Forest Health Conditions in Ontario, 2017

Ministry of Natural Resources and Forestry

Ontario

Forest Health Conditions in Ontario, 2017

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For more information about forest health monitoring in Ontario visit the natural resources website: <http://ontario.ca/page/forest-health-conditions>

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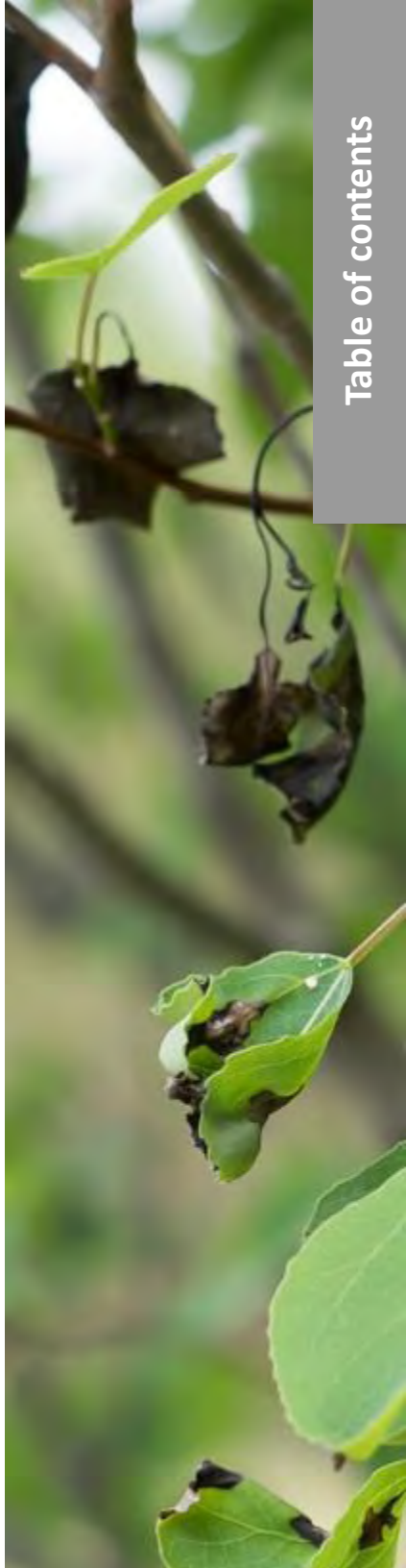
Contents



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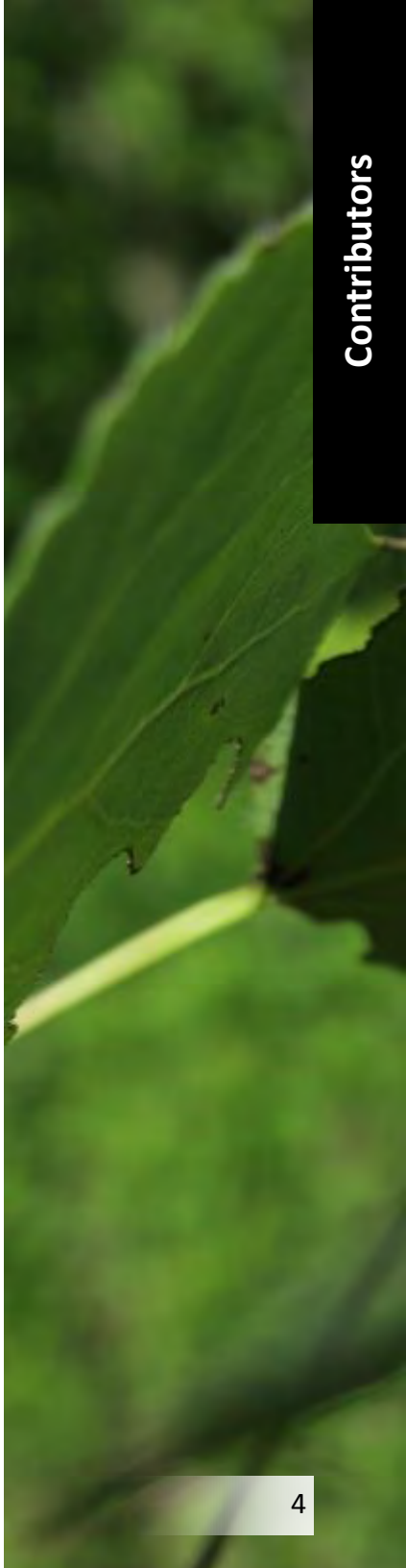
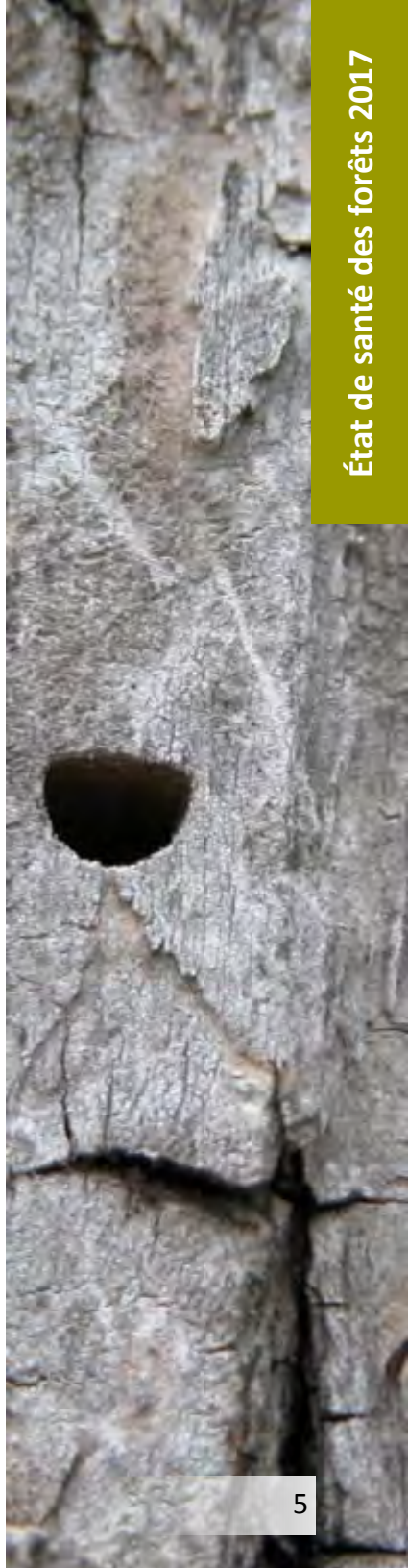


État de santé des forêts 2017

En 2017, les principales difficultés météorologiques ayant eu des répercussions sur la vitalité des forêts ont été un printemps humide et froid et des précipitations supérieures à la moyenne dans la partie orientale de la province. Ces conditions ont débouché sur une croissance des maladies touchant les feuilles et les aiguilles. Les régions où les feuilles ou les aiguilles des arbres ont été dévorées par la livrée des forêts, par la tordeuse des bourgeons de l'épinette ou par la tordeuse de pin gris ont été, pour ces trois ravageurs, plus nombreuses par rapport à l'année précédente. Les régions ayant souffert de la livrée des forêts ont été moins nombreuses dans le Nord-Ouest, mais plus nombreuses dans le Nord-Est et le Sud.

La Province s'est associée au Service canadien des forêts pour faire des essais en matière de lutte biologique contre l'agrile du frêne invasif. Plusieurs autres insectes ont nui aux forêts un peu partout dans la province, mais les dommages sont restés minimes et localisés.

Des conditions humides et fraîches ont été à l'origine d'un accroissement des régions touchées par les maladies dommageables pour les feuilles, en particulier dans le Sud. La maladie corticale du hêtre a continué à se propager dans le sud de l'Ontario et le personnel de surveillance a commencé à installer des pièges pour surveiller les nitidules susceptibles de transporter le pathogène responsable de la flétrissure du chêne, une maladie invasive.



Introduction

Forest health monitoring in Ontario is conducted under a partnership between the Ontario Ministry of Natural Resources and Forestry (MNRF) and Natural Resources Canada – Canadian Forest Service (CFS).

The annual forest health monitoring program has five components:

- Aerial mapping of major forest disturbances to quantify their extent and severity (e.g., insect outbreaks, weather events, decline, and disease damage)
- Biomonitoring through the collection of insect and disease samples to track occurrence, changes in range or host species attacked, or changes in abundance
- Surveying for pests of special interest, particularly invasive species, or pests affecting high value trees, such as plantations or seed orchards
- Conducting or supporting research on forest insect, disease, or weather effects
- Monitoring temporary and permanent sample plots to assess health of select forest ecosystems

Forest health monitoring in Ontario includes the occurrence of native, non-native, and invasive biotic (e.g., insects, disease) and abiotic (e.g., snow, drought) disturbances and events. All forested area in the province, regardless of ownership, is monitored and reported on each year.

In 2017, insect diagnostics were executed through a partnership between MNRF, CFS, and the Invasive Species Centre (ISC). Samples collected by the program were identified by the ISC and verified by the CFS, which also provided laboratory space and access to its insect collection. Disease samples were identified at the Ontario Forest Research Institute (OFRI). Results of the insect and disease collections were included in a national database managed by CFS.

Maps, tables, and graphs were produced from aerial surveys of major forest disturbances.

Results of the annual monitoring program were reported provincially at the Ontario Forest Health Review and nationally at the Forest Pest Management Forum. Final results and analyses for 2017 are described in this report.

Weather patterns

Weather affects the growth, phenology (timing of different life cycle stages), dispersal, and survival of forest insects. Forest pathogens, especially leaf diseases and needle cast fungi, can be more common during wet or humid periods. Also, extreme weather events such as drought, snowfall, flooding, tornadoes, microbursts, frost, freezing, scorch, and rapid temperature fluctuations can affect tree health, causing foliage or twig death, or tree decline and mortality.

In 2017, January and February were warmer than normal with more precipitation as both snow and rain. Northwest Region had record high temperatures in mid-January and Northeast Region had heavy rainfall in February, causing a section of Hwy 17 to wash out north of Wawa. In Southern Region, record warm temperatures occurred with late February thunderstorms in some areas.

Cooler temperatures and snowstorms hit all regions in March with over 30 cm of snowfall in some areas. Normal temperatures arrived in April, but the month ranked as one of the rainiest on record with the exception of some areas in Northwest Region. Flood watches and warnings were issued in mid-April but were lifted shortly thereafter. At the end of the month, Northwest Region received 20 cm of snow in the Kenora area.

The wet weather continued in May and June, particularly in Southern Region and southern areas of Northeast Region such as Sudbury and Sault Ste. Marie. Southern Ontario saw some flooding and water levels on Lake Ontario climbed back up to historic values. The northern parts of Northeast Region and all of Northwest Region were drier than normal in May and June. Temperatures were slightly below normal in May and normal in June.

July and August continued to be wet from Sault Ste. Marie eastward to Ottawa and the Quebec border, but northern parts of Northeast Region, Northwest Region, and southwest and central parts of Southern Region were relatively dry. On July 6, a tornado with winds up to 190 km/h touched down in Quetico Provincial Park, Northwest Region, blowing down many trees. Temperatures remained in the normal range for both July and August.

Summer-like temperatures continued into the fall. At the end of September temperatures soared, exceeding 30 °C in some areas. In September, precipitation levels flip-flopped in the province with

wetter than normal conditions in Northwest Region and the northern part of Northeast Region and drier conditions in the south. The warm weather continued into October but colder temperatures arrived the last week of the month. Even so, across the province average monthly temperatures were two to four degrees above normal. In October above normal precipitation continued in the southern parts of Northeast Region and eastern parts of Southern Region. Eastern Ontario had so much precipitation that Ottawa surpassed its annual precipitation record by the end of October with two months left in the year.

November and December were cooler than normal, particularly the end of December when extreme cold warnings were issued with wind chill temperatures reaching -30 °C or below for all regions. Overall precipitation levels were close to or just above normal for November and December, although some significant snowfall amounts occurred in December. In early December, Northwest Region had 30 to 35 cm of snow in the Kenora area and 50 cm in Pickle Lake.

The 2017 weather conditions promoted a number of tree diseases in Ontario. The wetter and cooler spring, as well as above normal precipitation in the eastern part of the province led to more reports of leaf and needle diseases such as anthracnose, septoria leaf spot, marssonina leaf spot, and spruce needle rust. The cold spell in late December was not cold enough to kill emerald ash borer larvae and pupae which are protected from freezing temperatures and wind chill by bark on trees.

Extreme weather and abiotic events

In 2017, the area of blowdown decreased substantially (by 9,009 ha) in Ontario. No blowdown was mapped in Southern Region and area mapped in Northeast and Northwest regions was similar. In both cases, localized areas of blowdown were small and scattered. A few areas of blowdown in Northeast Region actually occurred late in 2016 but were not mapped until 2017. The largest area was in Chapleau District in the Missinaibi Lake area. In Northwest Region, larger areas of blowdown were in Quetico Provincial Park, Fort Frances District, and north of Lake St. Joseph, Sioux Lookout District.

A few additional areas of hail damage and tree mortality were mapped following a hail storm that occurred in Fort Frances District, Northwest Region, in 2016. This area was very small and totalled 75 ha.

Insect infestations

The current jack pine budworm outbreak has been in decline since 2013, but in 2017 the area of moderate-to-severe defoliation increased. A total of 100,187 ha of moderate-to-severe jack pine budworm defoliation were mapped in the province, all in Red Lake District, Northwest Region. The defoliation was concentrated approximately 90 km north of the town of Red Lake in an area north and northwest of Kirkness Lake and west of Pikangikum First Nation. The infestation in Sault Ste. Marie District, Northeast Region, collapsed in 2017 but jack pine mortality occurred in the area of infestation from the two previous years. Combined with moderate-to-severe defoliation mapped in 2015 and 2016, as well as drought-like conditions on a poor site (shallow soil to bare rock), 323 ha of jack pine mortality was mapped on the east side of Matinenda Lake. Jack pine larvae were collected in areas historically infested by jack pine budworm in both Northwest and Northeast regions with very little associated defoliation. These areas will continue to be monitored in 2018.

The area of moderate-to-severe spruce budworm defoliation increased from 116,023 ha in 2016 to 147,072 ha in 2017. Most of this increase was in Northeast Region, with a small increase in Southern Region. A total of 146,525 ha of moderate-to-severe defoliation were mapped in the northern districts of Northeast Region, mostly in Cochrane, Timmins, Chapleau, and Hearst districts. After three consecutive years of moderate-to-severe spruce budworm defoliation, a total of 317 ha of tree mortality was observed almost entirely in Chapleau District, Northeast Region. Only a small amount of moderate-to-severe defoliation was mapped in Southern Region: 492 ha in Peterborough District and 55 ha in Bancroft District. Susceptible forests of spruce and balsam fir across much of northern Ontario are beginning to reach age classes preferred by spruce budworm (i.e., >40 years). Spruce budworm pheromone trapping and aerial surveys will continue to be carried out to detect any significant increases in populations, which may signal the beginning of the next outbreak.

The current forest tent caterpillar outbreak increased by only 50,130 ha, but shifts in location of mapped defoliation were extreme. All three regions had forest tent caterpillar in 2017 with almost 75% of the districts in the province reporting some defoliation. The outbreak in Northwest crashed with only 91,218 ha of defoliation mapped in 2017, compared to almost 1,000,000 ha in 2016. Defoliation was recorded in all districts in Northwest Region, except Thunder Bay District, and the decrease in defoliation mapped was substantial, particularly in Dryden District going from 386,518 ha in 2016 to 9,803 ha in 2017.

In Northeast Region an increase of 677,324 ha of moderate-to-severe forest tent caterpillar defoliation was recorded in 2017. The largest change was in Hearst District with an increase of 489,461 ha. In Southern Region over five times as much moderate-to-severe defoliation was recorded, going from 50,906 ha in 2016 to 272,893 ha in 2017. The forest tent caterpillar infestation collapsed in Midhurst District, but a new one popped up in Parry Sound District and an increase of 101,087 ha was aerially mapped in Bancroft District.

Moderate-to-severe defoliation by large aspen tortrix more than doubled from 22,587 ha in 2016 to 48,297 ha in 2017. All of this defoliation was recorded in Northeast Region, predominantly in Chapleau and Timmins districts. In Timmins District, aspen tortix damage was mixed with forest tent caterpillar defoliation, making it difficult to differentiate and map.

Gypsy moth defoliation has been up and down since 2011, peaking at 23,335 ha in 2014 and collapsing in 2016, but in 2017 this invasive defoliator caused 10,856 ha of moderate-to-severe defoliation. All defoliation was mapped in Southern Region, 81% of it in Guelph District and the remaining areas in Peterborough and Aylmer districts.

Moderate-to-severe fall cankerworm defoliation was mapped for the second consecutive year in Southern Region, with an increase in total area mapped from 3,853 ha in 2016 to 11,764 ha in 2017. The largest increases were in Guelph and Aurora districts, while new areas of defoliation were recorded in Aylmer and Peterborough districts. The infestation spread northeast and southwest in 2017. In some cases it was difficult to distinguish between fall cankerworm and gypsy moth defoliation, particularly in the south central part of Guelph District in and Haldimand County, but ground checks verified which pest was at fault.

Whitespotted sawyer beetle damage decreased in 2017 from 40,697 ha in 2016 to 8,116 ha. Over 95% of the damage was recorded in Red Lake District with the remaining damage observed in Sioux Lookout District, all in Northwest Region. The most whitespotted sawyer beetle damage was east of that seen in 2016, with the largest decrease in Woodland Caribou Provincial Park and the largest increase in the Trout Lake area.

Several other insects caused localized defoliation or damage in various parts of Ontario. These occurrences did not develop into provincially significant areas of defoliation, but contribute to overall forest health concerns.

Forest pathogens and tree decline

Most tree pathogens do not cause symptoms over large geographic areas to the point where they can be aerially mapped. Nonetheless, foliar diseases can occasionally be mapped when the damage is exceptionally severe. In 2017, foliar diseases such as septoria leaf spot, ink spot of aspen, and spruce needle rust were mapped in Northeast and Northwest regions, totalling 3,359 ha. Most (86%) of this damage was recorded in the northern districts of Northeast Region. Numerous other foliar diseases were reported during ground surveys including anthracnose and marssonina leaf spot.

Invasive species

Emerald ash borer is an invasive insect that is regulated by the Canadian Food Inspection Agency (CFIA). As of June 30, 2016, areas regulated to control emerald ash borer (EAB) in Ontario include one large area including all of Southern Region and the southern part of Northeast Region, south of Montreal River, which is at the northern end of Sault Ste. Marie District. The city of Thunder Bay in Northwest Region is also regulated for EAB.

In 2017, MNRF did not do aerial surveys to delineate decline and mortality of ash species, but deployed traps in and around the regulated areas. Forty six locations across the province were monitored for emerald ash borer using baited green prism traps. Beetles were found at three trap sites, one in Northeast Region and two in Southern Region, all in regulated areas. Emerald ash borer were also found during regular surveys (not trap sites) at four new locations in Northeast Region, all in the regulated area (in which restrictions against moving potentially infested wood items apply).

In 2013, as part of a long-term strategy to reduce the effects of emerald ash borer biocontrol agents were released by the Canadian Forest Service (CFS). In Ontario, from 2013 to 2016, the larval parasitoid, *Tetrastichus planipennisi* Yang, native to China, has been released at 14 sites, all in Southern Region. In 2017, this parasitoid was released at an additional seven locations, six in Southern Region and one in Northeast Region. Since 2015, another parasitoid, *Oobius agrili* Zhang and Huang, also native to China, was released at nine sites in Southern Region and at six additional locations in 2017, five in Southern Region and one in Northeast Region. A third parasitoid, *Spathius galinae*, which is native to Russia, was released for the first time in Ontario at two locations, both in Southern Region. All of the parasitoids were supplied to the CFS by the Brighton, Michigan, rearing facility except for *Tetrastichus planipennisi*, released at Fort St. Joseph, Sault Ste. Marie District, Northeast Region, which were reared in Sault Ste. Marie. Follow-up assessments determined that *Tetrastichus planipennisi* was recovered from about 64% of all trees sampled at all sites assessed in 2017. Additional sites will be reassessed in winter and spring 2018.

On April 5, 2013, CFIA declared Asian long-horned beetle (ALHB) eradicated from Toronto and Vaughan. The declaration resulted following a program aimed at eliminating the pest after it was initially found in the area in 2003. The program involved cutting and chipping infested trees and all potential host trees within 400 m of an infested tree, followed by surveys to determine if any beetles remained. After five consecutive years in which detection surveys found no beetles or infested trees, the CFIA declared the pest eradicated.

In August 2013, a new infestation of ALHB was found in Mississauga, following the discovery of a beetle on a car. Subsequent surveys by the CFIA, the cities of Toronto, Mississauga, Brampton, and MNRF found approximately 25 infested Norway and Manitoba maple trees. Infested trees were in the area around Lester B. Pearson International Airport, with the exception of one tree found in an adjacent area in the City of Toronto. This infestation has undergone an aggressive eradication program led by the CFIA, which continues to lead the federal detection survey. There were no new finds of ALHB in 2017.

Beech bark disease, which is a combination of an invasive insect (beech scale) and an invasive fungal pathogen, has continued to spread in Ontario. In 2017, new locations of beech bark disease were recorded in Southern Region.

Pest index – Major forest disturbances

Major forest disturbances occur annually when an insect, disease, or weather event affects a very large area, is not specific to a region, or has affected more than one region in the past. These disturbances, listed below, are considered to be of provincial significance.

Pest index – Minor forest disturbances

Minor forest disturbances are identified regionally using forest health surveys. These disturbances, listed below, could have local or regional significance to forest health conditions.

Pest index – Minor forest disturbances con't

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 and economic values. Invasive species found in or close to Ontario in 2017 are listed below.

Host index

Tree and shrub species mentioned in this report and their scientific names.

Common name	Scientific name
American beech	*Fagus grandifolia* Ehrh.
American elm/white elm	*Ulmus americana* L.
Balsam fir	*Abies balsamea* (L.) Mill.
Balsam poplar	*Populus balsamifera* L.
Basswood	*Tilia americana* L.
Bitternut hickory	*Carya cordiformis* (Wangenh.) K Koch
Black ash	*Fraxinus nigra* Marsh.
Black cherry	*Prunus serotina* Ehrh.
Black spruce	*Picea mariana* (Mill.) BSP
Black walnut	*Juglans nigra* L.
Bur oak	*Quercus macrocarpa* Michx.
Carolina poplar	*Populus x canadensis* Moench cv. Eugenei
Choke cherry	*Prunus virginiana* L.
Eastern cottonwood	*Populus deltoides* Bartr. ex Marsh.
Eastern hemlock	*Tsuga canadensis* (L.) Carrière
Eastern red cedar	*Juniperus virginiana* L.
Eastern white cedar	*Thuja occidentalis* L.
Eastern white pine	*Pinus strobus* L.
European larch	*Larix decidua* Mill.
European white poplar	*Populus alba* L.

Common name	Scientific name
Green ash	*Fraxinus pennsylvanica* Marshall
Jack pine	*Pinus banksiana* Lamb.
Largetooth aspen	*Populus grandidentata* Michx.
Lombardy poplar	*Populus nigra* L.
Manitoba maple	*Acer negundo* L.
Pin cherry	*Prunus pensylvanica* L. f.
Red maple	*Acer rubrum* L.
Red oak	*Quercus rubra* L.
Red pine	*Pinus resinosa* Ait.
Red spruce	*Picea rubens* Sarg.
Scots pine	*Pinus sylvestris* L.
Silver maple	*Acer saccharinum* L.
Speckled alder	*Alnus incana spp. rugosa* (Du Roi) J. Clausen
Sugar maple	*Acer saccharum* Marsh.
Tamarack/larch	*Larix laricina* (Du Roi) K. Koch
Trembling aspen	*Populus tremuloides* Michx.
White ash	*Fraxinus americana* L.
White birch	*Betula papyrifera* Marsh.
White oak	*Quercus alba* L.
White spruce	*Picea glauca* (Moench) Voss
Willow species	*Salix* spp.

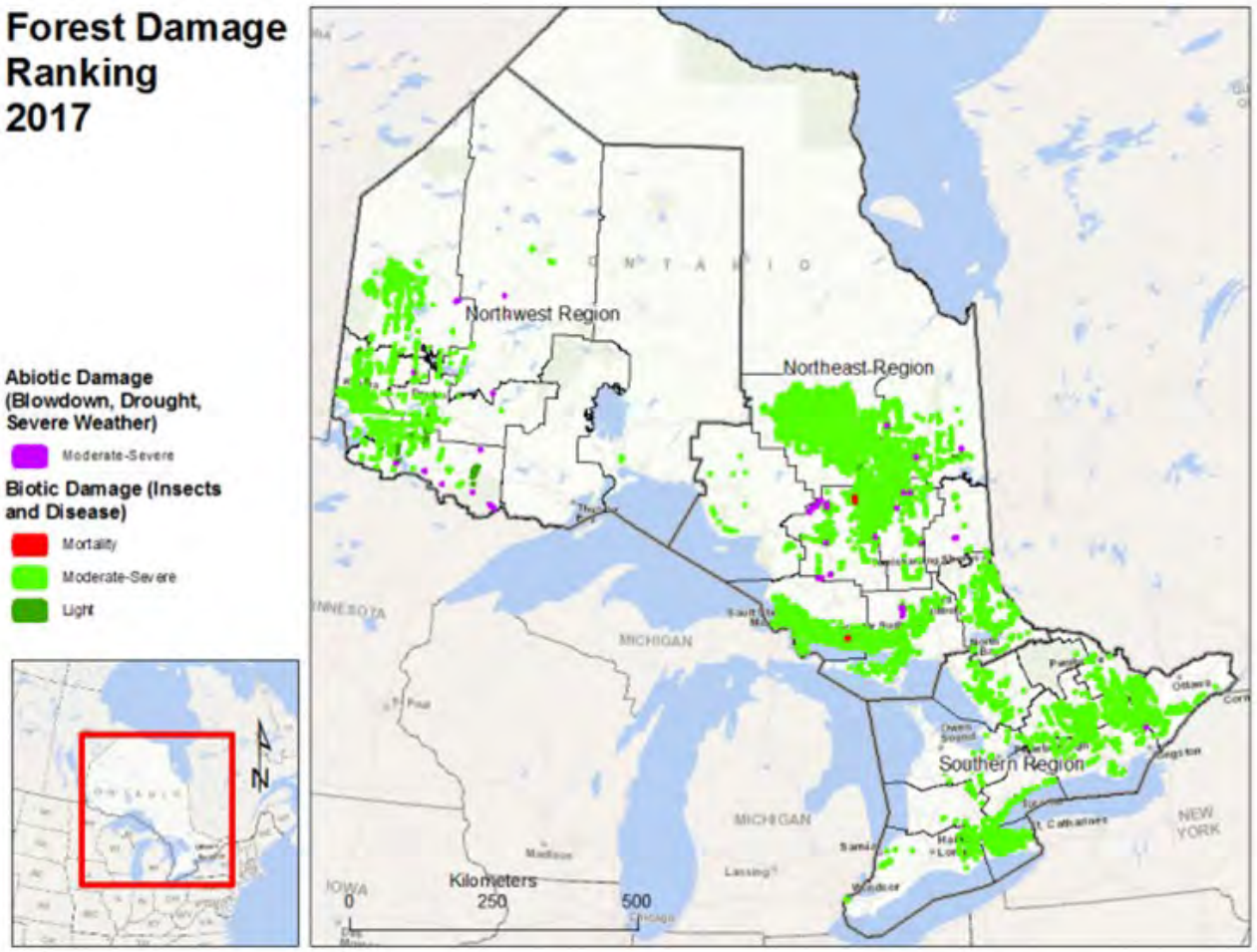
Area of major forest disturbances

Major forest disturbances are mapped to quantify current status and support trend analysis. The following table outlines area (in hectares) of mapped defoliation/damage by severity class for major disturbances in 2017.

