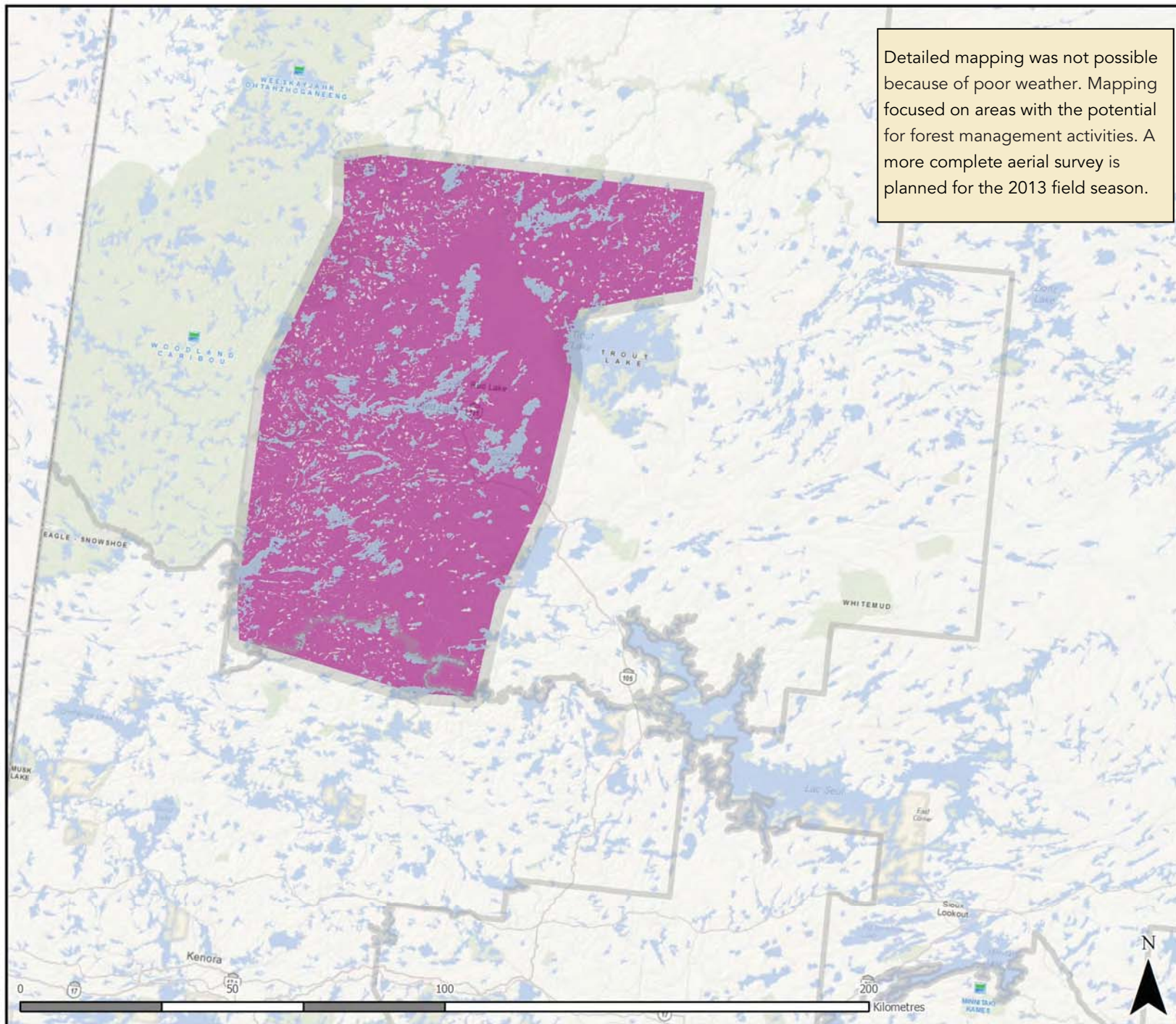
# Snow Damage



## Snow Damage 2012

Map 2  
Northwest Region  
Preliminary areas-within-  
which snow caused forest  
damage.

 Area of Damage





# Spruce Budworm

## Pest Information

Common Name:	Spruce Budworm
Latin Name:	<i>Choristoneura fumiferana</i> Clemens
Pest Origins:	Native to North America
Pest Type:	Defoliator
Host Species:	Balsam fir, white spruce, black spruce
Infestation Area:	147,843 ha (2012)

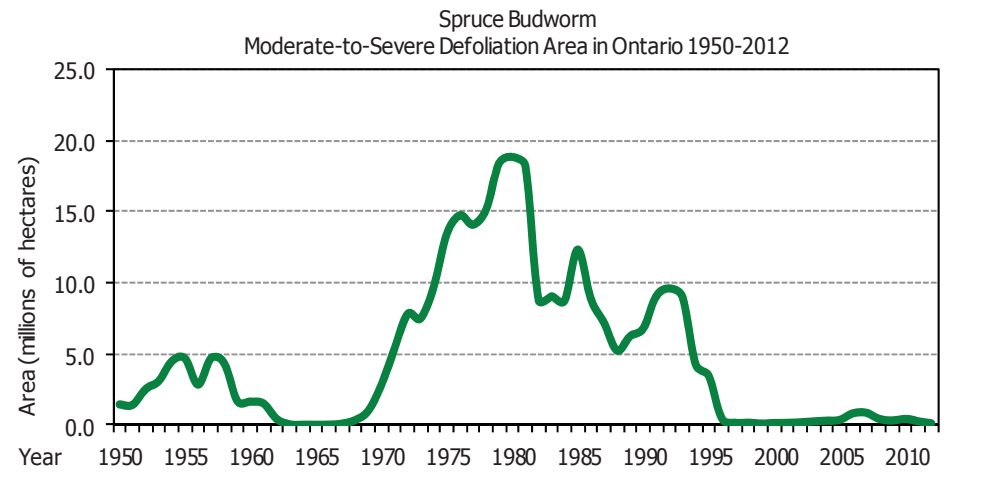
## Provincial Key Facts

- In 2012, there was 135 ha of light defoliation, 99,797 ha of moderate-to-severe defoliation and 47,911 ha of mortality due to spruce budworm.
- Total defoliation decreased by approximately 60% from 2011 (143,259 ha).
- Mortality caused by several years of repeated defoliation increased by nearly 20 fold over the 2011 levels (2,481 ha).

## Outlook

- Populations of spruce budworm appear to be declining based on the smaller area of mapped defoliation during 2012.
- Defoliation is expected to continue in 2013 in the area between Sudbury and North Bay,

## Trends



Spruce budworm larva.



Overview Map  
[Click to View Detail](#)



Spruce budworm damage in Sault Ste. Marie.



# Spruce Budworm

## Regional Summary

### Northeast:

- Sudbury District had an increase of nearly 15,000 ha of moderate-to-severe defoliation and a two year cumulative mortality area of nearly 42,000 ha.
- Defoliation along the eastern side of Sudbury District occurred in pockets scattered between Paradise Lake and Hartley Bay areas.
- In the central portion of the district, pockets of defoliation were mapped from the Windy Lake area north of the town of Chelmsford as well as the north side of Agnew Lake and south to the Lake Panache area.
- On Manitoulin Island, defoliation covered much of the eastern half of the island. Defoliation also occurred south of the town of Massey in proximity to Lake La Cloche.
- North Bay District had a decrease from 2011 in the area of moderate-to-severe defoliation by approximately 145,500 ha.
- Defoliation in the district was mapped in scattered pockets between the towns of Haileybury and Temagami and stretching south along the Ottawa River to the McLaren Bay area along the Quebec border.
- In the central portion of the district, damage was mapped along the Hwy 11 corridor between the town of North Bay to Marten River area. Some smaller pockets also occurred between Tomiko Lake and Hwy 17 east near Sturgeon Falls.
- Chapleau District had very little moderate-to-severe defoliation in 2012 relative to 2011. In addition to the moderate-to-severe defoliation, Chapleau District also had an area of light defoliation (135 ha).
- Defoliation in Chapleau District was in the north-eastern portion of the district around Shiners and Shenango lakes.
- Sault Ste. Marie District populations have collapsed. There was no mapped damage during 2012, but cumulative mortality increased to just over 100 ha.

### Southern:

- Parry Sound District had an increase of nearly 1,000 ha of moderate-to-severe spruce budworm defoliation and an additional area of 1,187 ha of mortality in 2012 compared to 2011.
- Defoliation was mapped north of Hwy 522 and west of Dollars Lake, between Spring and Big Deer lakes and north of Lake of Many Islands.
- The Peterborough District population appears to have collapsed. There was no mapped damage in 2012.
- To learn more about species impacting Ontario's forests, go to [Ontario.ca/forestpests](http://Ontario.ca/forestpests)

## Area Summary

Area-within-which spruce budworm caused moderate-to-severe (M-S) defoliation and mortality 2008 - 2012 by MNR District (area in hectares).

Region / District	2008	2009	2010	2011	2012	2011	2012
Severity	M-S	M-S	M-S	M-S	M-S	Mortality	Mortality
<b>Northeast</b>							
Chapleau	-	-	-	13,457	147	-	-
North Bay	306,069	164,919	124,588	156,405	10,889	2,353	4,741
Sault Ste. Marie	5,191	4,249	5,205	64	-	95	26
Sudbury	102,917	121,291	281,254	72,849	87,819	33	41,958
Subtotal:	414,177	290,459	411,047	242,775	98,855	2,481	46,724
<b>Southern</b>							
Guelph	-	381	-	-	-	-	-
Midhurst	47	-	-	-	-	-	-
Parry Sound	4,121	-	1,164	-	943	-	1,187
Pembroke	303	644	-	-	-	-	-
Peterborough	81	-	109	146	-	-	-
Subtotal:	4,552	1,025	1,273	146	943	-	1,187
<b>Provincial Total:</b>	<b>418,729</b>	<b>291,484</b>	<b>412,320</b>	<b>242,921</b>	<b>99,797</b>	<b>2,481</b>	<b>47,911</b>



Spruce budworm moth (adult).