Common name	Light	Moderate-to-severe	Tree mortality	Total
Balsam fir sawfly		135	-	135
Blowdown	-	2,439	-	2,439
Cedar leafminer	16	5,903	-	5,919
Eastern larch beetle	-	407	-	407
Fall cankerworm	-	11,764	-	11,764
Forest tent caterpillar	2,335	1,173,570	-	1,175,905
Gypsy moth	-	10,856	-	10,856
Hail	-	75	-	75
Ink spot of aspen	92	618	-	710
Jack pine budworm	-	100,187	323	100,510
Larch casebearer	-	3,853	-	3,853
Large aspen tortrix	25	48,297	-	48,322
Pine false webworm	-	11	-	11
Septoria leaf spot	-	2,044	-	2,044
Spruce budworm	158	147,072	317	147,546
Spruce needle rust	-	697	-	697
Whitespotted sawyer beetle	-	8,116	-	8,116

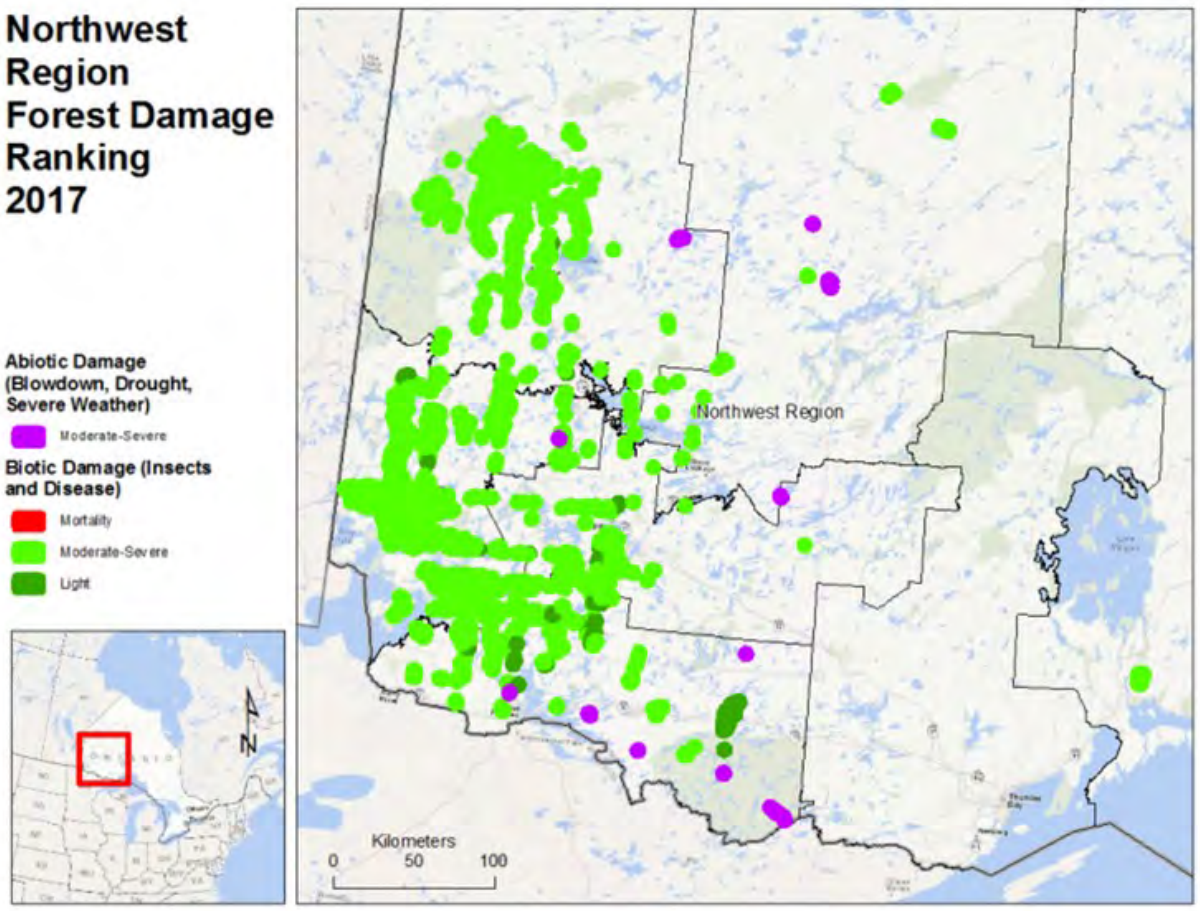
Major disturbances

Provincial overview



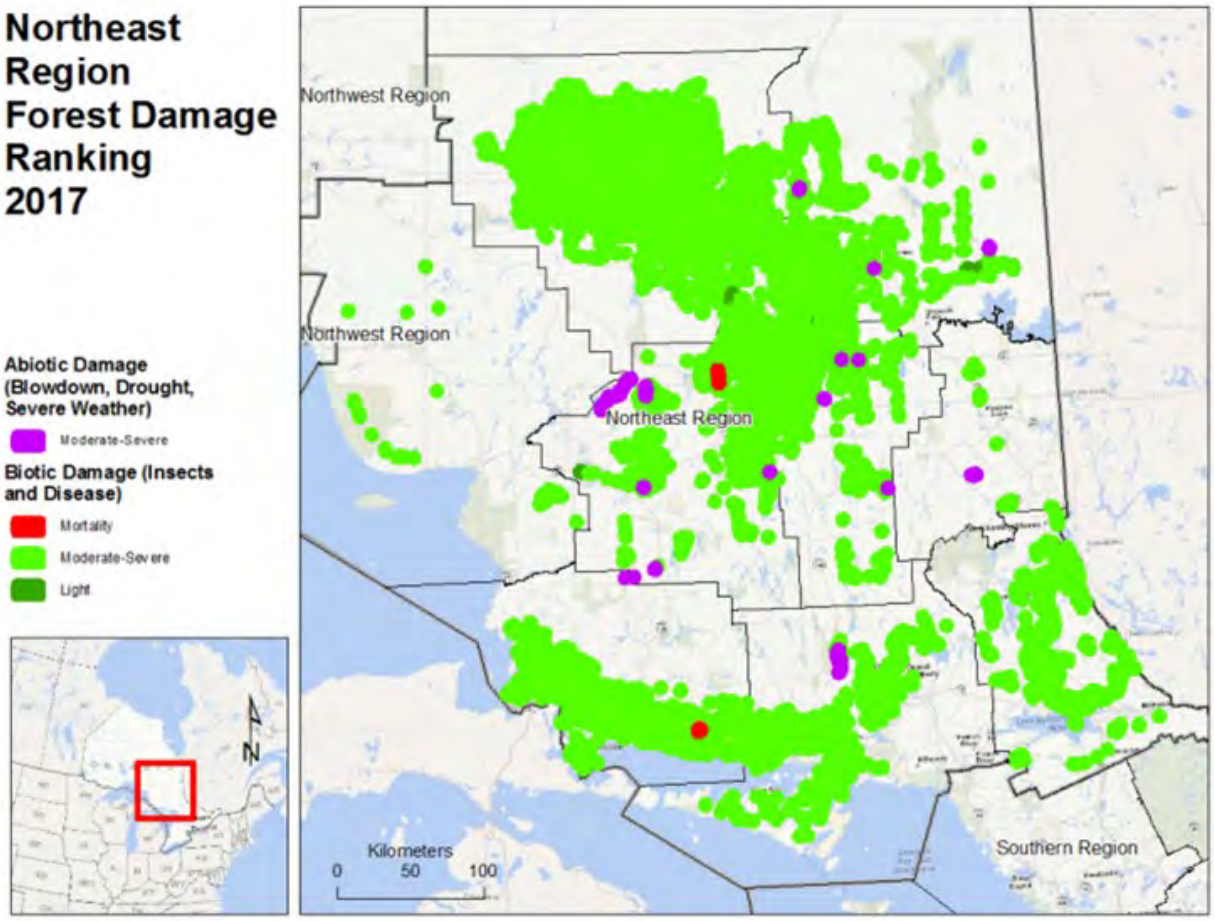
Major disturbances

Northwest overview



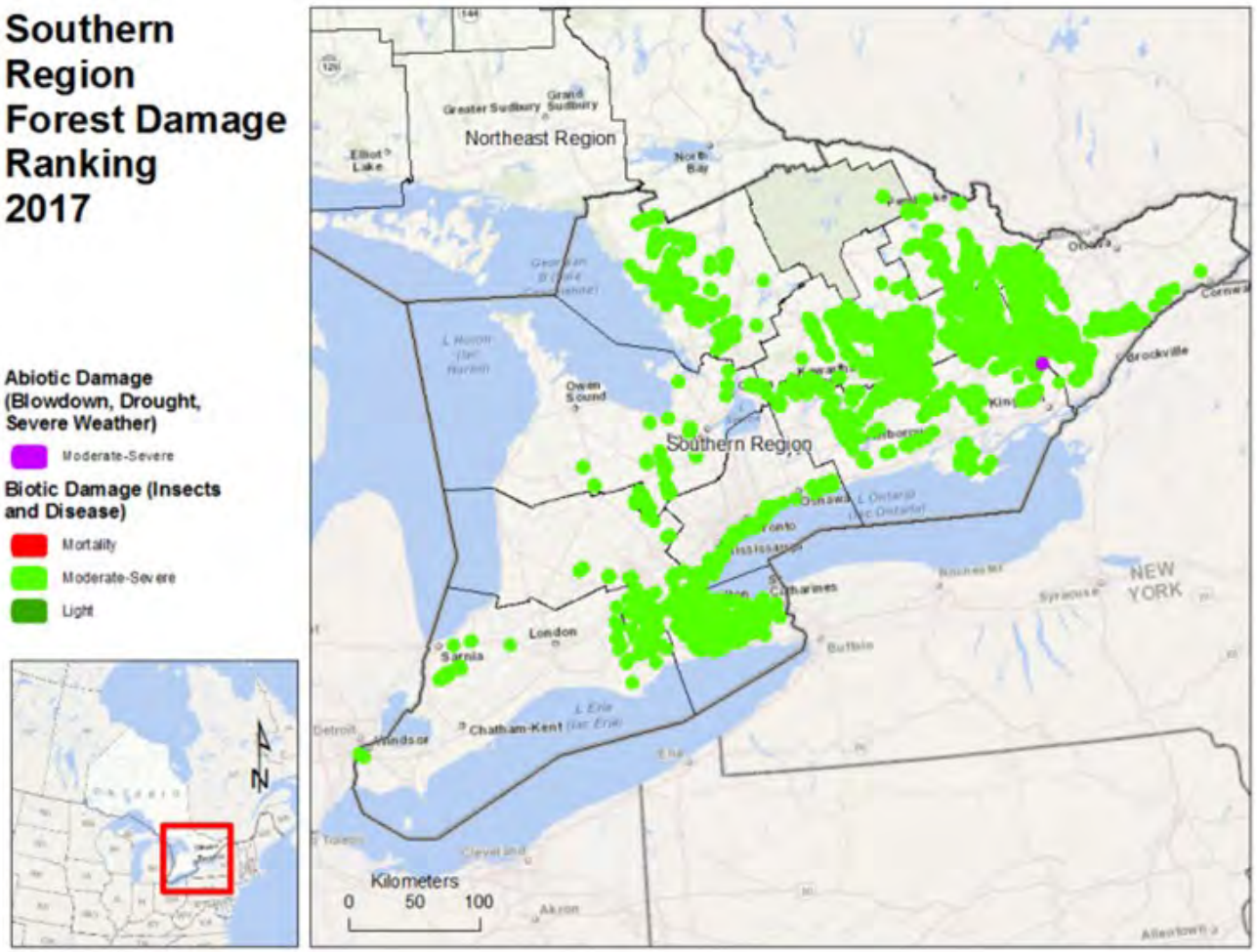
Major disturbances

Northeast overview



Major disturbances

Southern overview



Example report

How to read a major disturbance report

Each forest health condition report summarizes information about an event or disturbance affecting the health of Ontario's forests, including:

Pest/damage information - basic information about the disturbance, including the type, origin, host species, and area affected that year

Provincial key facts - overview of the disturbance, including provincial scale information about the disturbance, possible effects, and annual activity

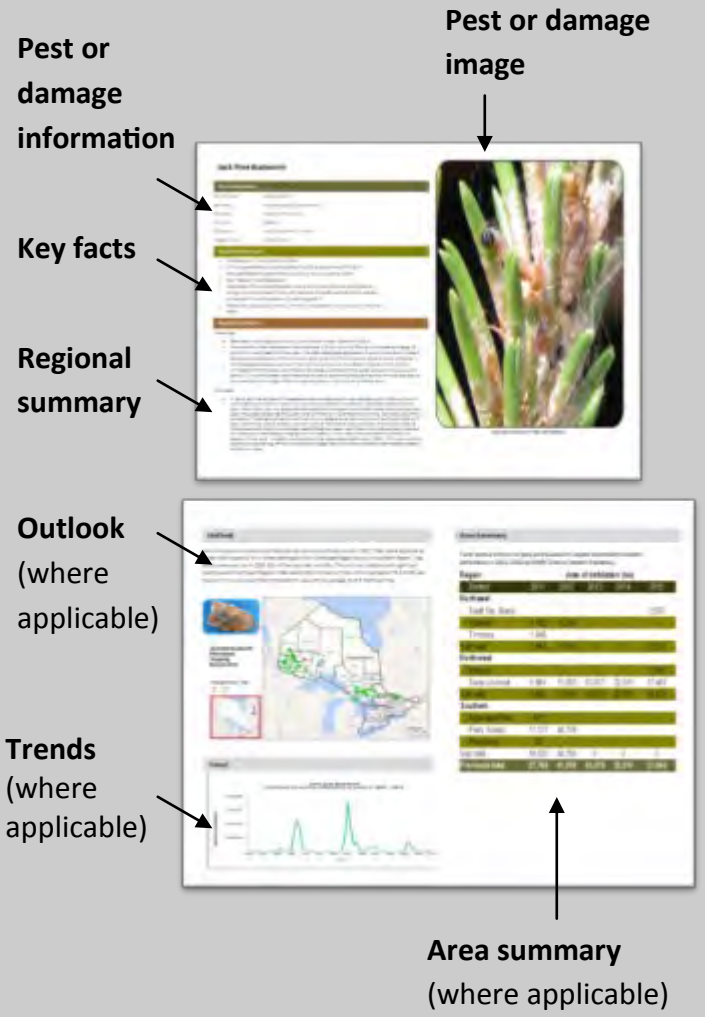
Regional summary - regional summaries, outlining more specific information by MNRF administrative regions (Northwest, Northeast, Southern)

Image - a photo of the disturbance or pest

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

Trends - where applicable, additional information about possible trends

Area summary - where applicable, information about the total area in which the disturbance caused moderate-to-severe damage from 2013 to 2017 by MNRF region and district.



Example map

How to read a map in this document

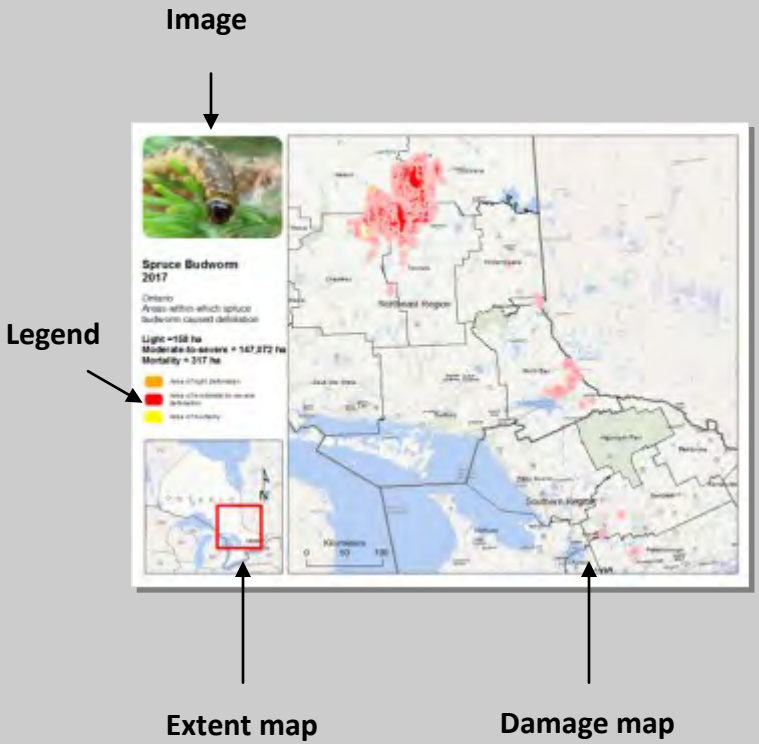
For major disturbances, the forest health condition report contains the following spatial information:

Damage map – shows the areas of infestation or damage. Light damage is typically represented in orange, moderate-to-severe damage in red, and mortality in yellow. Damage areas are also highlighted with a pink shadow or outline to help the reader distinguish small areas.

Legend – describes the features of the map.

Extent map – map of Ontario with the area of focus outlined in deep red.

Image – a photo of the disturbance or pest.



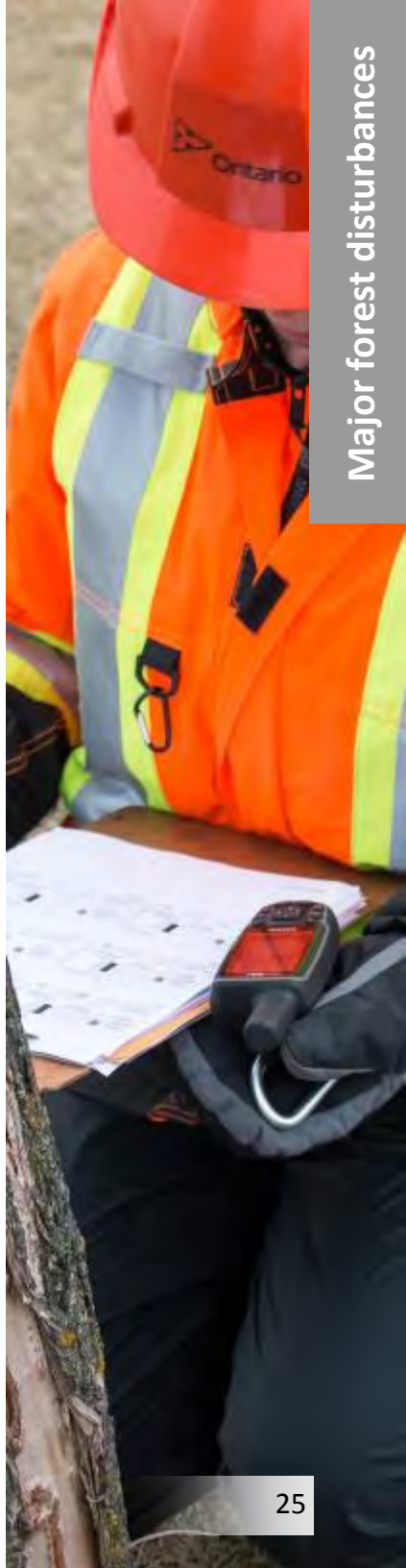
Asian long-horned beetle

Pest information

Common name:	Asian long-horned beetle
Scientific name:	*Anaplophora glabripennis* (Motschulsky)
Pest origin:	**Invasive** – native to Asia
Pest type:	Wood borer
Host species:	Birch, elm, hackberry, horse chestnut, Katsura, maple, mountain ash, poplar, silk tree, sycamore or London plane tree, and willow
Infestation area:	N/A

Provincial key facts

- This beetle was first found in 2003 in an industrial park bordering Toronto and the city of Vaughan.
- It was possibly introduced to North America by way of wooden pallets, crates, or packaging materials used in shipping.
- The Canadian Food Inspection Agency (CFIA), which is the lead agency responsible for preventing the entry and spread of invasive insect species, joined with MNRF, the Canadian Forest Service (CFS), City of Toronto, City of Vaughan, York Region, Toronto and Region Conservation Authority, and the U.S. Department of Agriculture to create a task force focused on controlling the Asian long-horned beetle.
- After several rounds of host tree removals and surveys, the Toronto Vaughan infestation was thought to be eradicated.
- On September 20, 2013, the CFIA confirmed the presence of Asian long-horned beetle in an industrial area near Pearson International Airport, Mississauga with approximately 25 trees identified as infested and destroyed.
- In early 2014, host trees within 800 metres of infested trees were removed from parks, ravines, and industrial and residential areas of Mississauga and west Toronto.
- As part of eradication efforts, the CFIA established a regulated area in Mississauga and Toronto to prevent the spread of the insect. This area is approximately 20 square kilometres, bordered by Finch Avenue (north), Martin Grove Road (east), Hwy 401 (south), and Dixie Road (west).
- Restrictions on moving nursery stock, trees, logs, lumber, wood, wood chips, and bark chips from certain deciduous trees identified as hosts of the beetle are in place for the regulated area.



Provincial key facts con`t

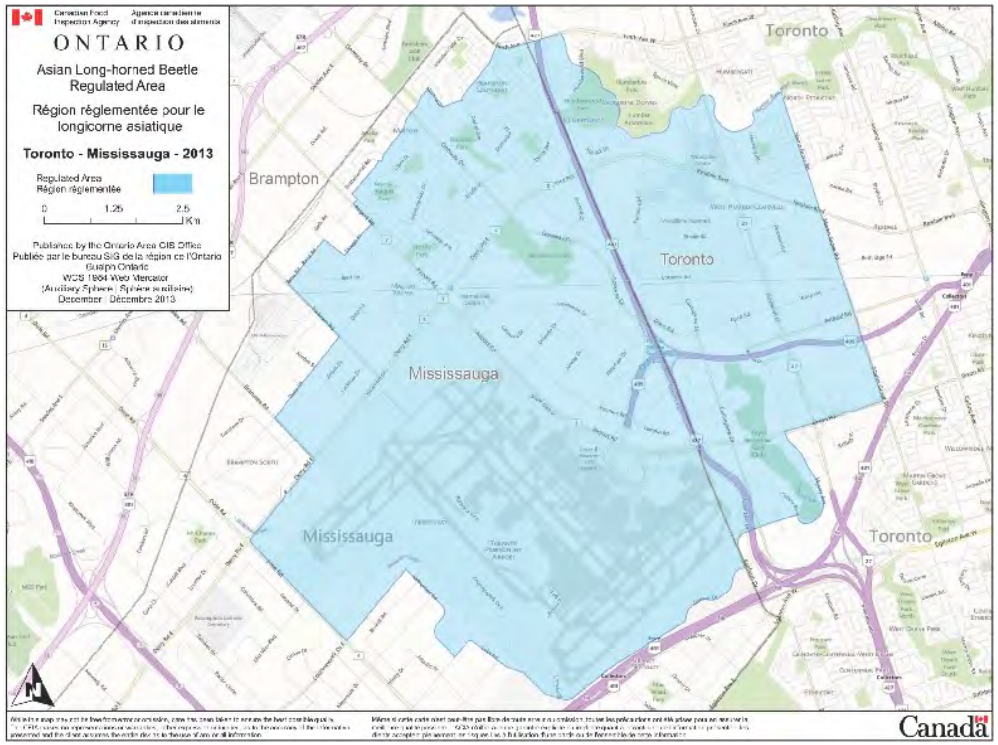
- Agencies currently working collaboratively to eradicate this insect are the CFIA, CFS, MNRF, and cities of Toronto, Mississauga, and Brampton.
- More information is available on the CFIA website at http://www.inspection.gc.ca/plants/plant-protection/insects/asian-longhorned-beetle/eng/1337792721926/1337792820836

Regional summary

Southern:

- In Aurora District, no new infestations were discovered during host tree surveys.
- In winter 2018, additional surveys will be carried out in partnership with the CFIA.

Asian long-horned beetle regulated area



Balsam fir sawfly

Pest information

Common name:	Balsam fir sawfly
Scientific name:	*Neodiprion abietis* (Harr.)
Pest origin:	Native to North America
Pest type:	Defoliator
Host species:	Balsam fir
Infestation area:	135 ha (2017)

Provincial key facts

- Infestations of balsam fir sawfly are common in eastern Canada (Newfoundland and Labrador) and less frequent in Ontario.
- Outbreaks occurred in southeastern Ontario in the Ottawa Valley in the early 1940s and 50s and again in the late 1960s and early 70s.
- More than five or six consecutive years of defoliation can cause some mortality, but since spruce budworm often occurs simultaneously it is difficult to distinguish which insect is causing the most damage.
- In 2017, moderate-to-severe defoliation was detected and mapped only in Southern Region.

Regional summary

Southern:

- In the southeast corner of Pembroke District, balsam fir sawfly caused 135 ha of moderate-to-severe defoliation south of Stewartville and along Robertson Line, south of the Madawaska River in McNab Twp. This area is adjacent to a small area of light balsam fir sawfly defoliation mapped in 2016, which had light defoliation in 2017, but was not aerially mapped. During early season ground surveys, moderate-to-severe defoliation was also observed south of the aerially mapped defoliation along Hwy 20, east of the community of Waba near the border of Kemptville District. Red crowns and defoliation of old foliage were observed.

Balsam fir sawfly 2017

Southern Region
Areas-within-which balsam fir sawfly caused defoliation

Moderate-to-severe = 135 ha

Area of moderate-to-severe defoliation

Beech bark disease

Pest information

Common name:	Beech bark disease
Scientific name:	Fungus – *Neonectria faginata* (Lohman et al) Castl. Insect – *Cryptococcus fagisuga* Lind.
Pest origin:	Invasive — native to Europe
Pest type:	Insect-disease complex
Host species:	American beech
Infestation area:	N/A

Provincial key facts

- Beech bark disease is the result of an insect–fungal pathogen complex that is initiated by the infestation of beech scale on American beech.
- As the insect and fungus become established in a stand they reduce growth, deform trees, decrease wood quality and mast production, and may cause premature mortality.
- Beech bark disease has been identified across the range of beech in Ontario, as far north as St. Joseph Island, Sault Ste. Marie District.
- Three distinct phases of beech bark disease development can be observed across Ontario:
    - Advancing front: beech scale populations have recently colonized unaffected beech trees. Scale infestations combined with other stressors can contribute to beech decline.
    - Killing front: scale populations rapidly build and the fungus colonizes trees. The killing front is characterized by heavy levels of tree mortality.
    - Aftermath forest: disease has passed through and remains endemic. Large remnant trees continue to decline and young trees become infected, disfigured, and gradually decline.
- In 2017, new locations of beech bark disease were added to an existing database of confirmed infections in Southern Region.

Regional summary

Southern:

- In Aylmer District, new finds and collections of beech bark disease were made on American beech. Old fruiting bodies were observed on one mature tree at Meadowlily Woods in London, and on two mature trees at Five Points Forest west of Ingersoll. Beech bark disease was also reported on several mature American beech trees at Chesney Conservation Area east of Innerkip. Fruiting bodies were also collected on several over-mature American beech trees in the Jaffa Tract of Springwater Forest southwest of Aylmer. Diseased trees were also observed on mature American beech in Backus Woods, Norfolk County, just north of Port Rowan.
- In Pembroke District, beech bark disease has been confirmed over the last few years in M^{c}Nab and Blithfield townships on the southeast border of the district, as well in the central part of the district in the townships of Matawatchan, Lyndoch, Raglan, Radcliffe, and Sebastopol. In the past, beech bark disease was also seen in the northern part of the district in Hagarty and Burns townships. In 2017, fruiting bodies were observed in the southern part of the district in a beech stand in Burnstown along the Madawaska River, Bagot Twp, and on an individual tree in Shaw Woods, south of Pembroke, where scale was reported in previous years.
- In Kemptville District, beech bark disease was confirmed in the Agroforestry Education Centre woodlot south of Kemptville, a site where scale populations were present in the past.

Beech bark disease plot assessments

- In 2010 and 2011, permanent plots were established at 11 locations to monitor the development of beech bark disease in Ontario, and to study interactions among the scale, the pathogen, the host tree, and climate. Most plots were located along the advancing front of the disease, and at nine of the locations scale was present at various levels. The pathogen was initially detected at only two locations, both where the scale was already well-established.
- From 2010 to 2015, scale abundance generally increased in plots where scale had recently arrived. Substantial scale die-off occurred in 2013 and 2015 in plots with more advanced disease symptoms, severe decline in tree vigour, and mortality of heavily infested trees.
- Currently, the beech bark disease pathogen has spread to nine of the 11 plot locations. Its development has been rapid, especially along the northern advancing front, and tree health has declined annually at an increasing rate. At the North Ril Lake Road location, where beech bark disease was already present when the plots were established, 60% of the trees (67% of plot basal area) were killed by the disease by 2015– a span of 5 years. Similar trends are developing at other locations where the pathogen has established.
- Monitoring data from 2017 is currently being analyzed and results will be reported in 2018. The beech bark disease plot network will continue to be monitored.

Trend analysis/outlook/issues:

Southern:

- Beech bark disease has no known control mechanism. As the disease spreads throughout the range of beech in Ontario, beech trees will continue to decline.
- Movement of firewood may accelerate the spread of beech scale and the canker fungus.
- The canker fungus can only infect beech trees that have previously been infested by beech scale. Some trees have been identified as potentially resistant to beech bark disease since despite growing in areas with high scale infestation they have not been attacked by beech scale. Identifying, monitoring, and retaining these resistant trees will aid efforts to conserve beech on the landscape.
- Increased mortality in high-density beech stands in Southern Ontario can pose a problem for forest managers. Current research is focused on silvicultural practices to inform best management strategies for declining beech stands.

Blowdown

Pest information

Common name:	Blowdown
Scientific name:	N/A
Pest origin:	N/A
Pest type:	Abiotic
Host species:	All species
Infestation area:	2,439 ha (2017)

Provincial key facts

- Blowdown, which is damage to trees caused by high winds or extreme weather events, is part of the natural processes in forests. The extent and frequency of such damage is sporadic.
- Blowdown recorded in 2017 (2,439 ha) was much less than that recorded in 2016 (11,448 ha).
- Damage was in small scattered areas with close to the same amount of area affected in Northeast and Northwest regions.

Regional summary

Northwest:

- In the central part of Sioux Lookout District, three areas of blowdown totalling 468 ha were mapped west of the community of Pickle Lake and north of Lake St. Joseph. Two of the areas of blowdown closest to Lake St. Joseph were southwest of Wright Lake and the third smallest area was northwest of Gaddess Lake.
- Three areas of blowdown were mapped in Fort Frances District, with the largest in the southeast corner of Quetico Provincial Park. This area stretched from McEwen Lake south to the north end of Ottertrack Lake near the Minnesota border. This swath of blowdown was approximately 12 km long by 200 m wide with trees flattened in a southeasterly direction. Smaller areas of blowdown were also recorded on the southeast side of Sturgeon Lake, in the central part of Quetico Provincial Park, and another small area was mapped east of the park in the south central part of the district on the south end of Lindgren Lake.

Regional summary con`t

- On the southeast side of Red Lake District, 227 ha of blowdown were aerially mapped close to the Sioux Lookout District boundary. Trees were uprooted and flattened north of Birch Lake. This was the only area of blowdown observed in Red Lake District.
- In the northwest part of Dryden District, two small areas of blowdown, totalling 31 ha, were mapped close to the Sioux Lookout District boundary. Damage was recorded southwest of Lake of Bays.
- In the northeast corner of Kenora District, one small (30 ha) area of blowdown was aerially mapped northwest of Camp Robinson at the north end of Cliff Lake.

Northeast:

- Over half of the blowdown recorded in Northeast Region was observed in Chapleau District. Most of this defoliation was in the northeast corner of the district and actually happened late in 2015, was not detected in 2016, but was mapped in 2017. Confirmation of event timing came via conversations with Missinaibi Provincial Park staff. The damage was in a swath at the south side of Missinaibi Lake and a slightly smaller swath in Lloyd Twp, west of Lloyd Lake. More recent areas of blowdown were in central and southern Chapleau District. Both of these areas were small; the central area was just east of the community of Chapleau near the airport and the area in the south was in Carruthers Twp at the north end of Prairie Grass Lake, close to the Sault Ste. Marie District boundary.
- In Sudbury District, a late season blowdown event between Halfway Lake and Windy Lake provincial parks in 2016 was mapped in 2017. A total of 326 ha of damage were mapped on the west side of Hwy 144. Small areas of damage in a swath running north–south were seen in Moncrieff and Hart townships northwest of Windy Lake Provincial Park.
- In the southern part of Kirkland Lake District, 140 ha of blowdown were mapped north of Elk Lake in the northeast corner of Smyth Twp. The swath of damage, comprising predominantly black spruce, ran in a west–east direction.
- In southern Cochrane District, two areas of blowdown, totalling 84 ha, were mapped. The largest area was north of Lake Abitibi between Circle and Endleman lakes in the southwest corner Kenning Twp. The smallest area was northwest of the town of Cochrane on the west side of Frederickhouse River, almost in the centre of Clute Twp.
- Small scattered areas of blowdown adding up to 83 ha were observed in Timmins District. Three small areas of blowdown were mapped north of the city of Timmins in Jessop and Jamieson townships, one area on the south side of Hwy 101, past the junction of Hwy 144 southeast of Dana-Jowsey Lakes Provincial Park (natural environment class) in Denton Twp, another southeast of Horwood Lake in McOwen Twp, and a third one north of Shining Tree in Mond Twp.
- On the eastern side of Hearst District, 25 ha of blowdown were mapped along the Cochrane District boundary. Two small areas of damage were observed on the west side of the Mattagami River in the southwest portion of Agate Twp.

Regional summary con`t

Northeast:

- In Sault Ste. Marie District, 10 ha of blowdown were mapped in the northeast corner of the district along the border of Chapleau District. Damage was in Algoma Headwaters Provincial Park at the north end of Megasin Lake, Carton Twp. Smaller areas of blowdown were encountered on St. Joseph Island, between Iron Bridge and Blind River as well as north of Thessalon. These areas were too fragmented to aerially map. On St. Joseph Island, small areas of blowdown, close to the stand's edge, were seen in the southern part of St. Joseph Twp and the north end of Jocelyn Twp. Hardwood trees were snapped off while some softwoods were uprooted along 10th Sideroad, the west side of Hilton Road, and A Line close to Otter Lake Road. Between Iron Bridge and Blind River, small groups of trees along Hwy 17 East were also blown down near the edges of stands. Most of this was in Thompson and Cobden townships. North of Thessalon, along Shaw Road, seed trees in clearcuts and trees on the edge of clearcuts were blown over. This occurred on the south end of the road in Rose and Bridgeland townships.
- In North Bay District, after a significant thunderstorm moved through the area in July blowdown was encountered along Hwy 17 near the Community of Beaucage. The damage was not mapped from the air.

Total area (in hectares) in which blowdown caused moderate-to-severe damage between 2013 and 2017, by MNRF district.

Region	Area of moderate-to-severe damage (ha)				
District	**2013**	**2014**	**2015**	**2016**	**2017**
Northeast					
Chapleau	27	-	4	275	697
Cochrane	-	7	-	67	84
Hearst	-	1	-	3	25
Kirkland Lake	-	-	-	-	140
North Bay	-	-	-	-	-
Sault Ste. Marie	125	152	-	-	10
Sudbury	-	7	67	-	326
Timmins	-	-	-	5	83
Wawa	-	-	-	-	-
Sub total	152	168	71	350	1,365
Northwest					
Dryden	1,582	292	31	884	31
Fort Frances	1,379	792	991	-	319
Kenora	-	106	488	73	30
Nipigon	220	46	277	180	-
Red Lake	189	-	-	6,761	227
Sioux Lookout	825	9	72	3,080	468
Thunder Bay	42	1,867	117	120	-
Sub total	4,236	3,111	1,976	1,098	1,075
Southern					
Algonquin Park	761	114	-	-	-
Aurora	-	-	-	-	-
Aylmer	-	-	-	-	-
Bancroft	-	7	-	-	-
Guelph	19	-	-	-	-
Kemptville	-	-	-	-	-
Midhurst	-	-	-	-	-
Parry Sound	7	-	-	-	-
Pembroke	102	16	-	-	-
Peterborough	-	-	-	-	-
Sub total	888	136	0	0	0
Provincial total	**5,276**	**3,415**	**2,047**	**11,448**	**2,439**

Blowdown 2017

Ontario
Areas-within-which blowndown caused damage

Moderate-to-severe = 2,439 ha

Area of moderate-to-severe damage

Blowdown 2017

Northwest Region
Areas-within-which blowndown caused damage

Moderate-to-severe = 1,075 ha

Area of moderate-to-severe damage

Blowdown 2017

Northeast Region
Areas-within-which blowdown caused damage

Moderate-to-severe = 1,365 ha

Area of moderate-to-severe damage

Cedar leafminer complex

Pest information

Common name:	Cedar leafminer complex
Scientific name:	*Argyresthia aureoargentella* Brower, *Argyresthia canadensis* Freeman, *Argyresthia thuiella* (Pack)
Pest origin:	Native to North America
Pest type:	Defoliator
Host species:	Eastern white cedar
Infestation area:	5,903 ha (2017)

Provincial key facts

- Cedar leafminer complex is a group of similar insects that mine cedar foliage, including:
  - *Argyresthia aureoargentella* Brower
  - *Argyresthia canadensis* Freeman
  - *Argyresthia thuiella* (Pack)
  - *Coleotechnites thujaella* (Kft.)
- The last large scale cedar leafminer outbreak occurred in Kemptville District from 2002 to 2007, resulting in high amounts of top-kill and whole tree mortality.
- In 2017, moderate-to-severe cedar leafminer defoliation totalling almost 6,000 ha was mapped in two regions. This was a substantial increase in area relative to 2016.