# Spruce Budworm



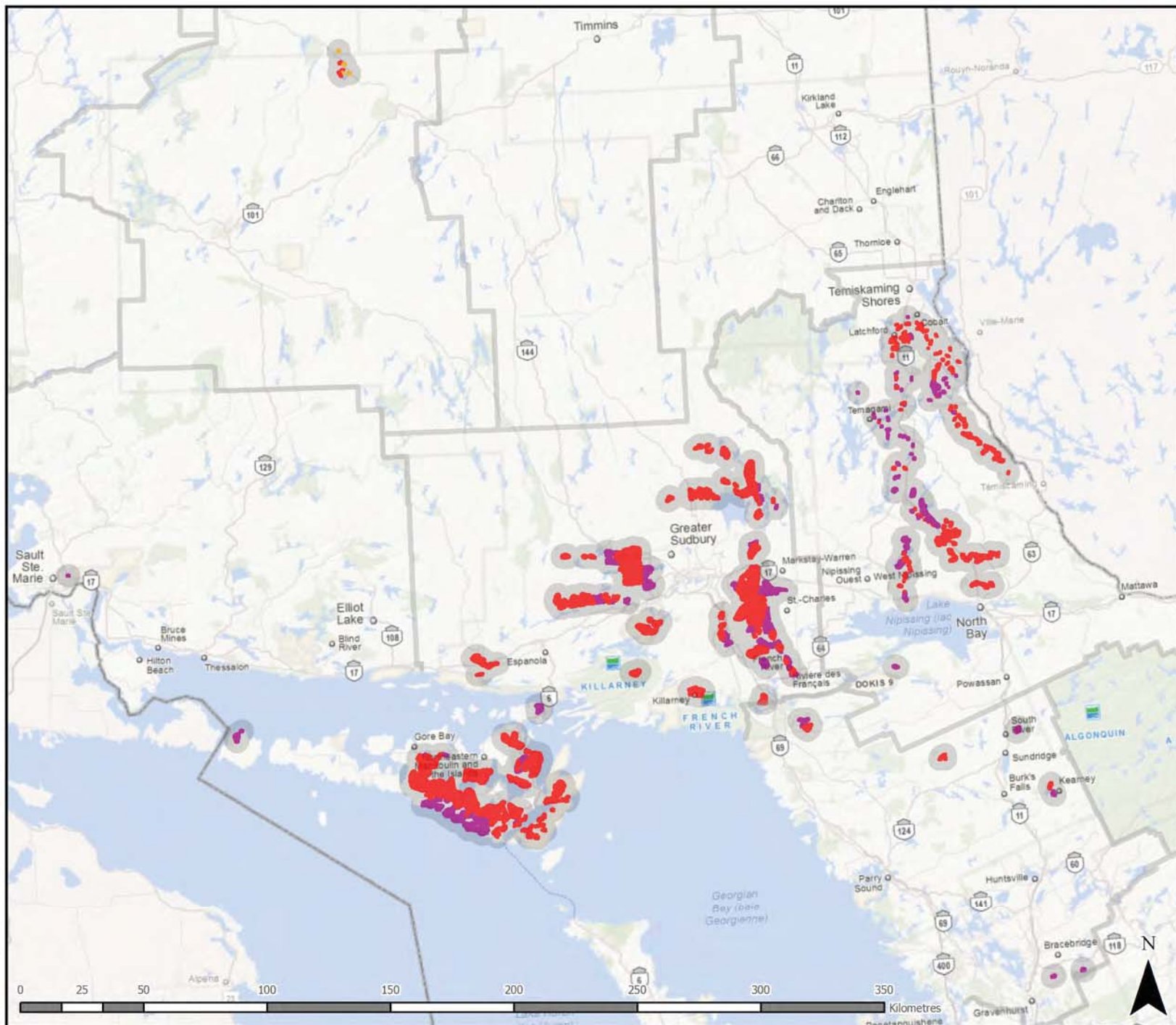
## Spruce Budworm 2012

Map 1

Northeast Region

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

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





## Winter Browning

### Damage Information

Damage Name:	Winter Browning Damage
Damage Type:	Abiotic - Weather Damage
Damage Area:	208,201 ha (2012)
Species:	White spruce, black spruce, balsam and white pine

### Provincial Key Facts

- Winter browning occurs as result of unusually warm temperatures, increased sunlight and winds that cause normally dormant trees to transpire when the ground is still frozen resulting in needle discolouration.
- An additional 72,915 ha of forest were lightly affected by the drying conditions.
- To learn more about species impacting Ontario's forests, go to [Ontario.ca/forestpests](http://Ontario.ca/forestpests)

### Regional Summary

#### Northwest:

- In March, mild temperatures for a 10-14 day period followed by freezing temperatures led to the browning of spruce, balsam fir and jack pine in the Thunder Bay area.
- Extensive damage was detected in Fort Frances, Dryden, Sioux Lookout and Thunder Bay districts, with infrequent damage in the Nipigon District.
- Signs of damaged needles became apparent in late April and early May, consisting of red/brown needles and some bud damage, primarily in young stands.
- Defoliation up to 100% was common in many areas, except where foliage was protected by snow pack.
- Northwest Region had over 250,000 ha of forest damaged as a result of the winter browning event (59,499 light, 191,220 moderate-to-severe).

#### Northeast:

- Jack pine trees sustained winter browning damage in Puskaskwa National Park in the south-west corner of Wawa District.
- The damage was mainly concentrated in the upper portion of the crowns where previous year's needles and buds were damaged.
- Some balsam fir damage was also recorded in the North Bay area.
- Just over 30,000 ha of damage was recorded across Northeast Region (13,416 light, 16,981 moderate-to-severe).



Winter browning damage on jack pine.



Overview Map  
Click to View Detail



Winter browning forest damage.