Regional summary

Northwest:

- In 2017, a new infestation of cedar leafminer was recorded in Northwest Region. All mappable defoliation was in Fort Frances District but lighter defoliation was recorded in Kenora District during ground surveys.
- In the southern part of Kenora District, light defoliation was observed during ground surveys on semi-mature cedar along the Hwy 71 corridor from the Fort Frances District boundary to Sioux Narrows Provincial Park on the northeast side of Lake of the Woods.

Regional summary con`t

- In the western part of Fort Frances District, 924 ha of moderate-to-severe cedar leafminer defoliation was aerially mapped in 2017. Most of the defoliation occurred northeast of Rainy River in small scattered areas of eastern white cedar stretching from Hwy 619 in Sutherland Twp east to Hwy 71 south of the community of Finland. Defoliation continued just north of Finland and on the south end of Little Pine Lake, both in Potts Twp and reached into Menary Twp with a small area on the southwest side of Beadle Lake and four smaller areas north of Banana Lake near the northern township boundary. The lesser area of moderate-to-severe defoliation was northwest and northeast of the town of Fort Frances. Northwest of Fort Frances, several small areas of defoliation were concentrated at the north end of Hwy 611 (Miscampbell Twp) and northeast of Fort Frances, two smaller areas of defoliation were recorded on the west side of the junction of Hwy 11 and Hwy 502.

Southern:

- In 2017, moderate-to-severe cedar leafminer defoliation was mapped in seven districts in Southern Region.
- Kemptville District had the most area of moderate-to-severe cedar leafminer defoliation in Southern Region with a total of 1,822 ha. Most of this defoliation was mapped in south central Kemptville District, with scattered stands of cedar defoliated from Smith Falls to the east side of the south end of Hwy 416. Smaller areas of defoliation continued east, just west of Iroquois along Hwy 22, north of Morrisburg, and north of the town of Cornwall along Hwy 138 between the communities of Bonville and St Andrews. A small area of defoliation was also mapped south of Carleton Place near the south end of Mississippi Lake.
- In Midhurst District, 1,124 ha of moderate-to-severe defoliation was mapped south of Collingwood in Simcoe County stretching to the Shelburne and Orangeville area in Dufferin County, where leafminer populations have historically been observed. Ground surveys revealed that to a lesser degree small stands of cedar were affected in Grey County south of the town of Durham.
- In Peterborough District, 1,073 ha of defoliation occurred in small scattered areas, mostly in a swath from Frankford in the south, northward through Madoc, and along Hwy 62 to Fox Corners in Hastings County near the Bancroft/ Peterborough District boundary. Several stands west of this area were also defoliated northeast of the city of Peterborough along May's Creek between Hwy 4 and Hwy 8 in Peterborough County. East of the largest area of defoliation, several small pockets of defoliation were found in the White and Lime lakes areas near the community of Marlbank, counties of Hastings, and Lennox and Addington.
- Two distinct areas in Guelph District had moderate-to-severe cedar leafminer defoliation of open-grown, woodlot edges and hedgerow eastern white cedar, with damaged area totalling 602 ha. In the northeast part of the district, defoliation was mapped north of the community of Grand Valley in riparian areas of the Grand River in Dufferin County. The other area of moderate-to-severe defoliation was aerially mapped in the southeast part of the district in wet areas north of Hamilton and south of Lake Ontario along the Niagara Escarpment from Vineland west to Grimsby, Niagara Region.

Regional summary con`t

One smaller area of defoliation was located between these two main areas, north of the community of Carlisle just south of Hwy 401 on the east side of Centre Road. During ground surveys, areas of lighter defoliation were recorded near Gorrie in Huron County, and in areas around Elmira and Kitchener in the Regional Municipality of Waterloo.

- In the southeast corner of Aurora District, 184 ha of moderate-to-severe defoliation of eastern white cedar were mapped between, and north of, the communities of New Castle Village and Newtonville in the Regional Municipality of Durham. All defoliation was in riparian areas on the north side of Hwy 401.
- Two small areas of cedar leafminer defoliation, adding up to 130 ha, were mapped in the central part of Bancroft District. Both areas were north of Kawartha Highlands Provincial Park with one at the south end of Nogies Lake and the other just east of the community of Gooderham along Laronde Creek.
- Only 44 ha of moderate-to-severe cedar leafminer defoliation was mapped in Parry Sound District, all of it south of the town of Parry Sound on the east side of Massasauga Provincial Park.
- In Aylmer District, moderate-to-severe cedar leafminer defoliation was observed ubiquitously in hedgerows and agricultural windbreaks across Oxford, Elgin, and Norfolk counties but was not aerially mapped.

Total area (in hectares) in which cedar leafminer complex caused moderate-to-severe defoliation from 2013 to 2017, by MNRF district.

Region	**Area of moderate-to-severe defoliation (ha)**				
District	**2013**	**2014**	**2015**	**2016**	**2017**
Northwest					
Dryden	-	-	-	-	-
Fort Frances	-	-	-	-	924
Kenora	-	-	-	-	-
Nipigon	-	-	-	-	-
Red Lake	-	-	-	-	-
Sioux Lookout	-	-	-	-	-
Thunder Bay	-	-	-	-	-
Sub total	0	0	0	0	924
Southern					
Algonquin Park	-	-	44	-	-
Aurora	695	631	-	-	184
Aylmer	386	36	-	-	-
Bancroft	31	231	9	-	130
Guelph	992	2,199	-	-	602
Kemptville	-	2	82	14	1,822
Midhurst	3,628	6,567	56	-	1,124
Parry Sound	-	-	-	-	44
Pembroke	-	227	200	-	-
Peterborough	477	886	120	-	1,073
Sub total	6,209	10,780	511	0	4,979
Provincial Total	**6,209**	**10,780**	**511**	**14**	**5,903**

Cedar Leafminer 2017

Ontario
Areas-within-which cedar leafminer caused defoliation

Light = 16 ha
Moderate-to-severe = 5,903 ha

Area of light defoliation

Area of moderate-to-severe defoliation

Cedar leafminer 2017

Southern Region
Areas-within-which cedar leafminer caused defoliation

Moderate-to-severe = 4,979 ha

Area of moderate-to-severe defoliation

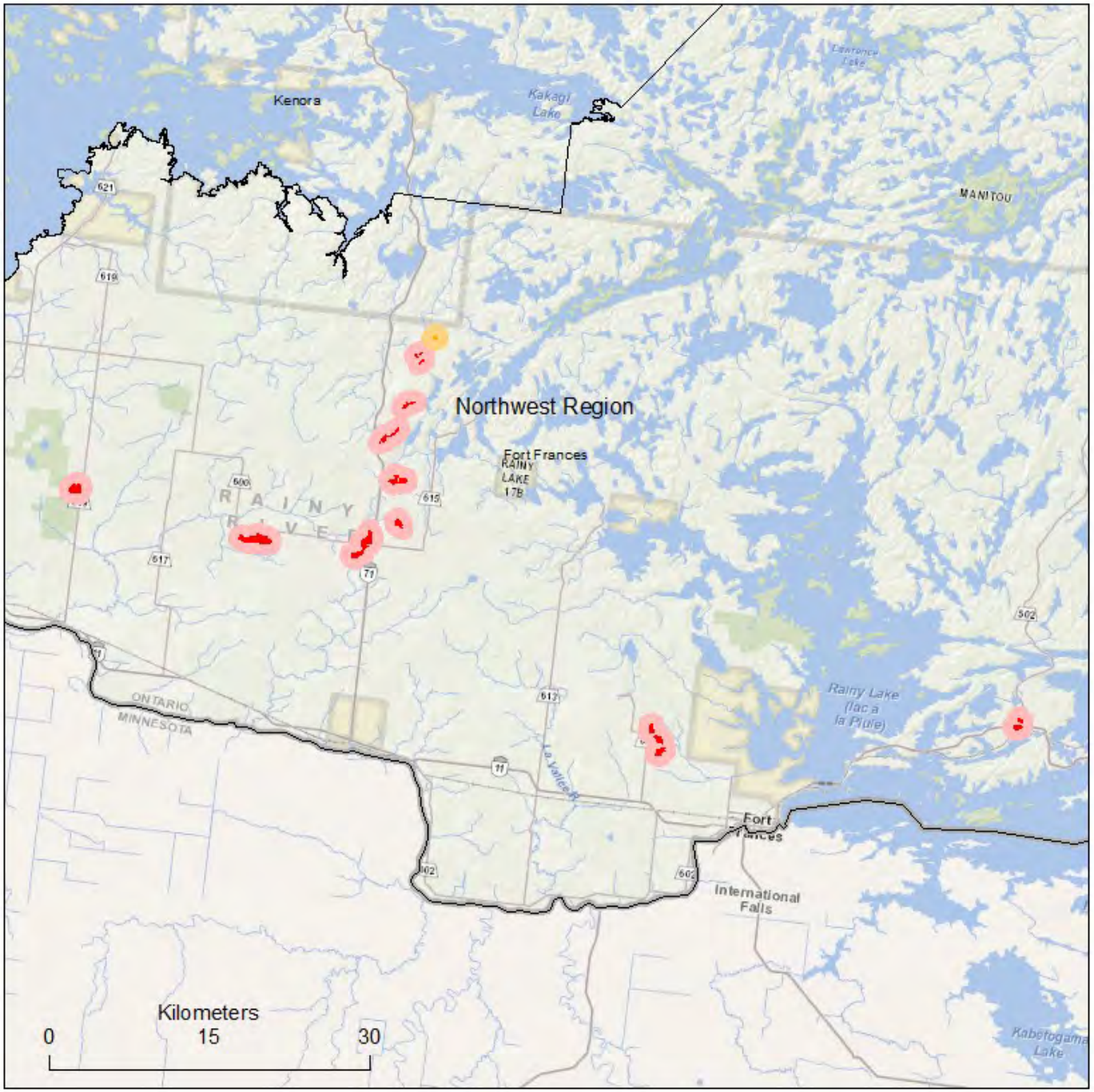
Cedar Leafminer 2017

Northwest Region
Areas-within-which cedar leafminer caused defoliation

Light = 16 ha
Moderate-to-severe = 924 ha

Area of light defoliation

Area of moderate-to-severe defoliation



Eastern larch beetle

Pest information

Common name:	Eastern larch beetle
Scientific name:	*Dendroctonus simplex* LeC.
Pest origin:	Native to North America
Pest type:	Bark beetle
Host species:	Larch (Tamarack)
Infestation area:	407 ha (2017)

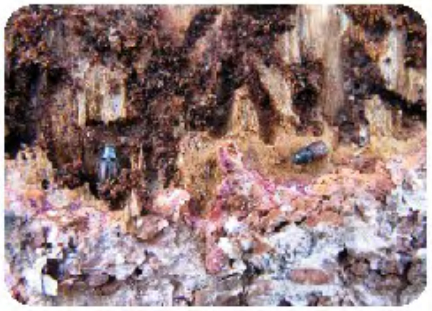
Provincial key facts

- Eastern larch beetle bores into and feeds on the inner bark and sapwood of larch.
- This beetle can produce two generations per year.
- After an eastern larch beetle outbreak, large parts of a larch stand may die.
- This pest is often observed in areas previously affected by other insect or abiotic disturbances.
- In 2017, eastern larch beetle damage in Northwest Region expanded from previously infested areas where trees were killed.

Regional summary

Northwest:

- In southern Fort Frances District, 407 ha of moderate-to-severe damage were mapped in 2017. Two distinct areas of damage were recorded; one along Hwy 71 northwest of Emo in Manitou Rapids Reserve and Dobie Twp and the second larger area at the north end of Nelles Twp on both sides of Hwy 619. The area on the west side of the highway was in Spruce Islands Provincial Park (nature reserve class). During ground surveys, smaller areas of moderate-to-severe damage were seen in western and southern areas of the district, but these were not mapped. Most new damage resulted from areas where previous larch beetle infestations had killed trees.

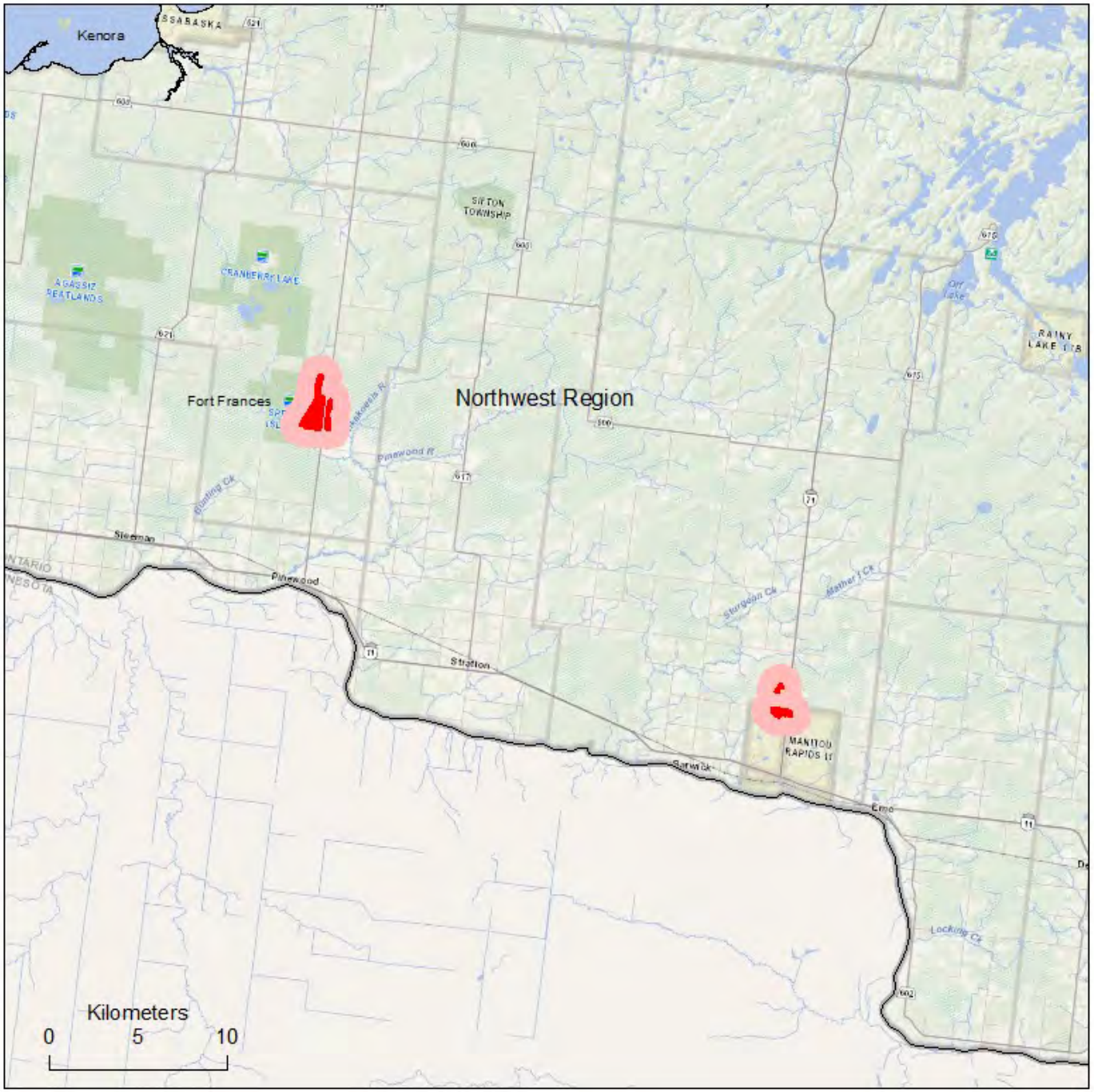


Eastern Larch Beetle 2017

Northwest Region
Areas-within-which eastern larch beetle caused damage

Moderate-to-severe = 407 ha

Area of moderate-to-severe damage



Emerald ash borer

Pest information

Common name:	Emerald ash borer
Scientific name:	*Agrilus planipennis* (Fairmaire)
Pest origin:	Invasive – Native to Asia
Pest type:	Wood borer
Host species:	Ash spp.
Infestation area:	N/A

Provincial key facts

- Since it was discovered in Windsor in 2002, emerald ash borer (EAB) has been a significant threat to ash in Ontario.
- Since 2002, it has spread east to Ottawa and north to Sault Ste. Marie and Thunder Bay.
- Emerald ash borer is expected to spread across the entire range of ash, causing widespread ash mortality in Ontario.
- In 2017, 46 locations across the province were monitored for emerald ash borer using baited green prism traps. Beetles were found at three trap sites, one in Northeast Region and two in Southern Region. Emerald ash borer were also found during regular surveys (not trap sites) at four new locations in Northeast Region, all in the regulated area (in which restrictions against moving potentially infested wood items apply).

Regional summary

Northwest:

- In Northwest Region, 22 trap locations were monitored for emerald ash borer. No beetles were found.

Northeast:

- In Northeast Region, of the 10 trap locations monitored for emerald ash borer, beetles were found in one.
- Emerald ash borer adult beetles (3) were found on a green prism trap in Sault Ste. Marie District west of Bruce Mines on Green Bay Road. During regular ground surveys, emerald ash borer larvae were found in four new areas in Sault Ste. Marie District. Several infested trees were found in the town of Bruce Mines along Bruce Bay Road. Emerald ash borer larvae (confirmed via diagnostics) were collected from

Regional summary con`t

white ash trees showing signs of decline. North of Sault Ste. Marie, one young black ash tree along Hwy 17N near Havilland Bay was infested with emerald ash borer. In early May, emerald ash borer larvae were found during an extension call on Bluenose Drive south of Laird near Neebish. In early June, a declining young white ash tree along Hwy 17E between Iron Bridge and Blind River was inspected for emerald ash borer. Several larvae were collected and confirmed via diagnostics to be emerald ash borer. All of these finds were in the regulated area.

Southern:

- In Southern Region, 14 locations were monitored for emerald ash borer using green prism traps. Two locations had beetles and another site with ash borer was found during ground surveys.
- One trap location in Parry Sound District had this invasive wood borer. A total of five adult beetles were collected over the summer, two during a mid-season check and three during trap retrieval at the end of August. This location was in the southern part of Parry Sound District on South Gibson Lake Road (regional Road 33) on the southwest end of Gibson Lake, northeast of Six Mile Lake Provincial Park.
- In Bancroft District, an emerald ash borer beetle was found on a trap southwest of the town of Bancroft, close to Cardiff, on Monk Road just southwest of Littlefools Lake.
- During ground surveys, a new emerald ash borer find was recorded on Maythew Road, at the north end of Midhurst District, in the vicinity of a firewood company on the west side of Matchedash Bay of Georgian Bay. It appears that the infestation has been there for some time as galleries extended to the base of infested trees. This site was approximately 21 km south of the beetles trapped in Parry Sound District.

Trend analysis/outlook/issues:

- In 2013, as part of a long-term strategy to reduce the effects of emerald ash borer biocontrol agents were released by the Canadian Forest Service (CFS). In Ontario, from 2013 to 2016, the larval parasitoid, *Tetrastichus planipennisi* Yang, native to China, has been released at 14 sites, all in Southern Region. In 2017, this parasitoid was released at an additional seven locations, six in Southern Region and one in Northeast Region. Since 2015, another parasitoid, *Oobius agrili* Zhang and Huang, also native to China, was released at nine sites in Southern Region and at six additional locations in 2017, five in Southern Region and one in Northeast Region. A third parasitoid, *Spathius galinae*, which is native to Russia, was released for the first time in Ontario at two locations, both in Southern Region. All of the parasitoids were supplied to the Canadian Forest Service by the Brighton Michigan rearing facility except for *Tetrastichus planipennisi*, released at Fort St. Joseph, Sault Ste. Marie District, Northeast Region, which were reared in Sault Ste. Marie. Follow-up assessments determined that *Tetrastichus planipennisi* was recovered from about 64% of all trees sampled at all sites assessed in 2017. Additional sites will be reassessed in winter and into the spring of 2018.

Emerald Ash Borer Traps & Ground Surveys 2017

- Trap - positive
- Trap - negative
- Ground Survey - positive

Fall cankerworm

Pest information

Common name:	Fall cankerworm
Scientific name:	*Alsophila pometaria* (Harris)
Pest origin:	Native to North America
Pest type:	Defoliator
Host species:	Various hardwoods, with preference for basswood, Manitoba maple, black walnut, white ash, elm and oak spp.
Infestation area:	11, 764 ha (2017)

Provincial key facts

- Fall cankerworm is an important early season defoliator of hardwood trees and is known to reach epidemic proportions throughout its range in North America.
- The distribution of this pest is believed to coincide with the range of basswood in Ontario.
- It has one generation per year.
- In North America, fall cankerworm has an outbreak cycle with large populations present for 2 to 3 years followed by sharp population declines for 5 to 8 years.
- Fall cankerworm was aerially mapped in Southern Region in rural woodlots as well as urban settings in 2016 and 2017.
- In 2017, gypsy moth was often found feeding alongside fall cankerworm.
- In 2017, the abundance of caterpillars in highly populated urban areas was a great concern for homeowners resulting in many media reports.

Regional summary

Southern:

- In the southeast part of Guelph District, a total of 8,121 ha of moderate-to-severe fall cankerworm defoliation occurred in 2017, an increase from the 3,597 ha that was mapped in 2016. Most of the infestation swept through the Niagara Escarpment from areas west of Brantford, Dundas, and Hamilton east to St. Catharines. In many areas, gypsy moth larvae were observed feeding

alongside larger populations of fall cankerworm, making it a challenge to identify the primary pest. Moderate-to-severe defoliation was also found south of the Grand River and Caledonia in Haldimand County. Smaller areas of defoliation were recorded south and west of Kitchener, as far south as the community of Ayr and west to Phillipsburg.

- In Aurora District, 2,647 ha of fall cankerworm defoliation was aerially mapped in 2017. Defoliated was evident from the southwest corner of Aurora District, along the Hwy 401 corridor, through Burlington, Mississauga, Toronto, Oshawa, and Newcastle in the east. As was the case elsewhere in Southern Region, gypsy moth larvae were frequently found feeding alongside fall cankerworm.
- In the eastern part of Aylmer District, scatterred areas of moderate-to-severe defolation were mapped in woodlots and riparian areas. In the northeast part of the district, small areas of defoliation were mapped on either side of the Nith River near the towns of Drumbo and Wolverton. Other scattered areas of defoliation were seen near the town of Norwich (Oxford County), down to the areas of Delhi, Simcoe, and Walsongham, all in Norfolk County. In many of these areas, manitoba maple was the main host.
- In the southern part of Peterborough District, 321 ha of moderate-to-severe fall cankerworm defoliation was mapped, predominantly on Big Island in Prince Edward County with a small area south of the city of Peterborough along the Otonabee River. At these locations, gypsy moth was also found feeding alongside cankerworm on oak, ash, and elm.

Total area (in hectares) in which fall cankerworm caused moderate-to-severe defoliation from 2013 to 2017, by MNRF district.

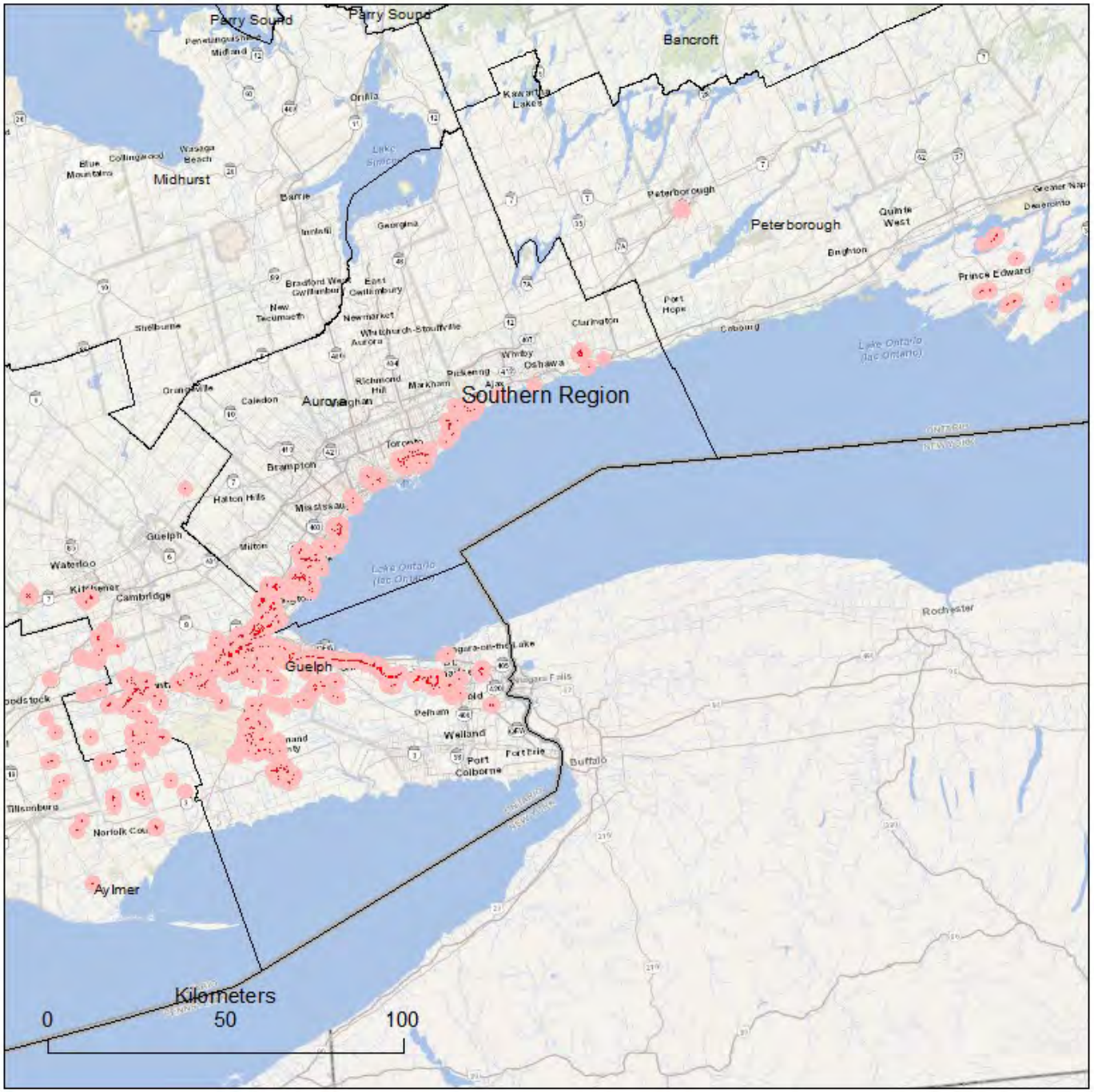
Region	**Area of moderate-to-severe defoliation (ha)**				
District	**2013**	**2014**	**2015**	**2016**	**2017**
Southern					
Algonquin Park	-	-	-	-	-
Aurora	-	-	-	256	2,647
Aylmer	-	-	-	0	675
Bancroft	-	-	-	-	-
Guelph	-	-	-	3,597	8,121
Kemptville	-	-	-	-	-
Midhurst	-	-	-	-	-
Parry Sound	-	-	-	-	-
Pembroke	-	-	-	-	-
Peterborough	-	-	-	-	321
Sub total	0	0	0	3,853	11,764
Provincial total	**0**	**0**	**0**	**3,853**	**11,764**

Fall Cankerworm 2017

Southern Region
Areas-within-which fall cankerworm caused defoliation

Moderate-to-severe = 11,764 ha

Area of moderate-to-severe defoliation



Forest tent caterpillar

Pest information

Common name:	Forest tent caterpillar
Scientific name:	*Malacosoma disstria* Hbn.
Pest origin:	Native to North America
Pest type:	Defoliator
Host species:	Various deciduous species
Infestation area:	1,173,570 ha (2017)

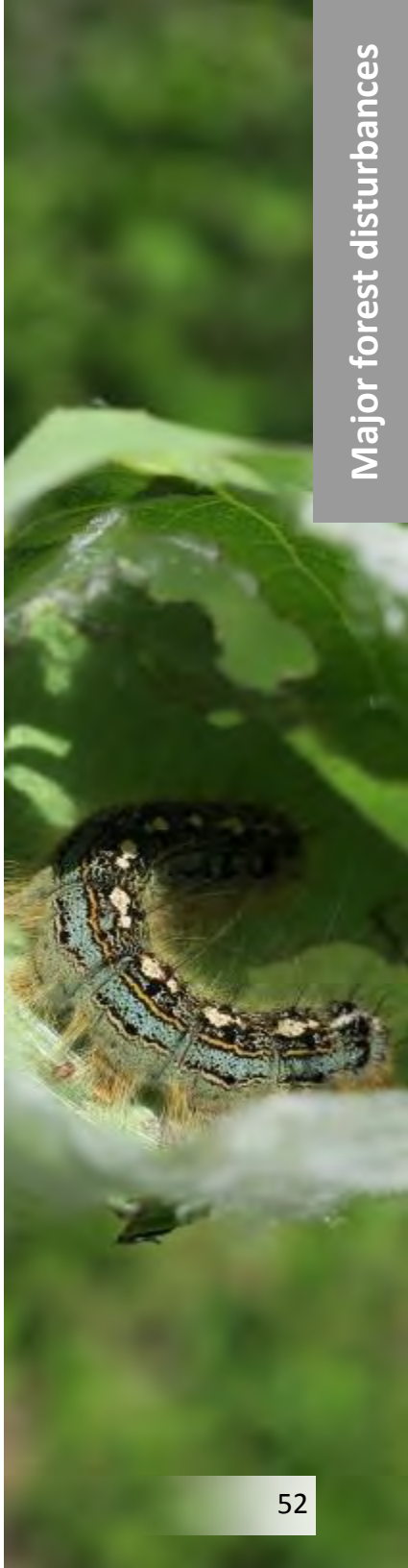
Provincial key facts

- On average in Ontario, forest tent caterpillar outbreaks have occurred every ten to twelve years, with each outbreak continuing for three to five years.
- In the south, forest tent caterpillar feed primarily on sugar maple and oak and in the north it is found mostly on trembling aspen but also occurs on several other deciduous species.
- Cumulatively, the area of moderate-to-severe defoliation in the province increased slightly in 2017, but regionally it decreased substantially in Northwest Region and increased significantly in Northeast and Southern regions.