# Winter Browning




## Winter Browning 2012

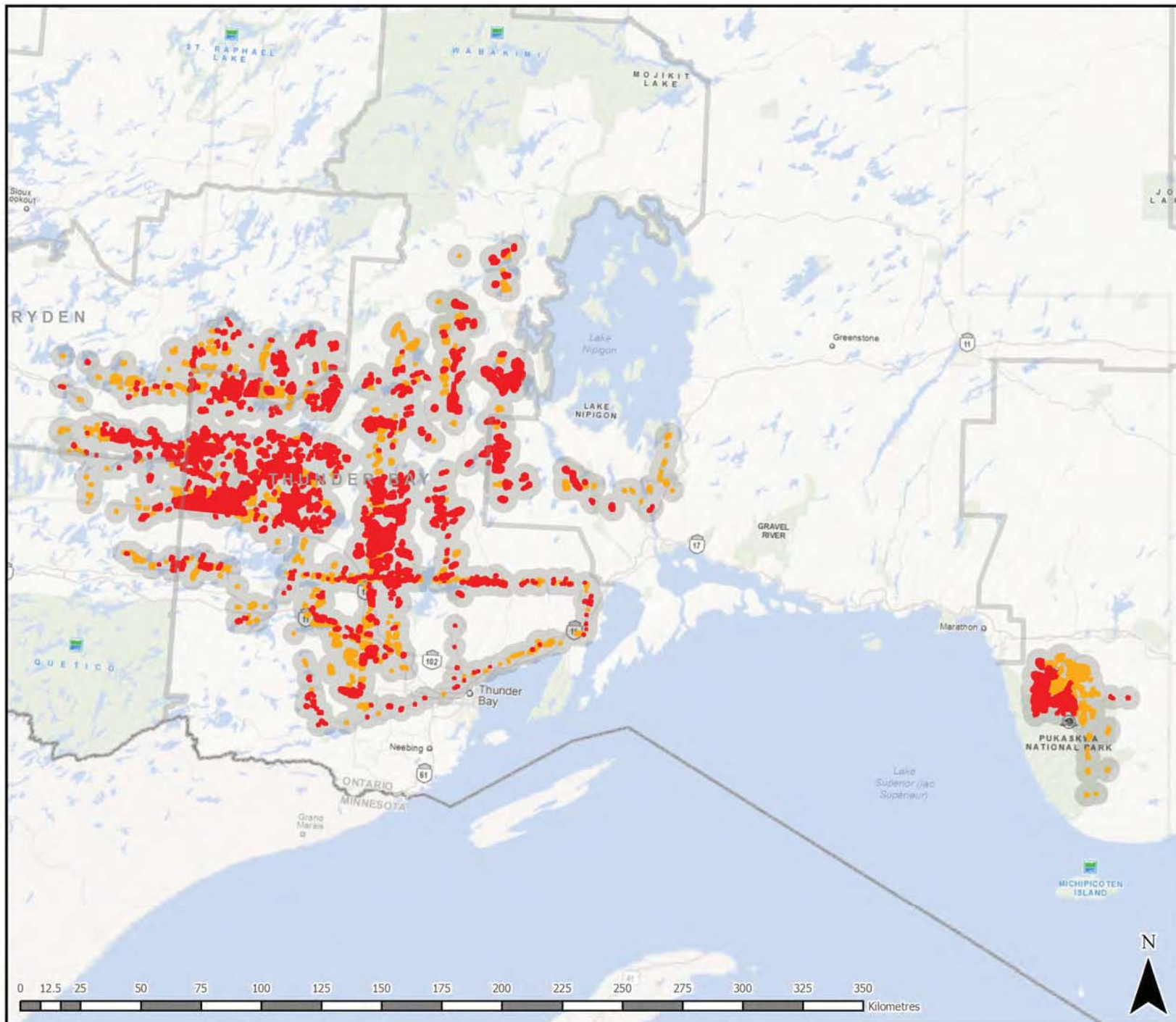
Map 1

Northwest Region

Areas-within-which winter  
browning caused  
forest damage.

 Area of Light  
Damage

 Area of Moderate-to-  
Severe Damage





## American Aspen Beetle

### Pest Information

Common Name:	American Aspen Beetle
Latin Name:	<i>Gonioctena americana</i> (Schaeff)
Pest Origins:	Native to North America
Pest Type:	Defoliator
Host Species:	Trembling Aspen

### Key Facts

- Most prevalent species of beetle to feed on poplar; defoliation levels ranged from 50-100%, resembles tent caterpillar defoliation pattern.
- Affected trees were typically <3m tall and were growing in roadside or open areas.
- Defoliation was also on the lower portions of semi-mature trees growing along the exposed edges of stands.

### Regional Summary

#### Northeast:

- In Chapleau District, defoliation caused by this insect was observed in several locations. Incidence ranged from a few trees being completely defoliated to over a hundred trees being defoliated.
- Damage to larger trees was less than 10 percent.
- Stand assessments were conducted in: Deans, Dupuis, Chapleau, Pinogami and Carty townships.
- In Wawa District, defoliation occurred in Topham and Windego townships in the east central portion of the district. Defoliation was not observed in trees larger than 3m tall.



American aspen beetle larvae.

## Basswood Leafminer

### Pest Information

Common Name:	Basswood Leafminer
Latin Name:	<i>Baliosus nervosus</i> (Panz.)
Pest Origins:	Native to North America
Pest Type:	Leaf Miner
Host Species:	Basswood

### Key Facts

- For the past 6 years small infestations of basswood leafminer have been observed across Southern Region.
- Localized damage can reach moderate-to-severe levels after several years in a row, causing branch dieback and an overall decrease in tree vigour.

### Regional Summary

#### Southern:

- Historical populations across Aurora and Midhurst Districts remained low in 2012, with several small infestations recorded in Aylmer District.
- At Pittock Conservation Area northeast of Woodstock, newly-emerged adults were observed on 80% of basswood trees but had only skeletonized 10% of the early spring foliage at the time of survey.
- A significant population was recorded near the Simpson Road and Longwoods Road junction in Southwest Middlesex County. Adults were found feeding on 90% of the host trees in several woodlots. Larval mining and adult feeding damage combined reached 70% on individual trees by late summer.



Basswood leafminer damage in late summer, in Aylmer District.



## Beech Scale

### Pest Information

Common Name:	Beech Scale
Latin Name:	<i>Cryptococcus fagisuga</i> (Lindinger)
Pest Origins:	<b>Invasive</b> - Native to Europe
Pest Type:	Sucking Insect
Host Species:	American Beech

### Key Facts

- First found in Halifax, Nova Scotia in 1890's.
- First found in Ontario in 1966 in Elgin County in southwestern Ontario along the north shore of Lake Erie.
- Predisposes beech trees to beech bark disease. Beech bark disease significantly impacts beech trees and often leads to mortality.

### Regional Summary

#### Northeast:

- Surveys (8 locations) completed on St Joseph Island, Sault Ste. Marie District. Beech scale found, but not beech bark disease. The beech scale found in the Michigan Upper Peninsula may have affected this beech population.
- Survey found moderate-to-severe levels in 2012 compared to light-to-moderate levels in 2011.

#### Southern:

- In Midhurst District, beech scale was found in a woodlot north of Wiarton. This location is north and east of previously known occurrences in the district.



Beech scale on St. Joseph's Island, Sault Ste. Marie District.

## Birch Sawfly

### Pest Information

Common Name:	Birch Sawfly
Latin Name:	<i>Arge pectoralis</i> (Leach)
Pest Origins:	Native to North America
Pest Type:	Defoliator
Host Species:	Birch species

### Key Facts

- Common mid-season defoliator of white birch.
- Damage to the tree is typically minimal as the growing season is ending by July and August, when defoliation happens.
- Reported occurrences were down from 2011 levels.

### Regional Summary

#### Southern:

- Several colonies of larvae were observed in central Midhurst District, south of Dundalk.
- Along Lake Huron, in Midhurst District, roadside trees ranging from one metre tall to mature trees received light to moderate-to-severe defoliation.
- On mature white birch, lower branches with 50% defoliation were commonly observed.
- One mature white birch tree was 90% defoliated by birch sawfly and striped alder sawfly *Hemichroa crocea* (Geoffrey).



Birch sawfly damage near Port Elgin, Midhurst District.



## Cherry Scallopshell Moth

### Pest Information

Common Name:	Cherry Scallopshell Moth
Latin Name:	<i>Hydria prunivorata</i> (Fgn.)
Pest Origins:	Native to North America
Pest Type:	Defoliator
Host Species:	Black Cherry

### Key Facts

- Feeds in nests of leaves webbed together on black cherry (*Prunus serotina*).
- Collections were made in June in Aylmer District, and in September in Midhurst District.
- Observed at endemic levels in Southern Region in three districts.
- Population has collapsed from peak (224ha) in 2008.

### Regional Summary

#### Southern:

- In Aylmer District, light defoliation on ten roadside trees in the area of 2011 moderate-to-severe defoliation, north-east of Port Burwell.
- Several colonies were found on two young cherry trees in Awenda Provincial Park, Midhurst District.
- One location reported in Aurora District near Uxbridge.



Cherry scallopshell larvae damage.

## Diplodia Tip Blight

### Pest Information

Common Name:	Diplodia Tip Blight
Latin Name:	<i>Diplodia pinea</i> (Desm.) Kickx
Pest Origins:	Worldwide distribution
Pest Type:	Blight Disease
Host Species:	Pine species

### Key Facts

- This disease affects two and three-needled pine species and occasionally white pine and spruce. Stressed trees are often attacked.
- The disease kills shoots, branches and under severe conditions, whole trees.
- Diplodia can cause severe damage to nurseries and Christmas tree plantations.

### Regional Summary

#### Northeast:

- Infected trees were found in semi-mature red pine stands near Lavigne, North Bay District where 30% of branches showed damage. Infection rate was 75% in some stands.
- In Sudbury District, near Espanola, light damage to red pine stands was reported..

#### Southern:

- In Bancroft District, red pine was infected (<30%) in the areas of Calabogie Lake, Weslemkoon Lake and Kawartha Highlands Provincial Park. It also caused cankers and decline on eastern white pine (1ha).
- Peterborough and Parry Sound Districts reported occurrences on red pine as well.



Diplodia tip blight on red pine.



## Dogwood Anthracnose

### Pest Information

Common Name:	Dogwood Anthracnose
Latin Name:	<i>Discula destructiva</i> (Redlin)
Pest Origins:	<b>Invasive</b> - Native to Asia
Pest Type:	Disease
Host Species:	Flowering Dogwood

### Key Facts

- Dogwood anthracnose is found throughout the range of flowering dogwood (*C. florida*) in Ontario. Flowering dogwood and its habitat is regulated under the *Endangered Species Act* 2007.
- Many of the flowering dogwood populations surveyed in the late 1990s have succumbed to this disease.
- Wet, cool weather increases the risk of disease development.

### Regional Summary

#### Southern:

- Observations of dogwood anthracnose were recorded in late May 2012.
- Collections of this disease continued through the summer until September 2012.
- In 2012, flowering dogwoods were further stressed due to drought conditions.



Dogwood anthracnose.

## Dutch Elm Disease

### Pest Information

Common Name:	Dutch Elm Disease
Latin Name:	<i>Ophiostoma novo-ulmi</i> (Brasier)
Pest Origins:	<b>Invasive</b> - Native to Asia, Europe
Pest Type:	Vascular Disease
Host Species:	Elms

### Key Facts

- In 2012, this pathogen continues to caused damage across the range of elm species in Ontario.
- Infection levels and damage varied considerably between sites and from tree to tree.
- This disease has been widespread across the range of elm species in Ontario for several decades. In some years infection and tree mortality rates appear to be more severe than in other years.

### Regional Summary

#### Northwest:

- Dutch elm disease was reported in the Fort Frances District in 2012.