Regional summary

Northwest:

- The forest tent caterpillar outbreak in Northwest Region seems to be collapsing as the area of moderate-to-severe defoliation decreased substantially in all districts.
- Kenora District had significantly less area of moderate-to-severe defoliation in 2017 (67,620 ha) compared to 2016 (197,292 ha). Most moderate-to-severe defoliation was seen in the central part of the district around the northern and eastern portions of Lake of the Woods, with smaller scattered areas of defoliation in the north and southeast corner of the district. At the north end of the lake, defoliation was observed on several islands, including larger ones such as Corkscrew and Barrier, as well as the northern, western, and eastern peninsulas of Lake of the Woods. At the north end of the lake, defoliation stretched in a band from Tannis Lake near the Manitoba border to



Regional summary con`t

Black Sturgeon Lake east of Kenora. Another band of defoliation was north of Kenora and followed the shores of Big Sand Lake up to the east side of Umfreville Lake. Other scattered areas of defoliation were noted near Separation, Mayward, Unexpected, and Cliff lakes. In the southeast corner of the district, a larger area of defoliation was mapped south of Sioux Narrows in the Dogpaw and Isinglass lakes area, as well as Elis Peninsula on the southeast side of Lake of the Woods. Smaller, scattered areas of defoliation were recorded near Kagaki and South Narrow Lakes. Several areas of light defoliation, totalling 245 ha, were mapped in the district. The largest area of light defoliation was at the north end of Separation Lake. Smaller areas were on the north side of Rex Lake north of Umfreville Lake and between Cedar and Ross lakes on the east side of the district. Smaller areas of light defoliation were also at the south end of Gun Lake northwest of Kenora, northeast of Corn Lake north of the Village of Redditt, and on a small island in the southwest corner of Dryberry Lake.

- In Fort Frances District, area of moderate-to-severe defoliation decreased by almost 8,000 ha. Most of this defoliation was aerially mapped in the northwest corner of the district along the shores of lakes, including Caliper, Pipestone, Upper Manitou, Kaopskikama, Kawawiag, and Despair. Along the Dryden District border, defoliation was also mapped in the Ajax and Bunyan lakes areas. Smaller areas of defoliation were recorded around Eltrut and Calm lakes in the centre of the district and scattered areas in the east around the town of Atikokan and the north end of Quetico Provincial Park.
- In Dryden District, just over 10,000 ha of moderate-to-severe defoliation was mapped in 2017 compared to 385,518 ha in 2016. Most of the defoliation was observed in the southern part of the district, south of Eagle and Wabigoon lakes. The largest areas of defoliation were south of Eagle Lake down to Bunyan Lake near the Fort Frances District boundary. Smaller scattered areas of defoliation were mapped south of Wabigoon Lake down to Kekekwa Lake, just north of Upper Manitou Lake, Fort Frances District, and stretched east to Long Lake, south of Borups Corners. Smaller areas of defoliation were also recorded between the town of Dryden west to the Kenora District boundary along Hwy 17 west near the communities of Oxdrift, Minnitaki, Eagle River, and Vermillion Bay. Six small areas of moderate-to-severe defoliation were also mapped just north of the town of Dryden, three south of Beaver and Zealand lakes, two further north on the west side of Pronger Lake, and one on the west side of Coates Bay of Gullwing Lake. In the northern part of the Dryden District, a small area of forest tent caterpillar defoliation was mapped south of Williams Bay of Lac Seul.
- In Red Lake District, a total of 1,003 ha of moderate-to-severe defoliation were recorded in 2017, compared to 139,046 ha in 2016. Defoliation was observed in the southern part of the district in small scattered areas. Most of the defoliation was seen in three areas: between Red and Dixie lakes south of the town of Red Lake, between Detector and Camping lakes north of Ear Falls, and around Wilcox and Goose lakes close to the Kenora District Boundary. Smaller areas of defoliation were recorded on the south end of Coli Lake, south of Two Island Lake, north of Bruce Lake, and on the southwest side of Pakwash Lake.
- In Nipigon District, for the third consecutive year forest tent caterpillar defoliation continued to decline to a total of 814 ha. All the moderate-to-severe defoliation was mapped on the east side of Hwy 11 near Helen Lake, northeast of the town of Nipigon.

Regional summary con`t

- In Sioux Lookout District, only 513 ha of moderate-to-severe defoliation were aerially mapped, indicating close to a total collapse of forest tent caterpillar populations. It was on the southwest side of the district with almost all of it observed 69 km north of the town of Sioux Lookout between the northernmost part of Lac Seul and Anenimus Lake. One smaller area was recorded near the Red Lake District boundary on the south side of Altimer Lake. Another small area of defoliation was recorded in the town of Sioux Lookout. Light-to-moderate defoliation of approximately 20 open grown semi-mature green ash were observed during an extension call at the Meno-Ya-Win Health Centre about 'sick' ash trees.
- During ground surveys, forest tent caterpillar was seen sporadically in Thunder Bay District but defoliation was not evident. Forest tent caterpillar populations appear to be collapsing in this district.

Northeast:

- In Northeast Region, the area of moderate-to-severe defoliation increased more than 675,000 ha.
- In Hearst District, almost 600,000 ha of moderate-to-severe defoliation were aerially mapped in 2017, compared to almost 200,000 ha in 2016. Most of the defoliation was recorded in the central part of the district on both sides of Hwy 11. Defoliation was mapped as far north as Squirrel River, as far west as Hwy 631, extended to the eastern border of the district to the town of Fauquier and reached south to Saganash Lake in Staples and Fenton townships south of Shanly Creek Drumlins. Moderate-to-severe defoliation detected south of Hwy 11 was more scattered and less severe than defoliation found north of Hwy 11.
- In Sault Ste. Marie District, moderate-to-severe forest tent caterpillar defoliation increased over 90,000 ha. This increase was observed mostly in the southwest and southern part of the district. Moderate-to-severe defoliation was seen as far north as Batchewana Bay and spread southeast past Searchmont into the Echo Bay area and continued east into the Poplar Dale area to Dunns Valley and the community of Wharncliffe. Defoliation was also mapped in the Basswood Lake area stretching east between Iron Bridge and Blind River. Smaller areas of moderate-to-severe defoliation were recorded north of Blind River and larger areas were mapped around Elliot Lake and continued southeast to the Sudbury District boundary close to the community of Serpent River. The hosts were mostly sugar maple and red oak, but aspen, white birch, and ash were defoliated as well. Defoliation was also mapped on the central part of St. Joseph Island south to Tenby Bay, predominantly on sugar maple.
- Over 50,000 ha of moderate-to-severe forest tent caterpillar was mapped in Sudbury District in 2017, almost five times the area mapped in 2016. The largest area of defoliation was recorded on the southwest side of the district on both sides of Hwy 17 from Espanola west to the town of Spanish. Moderate-to-severe defoliation was also observed northwest of the city of Greater Sudbury in the Windy and Vermillion lakes area as well as between Lake Wanapitei and Bigwood Lake in Kitchener and Hutton townships. The northern extent of defoliation was recorded just north of the village of Cartier along Hwy 144. In the southwest part of the district, forest tent caterpillar defoliation was also seen between Little Current and Lake Manitou on Manitoulin Island and in scattered areas near Mindemoya, Lake Kapawong, and Lake Wolsey.

Regional summary con`t

- A large increase (28,129 ha) in forest tent caterpillar defoliation was also recorded in North Bay District. The infestation continued from 2016 along the Hwy 11 corridor north of North Bay between Marten River and Latchford, but increases in moderate-to-severe defoliation were mapped northwest of the city of North Bay in the Tomiko Lake area as well as along the Quebec border stretching from Cobalt south to Buffalo Rock along Lake Timiskaming. New areas of defoliation were also recorded on the west side of Lake Temagami, reaching the shores of Obabika Lake. Smaller scattered areas of defoliation were observed on the west side of the district south of River Valley and along Hwy 805 up to Wawiashkashi Lake. In the southern part of the district, smaller areas of defoliation were found around Lake Nosbonsing Lake in the area of Bonfield and Astorville, southwest Lake Nipissing (Dokis Reserve), and between Commanda and Wolfe lakes southeast of Restoule.
- In Cochrane District, over 25,000 ha of moderate-to-severe defoliation was recorded in 2017. Most of this defoliation was on the west side of the district, a continuation of the Hearst District infestation. Larger areas of defoliation occurred north of Smooth Rock Falls up to Abitibi Canyon. South of Smooth Rock Falls. small scattered areas of defoliation were seen along the Mattagami River with a larger area west of Driftwood along East Bradburn Creek. Small, scattered areas of defoliation were also noted between Cochrane and Iroquois Falls, north of Cochrane up to Jawbone Lake near the community of Gardiner. Small areas of defoliation were also found northeast of Cochrane on the west and east side of Hwy 652 near Little Abitibi Lake.
- In Timmins District, moderate-to-severe forest tent caterpillar defoliation more than doubled in 2017, with almost 11,000 ha recorded in the northern and central parts of the district. In the northern part of the district, small scattered areas of defoliation were recorded north, west, and east of the city of Timmins. Defoliation was noted as far east as Frederick House and Nighthawk lakes, as far west as Kamiskotia Lake and the junction of Hwy 101 and Hwy 144, and as far north as Jocko Creek in the southern part of Crawford Twp. In the central part of the district, several areas of defoliation were mapped northeast of the town of Gogama between Mattagami Lake and Sinclair Lake.
- Kirkland District is the only district in Northeast Region in which forest tent caterpillar defoliation decreased in 2017, with only 600 ha of moderate-to-severe defoliation compared to almost 6,000 ha in 2016. Small scattered pockets of defoliation were seen in the northern and southern parts of the district. In the north, defoliation was concentrated between the towns of Ramore and Holtyre in Playfair and Guibord townships. Two small areas were also recorded north of Sesekinika on the east side of Hwy 11 north of Wolf Lake (Benoit Twp). In the southern part of the district, several small areas of defoliation were seen southwest of the town of Thornloe between Cane and Henwood roads off of Hwy 65.

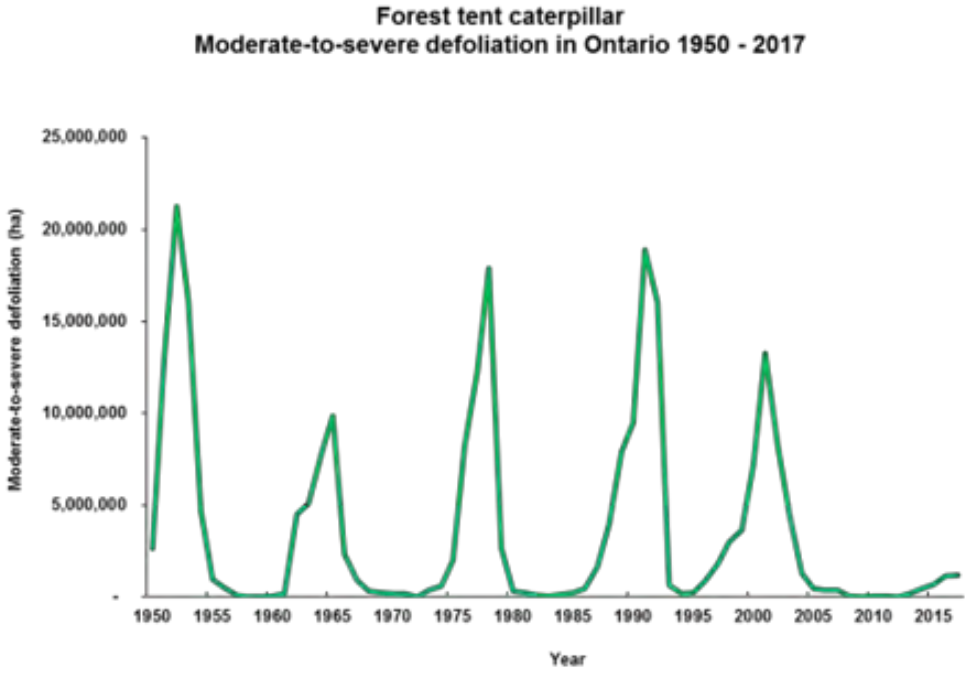
Regional summary con`t

Southern:

- In Southern Region, forest tent caterpillar defoliated over five times more area in 2017 than 2016.
- Bancroft District had the most defoliation (138,664 ha), with most of it in the central and eastern parts of the district. In the central part of the district, moderate-to-severe defoliation was mapped south and west of the town of Bancroft. Forest tent caterpillar defoliation was observed as far west as Soyers Lake area on the west side of Hwy 21, west of Hailburton. South of Bancroft, large areas of defoliation were seen in Limerick and Wollaston townships along Hwy 62 and Hwy 620. Smaller areas of defoliation were south of this larger area in Tudor and Lake townships, predominantly on the west side of Hwy 62. On the east side of Bancroft District, large areas of defoliation were observed east of Hwy 41 over to the Pembroke and Kemptville district boundaries. Host species in the above areas included aspen, maple, oak, ash, willow, cherry, and birch.
- In Kemptville District, moderate-to-severe forest tent caterpillar defoliation increased substantially in 2017, but only on the west side of the district. A large area of defoliation was north of Hwy 7 from Perth to Mississippi Mills, with scattered areas of defoliation near Carleton Place in Ramsay, Drummond, Lanark, and Beckwith townships. A variety of hardwood species were defoliated including ash, maple, oak, basswood, and poplar. Another large area of defoliation was seen between Big Rideau Lake and Christie Lake in North Crosby, Burgess, Bathurst, and South Sherbrooke townships. Smaller scattered areas of defoliation were seen south of Big Rideau Lake in the vicinity of Charleston Lake, Upper Beverley Lake, and Lake Eloida near the town of Addison. During ground surveys on Hill Island (Thousand Islands Archipelago), large numbers of forest tent caterpillar larvae were present on ash and maple, however only trace defoliation was observed. Similarly, in Baxter Conservation Area, several larvae were present on open-grown ash trees but no defoliation was observed.
- A total of 35,330 ha of moderate-to-severe defoliation were recorded in Peterborough District in 2017, more than five times the area observed in 2016. Most of this defoliation was aerially mapped in the northeast corner of the district with small scattered areas of defoliation throughout the rest of the district. In the northeast corner of the district defoliation was an extension of that seen in Bancroft and Kemptville districts. Large areas of defoliation were recorded around Sharbot and White lakes as well as near Crow, Eagle, and Bob's lakes. Other large areas of defoliation in the northeast corner of the district were mapped around Big Gull and Hungry lakes as well as along Hwy 7 corridor near Kennebec Lake. Smaller areas of defoliation were found south of here towards Kingston around the northwest end of Devil Lake near Frontenac Provincial Park, as well as around Sydenham and Loughborough lakes closer to Kingston. In the north central part of the district, moderate sized areas of defoliation were recorded north of the town of Marmora in the Round, Crowe, and Cordova lakes area and east of here in in Marmora and Madoc townships. A small area of defoliation in the central part of the district was mapped north and southeast of Tweed in Hungerford Twp. A little westward, small scattered areas of defoliation were observed north of Peterborough near Chemong, Pigeon Lower Buckhorn, and Stony lakes. South of Peterborough small forested stands were defoliated north and south of Rice Lake towards Brighton.

Regional summary con`t

- The area of moderate-to-severe defoliation increased almost tenfold in Pembroke District, covering just over 25,000 ha in 2017. Most of the defoliation was recorded in the southern part of the district along the Bancroft and Kemptville district boundaries. Large areas of defoliation were mapped near Centennial Lake, between Calabogie and Norway lakes and in the area of Constant Lake at the junction of Hwy 41 and Hwy 132. Small areas of defoliation were observed along the north end of Golden Lake and southeast of Wilno to Lake Clear. Small, scattered areas of defoliation were also noted southwest of Petawawa in McKay, Fraser, and Richards townships.
- A new infestation of forest tent caterpillar was detected in Parry Sound District. Moderate-to-severe defoliation was recorded predominantly in scattered areas in the southcentral part of the district. Larger areas of defoliation were seen between Parry Sound and Magnetawan along Hwy 124 corridor. Small areas were also seen around The Top Lake and The Big Lake in McKenzie and Burton townships. South of Parry Sound, defoliation was observed in the Lake Muskoka, Lake Joseph, and Lake Rosseau areas. Just northwards, small scattered areas of defoliation were recorded near Horseshoe Lake along the Hwy 400 corridor.
- Only a small area (369 ha) of moderate-to-severe defoliation was mapped in Algonquin Park. This defoliation was seen in the southeast corner of the park on the south side of Grand Lake (Barron Twp) and along the Pembroke District boundary (Master Twp).



Total area (in hectares) in which forest tent caterpillar caused moderate-to-severe defoliation from 2013 to 2017, by MNRF district.

Region	Area of moderate-to-severe defoliation (ha)				
District	**2013**	**2014**	**2015**	**2016**	**2017**
Northeast					
Chapleau	-	-	132	-	-
Cochrane	-	-	29	1,188	26,385
Hearst	-	1,031	36,444	100,990	590,451
Kirkland Lake	-	-	-	5,845	600
North Bay	-	-	-	5,778	33,907
Sault Ste. Marie	-	-	-	3,468	95,087
Sudbury	-	-	25	10,539	52,063
Timmins	-	-	443	4,327	10,966
Wawa	-	-	1,239	-	-
Sub total	0	1,031	38,312	132,135	809,459
Northwest					
Dryden	37,100	185,878	169,564	386,518	9,803
Fort Frances	-	-	8,693	20,980	11,465
Kenora	36,738	61,857	53,974	197,292	67,620
Nipigon	48,371	64,913	147,945	1,504	814
Red Lake	9,724	24,079	38,036	139,046	1,003
Sioux Lookout	59,898	114,242	87,316	186,838	513
Thunder Bay	-	8,228	116,466	8,221	-
Sub total	191,832	459,197	621,994	940,399	91,218
Southern					
Algonquin Park	-	-	-	18	369
Aurora	-	-	-	-	-
Aylmer	-	-	-	-	-
Bancroft	-	-	-	37,577	138,664
Guelph	-	-	-	-	-
Kemptville	-	-	-	2,007	58,782
Midhurst	3,794	8,638	21,339	2,150	-
Parry Sound	-	-	-	-	14,472
Pembroke	-	-	-	2,560	25,276
Peterborough	-	-	-	6,594	35,330
Sub total	3,794	8,638	21,339	50,906	272,893
Provincial total	**195,626**	**468,866**	**681,645**	**1,123,440**	**1,173,570**

Forest Tent Caterpillar 2017

Ontario
Areas-within-which forest tent caterpillar caused defoliation

Light = 2,335 ha
Moderate-to-severe = 1,173,570 ha

Area of light defoliation

Area of moderate-to-severe defoliation

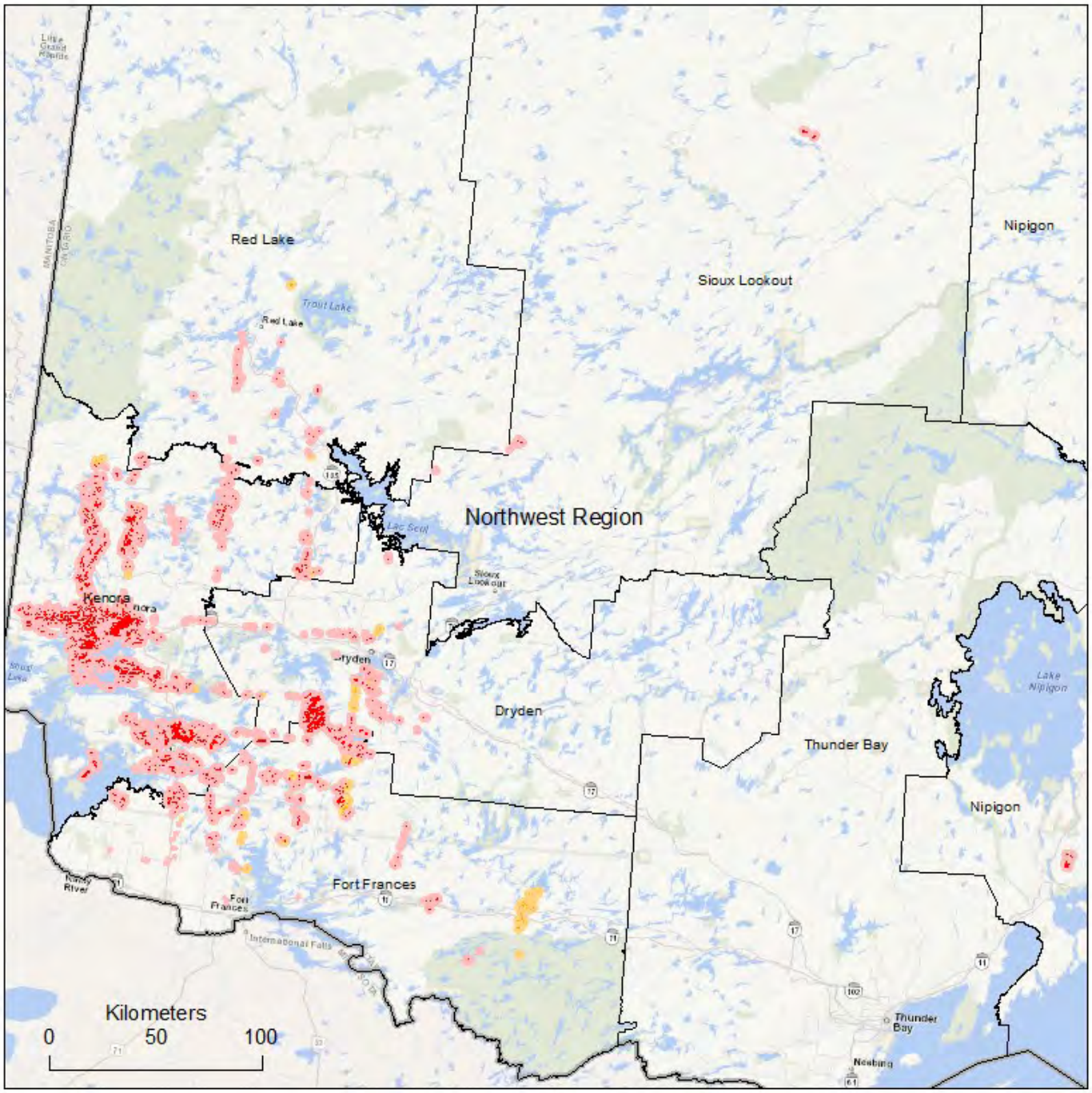
Forest Tent Caterpillar 2017

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

Light = 2,335 ha
Moderate-to-severe = 91,218 ha

Area of light defoliation

Area of moderate-to-severe defoliation

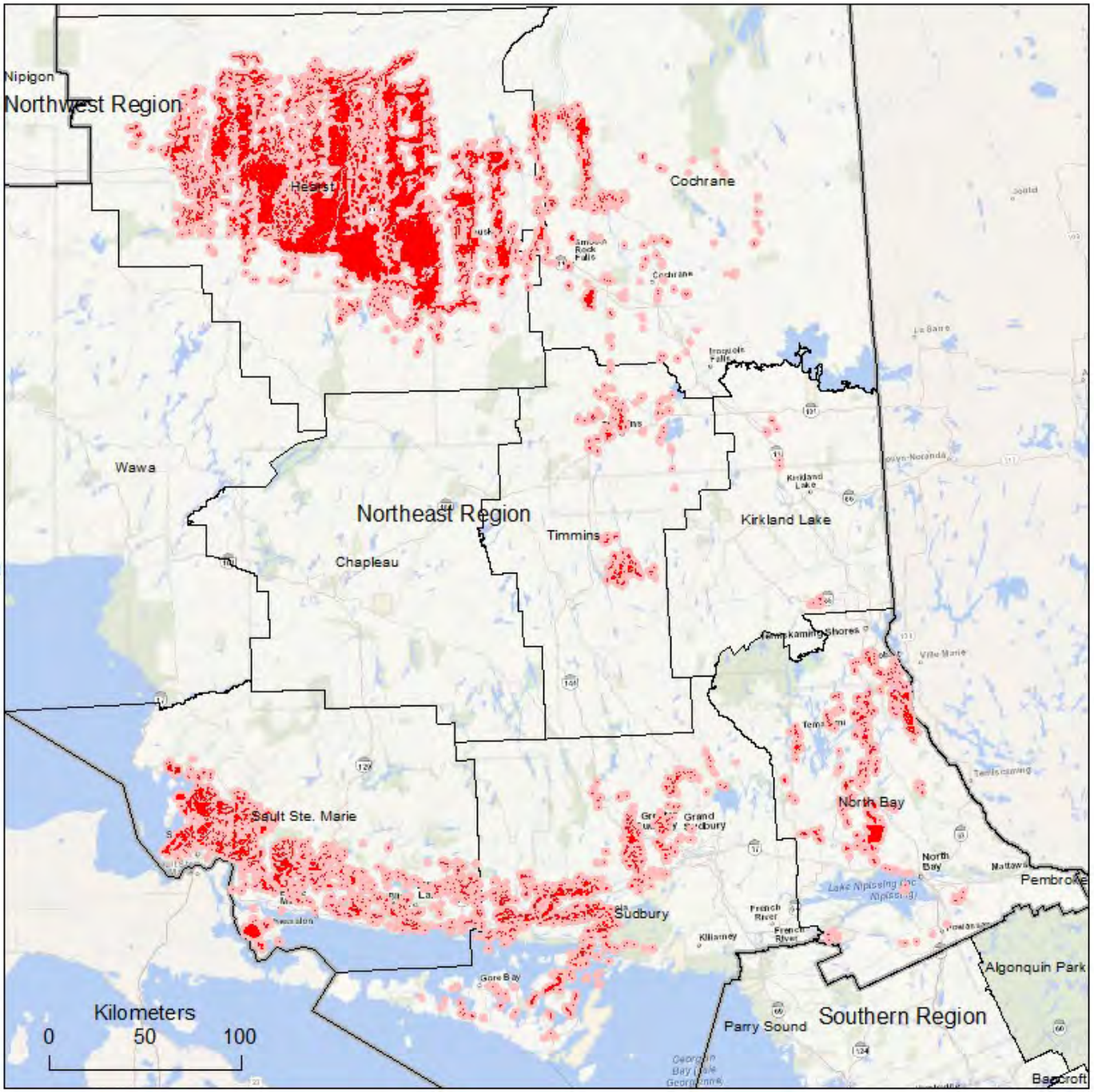


Forest Tent Caterpillar 2017

Northeast Region
Areas-within-which forest tent caterpillar caused defoliation

Moderate-to-severe = 809,459 ha

Area of moderate-to-severe defoliation

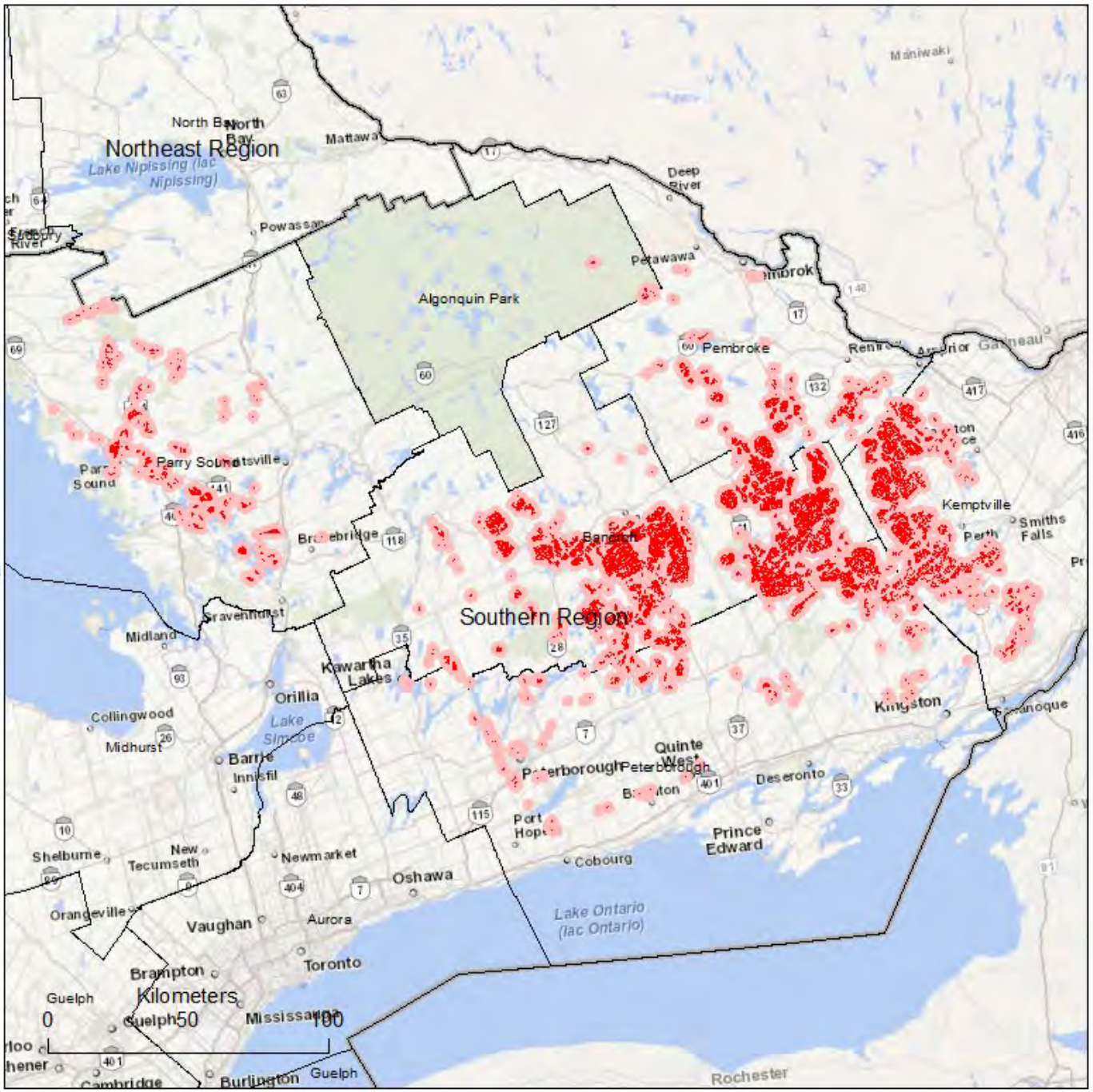


Forest Tent Caterpillar 2017

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

Moderate-to-severe = 272,893 ha

Area of moderate-to-severe defoliation



Gypsy moth

Pest information

Common name:	Gypsy moth
Scientific name:	*Lymantria dispar* (L.)
Pest origin:	Invasive — Native to Europe
Pest type:	Defoliator
Host species:	Oak spp., American beech, blue beech, maple spp., basswood, white ash, hickory spp., black cherry, hop hornbeam, elm spp., black walnut
Infestation area:	10,856 ha (2017)

Provincial key facts

- Gypsy moth was discovered in Ontario in 1969, with the first incidence of severe defoliation occurring in Kemptville District in 1981.
- Gypsy moth outbreaks are cyclical, typically occurring every seven to 10 years. In Ontario, major outbreaks have peaked in 1985, 1991, and 2002. The most recent outbreak, which peaked in 2008, was much less severe than previous ones.
- Gypsy moth hosts range from oak, birch, and aspen in the north to hardwoods such as oak, sugar maple, and American beech and softwoods such as eastern white pine and Colorado blue spruce in southern Ontario.
- Cool, wet conditions provide an ideal environment for the proliferation of *Entomophaga maimaiga*, a fungus known to cause gypsy moth populations to collapse. Nuclear polyhedrosis virus (NPV) is a viral infection that is also known to kill gypsy moth larvae.
- In 2017, gypsy moth was observed feeding alongside populations of fall cankerworm and forest tent caterpillar throughout Southern Region. In many cases, it was difficult to determine the primary defoliator.
- In 2017, 10,856 ha of defoliation attributed to gypsy moth were mapped in Southern Region.