#### Northeast:

- Dutch elm disease caused widespread death and decline of American elm (*Ulmus americana*) in North Bay District and on Manitoulin Island, Sudbury District.

#### Southern:

- Scattered individual American elm trees were in decline across Midhurst, Aurora, Peterborough and Bancroft Districts in 2012.
- Severity of infection ranged from a single yellowing branch to whole tree wilt and mortality.



Dutch elm disease.



## Dooks Needle Blight

### Pest Information

Common Name:	Dooks Needle Blight
Latin Name:	<i>Lophophacidium dooksii</i> , Corlett&Shoemaker
Pest Origins:	Native to North America
Pest Type:	Needle Blight
Host Species:	Eastern White Pine

### Key Facts

- In 1984, Dooks needle blight was first found north of Thessalon, Ontario. Sporadic events of needle browning of eastern white pine has been reported since the early 1900s, which may have been instances of Dooks needle blight.
- Also found on non-native five needle pines and hybrids.
- Not as prevalent in Ontario as previous years.

### Regional Summary

#### Northeast:

- In Sault Ste. Marie District, Dooks needle blight was found for the third consecutive year in a five needle pine genetic archive in the MNR arboretum.
- Average amount of damage was 6% overall, but Macedonian pine averaged 68%.
- Found in the southeast portion of North Bay District at low levels on approximately 25% of semi-mature eastern white pine south-west of Mattawa.



Dooks needle blight on Macedonian pine in Sault Ste. Marie arboretum.

## Euonymus Webworm

### Pest Information

Common Name:	Euonymus Webworm
Latin Name:	<i>Yponomeuta euonymella</i> (Cham.)
Pest Origins:	<b>Invasive</b> - Native to Europe and Asia
Pest Type:	Defoliator
Host Species:	Euonymus spp.

### Key Facts

- Early season defoliator originating from Europe, the Middle East, and Siberia.
- First found in Guelph in 1967 and spreading to Nova Scotia by 1993.

### Regional Summary

#### Southern:

- Active defoliator in Midhurst and Aurora Districts in 2012.
- In western Midhurst District near Ripley, euonymus webworm caused 80% defoliation to a small clump of euonymus shrubs.
- Observed in Aurora District, near Campbellford. Shrubs and grasses and the gravel along the side of the road was enshrouded in a 100m long web.



Euonymus webworm.



## Fall Cankerworm

### Pest Information

Common Name:	Fall Cankerworm
Latin Name:	<i>Alsophila pometaria</i> (Harr.)
Pest Origins:	Native to North America
Pest Type:	Defoliator
Host Species:	Maple, Beech and Ash

### Key Facts

- Fall cankerworm periodically reaches epidemic proportions in Ontario, defoliating a wide variety of hardwood trees and shrubs.
- All mapped populations existing between 2008-2011 in Ontario collapsed in 2012.
- Incidental observations were noted in Southern and Northeast Regions, however damage was not significant for mapping.

### Regional Summary

#### Southern:

- Larvae were found feeding on sugar maple and American beech at historical locations in Norfolk County in Aylmer District where defoliation was mapped for the past three consecutive years at trace levels. No feeding damage was recorded in 2012.

#### Northeast:

- Observations of fall cankerworm were recorded causing moderate-to-severe defoliation on a mature Manitoba maple in Sault Ste. Marie District. Several larvae sampled were afflicted by parasites suggesting that the population may be short-lived.



Fall cankerworm larvae.

## Greenstriped Mapleworm

### Pest Information

Common Name:	Greenstriped Mapleworm
Latin Name:	<i>Dryocampa rubicunda</i> (F.)
Pest Origins:	Native to North America
Pest Type:	Defoliator
Host Species:	Red and Sugar Maple

### Key Facts

- Outbreaks have occurred in previous years in Ontario.
- More commonly found on young red maple.
- Maple syrup quality can be affected after severe defoliation.
- Tree mortality can occur after three consecutive years of severe defoliation.
- Populations are collapsing, with very little defoliation in 2012.

### Regional Summary

#### Northeast:

- Fourth consecutive year of defoliation in Sault Ste. Marie District (Kirkwood Forest) north of Thessalon.
- Defoliation was light (<10%) compared to 2011 when there was moderate-to-severe defoliation and it was more widespread in occurrence. Young understory red maple in a red pine stand were affected.
- In southern Timmins District, mapleworm was reported for a second consecutive year. Light defoliation occurred on young understory red maple in a jack pine stand north of Gogama.



Greenstriped mapleworm on red maple.



## Ink Spot of Aspen

### Pest Information

Common Name:	Ink Spot of Aspen
Latin Name:	<i>Cibornia whetzellii</i> (Seaver) Seaver
Pest Origins:	Native to North America
Pest Type:	Leaf Disease
Host Species:	Poplars

### Key Facts

- Ink spot of aspen affects predominately trembling aspen, but occasionally affects other poplar species.
- This disease kills leaves in late-spring and rapidly produces black "ink spots".
- Heavily infected trees experience pre-mature defoliation.

### Regional Summary

#### Northwest:

- In Fort Frances District, several stands and individual trees of trembling aspen were affected.
- Shangri La Road just south of Sioux Narrows, experienced defoliation of approximately 100% of the tree crowns.
- Dense young stands, low temperatures and high humidity during leaf expansion can lead to severe outbreaks.



Ink spot of aspen.

## Japanese Beetle

### Pest Information

Common Name:	Japanese Beetle
Latin Name:	<i>Popillia japonica</i> (Newman)
Pest Origins:	<b>Invasive</b> - Native to Japan
Pest Type:	Defoliator
Host Species:	Shrubs

### Key Facts

- First detected in Nova Scotia and southern Quebec in 1939, now widespread across southern Ontario.
- Larvae feed on the roots of turf, shrub and tree species.
- Adult beetles feed on the foliage of many broad-leaved plant species in Ontario particularly oak (*Quercus* spp.), basswood (*Tilia americana*) and white birch.

### Regional Summary

#### Southern:

- In Midhurst District, north of Lake Simcoe and east of Georgian Bay, populations have been building for several years.
- Mature white birch were 80% defoliated along roadways and bush lines adjacent to sandy agricultural fields. Also, approximately 10% of basswood, cherry and American elm stems were affected to a lesser degree.
- Defoliation was complete by mid-August but adults were still feeding in early-September
- Defoliation occurred from Wasaga Beach to Elmvale and extending north and west of Awenda Provincial Park on sites with sandy soils.



Japanese beetle feeding on foliage.



## Larch Needlecast

### Pest Information

Common Name:	Larch Needlecast
Latin Name:	<i>Mycosphaerella laracina</i> (R.Hartig) Migula
Pest Origins:	<b>Invasive</b> - Native to Europe
Pest Type:	Needlecast Disease
Host Species:	European Larch

### Key Facts

- First noted in Ontario in late summer 2011, although not reported until 2012.
- Only two known sites have been identified in southern Ontario, both of which are reforested areas of European larch in close proximity to each other.

### Regional Summary

#### Southern:

- In Aylmer District, larch needlecast was detected for the first time in 2011 and confirmed in 2012.
- The detection was at two reforestation sites along the Thames River in Aylmer District. The sites were less than 1km away from each other.
- Both sites were mixed plantations with vigorous trees reaching 10 metres in height.
- Foliage damage was <30% on the infected larch trees in the plantations.



Typical fruiting and infection of needles associated with larch needlecast.

## Mourning Cloak Butterfly - Spiny Elm Caterpillar

### Pest Information

Common Name:	Mourningcloak Butterfly-Spiny Elm Caterpillar
Latin Name:	<i>Nymphalis antiopa</i> (L.)
Pest Origins:	Native to North America
Pest Type:	Defoliator
Host Species:	Willow, Elm and Aspen spp.

### Key Facts

- In 2012, spiny elm caterpillar was only reported in the Northwest Region.
- No large-scale disturbances were associated with this insect.

### Regional Summary

#### Northwest:

- Relatively widespread across the region with particularly high incidence in Thunder Bay District.
- Spiny elm caterpillar defoliated willow shrubs, balsam poplar and trembling aspen.
- Scattered willow were approximately 50% defoliated.
- Trembling aspen and balsam poplar were defoliated at lighter levels up to 30%.
- Defoliation occurred in late-July and early-August.
- Mourning cloak butterflies are the adult stage of the insect and many were observed later in the season.



Spiny elm caterpillar.



## Pine Shoot Beetle

### Pest Information

Common Name:	Pine Shoot Beetle
Latin Name:	<i>Tomicus piniperda</i> (L.)
Pest Origins:	<b>Invasive</b> - Native to Asia, Europe and Africa
Pest Type:	Stem Boring Insect
Host Species:	Pine spp.

### Key Facts

- Discovered in Ontario in 1993, causing mortality to red pine, jack pine and Scots pine stands in southern Ontario.
- An annual trapping program has been conducted since 2000.
- A new range extension in southern Algoma District occurred in 2011.

### Regional Summary

#### Northwest:

- Traps were placed at 9 locations in Thunder Bay and Fort Frances Districts.
- No adult beetles were caught at any of the locations.

#### Northeast:

- Traps were placed at 11 locations throughout Sault Ste. Marie, Hearst, Kirkland Lake and Wawa Districts.
- In 2012, adult beetles were again caught in Sault Ste. Marie confirming the 2011 adult capture at this location was not an incidental catch.



Stand damaged by pine shoot beetle.

## Satin Moth

### Pest Information

Common Name:	Satin Moth
Latin Name:	<i>Leucoma salicis</i> (L.)
Pest Origins:	<b>Invasive</b> - Native to Europe
Pest Type:	Defoliator
Host Species:	Poplar spp.

### Key Facts

- Satin moth can be found in north-eastern and western North America including the majority of southern Ontario and northward and westward in satellite pockets to Sault Ste. Marie.
- Localized infestations occur annually in Southern and Northeast Regions usually on individual or small groups of trees.
- Incidental observations were noted in 2012 within Southern and Northeast regions however damage did not reach mapped levels.

### Regional Summary

#### Northeast:

- Isolated occurrences in urban areas of North Bay, Sault Ste. Marie and Thessalon on white poplar (*Populus alba*) ornamental trees.

#### Southern:

- In Midhurst District, a recurring population caused severe defoliation on roadside white poplar on the Bruce Peninsula.
- Isolated trembling aspen in Midhurst and Aurora Districts were 60-90% defoliated by satin moth larval feeding in late-June.
- In Peterborough District, individual Carolina poplar (*Populus x canadensis*) were moderate-to-severely defoliated with levels averaging 80%.



Satin moth larvae.



## Septoria Leaf Spot of Birch

### Pest Information

Common Name:	Septoria Leaf Spot of Birch
Latin Name:	<i>Septoria betulae</i> Pass
Pest Origins:	Native to North America
Pest Type:	Foliar Disease
Host Species:	White Birch

### Key Facts

- Common fungal disease of birch species.
- Normally prevalent in wet and humid weather conditions.
- Disease affected white birch over extensive areas in Northwest, Northeast and Southern regions, causing foliage yellowing and browning, and pre-mature leaf drop.
- Overall effect on tree health is expected to be limited, as the event occurs late in the growing season.