Regional summary

Southern:

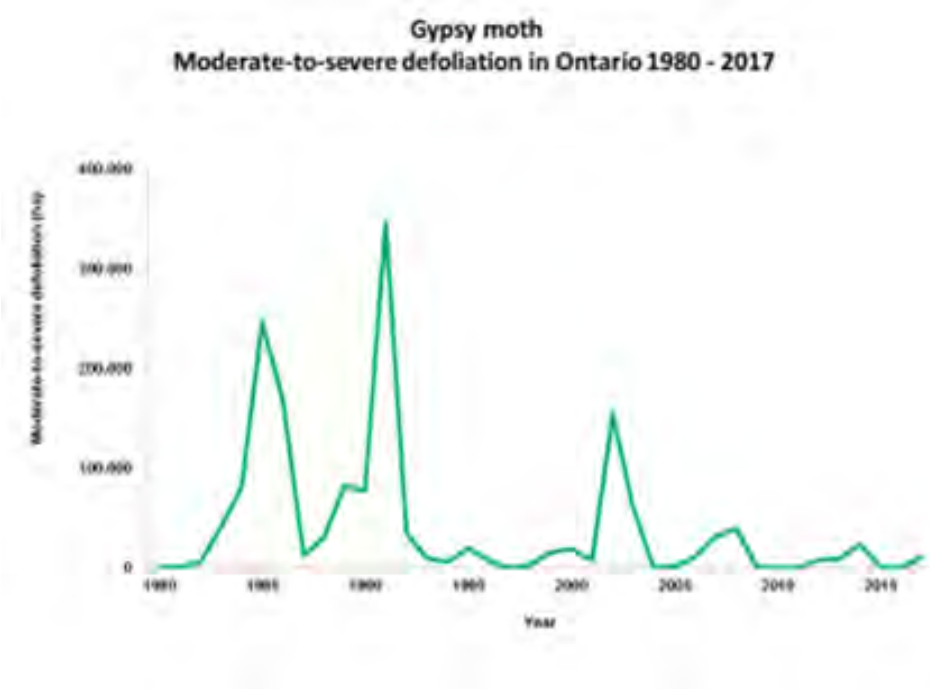
- Gypsy moth outbreaks occurred in large areas in eastern Guelph District, causing 8,768 ha of moderate-to-severe defoliation. Defoliation was observed on all age classes of predominantly oak, maple, hickory, basswood, elm, cherry, black walnut, hop hornbeam, blue beech, and American beech. In Haldimand County, notable areas of defoliation caused by gypsy moth were observed in wooded areas around York, Cayuga, and east of the Grand River near Dunneville. In the Regional Municipality of Niagara, defoliation was mapped throughout woodlots around Smithville south to Wellandport in West Lincoln, and from the Welland River south to Hwy 3 in Wainfleet Twp. Large swaths of moderate-to-severe defoliation were also mapped through the town of Pelham, particularly around Ridgeville, and Effingham. In many of these areas, gypsy moth larvae were observed feeding alongside populations of fall cankerworm larvae, particularly in Hamilton (including communities of Copetown, Dundas, and Ancaster) and areas of Haldimand County.
- In Peterborough District, 1,461 ha of moderate-to-severe gypsy moth defoliation was aerially mapped in areas around Trenton in Quinte West and Prince Edward County. In central Prince Edward County, gypsy moth caused moderate-to-severe defoliation of oak, maple, ash, and other hardwood species in woodlots. In other areas of the county, gypsy moth larvae were observed feeding on various hardwoods alongside larger populations of fall cankerworm. Additionally, gypsy moth was observed feeding alongside imported willow leaf beetle causing moderate-to-severe defoliation in Wooler, Murray Twp.
- In Aylmer District, 625 ha of moderate-to-severe gypsy moth defoliation was aerially mapped. Small areas of defoliation were mapped south and southeast of Sarnia in townships of St. Clair and Enniskillen, and in the town of Plympton-Wyoming in Lambton County, where populations have been detected since 2012. Hosts included oak, basswood, maple, and hickory. In addition, moderate-to-severe defoliation of over 50 mature black oak trees was observed along Ojibway Parkway in the city of Windsor.
- In Aurora District, gypsy moth defoliation was observed during ground surveys from Burlington east to Oakville, Mississauga, Etobicoke, and Toronto. At Kearn Road in Burlington, gypsy moth larvae were feeding alongside fall cankerworm causing 10 to 30% defoliation of sugar maple, oak, hickory, and basswood. Gypsy moth was found at Bronte Provincial Park feeding on oak, maple, elm, cherry, walnut, basswood, hickory, and witch hazel. In Oakville, larvae were collected at Winston Woods north of Hwy 403 and QEW, where 10% defoliation of red oak, sugar maple, and hickory was observed. In Mississauga, gypsy moth was present along with fall cankerworm at White Oaks Park south of the QEW feeding on oak, maple, basswood, and understory shrubs. At Richard FC Mortensen Park south of Hwy 403, gypsy moth larvae were observed feeding alongside fall cankerworm, causing 95% defoliation of Ohio buckeye, oak, and maple. Defoliation of gypsy moth and fall cankerworm was widespread through residential streets in southern Mississauga.

Regional summary con't

- During ground surveys in Bancroft District, small populations of gypsy moth larvae were observed feeding alongside larger populations of forest tent caterpillar, causing areas of moderate-to-severe defoliation in forested areas east of Bancroft in Hastings County.
- Small populations of gypsy moth were identified in Kemptville District during ground surveys. Gypsy moth larvae were feeding alongside larger populations of forest tent caterpillar, causing moderate-to-severe defoliation of red oak and hop hornbeam in Drummond/North Elmsley Twp, between the communities of Perth and Smiths Falls.
- In Pembroke District, gypsy moth larvae were detected during ground surveys and were observed feeding on American beech and red oak alongside larger populations of forest tent caterpillar resulting in moderate-to-severe defoliation in areas of Renfrew County, east of Calabogie in the Twp of Greater Madawaska.
- In Midhurst District, gypsy moth caused light defoliation of red oak, sugar maple, and basswood at Wyebridge Tract in Simcoe County. Dead larvae were found on the boles of trees but egg masses were not seen.

Total area (in hectares) in which gypsy moth caused moderate-to -severe defoliation from 2013 to 2017, by MNRF district.

Region	Area of moderate-to-severe defoliation (ha)				
District	**2013**	**2014**	**2015**	**2016**	**2017**
Northeast					
Chapleau	-	-	-	-	-
Cochrane	-	-	-	-	-
Hearst	-	-	-	-	-
Kirkland Lake	-	-	-	-	-
North Bay	-	-	-	-	-
Sault Ste. Marie	-	-	-	-	-
Sudbury	8,451	22,098	-	-	-
Timmins	-	-	-	-	-
Wawa	-	-	-	-	-
Sub total	8,451	22,098	0	0	0
Southern					
Algonquin Park	-	-	-	-	-
Aurora	-	-	-	-	-
Aylmer	-	1,077	757	-	627
Bancroft	-	-	-	-	-
Guelph	-	-	-	-	8,768
Kemptville	-	-	-	-	-
Midhurst	-	-	-	-	-
Parry Sound	-	160	-	-	-
Pembroke	-	-	-	-	-
Peterborough	-	-	-	-	1,461
Sub total	0	1,237	757	0	10,856
Provincial total	**8,451**	**23,335**	**757**	**0**	**10,856**



Gypsy Moth 2017

Southern Region
Areas-within-which gypsy moth caused defoliation

Moderate-to-severe = 10,856 ha

Area of moderate-to-severe defoliation

Hail

Pest information

Common name:	Hail damage
Scientific name:	N/A
Pest origin:	N/A
Pest type:	Abiotic
Host species:	All spp.
Infestation area:	75 ha (2017)

Provincial key facts

- Hail occasionally causes severe damage to trees, ranging from damaged bark and foliage to whole tree mortality.
- Hailstones can rip and shred foliage and tear away smaller branches.
- Depending on its size, hail can damage a tree's underlying vascular tissues and tear bark on both the upper surface of branches and the windward side of the main trunk, affecting the tree's ability to move water and nutrients from roots to limbs, twigs, and foliage. Wounds from branch tearing and bark damage often become entry sites for insects and diseases.
- In late June 2016, a major hail event occurred in Ontario's Northwest Region, which continued to be mapped in 2017.

Regional summary

Northwest:

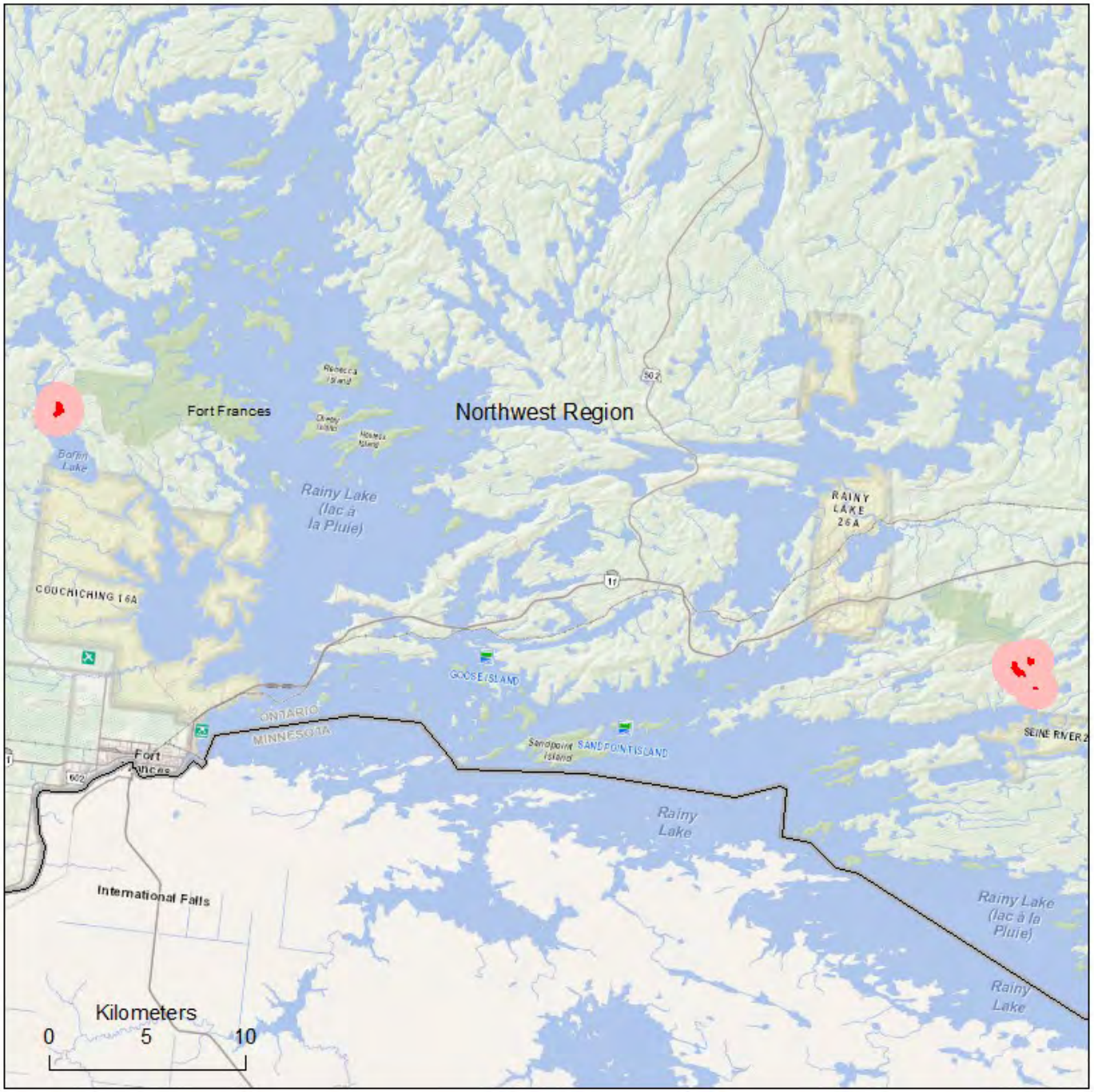
- In Fort Frances District, an area of young jack pine (46 ha) located southwest of the town of Mine Centre, at the junction of Barber and Bliss Lake roads, was severely damaged in 2016, but not mapped until 2017. All tree species sustained severe damage but conifer species appeared to be hardest hit. In the Wegg and Boffin lakes area, 12 km north of the town of Fort Frances, red and jack pine mortality in the area most affected by the 2016 hail event was mapped in 2017. This mortality totalled 29 ha. After a hail event, beetle activity as well as incidence of tree diseases often increases, so this area will continue to be monitored for forest health issues in 2018.

Hail Damage 2017

Northwest Region
Areas-within-which hail caused damage

Moderate-to-severe = 75 ha

Area of moderate-to-severe damage



Ink spot of aspen

Pest information

Common name:	Ink spot of aspen
Scientific name:	*Ciborinia whetzelii* (Seaver) Seaver
Pest origin:	Native to North America
Pest type:	Leaf disease
Host species:	Trembling aspen
Infestation area:	618 ha (2017)

Provincial key facts

- In early summer, brown spots begin to appear on infected aspen leaves as the fungus advances. By mid-summer hard black fungal material forms as circular spots on infected leaves. By late summer these spots fall to the ground leaving characteristic holes in the leaves.
- Early season damage by ink spot may reduce aspen growth.
- Repeated infections can kill young trees and weaken larger trees.
- In 2017, ink spot of aspen was only recorded in Northeast Region.

Regional summary

Northeast:

- In the southern part of Cochrane District, 427 ha of moderate-to-severe ink spot of aspen damage were aerially mapped. Heavy damage was encountered east of the town of Cochrane along Translimit Road, north of Lake Abitibi, and south of Little Abitibi Lake along Hwy 652. Smaller pockets were also recorded west and south of Smooth Rock Falls, and southeast and southwest of the town of Cochrane in Beck and Mortimer townships. Small scattered areas of damage were also observed southwest of Iroquois Falls along the boundary of Timmins District. Damage on individual trees ranged from 10 to 70%, with heavily infested trees having a distinct reddish hue.

Regional summary con't

- In Timmins District, small scattered areas of ink spot of aspen damage were mapped south of Night Hawk Lake, north of the city of Timmins in Kidd Twp, and in the western portion of the district in Whitesides and Doyle townships. In the southeast corner of the district, two small areas of ink spot damage were recorded southeast of Westree in Hodgetts and Lampman townships.
- In Chapleau District, 88 ha of moderate-to-severe damage were aerially mapped north of Foleyet in the northeast corner of the district in Belford, Wadsworth, Ossin, Nova, and Strachan townships. Scattered areas of damage were near and west of the Groundhog River area, which is at the southwest tip of the Northern Clay Belt Forest Complex Conservation Reserve.
- In the southeast corner of Hearst District, 10 ha of moderate-to-severe ink spot damage was aerially mapped west of the Groundhog River in Seaton, Slack, and Casselman townships.

Ink Spot of Aspen 2017

Northeast Region
Areas-within-which ink spot of aspen caused defoliation

Light = 92 ha
Moderate-to-severe = 618 ha

Area of light defoliation

Area of moderate-to-severe defoliation

Jack pine budworm

Pest information

Common name:	Jack pine budworm
Scientific name:	*Choristoneura pinus pinus* Freeman
Pest origin:	Native to North America
Pest type:	Defoliator
Host species:	Jack pine
Infestation area:	100,187 ha (2017)

Provincial key facts

- Jack pine budworm outbreaks occur in Ontario about every 8 to 10 years.
- In the past, large-scale control programs have been undertaken to protect high value jack pine stands during an outbreak. The most recent control program was in 2009, as reported in that year's Annual Report on Forest Management.
- In 2017, over 100,000 ha of moderate-to-severe jack pine budworm defoliation were aerially mapped in Northwest Region. In Northeast Region, 323 ha of jack pine budworm mortality was mapped in one district.
- During ground surveys larvae were collected from historically infested areas in Northwest and Northeast regions.

Regional summary

Northwest:

- In Red Lake District, jack pine budworm defoliation was aerially mapped for the first time since the last outbreak ended in 2010. A total of 100,187 ha of moderate-to-severe defoliation were mapped in the northern part of the district, approximately 90 km north of the town of Red Lake. The area of defoliation was concentrated north and northwest of Kirkness Lake and west of Pikangikum First Nation. Damage in mapped areas ranged from 40 to 80% defoliation of all jack pine age classes and was heaviest on the tops of mature jack pine trees. Ground surveys also revealed trace-to-light defoliation along Pine Ridge Road, approximately 70 km south of the known infestation and 16 km north of Hwy 125. This area was not aerially mapped.

Regional summary con't

- In Sioux Lookout District, jack pine budworm feeding was observed on semi-mature jack pine in the northern part of Hwy 808. Areas of defoliation were located west of Musselwhite Mine Road and southeast of Windigo Lake. Jack pine trees had light defoliation (<20%) concentrated on the upper crown.

Northeast:

- Sault Ste. Marie District had 323 ha of jack pine budworm mortality located between Blind River and Elliot Lake in Mack Twp, on the east side of Matinenda Lake. This area was severely defoliated in 2015 and 2016 and drought-like conditions in fall of 2016, coupled with poor site conditions (shallow soil to bare rock) would have contributed to the mortality. Jack pine budworm larvae were found causing light-to-moderate defoliation on singular trees in Sagard Twp north of Elliot Lake.
- In Sudbury District, jack pine budworm larvae were collected close to Espanola in Merritt Twp along Jacklin Road where jack pine budworm has historically been found. Pine false webworm along with jack pine budworm were found in this area on edge and open grown semi-mature jack pine, but only trace defoliation (<5%) was observed.

Jack pine forest health plots

- In the mid-1990s, plots were established in jack pine stands across Northeast and Northwest regions to monitor and study the effects of jack pine budworm and the overall health of jack pine forests across northern Ontario.
- A total of 109 plots (50 in Northeast Region, 59 in Northwest Region), comprising 5,450 jack pine trees, were assessed in 2017. The trees were rated for the presence of any pest, disease, or abiotic factors that affect health/condition as well as the abundance of male flowers.

Regional plot summary

- In Northeast Region, 72% of the live jack pine trees were less than 25% defoliated, while in the Northwest Region 73% were less than 25% defoliated. Over 95% of the tops of live jack pine trees were healthy in both regions.
- In 2017, 45 trees in jack pine plots in Northeast Region died. This mortality was caused mostly by armillaria root rot. Western gall rust, wood borers, and abiotic factors such as blowdown also contributed to mortality.

Regional plot summary con't

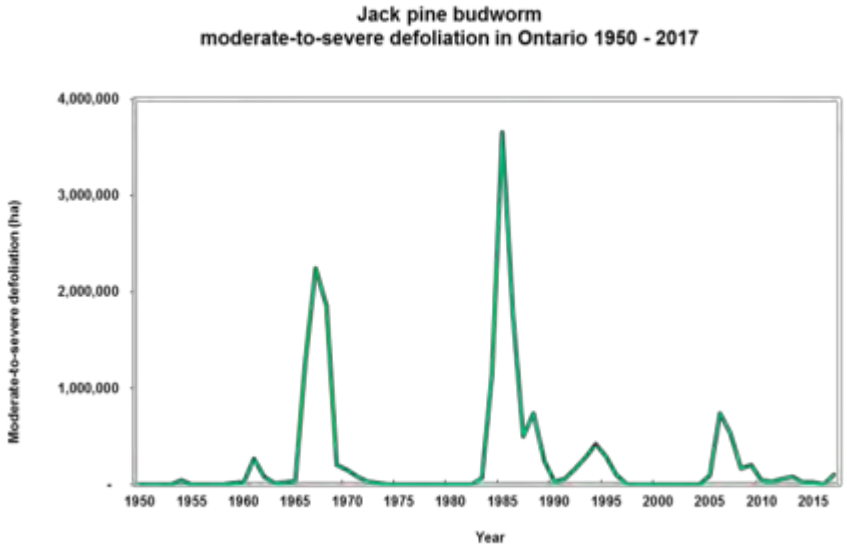
- A total of 53 trees in jack pine plots in Northwest Region died in 2017. Most (79%) of the mortality was caused by armillaria root rot. Bark beetles, blowdown, and snow damage accounted for most of the remaining mortality.
- Surveys revealed a large number of male flowers in Northeast Region in 2017, with more than 66% of the live jack pine trees having moderate-to-high numbers. In contrast, in Northwest Region more than 50% of the trees assessed had nil-to-moderate numbers of male flowers.
- One plot in Northeast Region had jack pine budworm defoliation. In Sault Ste. Marie District, the jack pine forest health plot north of Elliot Lake in Sagard Twp averaged 15% jack pine budworm defoliation with a maximum of 50% on one tree. In Northwest Region, four plots, all in Red Lake District, showed signs of jack pine budworm defoliation. One plot near Kirkness Lake was in the area of mapped defoliation and averaged 60% defoliation. The other three plots were south of the Kirkness Lake plot and not in the area of mapped defoliation. These plots close to Nungesser and Coli lakes averaged <10% defoliation.
- A total of 644 live jack pine trees were affected by forest health factors other than budworm, including western gall rust, animal damage (porcupine), shoot and bark beetles, and abiotic factors such as drought, blowdown, and snow damage.
- The most damaging agent in both regions was western gall rust. A total of 430 trees, most of which were in Northeast Region, had some level of gall rust, but damage was minimal. In Northwest Region almost half the trees affected by forest health factors other than jack pine budworm were affected by a shoot tip beetle, as over 80 trees displayed red flagging (red needles) on the tips of branches in the crown.

Trend analysis/outlook/issues:

- Jack pine budworm pheromone trapping was carried out across the province in 2017. Traps were deployed at 80 locations: 40 in Northwest Region, 33 in Northeast Region, and seven in Southern Region. Trap catches increased marginally in 2017, with the largest increases in Southern Region. In Northeast Region, the highest average number of moth catches was 21 in Sagard Twp, Sault Ste. Marie District. In Northwest Region, the highest average moths per trap (7) were observed in Bateman Twp, Red Lake District. Southern Region catches were highest in Pembroke District in Hagarty and Richards Twp with an average of 12.5 moths per trap. Jack pine budworm has historically been found there.

Total area (in hectares) in which jack pine budworm caused moderate-to-severe defoliation from 2013 to 2017, by MNRF district.

Region / District	Area of moderate-to-severe defoliation (ha) 2013	2014	2015	2016	2017
Northeast					
Chapleau	-	-	-	-	-
Cochrane	-	-	-	-	-
Hearst	-	-	-	-	-
Kirkland Lake	-	-	-	-	-
North Bay	-	-	-	-	-
Sault Ste. Marie	-	-	2,520	2,403	-
Sudbury	-	-	-	-	-
Timmins	-	-	-	-	-
Wawa	-	-	-	-	-
Sub total	0	0	2,520	2,403	0
Northwest					
Dryden	-	-	-	-	-
Fort Frances	-	-	-	-	-
Kenora	-	-	-	-	-
Nipigon	-	-	1,368	2,020	-
Red Lake	-	-	-	-	100,187
Sioux Lookout	83,075	22,010	17,461	662	-
Thunder Bay	-	-	-	-	-
Sub total	83,075	22,010	18,829	2,682	100,187
Provincial total	**83,075**	**22,010**	**21,349**	**5,085**	**100,187**



Jack Pine Budworm 2017

Ontario
Areas-within-which jack pine budworm caused defoliation

Moderate-to-severe = 100,187 ha
Mortality = 323

Area of moderate-to-severe defoliation

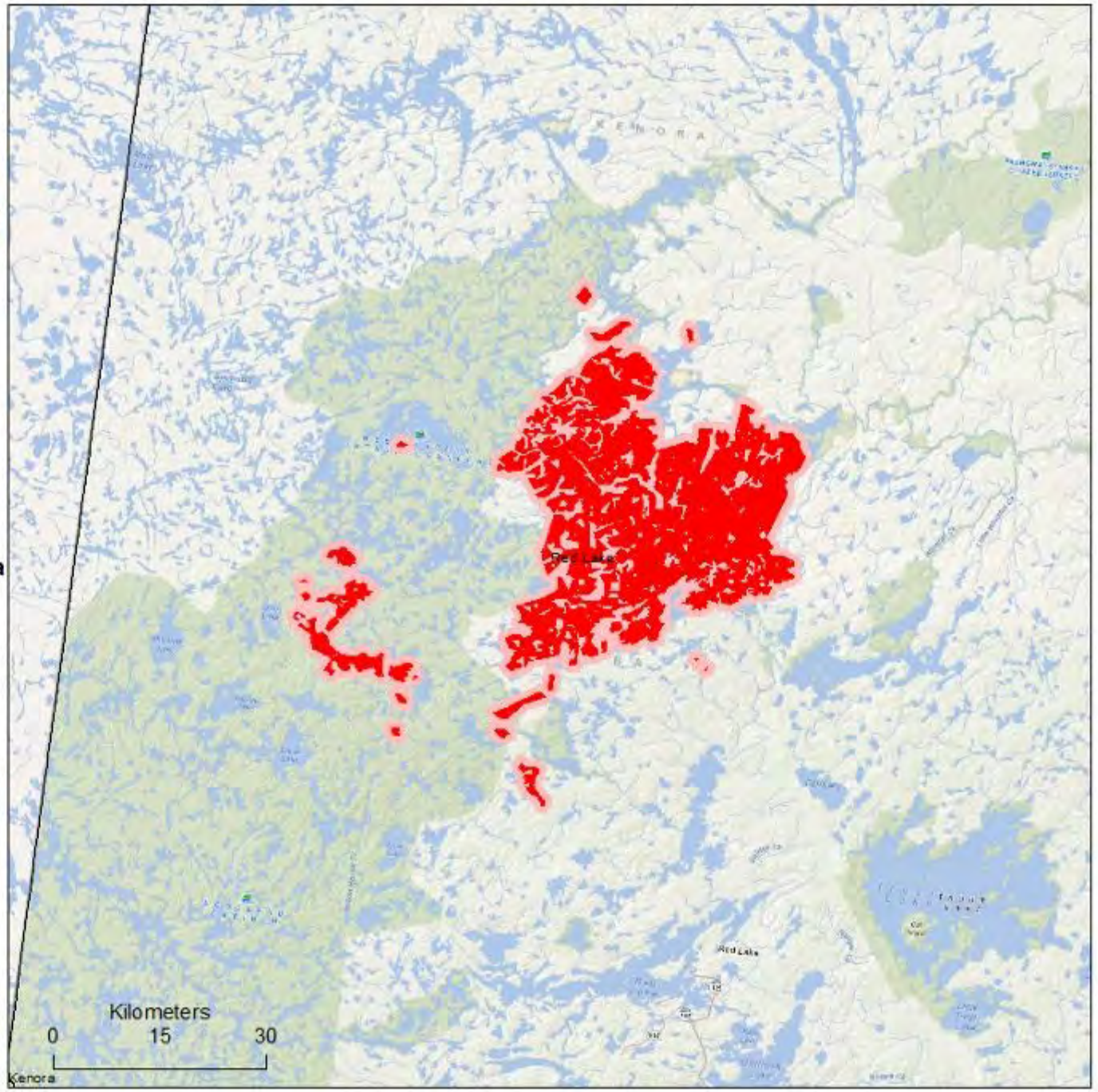
Area of mortality

Jack Pine Budworm 2017

Northwest Region
Areas-within-which jack pine budworm caused defoliation

Moderate-to-severe = 100,187 ha

Area of moderate-to-severe defoliation

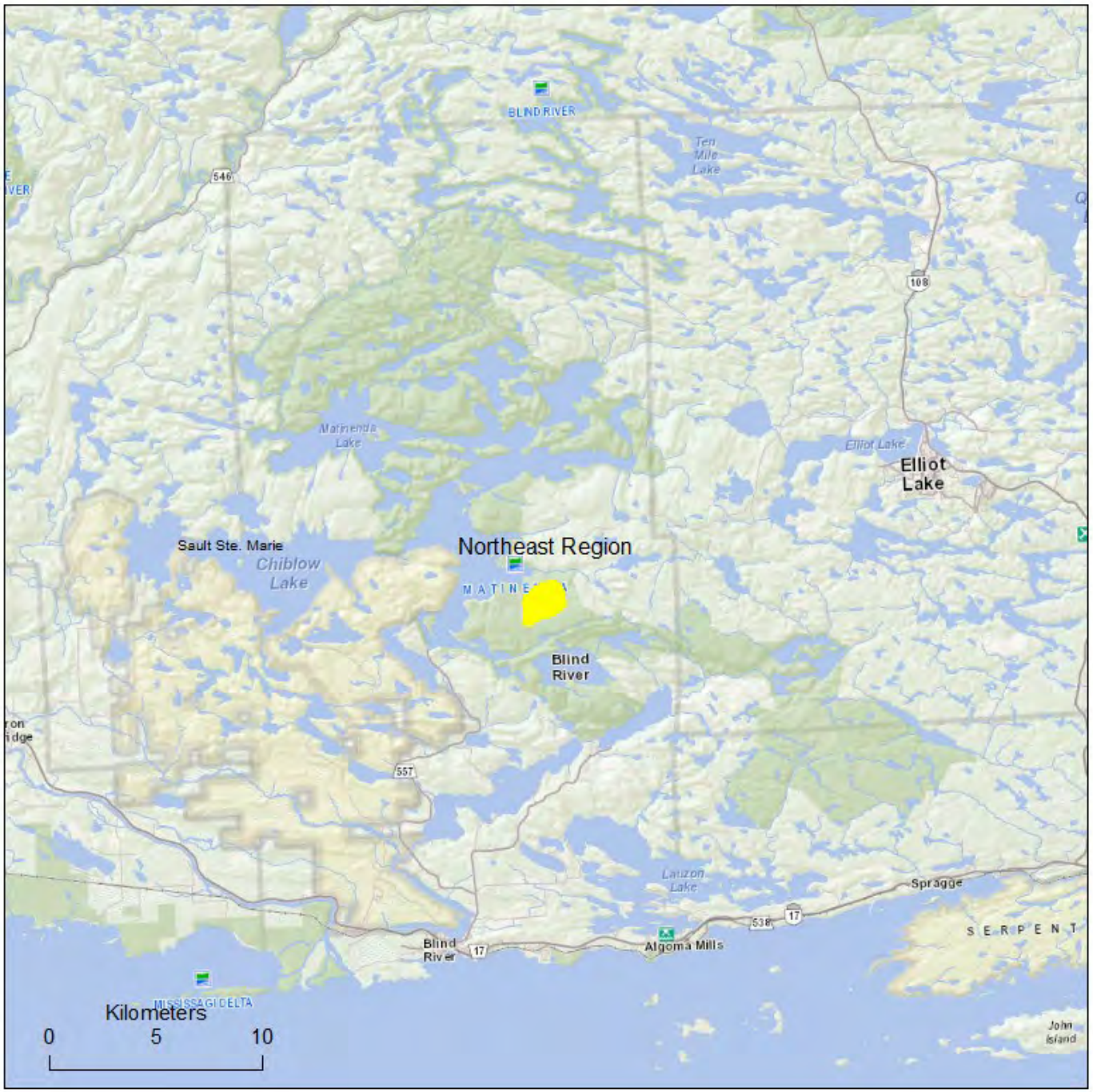


Jack Pine Budworm 2017

Northeast Region
Areas-within-which jack pine budworm caused mortality

Mortality = 323 ha

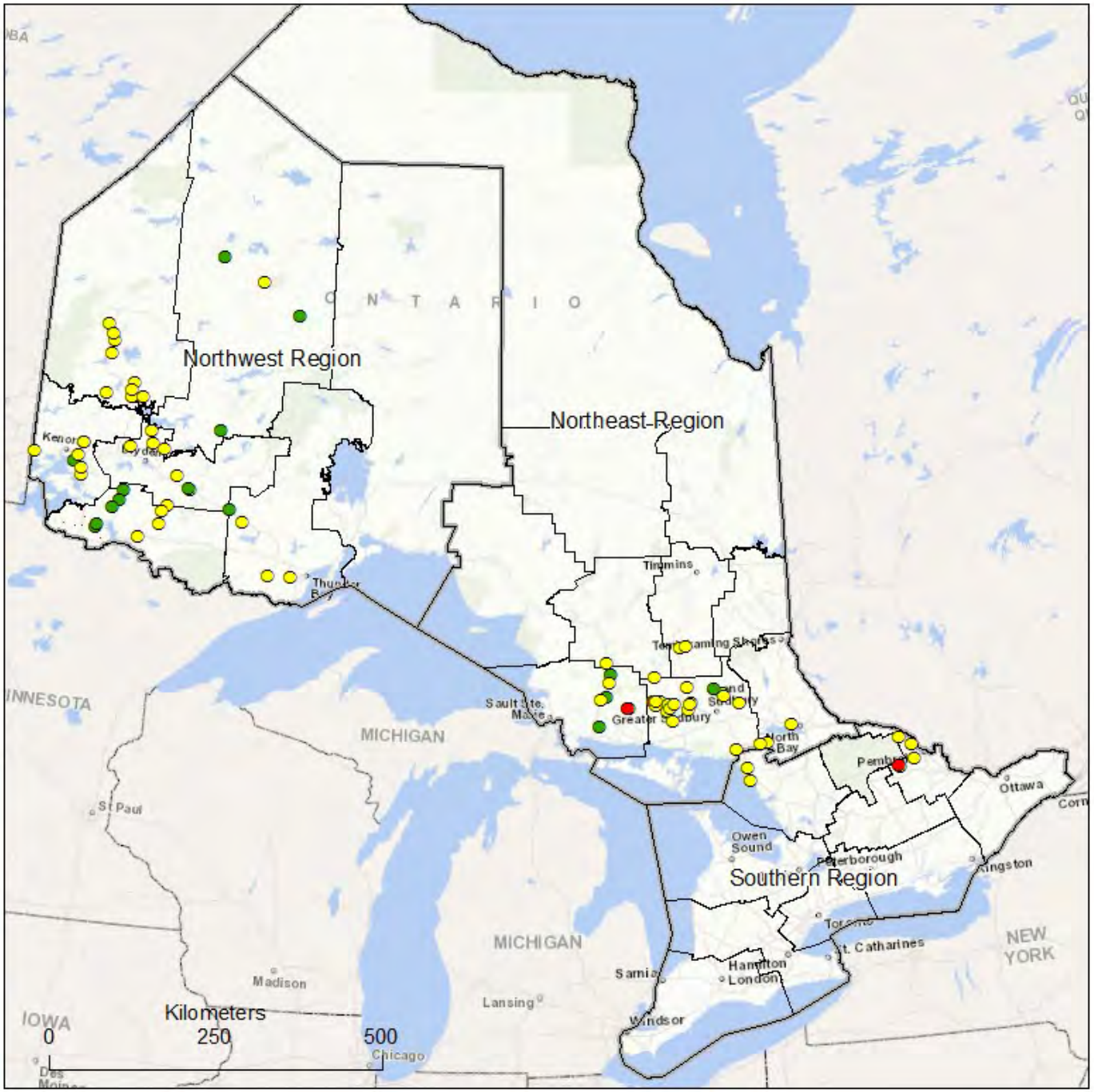
Area of mortality



Jack pine budworm Pheromone Trapping Results 2017

Average Number of Moths per Trap

- 0
- < 10
- 10 - 25



Larch casebearer

Pest information

Common name:	Larch casebearer
Scientific name:	*Coleophora laricella* (Hubner)
Pest origin:	**Invasive** - native to Europe
Pest type:	Defoliator
Host species:	Larch species
Infestation area:	3,853 ha (2017)

Provincial key facts

- Larch casebearer was introduced to North America in Massachusetts in 1886 and was detected in Ontario in 1905. This pest is now found across the range of tamarack and throughout European larch plantations in Ontario.
- Larch casebearer is a serious defoliator of tamarack and in Southern Region defoliation has been mapped annually since 2001.
- In 2017, 3,853 ha of moderate-to-severe defoliation were aerially mapped in small scattered areas across Southern Region, which is more than double the area mapped in 2016.