### Regional Summary

#### Northwest:

- Widespread along with birch skeletonizer.

#### Northeast:

- In Sault Ste. Marie District, a contiguous area was affected along the Hwy 17 corridor from Goulais River north to Mamainse Harbour.
- In Wawa District, damage occurred in Lake Superior Provincial Park near Agawa Bay.

#### Southern:

- In Peterborough District damage was found in scattered pockets with up to 40% defoliation.
- In the western portion of Bancroft District, scattered satellite pockets of affected white birch trees had an average of 33% damage.



Septoria leaf spot on white birch.

## Septoria Leaf Spot of Poplar

### Pest Information

Common Name:	Septoria Leaf Spot of Poplar
Latin Name:	<i>Mycosphaerella populorum</i> G.E. Thompson
Pest Origins:	Native to North America
Pest Type:	Foliar Disease
Host Species:	Balsam Poplar

### Key Facts

- A foliar disease on balsam poplar that can also cause cankers on main stems of affected trees.
- Irregular brown leaf spots occur late in the summer often coalescing across the entire leaf surface. This results in early leaf drop in severe cases.
- Branch and stem cankers may form as infections spread from leaf tissues to lenticels, leaf scars or wounds within the tree.

### Regional Summary

#### Southern:

- Severe damage was identified on balsam poplar at several sites across central Southern Region from the Lake Huron shores in Bruce County to the Big Gull Lake area in Frontenac County. Balsam poplar had on average 75% foliar damage.
- Early leaf drop occurred in late-August to early-September in all areas affected.



Septoria leaf spot of poplar damage.



## White Pine Blister Rust

### Pest Information

Common Name:	White Pine Blister Rust
Latin Name:	<i>Cronartium ribicola</i> J.C. Fisch.
Pest Origins:	<b>Invasive</b> - Native to Asia
Pest Type:	Rust Disease
Host Species:	Eastern White Pine (five needled pines)

### Key Facts

- This disease is relatively common throughout Ontario.
- Continues to be a pest throughout Ontario where *Ribes* spp. can be found growing in close proximity.
- In 2012, the hot, dry spring resulted in very few visible fruiting bodies.

### Regional Summary

#### Northeast:

- Four tree improvement survey sites were monitored in 2012: Evanturel, Eby and Ingram test sites in Kirkland Lake District and Gurd test site in North Bay District.
- Eventurel had the highest percentage of lethal infection (fruiting bodies on or within 10cm of main stem) with 16% of the plantation trees affected.
- Ingram had the lowest percentage of trees with lethal infections representing 1% of plantation trees.



White pine blister rust cankers.

## Western Gall Rust

### Pest Information

Common Name:	Western Gall Rust
Latin Name:	<i>Peridermium harknessii</i> J.P. Moore
Pest Origins:	Native to North America
Pest Type:	Rust Disease
Host Species:	Jack and Scots Pine

### Key Facts

- This rust disease is common across Ontario.
- Typically causes malformations, stunting and aesthetic degradation.
- Western gall rust can be a significant pest of nurseries and plantations.

### Regional Summary

#### Northeast:

- In the Temagami area of North Bay District, the bright orange fruiting body of western gall rust was visible on host trees.
- In a stand of 18m tall jack pine, 15-20% of the trees were infected, with galls present on 30% of host tree branches.
- Individual trees along the roadside were also infected with 10-30% of branches showing galls and flagging. Most of the galls were on the branches and not on the stem.



Western gall rust fruiting body.



## Willow Flea Weevil

### Pest Information

Common Name:	Willow Flea Weevil
Latin Name:	<i>Isochnus rufipes</i> (LeConte)
Pest Origins:	Native to North America
Pest Type:	Defoliator
Host Species:	Willow spp.

### Key Facts

- Insect was prevalent in 2008 - 2009 throughout most of Ontario, with a sudden collapse in 2010 and only a few occurrences in 2011.
- The main host species is shining willow (*Salix lucida* Muhl.).
- All willow species affected were in Southern Region.
- Populations recurred in 2012.

### Regional Summary

#### Southern:

- South of Shelburne in Midhurst District, all area willows had dark foliar browning caused by larval mining of leaves by early-August.
- Defoliation occurred in Aurora District from Orangeville to Scugog Island.
- By September almost 75% of willows across the two districts were showing 80% foliar browning from the leaf mining.



Willow flea weevil damage.

## Yellowheaded Spruce Sawfly

### Pest Information

Common Name:	Yellowheaded Spruce Sawfly
Latin Name:	<i>Pikonema alaskensis</i> Rohwer
Pest Origins:	Native to North America
Pest Type:	Defoliator
Host Species:	Spruce spp.

### Key Facts

- Common pest that is active every year in Ontario.
- Serious pest of Christmas tree plantations, open-grown trees and plantations.
- Normally prefers to feed on young, open growing and roadside trees less than 10 years of age.

### Regional Summary

#### Northeast:

- Wawa District had an outbreak in a 15 year old (50ha) white spruce plantation for a third year in a row. There was no noticeable branch dieback.

#### Southern:

- Near Springwater in Midhurst District, shelterbelt plantings of 15-20 year old white spruce experienced severe defoliation.
- Sporadic defoliation was visible north of Elmvale, with open growing trees up to 1.5m tall with approximately 10% defoliation.
- Aurora District had defoliation levels of 30% on spruce trees along Airport Rd. and Hwy 50 north of Brampton.



Yellowheaded spruce sawfly larvae.