Regional summary

Southern:

- Midhurst District had the most area of moderate-to-severe defoliation caused by larch casebearer, totalling 1,437 ha. The largest area of defoliation was in Simcoe County around Lake Couchiching, north of Orillia. On the east side of Lake Couchiching, large areas of defoliation were recorded in the northern part of Mara Twp close to the Bancroft District boundary, with one of the areas of defoliation stretching into Rama Twp. On the west side of the lake, three areas of defoliation were mapped in Orillia Twp. The largest area was in the centre of the township northwest of Orillia. The smaller areas were in the northern part of the township west of Buck Lake and the southern part of the township near Bass Lake Provincial Park. West of the city of Barrie, larch casebearer defoliation was mapped in low lying wet

Regional summary con't

areas along Willow Creek, north of Canadian Forces Base Borden. One smaller area was noted east of Base Borden near the community of Baxter on Hwy 21 (Murphy Road). Three other small, scattered areas of defoliation were mapped in the south central part of the district. One area was north of Shelburne in Dufferin County, southwest of the junction of Hwy 124 and Hwy 21. The remaining two areas of defoliation were in Grey County, one between Hanover and Durham and the other north of Mount Forest near the junction of Hwy 9 and Hwy 6.

- In Peterborough District, small areas of moderate-to-severe defoliation were aerially mapped, totalling 1,102 ha. The largest area was scattered on the northwest side of the district from the west side of Kawartha Lakes to north of Bobcaygen, southwest of Buckhorn and south of Stony Lake. Another smaller area of defoliation was aerially mapped in the southeastern part of the district in Menzel Centennial Provincial Park (nature reserve), northwest of Napanee and east of the junction of County Road 11 and Deseronto Road , both in Tyendinaga and Richmond townships.
- In Guelph District, 776 ha of moderate-to-severe larch casebearer defoliation was aerially mapped. Most of it was between Cambridge and Burlington, with the largest area east of Valens Reservoir along Hwy 97 near the community of Freelton. A small area of defoliation was mapped north of Stratford in a swampy area at the junction of Black Creek and County Road 44, County of Perth. West of the town of Orangeville, larch casebearer defoliation was seen at the south end of Luther Lake, where it has persisted for a few years. This area of defoliation, straddling Dufferin and Wellington counties, was less than 20 ha. During ground surveys, moderate-to-severe defoliation was also observed, but not mapped, on more than 20 larch trees along Victoria Avenue and Gordon Street in the city of Guelph. Larch trees along Wellington County Road 6, just north of 3rd Sideroad in Wellington County, were also defoliated by larch casebearer.
- In Kemptville District, 231 ha of moderate-to-severe defoliation were recorded in the southern part of the district. Most of this defoliation was between the town of Pert and Upper Rideau Lake on the south side of the Tay River, Elmsley Twp. Smaller areas of moderate-to-severe defoliation were mapped north of Prescott in the northern parts of Augsta and Edwardsburgh townships. The smallest area of defoliation was recorded northeast of Morrisburg near the community of Gallingertown, Osnabruck Twp. Moderate-to-severe defoliation was also observed in some areas during ground surveys, including small stands of tamarack on Rooney Road north of Hwy 401, Edwardsburgh Twp, near the community of Monkland in Roxborough Twp, and on Boyne Road east of the town of Winchester, Winchester Twp.
- In the central part of Pembroke District, 26 ha of moderate-to-severe larch casebearer defoliation was mapped southeast of the town of Eganville in three small stands of tamarack south of Mink Lake, Wilberforce and Grattan townships.
- In the southern part of Parry Sound District, a small area (5 ha) of moderate-to-severe defoliation was mapped north of Severn Falls near Nine Mile Lake, Wood Twp.
- In Aylmer District, a small area of moderate-to-severe defoliation of larch was observed during ground surveys west of the town of Woodstock along Dundas St. (Hwy 2), Zorra Twp, Oxford County.

Total area (in hectares) in which larch casebearer caused moderate-to-severe defoliation from 2013 to 2017, by MNRF district.

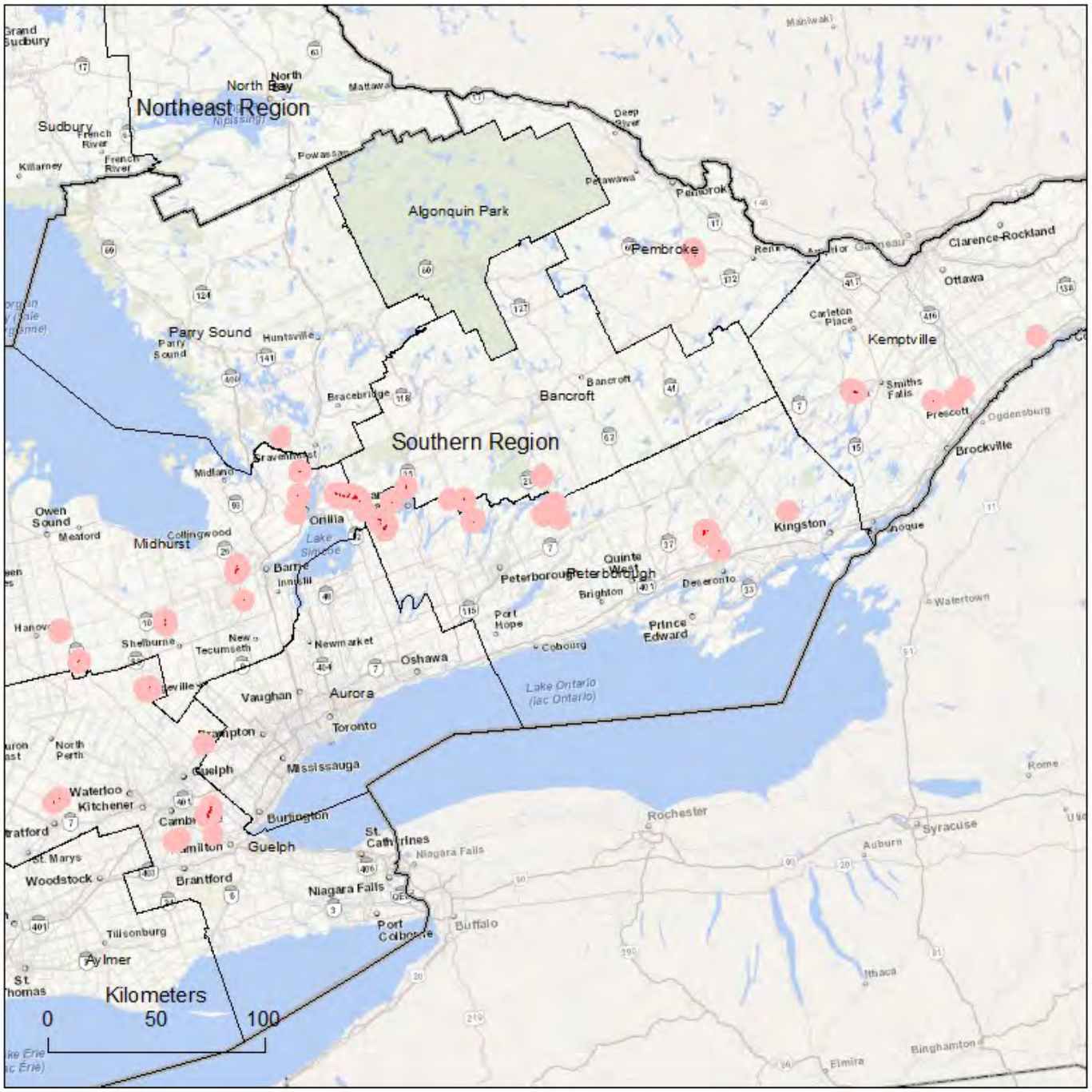
Region	Area of moderate-to-severe defoliation (ha)				
District	**2013**	**2014**	**2015**	**2016**	**2017**
Northeast					
Chapleau	-	-	-	-	-
Cochrane	-	3	-	-	-
Hearst	-	1,008	-	-	-
Kirkland Lake	-	15	-	-	-
North Bay	-	-	-	-	-
Sault Ste. Marie	-	34	-	-	-
Sudbury	-	-	-	-	-
Timmins	-	296	-	-	-
Wawa	-	-	-	-	-
Sub total	0	1,355	0	0	0
Southern					
Algonquin Park	-	57	63	-	-
Aurora	258	445	-	-	-
Aylmer	-	47	3	-	-
Bancroft	89	105	811	80	275
Guelph	942	1,369	19	1056	776
Kemptville	1,093	1,463	86	196	231
Midhurst	1,928	2,666	661	-	1,437
Parry Sound	5	51	42	-	5
Pembroke	143	929	4	52	26
Peterborough	1,028	1,154	179	126	1,103
Sub total	5,486	8,287	1,869	1,510	3,853
Provincial total	**5,486**	**9,643**	**1,869**	**1,510**	**3,853**

Larch Casebearer 2017

Southern Region
Areas-within-which larch casebearer caused defoliation

Moderate-to-severe = 3,853 ha

Area of moderate-to-severe defoliation



Large aspen tortrix

Pest information

Common name:	Large aspen tortrix
Scientific name:	*Choristoneura conflictana* (Wlk.)
Pest origin:	Native to North America
Pest type:	Defoliator
Host species:	Trembling aspen
Infestation area:	48,297 ha (2017)

Provincial key facts

- Large aspen tortrix is second only to forest tent caterpillar as an aspen defoliator.
- It is an early season defoliator that prefers trembling aspen but, if aspen are completely defoliated before larvae finish feeding, it will feed on other trees and shrubs (e.g., birches, alder, and choke cherry).
- This pest has periodic outbreaks, with sharp increases and quick decreases after two to three years of moderate-to-severe defoliation.
- Moderate-to-severe large aspen tortrix defoliation was aerially mapped in Northeast Region, almost doubling in area defoliated compared to 2016.

Regional summary

Northeast:

- Most moderate-to-severe defoliation was mapped in Chapleau District in 2017, over 34,000 ha compared to almost 20,000 ha in 2016. Defoliation was mapped in two main areas in the eastern and central portion of Chapleau District, with small scattered areas of defoliation in the southern part of the district. On the east side of Chapleau District larger areas of moderate-to-severe defoliation were observed along the Timmins District border, west to the town of Foleyet from Nova and Stratchan townships, in the north, south to Coppell and Newton townships in the area of Coppell Lake. In the central part of the district defoliation was recorded east of Missinaibi Lake, in Lloyd and Bonar

Regional summary con't

townships south to a large area of defoliation northeast of the town of Chapleau and north of Borden Lake between Racine and Nemesogenda lakes. Small scattered areas of defoliation in the southern part of the district were observed near the Algoma Headwaters Provincial Park near the Sault Ste. Marie District boundary, southwest of Sultan between Wakami and Wenebegon lakes and northwest of Ramsey in Hong Kong, Fawn and Edith townships.

- In Timmins District, 12,355 ha of moderate-to- severe defoliation was aerially mapped in 2017, a significant increase from 2,980 ha in 2016. Areas of defoliation were close to those mapped in 2016, but new areas were mapped south and east of the 2016 defoliation, predominantly south of Hwy 101 from the city of Timmins to the western border of Timmins District. Larger areas of defoliation were seen on the southeast side of Horwood Lake, the northern area of Kenogaming Lake, and south of Timmins to the northern end of Kenogamissi Lake. Smaller, more scattered, areas of defoliation were observed on the north side of Hwy 101 between the Ground Hog River (Melrose and Reeves townships) and Dana Lake (Dana Jowsey Lakes Provincial Park) up to Brombay and Harriet lakes in Enid and Frey townships.
- In the southeast corner of Wawa District, a new infestation of large aspen tortrix caused a total of 1,858 ha of moderate-to-severe defoliation. This defoliation was mapped south of Potholes Provincial Park approximately 18 km south of Hwy 101 down Ripple Lake Road, just north of Crossover Road in Sampson, Saunders, and Tabobondung townships. One smaller area of defoliation was also mapped near the Chapleau District boundary at the north end of Loop Lake in the northwest corner of Beilhartz Twp.

Total area (in hectares) in which large aspen tortrix caused moderate-to-severe defoliation from 2013 to 2017, by MNRF district.

Region	**Area of moderate-to-severe defoliation (ha)**				
District	**2013**	**2014**	**2015**	**2016**	**2017**
Northeast					
Chapleau	-	-	-	19,521	34,084
Hearst	-	-	-	86	-
Timmins	-	-	-	2,980	12,355
Wawa	-	-	-	-	1,858
Sub total	0	0	0	22,587	48,297
Provincial total	**0**	**0**	**0**	**22,587**	**48,297**

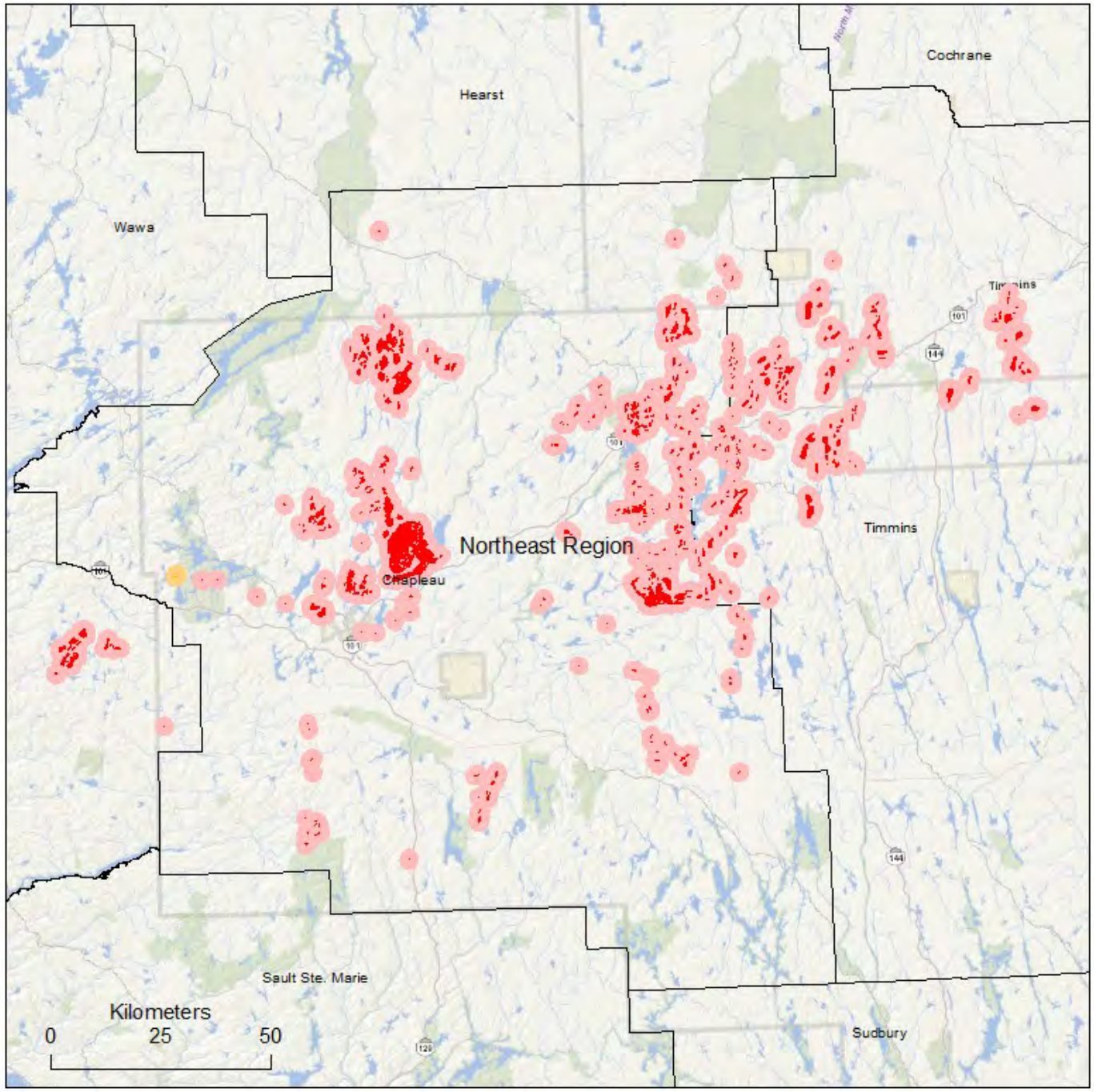
Large Aspen Tortrix 2017

Northeast Region
Areas-within-which large aspen tortrix caused defoliation

Light = 25 ha
Moderate-to-severe = 48,297 ha

Area of light defoliation

Area of moderate-to-severe defoliation



Mountain pine beetle

Pest information

Common name:	Mountain pine beetle
Scientific name:	*Dendroctonus ponderosae* Hopkins
Pest origin:	Native to North America (western Canada and US)
Pest type:	Bark beetle
Host species:	Pine
Infestation area:	N/A

Provincial key facts

- Mountain pine beetle is native to western North America. In Canada, its native range is northern British Columbia, but in recent years this beetle expanded to an isolated area in Cypress Hills, Saskatchewan, and even more recently to northern Alberta.
- The host of mountain pine beetle is lodgepole pine but with the recent range expansion it has been found in jack pine in the boreal forest in north central Alberta. Jack pine is a dominant species in the boreal forest that stretches across northern Ontario, making this pest a potential concern.
- Infestations of mountain pine beetle can cause widespread pine mortality.
- In 2017, 12 pairs of mountain pine beetle pheromone baited Lindgren funnel traps were installed throughout Northwest Region. Traps were located in jack pine health plots and other mature to overmature jack pine stands. Two traps were deployed at each location, a minimum of 50 m apart.
- Traps were retrieved in August and all contents sent for diagnostics; no pine beetles were captured.

Regional summary

Northwest:

- Mountain pine beetle pheromone baited traps were deployed on the west side of Northwest Region at six sites in Fort Frances District, four in Kenora District, and one each in Red Lake and Sioux Lookout districts. Most were jack pine forest health plots, with the others jack pine stands that were stressed by hail or snow damage. No mountain pine beetles were caught in the traps.

Mountain Pine Beetle Traps 2017

■ Trap Location

Nitidulid Beetle

Pest information

Common name:	Nitidulid beetle
Scientific name:	*Nitidulidae* spp.
Pest origin:	Native to North America
Pest type:	Sap beetle
Host species:	Oak spp.
Infestation area:	N/A

Provincial key facts

- Nitidulid beetles are sap beetles that are attracted to the fungal mats on the main stem of oak trees that are caused by the pathogen *Bretzieilla* which causes the disease oak wilt. These mats produce a sweet fruity odour that attracts the beetle.
- Nitidulid beetles transmit oak wilt disease in a somewhat similar way that elm bark beetles transmit Dutch elm disease. During feeding, sticky oak wilt spores adhere to the beetles, which disperse to recently wounded trees spreading the infection.
- In 2017, an insect trapping program targeting nitidulid beetles was delivered in Ontario. Traps were deployed in oak stands in the Northeast and Southern regions. The objective of the program was to collect and identify native nitidulid beetles that can vector oak wilt disease (species and period of the year) which is not in Canada, but is approaching Ontario's border. Lindgren funnel traps were deployed in June at a total of five sites with a high component of oak and relatively close proximity to oak wilt disease in northern United States. At each trap location, fresh cut oak branches from surrounding trees were placed below a trap as a lure to attract beetles.

Regional summary

Northeast:

- In Northeast Region, a lindgren funnel trap was set in a young red oak plantation in the MNRF arboretum on the outskirts of the city of Sault Ste. Marie, Sault Ste. Marie District. Oak wilt occurs in the southcentral part of Cheboygan County, Michigan, just over an hour south of Sault Ste. Marie. The trap in Sault Ste. Marie did not capture nitidulid beetles.

Regional summary con't

Southern:

- In Southern Region, four nitidulid trap sites were established in oak stands close to the northern distribution of oak wilt in United States.
- The trap site closest to a known location with oak wilt on Belle Isle in Detroit, Michigan was in Aylmer District in the city of Windsor. A trap, baited with freshly cut oak branches, was set in a forested site with semi-mature of black oak and hickory. Nitidulid beetles were not captured.
- In Peterborough District, a trap was set in a semi-mature oak stand at the northwest end of Sharbot Lake along Hwy 7. Nitidulid beetles were not found.
- In Bancroft District, a trap was set out approximately seven kilometres south of the town of Gooderham in the north end of Cavendish Twp, along Hwy 507, in a hardwood stand with sugar maple and red oak. No nitidulid beetles were captured.
- In Midhurst District, a trap was put out in a mixed stand of eastern white pine and red oak at the Angus Seed Plant west of the city of Barrie. No nitidulid beetles were captured.

Trend analysis/outlook/issues:

- Oak wilt is a vascular disease of oak trees caused by the fungus *Bretziella fagacearum*. The disease is present in the northern United States near the Canadian border, posing a high risk of introduction to Canada. Locally, the disease is spread by insect vectors such as sap beetles (Coleoptera: Nitidulidae), root grafting, and the movement of beetle-infested firewood.
- Nitidulid beetles were not collected in 2017. The effectiveness of trap design, locations, and lures will be reviewed to inform future trapping efforts.

Nitulid Beetle Traps 2017

■ Trap Location

Oak wilt

Pest information

Common name:	Oak wilt
Scientific name:	*Bratziella fagacearum* (Bretz) Hunt
Pest origin:	Unknown
Pest type:	Vascular disease
Host species:	All oak species
Infestation area:	N/A

Provincial key facts

- This fungal disease of oak trees has not yet been found in Ontario or Canada.
- Oak wilt has spread throughout the eastern United States. In 2016, oak wilt was confirmed on Belle Isle, Michigan, approximately 500 metres from Windsor, Ontario.
- All oak species are susceptible and at risk, with species in the red oak group most susceptible. Oaks in the white oak group are also affected but show more resistance.
- Oak wilt is spread by root grafting, insect vectors (nitidulid beetles), and movement of infected firewood.
- In 2017, samples of oak leaves from Southern Region sent for diagnostics for suspected oak wilt were all negative.

Regional summary

Southern:

- In Aylmer District, oak trees displaying signs and symptoms of oak wilt were identified at Devonwood Conservation Area in Windsor as well as Brunet Park in La Salle. Collections from both locations were sent for laboratory analysis at the Ontario Forest Research Institute. Diagnostics determined that a combination of site conditions and secondary fungi caused the oak wilt-like symptoms. Samples did not contain the fungus causing oak wilt disease.

Trend analysis/outlook/issues:

- Staff with Ontario Ministry of Natural Resources and Forestry's Forest Health Monitoring Program will continue to monitor the health of oak trees across Ontario.

Pine false webworm

Pest information

Common name:	Pine false webworm
Scientific name:	*Acantholyda erythrocephala* (L.)
Pest origin:	**Invasive** — native to Europe and Asia
Pest type:	Defoliator
Host species:	Eastern white pine, red pine, and jack pine
Infestation area:	11 ha (2017)

Provincial key facts

- First collected in Ontario in 1961, pine false webworm 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.
- With the exception of 2014, low levels of defoliation have been aerially mapped in Ontario since 2008.
- Moderate-to-severe pine false webworm defoliation was aerially mapped in Northeast Region in 2017 and also detected at low levels during ground surveys.

Regional summary

Northwest:

- In southern Sault Ste. Marie District, a red pine plantation east of Thessalon (northeast corner of Thessalon Twp) in Maple Ridge Gravel Pit was heavily infested with pine false webworm for the third consecutive year. A total of 11 ha of moderate-to-severe defoliation were recorded in this area during aerial surveys. The most severe defoliation was seen in the heart of the plantation but, since the trees are young (15 years old) and growing vigorously, none have died yet. Light defoliation on lower branches of several overmature white pine trees was also recorded during an extension call in Iron Bridge. Further investigation indicated that a younger, smaller white pine tree in the neighbour's yard had moderate defoliation. This area was not aerially mapped.

Regional summary con't

- On the southwest side of Sudbury District, pine false webworm was seen on red pine and jack pine. Moderate defoliation was recorded in a red pine plantation west of the town of Nairn Centre at the junction of Hwy 17 and Birch Street, Nairn Twp. This defoliation was observed on several edge trees near the southwest end of the plantation, but overall the plantation had light defoliation. Pine false webworm was also detected in a semi-mature jack pine stand northeast of the town of Espanola along Jacklin Road in Merritt Twp. Jack pine budworm was also detected there, but at lower levels than pine false webworm and the pine false webworm was more prevalent on the lower branches of edge trees. Overall defoliation was less than five per cent.

Total area (in hectares) in which pine false webworm caused moderate -to-severe defoliation from 2013 to 2017, by MNRF district.

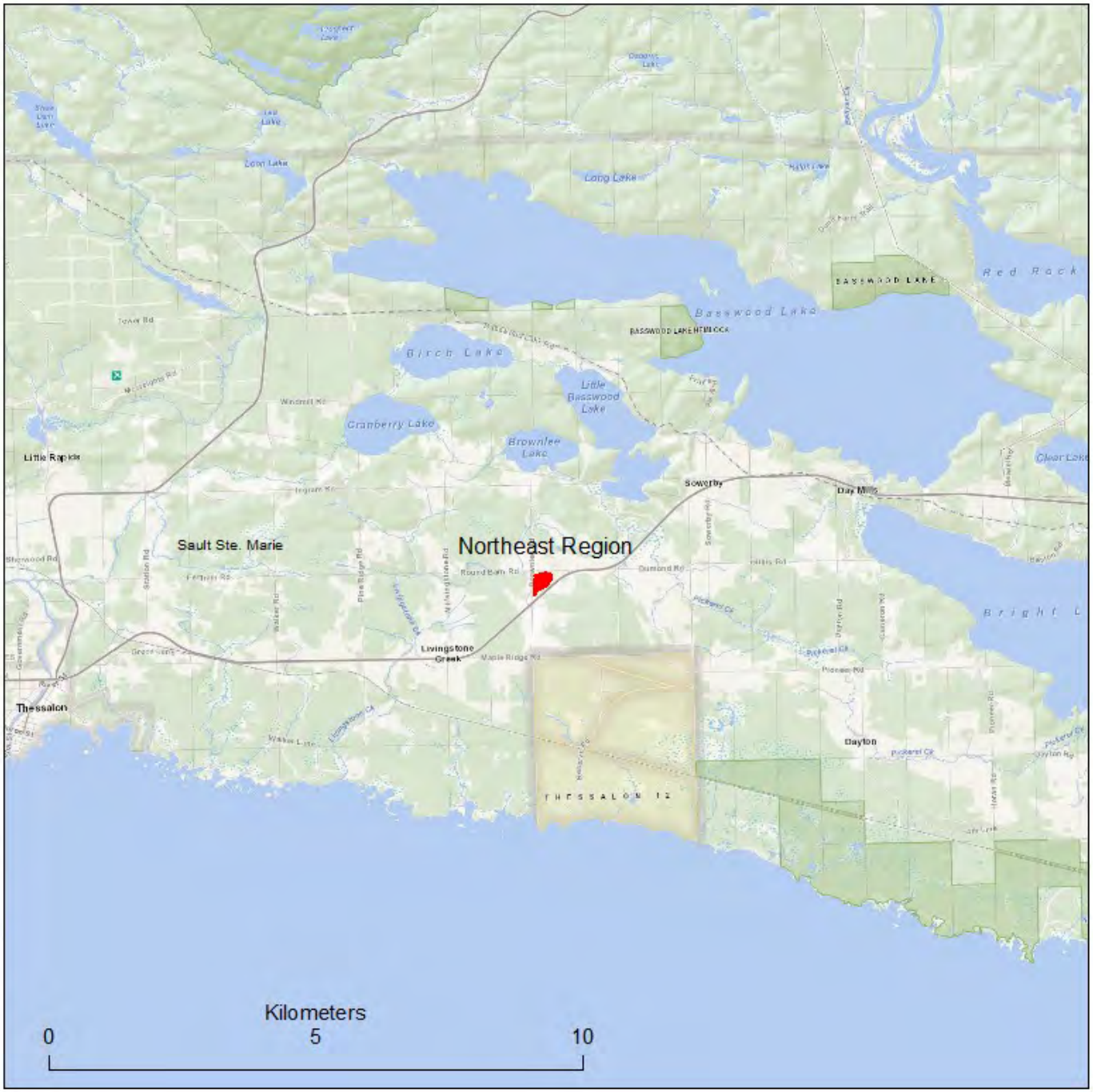
Region	**Area of defoliation (ha)**				
District	**2013**	**2014**	**2015**	**2016**	**2017**
Northeast					
Chapleau	-	-	-	-	-
Cochrane	-	-	-	-	-
Hearst	-	-	-	-	-
Kirkland Lake	-	-	-	-	-
North Bay	7	-	3	-	-
Sault Ste. Marie	-	-	-	-	11
Sudbury	-	-	-	-	-
Timmins	-	-	-	-	-
Wawa	-	-	-	-	-
Sub total	7	0	3	0	0
Provincial total	**7**	**0**	**3**	**0**	**11**

Pine False Webworm 2017

Northeast Region
Areas-within-which pine false webworm caused defoliation

Moderate-to-severe = 11 ha

Area of moderate-to-severe defoliation



Pine shoot beetle

Pest information

Common name:	Pine shoot beetle
Scientific name:	*Tomicus piniperda* (L.)
Pest origin:	**Invasive** - native to Europe, North Africa and Asia
Pest type:	Bark beetle
Host species:	Pine species
Infestation area:	N/A

Provincial key facts

- This shoot beetle was first detected in Ontario in 1993 and in Quebec in 1998.
- It is a threat to pine plantations, reducing wood volume and can result in mortality.
- Poorly managed plantations are more susceptible to pine shoot beetle.
- In 2017, in cooperation with the Canadian Food Inspection Agency (CFIA), monitoring crews installed Lindgren funnel traps at 16 locations across Northeast and Northwest regions to more accurately determine the extent of pine shoot beetle.

Regional summary

Northwest:

- In 2017, seven locations were surveyed in Northwest Region. Baited traps were installed in Thunder Bay and Fort Frances districts near wood processing facilities where pine materials are being moved/ used outside the area of known infestation. All locations were negative for pine shoot beetle.

Northeast:

- In 2017, nine locations were surveyed in Northeast Region. Baited traps were installed in Sault Ste. Marie, Hearst, Wawa, and Kirkland Lake districts. Trap locations in Sault Ste. Marie District are in the quarantined area and were used to reconfirm the presence of pine shoot beetle. The Sault Ste. Marie District locations had pine shoot beetle, but those in the other districts did not. The traps in Sault Ste. Marie District were located in the city of Sault Ste. Marie, on Hwy 17E near Echo Bay, and on Hwy 17E on the west side of Iron Bridge. Shoot beetle numbers were moderate-to-high near Iron Bridge and relatively low at the other two locations. Damage was low in all three locations.

Pine Shoot Beetle Traps 2017

- Positive
- Negative

Septoria leaf spot

Pest information

Common name:	Septoria leaf spot
Scientific name:	*Sphaerulina musiva* (Peck) Quaedvl., Verkley & Crous, on balsam poplar and trembling aspen and *Septoria betulae* Pass. on white birch
Pest origin:	Native to North America
Pest type:	Foliar disease
Host species:	Balsam poplar, trembling aspen, and white birch
Infestation area:	2,044 ha (2017)

Provincial key facts

- Septoria leaf spot is a common fungal disease of poplar and birch.
- This pest usually infects leaves, but can also cause branch and main stem cankers, particularly on hybrid poplar.
- It is normally prevalent during wet and humid weather with fallen leaves re-infecting new leaves the following year.
- After repeated severe infections trees may lose vigour, making them more susceptible to other pests and pathogens.
- In 2017, septoria leafspot was recorded across all three regions.

Regional summary

Northwest:

- A total of 472 ha of septoria leaf spot damage was aerially mapped in four districts in the region.
- Sioux Lookout District had almost half the moderate-to-severe septoria leaf spot damage in the region, most of it in the southwest part of the district. Small scattered areas of infected trees were recorded southwest of the town of Sioux Lookout, north of Lac Seul from Windigo Point north to Wapesi Bay on Wapesi Lake. One small area was detected at the north end of Fry Lake about 82 km west of Pickle Lake. Small areas of damage were also observed south of Lac Seul from Canoe Bay to the north end of Lost Lake, almost directly north of the town of Hudson.

Regional summary con't

- In the southeast corner of Red Lake District, 161 ha of moderate-to-severe septoria leaf spot damage was aerially mapped. Small areas of damage were noted from Trout Lake to McKenzie Bay (Lac Seul), including areas in Badrock Lake, Detector Lake northwest of Ear Falls, and between Goose and Wegg lakes west of the community of Manitou Falls. During ground surveys, areas of damage were detected along Nungesser Road on young roadside trees. When travelling road corridors throughout the late summer, damage was commonly seen on poplar and birch. Damage was variable ranging from 20-75% of leaves infected.
- In Dryden District, 55 ha of damage were aerially mapped in a few small areas. On the west side of the district, damage was recorded in an area northwest of the town of Dryden in Eton Twp just north of Oxdrift. Damage was also recorded in an area between Lynx and Alder lakes about 30 km northeast of Richan. Similarly, small areas of damage were seen near the Sioux Lookout District boundary near Williams Bay (Lac Seul) and on a peninsula, at the southwest shore of Minnitaki Lake, between Southwest and Redpine bays. A small area of septoria was also mapped on the east side of the district, on the north shore of Unaka Lake. During ground surveys, infected trees were also seen south of the town of Dryden along the north boundary of Hyndman Twp.
- Only 25 ha of septoria leaf spot damage was recorded in Kenora District. Small isolated areas of damage were seen north and northeast of the town of Kenora. These areas included one on the south shore of Black Sturgeon Lake, another near Grassy Narrows, and two small ones east of Camp Robinson near Moose and Ord lakes close to the Dryden District boundary.

Northeast:

- This is the second consecutive year that septoria leaf spot damage was aerially mapped in Northeast Region, with over 78% of the damage mapped in the province in this region in 2017.
- In Timmins District, 672 ha of moderate-to-severe damage were mapped across the district in small areas, mostly in the southern part of the district. Several small scattered areas of damage were seen south of Westree scattered across the landscape down to the White Partridge Lake area in Blewett, Shelley, and Marshay townships. Three small areas were also mapped north, south, and west of Shining Tree in Natal, Asquith, and Brunswick townships. The remainder of damage was mapped in small areas on the west and north sides of the district, as well as one area in the central part. On the west side, four small areas were recorded close to the Chapleau District boundary between Horwood and Little Rush lakes in Hardiman and McOwen townships. In the north, two areas were noted north of the city of Timmins in Jessop and Murphy townships and two other areas, one between Bromley and Opishing lakes (Frey Twp), the other in the southern part of Price Twp east of Kenogamissi Lake. The lone area in the central part of the district was north of Gogama between Mattagami and the south end of Kenogamissi lakes, on Kenogamissi Falls Road. During ground surveys, several collections were made in the early part of August confirming septoria leaf spot on balsam poplar and white birch. Damage became more severe later in August and into September.
- In Cochrane District, 496 ha of moderate-to-severe septoria leaf spot damage were mapped, all in the southern part from the western district boundary close to the eastern boundary. Most of the damage was recorded in small, scattered

Regional summary con't

areas from Smooth Rock Falls over to the west side of Little Abitibi Lake. Small dispersed areas of damage were observed north and south of this general area, north to Lawagamau Lake and south to the north end of Lake Abitibi and southwest to Newmarket and Crawford townships, west of the town of Iroquois Falls. Most of this damage was on balsam poplar.

- Just over 300 ha of moderate-to-severe septoria leaf damage was observed in Hearst District, the bulk of it on the south side of Hwy 11. Small scattered areas of damage south of Hwy 11 were seen northeast of Oba to the west side of Buchanan Lake and then continued east with two small areas of damage, one in the northeast corner of Maude Twp southwest of Saganash Lake, the other in the northwest corner of Poulett Twp along the Groundhog River. The remainder of the damage was focused west of the town of Hearst between Constance and Fushimi lakes. Two small areas were located on the south side of Hwy 11, just south of Carey Lake and two more areas north of Hwy 11, one at the north end of Carey Lake the other at the north end of St Joseph Lake, all in Stoddart Twp.
- Only 79 ha of septoria leaf spot damage was aerially mapped in Wawa District. The largest area of damage was in the southwest part of the district through the middle of Pukaskwa National Park, close to the coast of Lake Superior southwest of Mishibishu Lake. The remaining area of damage was scattered throughout the central portion of the district, one area south of the town of White River on the east side of Pokei Lake (Memaskwosh Twp) and three other small areas of damage south of the town of Manitouwadge, one east of Cirrus Lake, another on the southeast corner of McGill Lake (McGill Twp) and the third west of Matthews Lake in the southeast corner of Welsh Twp. Septoria leaf spot of birch (*Sphaerulina betulae*) was collected during ground surveys with moderate-to-severe damage seen in Lake Superior Provincial Park.
- In Chapleau District, only three small areas of moderate-to-severe septoria leaf spot damage, totalling 21 ha, were mapped on the east side of the district. Two small areas were mapped on the northeast side of Ivanhoe Lake, just outside Ivanhoe Provincial Park and another small area was recorded approximately 25 km southwest near the south end of Biggs Lake, Biggs Twp. During ground surveys, septoria leaf spot of poplar and birch were commonly found at low levels.
- Collections of septoria leaf spot of balsam poplar and birch were made at various locations in other districts in Northeast Region, including Sudbury, Kirkland Lake, and North Bay. Damage in these locations was light-to-moderate.

Southern:

- In early August, balsam poplar leaves were browning, curling, and dropped early in Midhurst District. Collections of septoria leaf spot were made along the 19th Side Road, east of Epping in West Grey Twp, and Hibou Conservation area near Owen Sound in Grey County, where 50% of leaves were affected. Damage was also observed at Spirit Rock, south of Wiarton, Crane River Bruce Peninsula, and Bruce Peninsula National Park Visitors Centre, all in Bruce County, Midhurst District.
- In the southwest corner of Pembroke District, septoria leaf spot was collected south of the community of Craigmont (Raglan Twp) where it was causing moderate-to-severe damage to a small stand of intermediate balsam poplar.

Total area (in hectares) in which septoria leaf spot caused moderate-to-severe damage from 2013 to 2017, by MNRF district.

Region	Area of damage (ha)				
District	**2013**	**2014**	**2015**	**2016**	**2017**
Northeast					
Chapleau	-	-	-	144	21
Cochrane	-	-	-	95	496
Hearst	-	8	-	18	305
Kirkland Lake	-	-	-	-	-
North Bay	-	-	-	-	-
Sault Ste. Marie	-	-	-	-	-
Sudbury	-	1	-	-	-
Timmins	-	7	-	75	672
Wawa	-	-	-	-	79
Sub total	0	16	0	332	1,572
Northwest					
Dryden	-	-	-	-	55
Fort Frances	-	-	-	-	-
Kenora	-	-	-	-	25
Nipigon	-	-	-	-	-
Red Lake	-	-	-	-	161
Sioux Lookout	-	-	-	-	231
Thunder Bay	-	-	-	-	-
Sub total	0	0	0	0	472
Provincial total	**0**	**16**	**0**	**332**	**2,044**

Septoria leaf spot 2017

Ontario
Areas-within-which septoria leaf spot caused defoliation

Moderate-to-severe = 2,044 ha

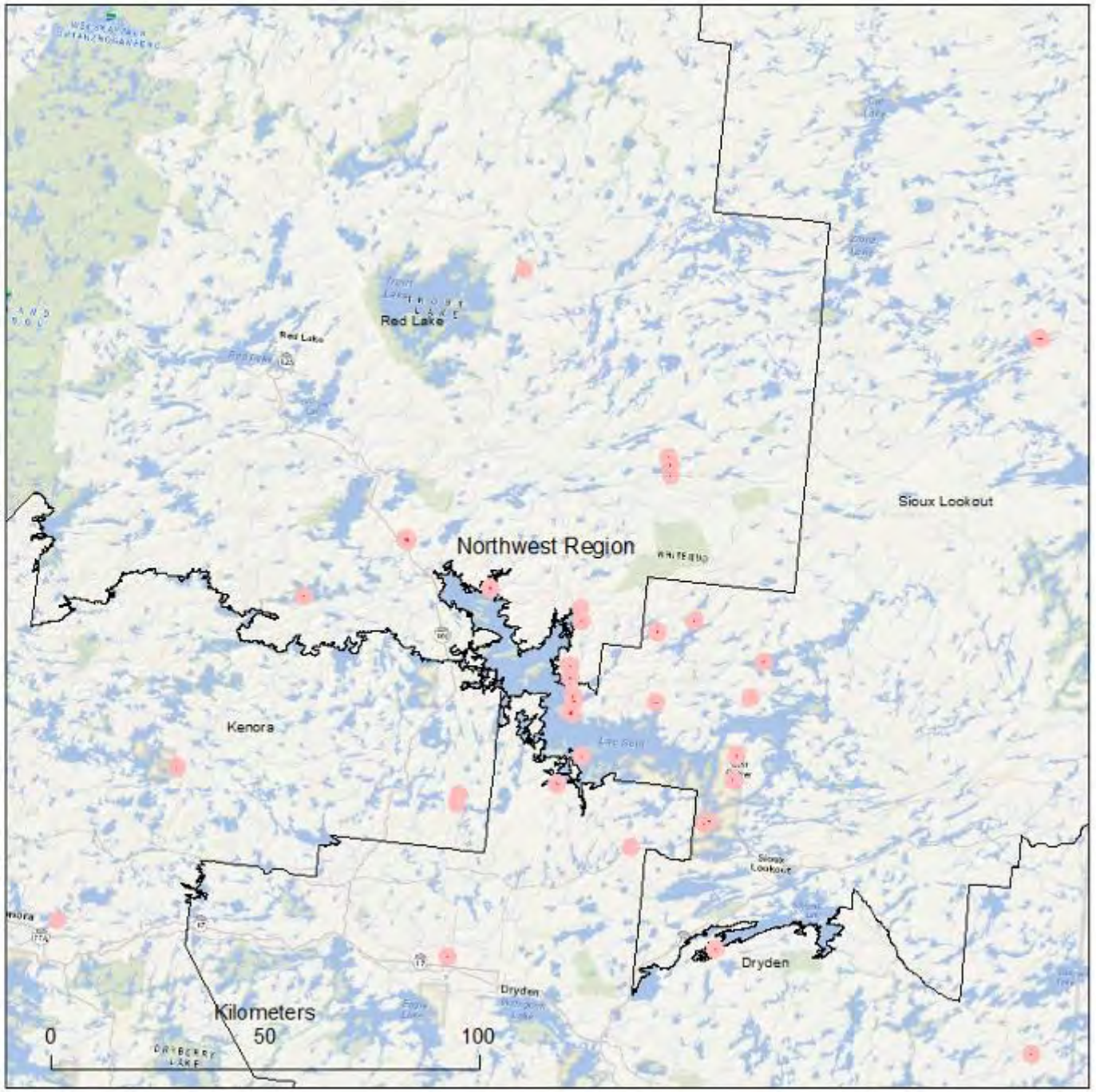
Area of moderate-to-severe defoliation

Septoria leaf spot 2017

Northwest Region
Areas-within-which septoria leaf spot caused defoliation

Moderate-to-severe = 472 ha

Area of moderate-to-severe defoliation



Septoria Leaf Spot 2017

Northeast Region
Areas-within-which septoria leaf spot caused defoliation

Moderate-to-severe = 1,572 ha

Area of moderate-to-severe defoliation

Spruce budworm

Pest information

Common name:	Spruce budworm
Scientific name:	*Choristoneura fumiferana* (Clem.)
Pest origin:	Native to North America
Pest type:	Defoliator
Host species:	White spruce, black spruce, balsam fir
Infestation area:	147,072 ha (2017)

Provincial key facts

- Spruce budworm outbreaks occur periodically when the primary host, balsam fir, reaches 40 years of age.
- Outbreaks can last several decades and can result in extensive mortality to balsam fir and spruce.
- Spruce budworm is one of the most damaging native insects affecting fir and spruce in Ontario.
- More moderate-to-severe defoliation was mapped in 2017 (147,072 ha) than in 2016 (116,023).
- Most of the defoliation was mapped in Northeast Region, with only a few hundred hectares of defoliation mapped in Southern Region. A total of 317 ha of tree mortality resulting from three consecutive years of moderate-to-severe spruce budworm defoliation were recorded in Northeast Region.

Regional summary

Northwest:

- In Red Lake District, defoliation was not mapped in 2017, but ground surveys revealed light defoliation on young open grown black spruce on the northern edge of Stormer Lake along Nungesser Road.

Northeast:

- Cochrane District had the greatest amount of defoliation with 53,967 ha of moderate-to-severe defoliation south and north of Smooth Rock Falls in the southwest corner of the district, with outlying populations west of the town of Cochrane along Hwy 11, and Greenwater Provincial Park.
- In Timmins District, 43,772 ha of moderate-to-severe defoliation were mapped in the northwest corner of the district. The defoliation was mapped northwest of the city of Timmins bordering the

Regional summary con't

Hearst, Cochrane, and Chapleau districts. A very small area of mortality was mapped at the north end of the district, north of Kamiskotia Lake. One ha of mortality was observed at the north end of Loveland Twp, south of Lower Footprint Lake.

- Hearst District had 22,168 ha of defoliation in the southeast corner and it expanded further north in 2017 than in 2016. The defoliation was south of Hwy 11 and was a continuation of the infestation in Cochrane, Timmins, and Chapleau districts.
- In Chapleau District, the area of moderate-to-severe defoliation decreased from 78,629 ha in 2016 to 22,429 ha in 2017. The largest area of moderate-to-severe defoliation occurred in the northeast corner of the district bordering the Timmins and Hearst districts. Smaller areas of defoliation were mapped north of Ivanhoe Lake Provincial Park, and around Rush Lake in the townships of Genoa, Marion, and Mallard. After three consecutive years of moderate-to-severe defoliation, tree mortality caused by spruce budworm in Chapleau District totalled 316 ha. The mortality was mapped in the northeast corner of the district along the western boundary of Ossin Twp, south of Paypeeshek Lake.
- The area defoliated in North Bay District decreased from 8,995 ha in 2016 to 4,058 ha in 2017. The largest areas of defoliation were mapped along Hwy 63 to the Quebec border, north and northeast of North Bay, and four small areas were mapped at the north end of Lake Timiskaming.
- In Kirkland Lake District, 132 ha of moderate-to-severe defoliation were mapped in the central and southeast parts of the district. In the central part of the district, a small area of defoliation was mapped south of the town of Kirkland Lake, on the west side of Hwy 11 near Round Lake (Marquis Twp). A larger, but still relatively small area was mapped in the southeast corner of the district, southeast of the town of Thornloe in Harley Twp along the North Bay District boundary.
- In Sault Ste. Marie District, defoliation was not mapped in 2017, but ground surveys revealed moderate defoliation on overmature white spruce in the north and east ends of the city of Sault Ste. Marie. On St. Joseph Island shrivelled up larvae and unspent larval cases were observed in balsam fir and spruce stands with trace defoliation.

Southern:

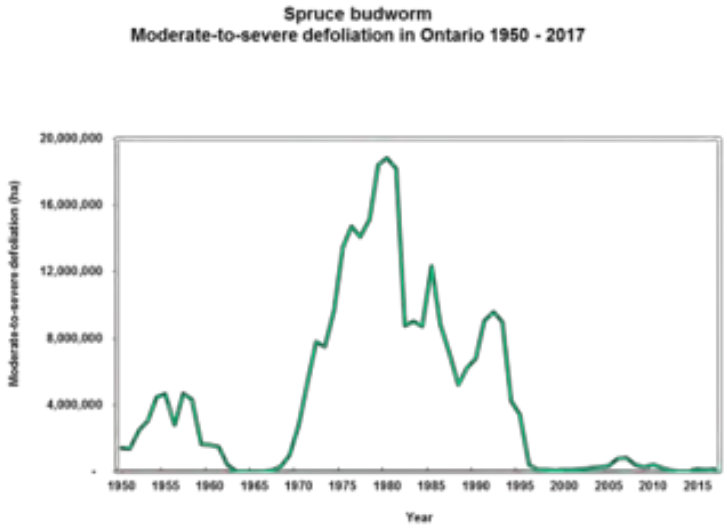
- In Peterborough District, 492 ha of moderate-to-severe defoliation were aerially mapped. The largest areas were north of Peterborough along the southeast end of Chemong Lake, and north of Kawartha Lakes in Balsam Lake Provincial Park and Indian Point Provincial Park. This is the second year moderate-to-severe defoliation was mapped in Balsam Lake Provincial Park. One small area of moderate-to-severe spruce budworm defoliation was mapped in the northern part of the district north of Marmora.
- In Bancroft District, three small areas totalling 55 ha of moderate-to-severe defoliation were aerially mapped northwest and northeast of Kawartha Highlands Provincial Park.
- In Kemptville District, defoliation was not mapped in 2017, but ground surveys revealed larvae on understory white spruce in the townships of Glouchester, Malborough, and Pakenham, all in the northern part of the district. No defoliation was observed.
- In Pembroke District, defoliation was not mapped in 2017, but larvae were found during ground surveys near Cobden in Ross Twp. No defoliation was observed.

Trend analysis/outlook/issues:

- In 2017, spruce budworm pheromone traps were deployed in 70 locations across the province. Overall moth catches were higher in 2017 than in 2016. Northeast Region traps averaged 179 moths per trap, while Northwest Region moth catches were low, averaging 2.4 moths per trap. In Southern Region, traps were deployed in 17 locations and average moth catches were 172.5 male moths per trap.

Total area (in hectares) in which spruce budworm caused moderate-to-severe defoliation from 2013 to 2017, by MNRF district.

Region	Area of defoliation (ha)				
District	**2013**	**2014**	**2015**	**2016**	**2017**
Northeast					
Chapleau	-	20,158	21,167	78,629	22,429
Cochrane	-	-	-	3,025	53,967
Hearst	-	9	1,134	15,761	22,168
Kirkland Lake	-	-	-	-	132
North Bay	173	9,240	119,184	8,995	4,058
Sault Ste. Marie	-	-	3,952	-	-
Sudbury	80	911	2,368	549	-
Timmins	-	-	736	8,918	43,772
Wawa	-	-	-	-	-
Sub total	254	30,317	148,542	115,877	146,525
Southern					
Algonquin Park	-	-	-	-	-
Aurora	-	-	-	-	-
Aylmer	-	-	-	-	-
Bancroft	-	-	-	-	55
Guelph	-	-	-	-	-
Kemptville	-	-	-	-	-
Midhurst	-	-	-	-	-
Parry Sound	-	-	-	-	-
Pembroke	-	-	-	-	-
Peterborough	-	-	-	146	492
Sub total	0	0	0	146	547
Provincial total	**254**	**30,317**	**148,542**	**116,023**	**147,072**

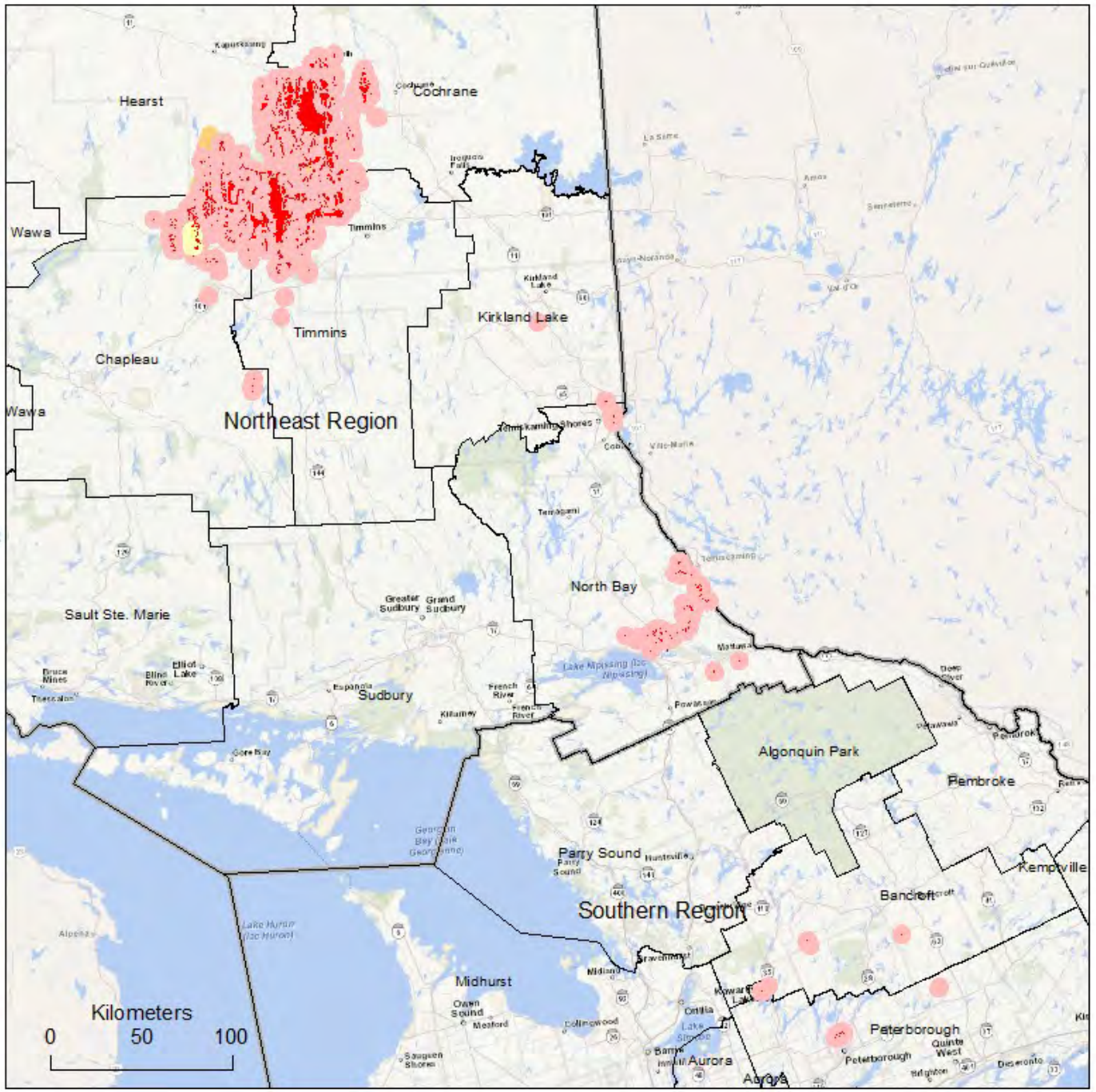


Spruce Budworm 2017

Ontario
Areas-within-which spruce budworm caused defoliation

Light =158 ha
Moderate-to-severe = 147,072 ha
Mortality = 317 ha

- Area of light defoliation
- Area of moderate-to-severe defoliation
- Area of mortality

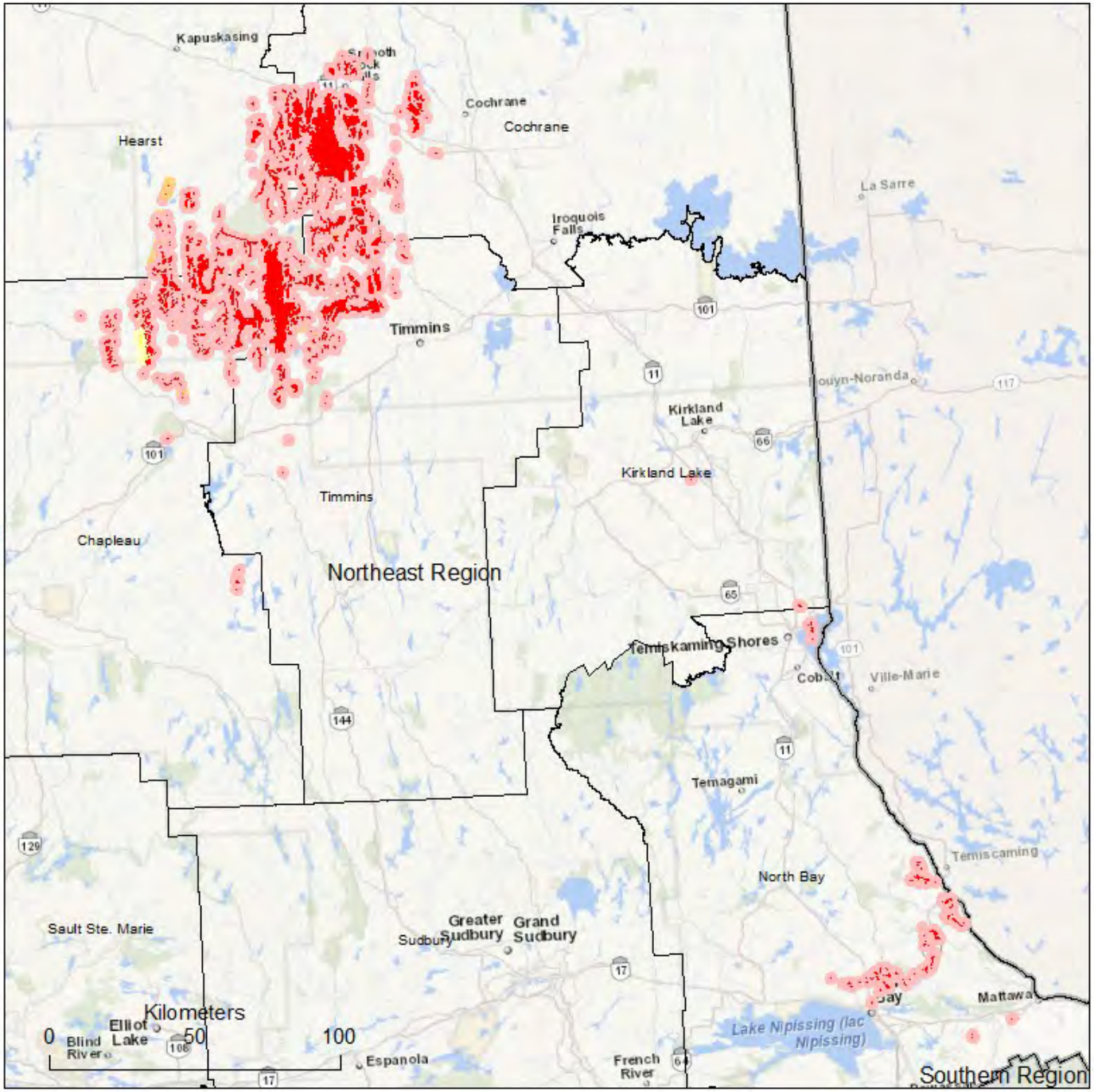


Spruce Budworm 2017

Northeast Region
Areas-within-which spruce budworm caused defoliation

Light =158 ha
Moderate-to-severe = 146,525 ha
Mortality = 317 ha

- Area of light defoliation
- Area of moderate-to-severe defoliation
- Area of mortality



Spruce Budworm 2017

Southern Region
Areas-within-which spruce budworm caused defoliation

Moderate-to-severe = 547 ha

Area of moderate-to-severe defoliation

Spruce budworm Pheromone Trapping Results 2017

Average Number of Moths per Trap

- < 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

Spruce needle rust

Pest information

Common name:	Spruce needle rust
Scientific name:	*Chrysomyxa ledicola* Lagerh.
Pest origin:	Native to North America
Pest type:	Needle rust
Host species:	Black spruce and white spruce
Infestation area:	697 ha (2017)

Provincial key facts

- This fungus causes current year needles to dry out, turn red, and drop off.
- It can be identified by the presence of white blisters with bright orange spores.
- Alternate hosts of spruce needle rust are Labrador tea and leather leaf.
- This rust is most common along bog edges where the alternate hosts reside.
- Normally spruce needle rust is not a serious problem, and more than two consecutive years of infection rarely occur.
- Consecutive years of severe infection can kill younger trees and reduce growth of older trees.
- In 2017, damage from spruce needle rust occurred in the Northeast and Northwest regions, but was aerially mapped only in Northeast Region.

Regional summary

Northwest:

- In Red Lake District, a moderate amount of damage was affecting understory black spruce north of the town of Red Lake. Infection levels were relatively low, with 5 to 20% of foliage affected.
- In Kenora District, minimal damage was observed on young, understory spruce, ranging from 5 to 10% of new growth affected by rust.
- In Sioux Lookout District, spruce needle rust was observed in mature jack pine stands on understory black spruce north of Pickle Lake and northeast of Sioux Lookout on Hwy 516.
- In Dryden District, needle rust was seen on understory young black and white spruce in jack pine stands north of the town of Dryden and east towards the town of Ignace.

Regional summary con't

Northeast:

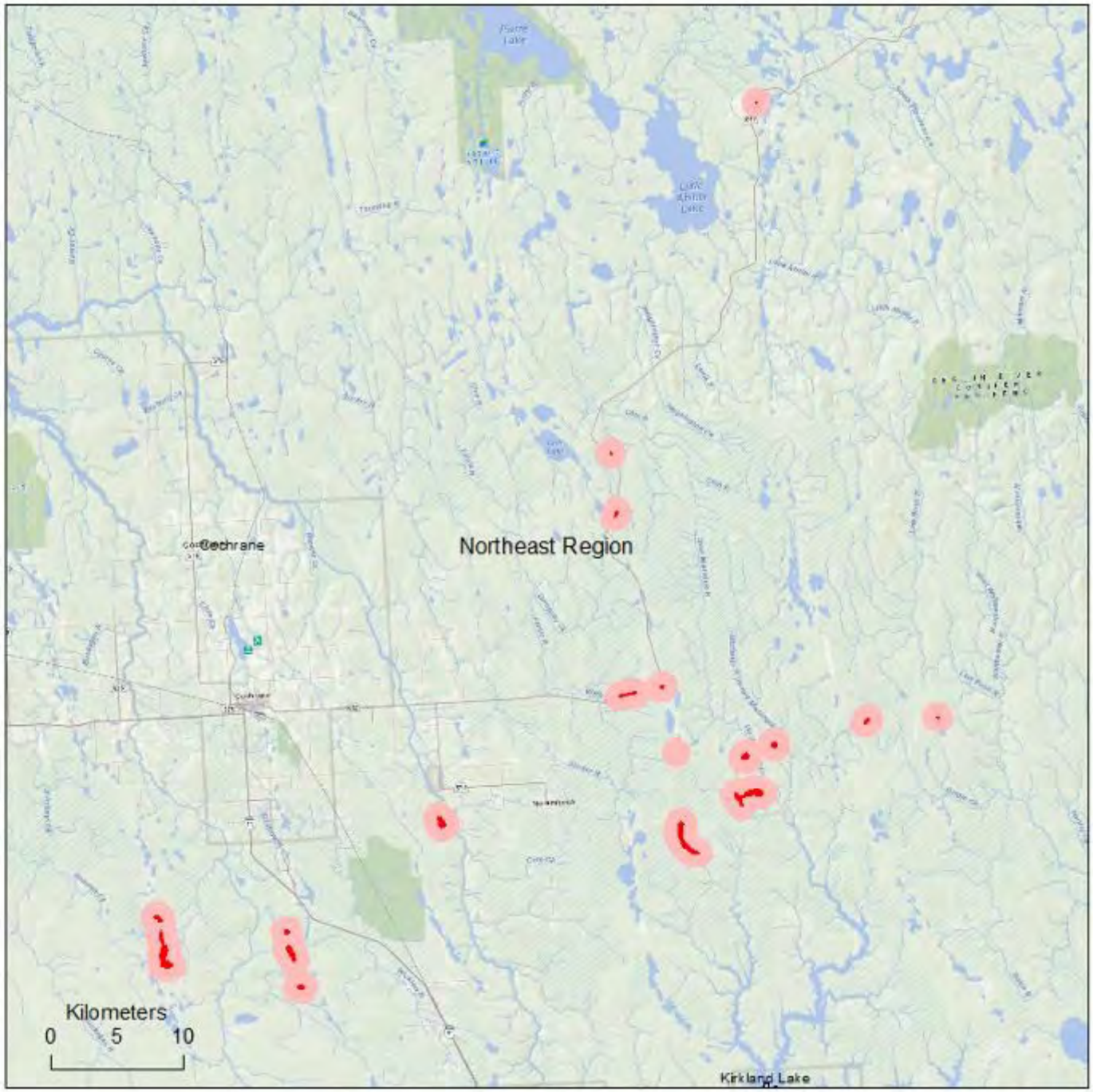
- In Cochrane District, 697 ha of damage were aerially mapped at the end of July south and east of the town of Cochrane. Damage was observed on co-dominant to dominant mature white spruce. East of the town of Cochrane, ground surveys revealed spruce needle rust along Hwy 652 and the Translimit Road and during aerial flights more was seen south of Hwy 652 near the southern corner of Hwy 574 and several areas around Wade and Maloney lakes (Sweatman and Mortimer townships). Spruce needle rust damage was also mapped south of Cochrane in Reaume, Hanna, and Mann townships. Ground checks in August exposed even more spruce needle rust along the northern portion of Hwy 655, along Hwy 11 between the town of Cochrane and Hwy 101, and east of Cochrane (area not aerially mapped). Spruce needle rust was observed in Polar Bear Provincial Park at the end of August and along the coast of Hudson Bay between Moosonee and Polar Bear Provincial Park at the end of September. Damage in these areas was not aerially mapped in 2017.
- In southern Timmins District, spruce needle rust was collected on white spruce in a treed swamp north of Shining Tree. Damage was light-to-moderate.
- In Chapleau District, spruce needle rust was found late in the season on white spruce along Hwy 101, just east of Shoals Provincial Park. Damage was light.
- In Wawa District, spruce needle rust was observed southwest of the town of Wawa along Hwy 17 by Magpie Road, Lendrum Twp, and north of Wawa from the intersection of Hwy 17 and Hwy 519 northwest on Hwy 17 to Hammer Lake. It was also collected through Obatanga Provincial Park and White Lake Provincial Park along the Hwy 17 corridor. Rust was found mainly on black spruce and sporadically on white spruce, but in all cases damage was light (<25%).

Spruce Needle Rust 2017

Northeast Region
Areas-within-which spruce needle rust caused defoliation

Moderate-to-severe = 697 ha

Area of moderate-to-severe defoliation



Whitespotted sawyer beetle

Pest information

Common name:	Whitespotted sawyer beetle
Scientific name:	*Monochamus s. scutellatus* Say
Pest origin:	Native to North America
Pest type:	Wood borer
Host species:	Jack pine, balsam fir, spruce spp.
Infestation area:	8,116 ha (2017)

Provincial key facts

- Whitespotted sawyer beetle is one of the most widely distributed and common wood borers in North America.
- This pest is mainly found on recently dead or dying trees.
- Larval tunnelling damage severely downgrades lumber value.
- Larger populations often occur near other forest disturbances, such as blowdown, drought, multiple years of defoliation, fire, and cutovers.
- This beetle is often confused with the invasive Asian long-horned beetle.
- In 2017, whitespotted sawyer beetle damage was aerially mapped in Northwest Region and small areas of damage were reported during ground surveys. This year, the mapped area of sawyer beetle damage decreased by almost 30,000 ha.

Regional summary

Northwest:

- In Northwest Region, most moderate-to-severe damage caused by whitespotted sawyer beetle was in Red Lake District (amounting to 7,862 ha). In 2012, a heavy snow event resulted in uprooted and downed trees. Ensuing snow damage, blowdown, and forest fires that occurred in the same general areas provided abundant food for the sawyer beetle. Damage in and around Woodland Caribou Provincial Park decreased to a a few small areas in the central part of the park near Larus and

Regional summary con't

Sabourin lakes. East of the park, significant areas of damage were mapped along the north shore of Trout Lake, east side of Gullrock Lake, and the north and east sides of Nungesser Lake. Small scattered areas of damage were also mapped on the north and west sides of Little Vermillion Lake and east of Pikangikum Lake, and north and south of Berens, Murfitt, and Silcox lakes. In the southern part of the district, small areas of damage were mapped from Sydney Lake north to Longlegged and Medicine Stone lakes.

- In the central part of Sioux Lookout District, two small areas of whitespotted sawyer beetle damage were mapped, totalling 264 ha. These areas were about 100 km north of the community of Pickle Lake, southeast of Mawley Lake between Pipestone River and Hwy 808.
- In Kenora District, severe damage from whitespotted sawyer beetle maturation feeding was observed on twigs and branches of spruce and jack pine in and around a forest harvest area north of Kenora on English River Road. About a 300 m buffer of damage was evident around the harvested area south of Forgotten Lake. Maturation feeding killed branches of scattered understory balsam fir at Sioux Narrows Provincial Park in the southern part of Kenora District. This small area was not aerially mapped.
- In the northern part of Fort Frances District, whitespotted sawyer beetle damage was recorded near a harvested area on Fish Hawk Road. Recently cut trees left on site were infested with sawyer beetle and maturation feeding was observed on residual standing jack pine as well as on jack pine along the entire perimeter of the cut block. This small area was not aerially mapped.

Total area (in hectares) in which whitespotted sawyer beetle caused moderate-to-severe damage from 2013 to 2017, by MNRF district.

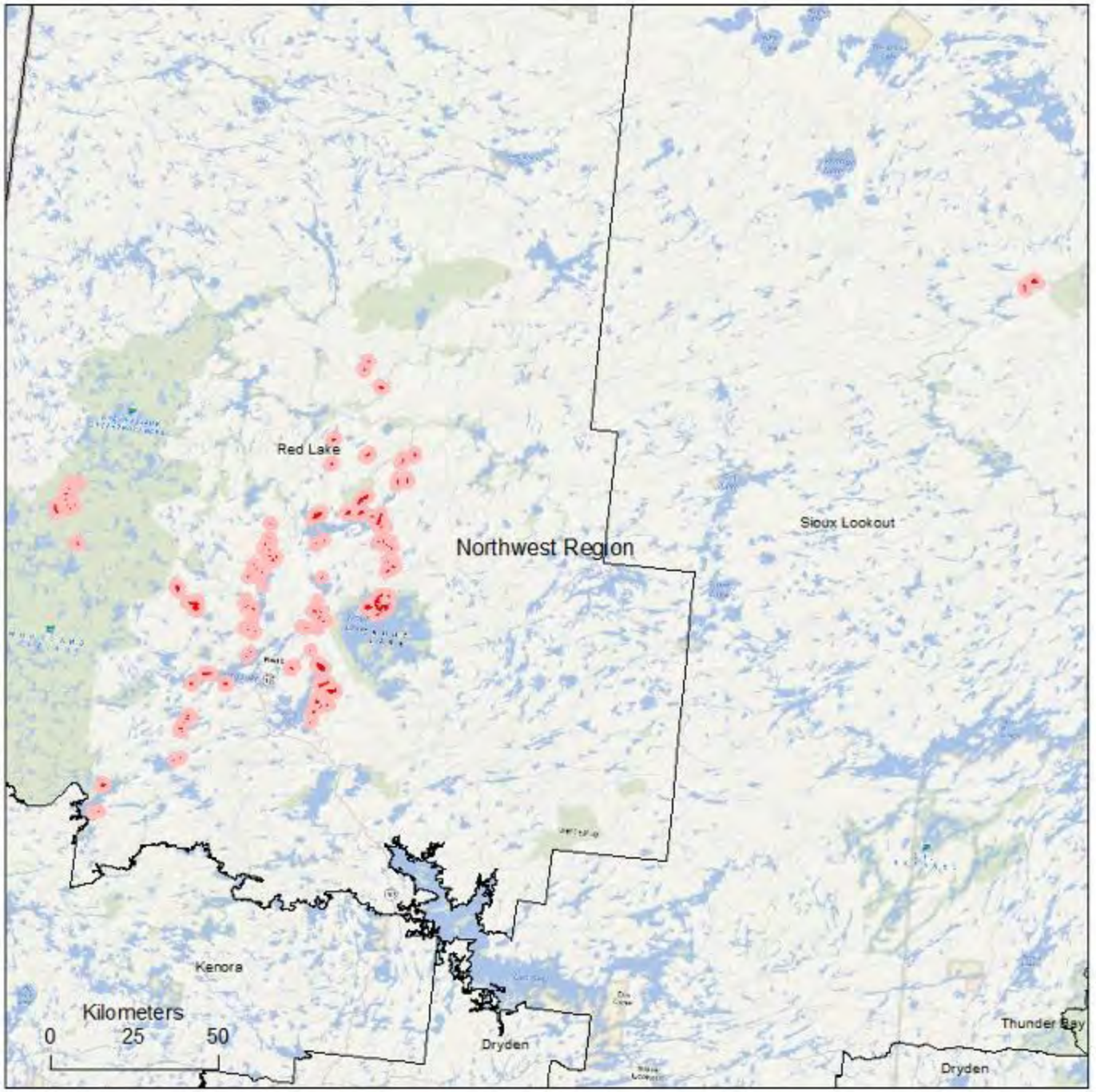
Region	Area of damage (ha)				
District	2013	2014	2015	2016	2017
Northeast					
Chapleau	-	-	-	-	-
Cochrane	-	-	-	-	-
Hearst	-	-	-	-	-
Kirkland Lake	-	-	-	-	-
North Bay	-	-	-	-	-
Sault Ste. Marie	-	-	-	-	-
Sudbury	-	-	-	-	-
Timmins	-	28	-	-	-
Wawa	-	-	-	-	-
Sub total	0	28	0	0	0
Northwest					
Dryden	-	-	34	-	-
Fort Frances	-	-	-	-	-
Kenora	-	-	-	1,650	-
Nipigon	-	-	-		-
Red Lake	-	-	892	39,047	7,862
Sioux Lookout	-	-	-	-	254
Thunder Bay	-	-	-	-	-
Sub total	0	0	926	40,697	8,116
Provincial total	**0**	**28**	**926**	**40,697**	**8,116**

Whitespotted Sawyer Beetle 2017

Northwest Region
Areas-within-which whitespotted sawyer beetle caused damage

Moderate-to-severe = 8,116 ha

Area of moderate-to-severe damage



American aspen beetle

Pest information

Common name:	American aspen beetle
Scientific name:	*Gonioctena americana* (Schaeff.)
Pest origin:	Native to North America
Pest type:	Defoliator
Host species:	Trembling aspen
Infestation area:	N/A

Provincial key facts

- Both larvae and beetles of this pest feed on aspen foliage.
- The larvae feed on the lower surface of the leaves initially skeletonizing them and eventually consuming the entire leaf.
- Adult beetles feed on leaves in spring and later in season before overwintering in the duff.
- Small numbers of American aspen beetles are found annually, but periodically they are abundant, especially on pole-sized aspen.
- In 2017, low numbers of American aspen beetle were found in Northeast Region.

Regional summary

Northeast:

- On the southeast side of Chapleau District, American aspen beetle larvae were collected on young trembling aspen trees along the Opee Road corridor, Osway Twp. Defoliation was light, averaging 15% defoliation. South of Sultan Industrial Road, American aspen beetle was also found on young aspen along the Hong Kong Road corridor in Fawn Twp, where 80% of the aspen were moderately defoliated.

Anthracnose

Pest information

Common name:	Anthracnose of oak, ash, maple, sycamore, and American beech
Scientific name:	*Anthracnose* spp.*, Discula campestris, Apiognomonia veneta, Aurebasidium appocrytum, Discula umbrinella*
Pest origin:	Native to North America
Pest type:	Foliar disease
Host species:	American sycamore, ash, maple, oak, and beech
Infestation area:	N/A

Provincial key facts

- Antracnose is normally not a serious problem, but the resulting early leaf drop can be a nuisance for homeowners.
- Removal and destruction of fallen leaves can limit re-infection the following spring.
- Infection may weaken tree and predispose it to other disturbance agents.
- In 2017, various forms of the disease were found in Northwest and Southern regions.

Regional summary

Northwest:

- In spring 2017, large amounts of precipitation in the Northwest Region created ideal conditions for the spread of anthracnose.
- In the southern portion of Kenora District, semi-mature ash trees were infected with ash anthracnose. Light-to-moderate damage was recorded in the town of Nestor Falls as well as in Sioux Narrows Provincial Park.
- In Sioux Lookout District, ash anthracnose was collected on semi-mature open grown green ash at a private residence in Sioux Lookout. More than half of the ash leaves were affected with damage on 20 to 40% of each leaf.

Regional summary con't

Southern:

- In Guelph District, moderate-to-severe damage was observed on 10 mature, open-grown sycamore trees at the Royal Botanical Gardens Arboretum in Hamilton. Throughout infected tree crowns small cankers were noted along branches and twigs. The disease was also evident on the foliage of six mature silver maple trees at the Shakespeare Conservation Area between Stratford and New Hamburg.
- On the west side of Aylmer District, anthracnose was collected on branches and leaves of several open-grown Norway maple trees at AW Campbell Conservation Area in the Municipality of Brooke-Alvinston. In the south central part of Aylmer District, beech anthracnose caused leaf spots and twig dieback on overmature American beech trees at Southwold Earthworks National Historic Site, south of the community of Iona in Southward Twp.
- In Kemptville District, moderate levels of anthracnose were seen on scattered individual maple trees in the communities of Bishop Mills and Carleton Place.
- In Midhurst District, 70% of foliage was affected on a larger silver maple in the community of Massie in Chatsworth Twp. In the southern part of Bruce Peninsula, light levels of anthracnose on maple were observed southeast of Wiarton at Francis Lake.

Armillaria root rot

Pest information

Common name:	Armillaria root rot
Scientific name:	*Armillaria* spp.
Pest origin:	Native to North America
Pest type:	Root rot
Host species:	Various coniferous and deciduous species
Infestation area:	N/A

Provincial key facts

- Found throughout North America, armillaria root rot is a serious fungal disease that causes tree mortality and contributes to significant wood volume losses in both hardwood and softwood stands.
- This fungus is present in the soil and affects trees that are stressed by other biotic and abiotic factors. Trees can be infected for many years before they succumb to the disease.
- In forest stands, individual trees or groups of trees in a circular pattern decline and die. New trees are infected when they root graft with diseased trees or when “shoestring-like” filaments produced by the fungus reach nearby hosts.
- In 2017, armillaria root rot was reported in the Northwest and Southern regions, occurring solely on softwoods.

Regional summary

Northwest:

- In Thunder Bay District, armillaria root rot was found in a stand at a ministry plantation trial property in the community of Rosslyn. Evidence of root rot was observed on several dead and declining red pine saplings and mature jack pine.
- In Fort Frances District, several larch trees were affected by armillaria root rot in Spruce Islands Provincial Nature Reserve on Hwy 619. These trees were already under attack by eastern larch beetle.
- In Kenora District, armillaria was observed and collected on jack pine near Sioux Narrows.

Regional summary con't

Southern:

- In Peterborough District, armillaria root rot was observed in one location, just north of Peterborough. Armillaria was found in the north end of Smith Twp along Youngs Point Road on the west side of Katchewanooka Lake, where a group of 10 to 20 red pine trees were in decline.
- In Bancroft District, armillaria root rot was recorded in a mature hemlock stand in Effingham Twp north of Bon Echo Provincial Park. Drought-like conditions in the fall of 2016 may have contributed to this decline.
- In Midhurst District, armillaria root rot was recorded near the town of Mansfield, southwest of Barrie. In a small stand near a tree farm, semi-mature balsam fir were in decline.

Aspen leafblotch miner

Pest information

Common name:	Aspen leafblotch miner
Scientific name:	*Phyllonorycter ontario* (Free.)
Pest origin:	Native to North America
Pest type:	Defoliator
Host species:	Trembling aspen, largetooth aspen
Infestation area:	N/A

Provincial key facts

- Aspen leafblotch miner is the most common leafminer in Ontario.
- It prefers young trembling aspen and largetooth aspen.
- Larvae form blotch mines between the upper and lower surface of leaves to feed and pupate.
- Blotches are not always visible from the top of the leaf when larvae first develop.
- Tree mortality is rare, but repeated infestations could reduce tree health and growth rate.
- In 2017, only reported in Northeast Region.

Regional summary

Northeast:

- In Kirkland Lake District, aspen leafblotch miner was observed causing moderate-to-severe defoliation on all ages of trembling aspen along Hwy 11 just north of Sesekinika and along Hwy 66 between Hwy 65 and Hwy 11.
- In the northeastern and central portions of Timmins District, between August and September light-to-moderate defoliation was commonly observed on trembling aspen. A collection was made south of the community of Timmins in a mixedwood stand in Doyle Twp on a secondary road on the east side of Hwy 144 near Kenogamissi Lake. Overall defoliation ranged from 5 to 35% on saplings to semi-mature aspen.

Aspen webworm

Pest information

Common name:	Aspen webworm
Scientific name:	*Pococera* (= Tetralopha) *aplastella* (Hlst.)
Pest origin:	Native
Pest type:	Defoliator
Host species:	Trembling aspen
Infestation area:	N/A

Provincial key facts

- This insect occurs across southeastern Canada, but is most prevalent in the central regions.
- Aspen webworm feeds on a variety of hardwoods.
- Infestations of aspen webworm are heaviest in open and exposed parts of stands.
- In the past, populations of this pest have been observed in conjunction with forest tent caterpillar infestations.
- Aspen webworm was reported in Northeast Region in 2017.

Regional summary

Northeast:

- In Wawa District, aspen webworm was seen in areas with large aspen tortrix. One such area was east of Lake Superior Provincial Park on Crossover Road south of Hwy 101 in Tabobondung Twp. Aspen webworm defoliation was minimal relative to that of large aspen tortrix.
- Aspen webworm was also collected in Timmins District. One location was east of the city of Timmins, in Kettle Lakes Provincial Park, where light defoliation was seen on understory trembling aspen in late summer. Another collection was made along a forest road north of Grassy Lake Road (Kemp Twp) during ground truthing for large aspen tortrix.

Basswood leafminer

Pest information

Common name:	Basswood leafminer
Scientific name:	*Baliosus nervosus* (Panz.)
Pest origin:	Native to North America
Pest type:	Defoliator
Host species:	Basswood
Infestation area:	N/A

Provincial key facts

- Basswood leafminer is known to attack all *Tilia* species, with basswood the primary host, and this insect can be found throughout the native range of basswood in Ontario.
- Consecutive years of moderate-to-severe defoliation may cause branch dieback and decrease tree vigour.
- Heaviest feeding occurs on understory trees and low in the crowns of larger trees.
- For the second consecutive year, moderate-to-severe basswood leafminer defoliation was recorded in Southern Region in Aylmer and Midhurst districts.

Regional summary

Southern:

- In the southwest portion of Aylmer District, moderate-to-severe defoliation of basswood was reported in areas around the Thames River where the western borders of Elgin and Middlesex counties meet the eastern boundaries of Chatham-Kent and Lambton counties. Severe defoliation of basswood was observed in wooded areas south of the Thames River along Gibb Line, north of the community of Clachan in Elgin County. In the south central portion of the district, moderate-to-severe defoliation was also reported along Hwy 401 at Furnival Road and northeastward along main trails at EM Warwick Conservation Area located near Wallacetown, both in Elgin County. In the central part of the district, moderate-to-severe defoliation was recorded in wooded areas surrounding Alvinston in Lambton County and Glencoe in Middlesex County.
- In Midhurst District, severe defoliation (70%) of understory basswood was observed at Angus Seed Plant and light defoliation (10%) of young, fringe basswood was noted at Geneva Park, Ramara Twp in Simcoe County.

Beech leaf disease

Pest information

Common name:	Beech leaf disease
Scientific name:	N/A
Pest origin:	N/A
Pest type:	N/A
Host species:	American beech
Infestation area:	N/A

Provincial key facts

- Symptoms similar to a condition that United States researchers are calling beech leaf disease were observed in areas of Aylmer District.
- Beech leaf disease was first identified in Lake County, Ohio, in 2012 and now extends into other areas of Ohio, northwestern Pennsylvania, and southwestern New York.
- To date, no causal agent has been identified.
- Symptoms include striping or banding caused by the thickening of leaf tissue between veins. As the growing season progresses, foliage of affected trees become thin, shrivelled and discoloured.
- Symptomatic trees are host to other foliage-affecting insects and pathogens including erineum patches caused by eriophyid mites, *Acalitus fagerinea*, beech blight aphids, *Grylloprociphilus imbricator*, and foliar fungi such as anthracnose, *Discula umbrinella*, and powdery mildew.
- Several areas in Aylmer District in Southern Region were sampled for this condition.

Regional summary

Southern:

- Symptoms similar to beech leaf disease are affecting American beech trees in Aylmer District, Southern Region. Affected trees were in Elgin County in ravines and woodlots along the north shore of Lake Erie near Iona in Southwold Twp eastward to Vienna and Port Burwell in Bayham Twp. The condition does not seem to be influenced by age class, canopy class, slope, or soil conditions. In areas where beech leaves were sampled, all trees were affected with damage ranging from 10 to 70%. Most samples had anthracnose of beech (*Discula umbrinella*) or a strain of powdery mildew (*Erysiphe sp.*).

Trend analysis/outlook/issues:

- Forest Health Program staff will continue to monitor this condition, and work with laboratory diagnosticians and researchers at Ohio State University to identify a causal agent.
- For more information: http://forestry.ohiodnr.gov/portals/forestry/pdfs/BLDAlert.pdf

Beech scale

Pest information

Common name:	Beech scale
Scientific name:	*Cryptococcus fagisuga* Linding.
Pest origin:	**Invasive** – native to Europe
Pest type:	Sucking insect
Host species:	American beech
Infestation area:	N/A

Provincial key facts

- Beech scale was first found in Canada in the 1890s in Halifax, Nova Scotia.
- In Ontario it was first found in 1966 in Elgin County along the north shore of Lake Erie.
- Infestation with scale predisposes beech trees to beech bark disease, which significantly reduces beech tree vigour and can kill them.
- In 2017, beech scale was collected in Northeast and Southern regions.

Regional summary

Northeast:

- Two beech scale collections were made in the southern part of North Bay District. Low levels of beech scale were seen north of Farley's Corners on Hwy 522 southeast of Restoule Lake, Pringle Twp. A collection of beech scale was made in the southeast corner of the district close to the Pembroke District boundary in Cameron Twp on Twin Ponds Road. Both of these are new locations for beech scale in North Bay District. Beech bark disease was not found at either of these locations.

Southern:

- Beech scale collections were made in four locations in Aylmer District, all on the eastern side of the district. Trace-to-light levels of beech scale were collected in John E. Pearce Provincial Park near Wallacetown, Elgin County, the most southwestern detection of beech scale to date in Aylmer District. Very low levels of beech scale were observed on the northwest side of Middlesex County

Regional summary con't

north of the community of Arkona on the east side of Ausable River. East of this location, another beech scale collection was made west of the community of Lucan in Lucan Conservation area on Prince William Street, also in Middlesex County. Moderate-to-high levels of scale were recorded on mature American beech, but no beech bark disease was recorded. In Oxford County, low levels of beech scale were collected south of Ingersoll along McBeth Road, Dereham Twp, and no beech bark disease was observed.

- In the southeast part of Guelph District, beech scale was collected south of St. Catharines on the southeast side of Short Hills Provincial Park. Beech scale levels were moderate-to-high in the park, with no sign of beech bark disease.
- In Parry Sound District, three collections of beech scale were taken, two in the northern part of the district, the other in the southern part, near the Midhurst District boundary. In the north, trace levels of scale were seen north of Pointe au Baril on Harris Lake Road, Wallbridge Twp, as well as in the southeast corner of Burton Twp southeast of Clear Lake. In the southern part of the district, trace levels of scale were also observed in the northern part of Baxter Twp, north of Six Mile Lake on Hungry Bay Road. This is the first time beech scale was collected in these areas and no associated beech bark disease was observed.

Black knot of cherry

Pest information

Common name:	Black knot of cherry
Scientific name:	*Apiosporina morbosa* (Schwein.)
Pest origin:	Native to North America
Pest type:	Fungal disease
Host species:	Pin cherry, black cherry, choke cherry, and serviceberry
Infestation area:	N/A

Provincial key facts

- Black knot is a common disease of members of the *Prunus* family.
- It is always present on the landscape at varying levels.
- It causes reduced growth and fruiting ability.
- When infection levels are severe, it can cause branch mortality.
- Cracks created by black knot of cherry can allow entry of secondary fungi.
- In 2017, black knot of cherry was recorded in two regions but was most prevalent in Northeast Region.

Regional summary

Northeast:

- Wet conditions in spring spread this disease to young and semi-mature pin cherry along forest roads in Wawa and Chapleau districts.
- On the southeast side of Chapleau District, young understory pin cherry trees along Dore Road, on the northeast side of Fawn Twp, east of Wakami Lake Provincial Park, were infected with black knot. Approximately 35% of the trees were infected to various degrees.
- In southern Wawa District, 80% of young-to-semi-mature pin cherry trees were infected with black knot along Sand Road, east of Anjigami Lake, in Nebonaionquet Twp. In the northern part of the district, symptomatic black masses were also seen on young pin cherry on forest roads at the south end of Lessard Twp, west of Hornepayne.

Regional summary con't

- Black knot was found in a few areas in Kirkland Lake District. One area was in a one kilometre stretch along a forest road off Hwy 66, near King Kirkwood, where semi mature pin cherry were affected. Trees had many fruiting bodies on main stems, leading to broken branches. Other areas included two white pine plantations east of Englehart, one in Evanturel Twp, the other in Ingram Twp. In both cases young pin cherry trees on the outer edges of the white pine plantations had moderate black knot infection levels.
- Moderate levels of black knot were observed in the southern part of North Bay District between Restoule and Powassan in 2017. Along McQuay Lake Road, black knot was found on some young pin cherry, covering less than 50% of the branches.
- Black knot was also seen in the southwest portion of Sudbury District, south of the community of Walden near Beaver Lake. Damage was relatively low on roadside pin cherry along Flowers Road south of Hwy 17.

Southern:

- In a KOA campground in Bracebridge, Parry Sound District, almost every branch of fringe chokecherry was affected by black knot.
- On the eastern side of Bancroft District, black knot was collected northeast of the community of Fort Stewart. Along a one kilometre stretch of road, young pin cherry in a swampy area were infected with black knot.

Bronze birch borer

Pest information

Common name:	Bronze birch borer
Scientific name:	*Agrilus anxius* Gory
Pest origin:	Native to North America
Pest type:	Wood borer
Host species:	White birch
Infestation area:	N/A

Provincial key facts

- Bronze birch borer is a native wood borer that feeds on birch and can be found throughout the natural range of birch.
- This insect targets stressed trees that have been weakened by natural stressors such as poor site conditions and drought.
- The adult beetle can be confused with the destructive invasive emerald ash borer beetle.
- After two to three years of repeated attack, trees may dies as a result of this pest.
- In 2017, damage was reported in two districts in the Northwest Region.

Regional summary

Northwest:

- Bronze birch borer damage was observed in the northern portion of Sioux Lookout District in 2017. Moderate-to-severe levels of damage were observed on roadside semi-mature white birch for a 40 km stretch, along the northern section of Hwy 808. Trees displayed various signs of damage including larval galleries, exit holes, wood pecker feeding, and crown dieback and mortality.
- In Thunder Bay District, damage was observed on several semi-mature white birch along 25th Sideroad in Rosslyn. Various signs of decline such as feeding galleries, exit holes, and top dieback were observed. During an extension call to a residential area on the south side of Thunder Bay, three semi-mature white birch were observed with low-to-moderate damage.

Cedar apple rust

Pest information

Common name:	Cedar apple rust
Scientific name:	*Gymnosporangium juniper-virginianae Schwein.*
Pest origin:	Native to North America
Pest type:	Foliar rust
Host species:	Eastern redcedar, apple spp.
Infestation area:	N/A

Provincial key facts

- The causal pathogen of this disease requires a second host, apple, to complete its two-year lifecycle.
- Symptoms look completely different on each host; on apple it appears as lesions on the leaves and on cedar it forms as a gall on the foliage.
- As with other foliar fungal diseases, cedar apple rust is often more prevalent in years with a wet spring.
- In 2017, localized infections of this rust were observed in Southern Region.

Regional summary

Southern:

- In 2017, cedar apple rust was reported on scattered, open-grown young eastern redcedar in small areas in Aylmer District, particularly in the central and western part of the district. Observations of fruiting bodies were made along Lakeshore Road (County Road 7) in the municipality of Lambton Shores, Lambton County; along Hwy 3 near New Sarum in the municipality of Central Elgin, Elgin County; along Hwy 3 across the southern end of Chatham-Kent County, and in areas around Wardsville in the southwestern portion of Middlesex County.
- In Midhurst District, cedar apple rust caused 90% foliar damage of several open-grown apple trees located east of Duncan Escarpment Provincial Park along Side Road 9 in The Blue Mountains, Grey County. Several severely infected eastern redcedar at this site had approximately 100 fruiting bodies per tree. A collection of cedar apple rust was also made on an open-grown eastern redcedar with approximately 20 fruiting bodies. This tree was located along Leonard Road in Bradford, West Gwillimbury, Simcoe County. In addition, several open-grown eastern redcedar near Port Elgin and MacGregor Point Provincial Park in Saugeen Shores, Bruce County were moderately infected by cedar apple rust.

Darkheaded aspen leafroller

Pest information

Common name:	Darkheaded aspen leafroller
Scientific name:	*Anacampsis innocuella* (Zell.)
Pest origin:	Native to North America
Pest type:	Defoliator
Host species:	Trembling aspen, largetooth aspen
Infestation area:	N/A

Provincial key facts

- A native pest often found feeding on aspen alongside other species of leafrollers and tiers.
- Historically this pest has not caused extensive defoliation but is often abundant in North America.
- The darkheaded aspen leafroller is one of three common native leafrollers referred to as early aspen leafroller complex.
- Before 2015, the darkheaded aspen leafroller was last documented in 2006 to 2008 as part of an early aspen leafroller complex that defoliated trees in scattered patches in Northwest Region.
- In 2017, this pest was only reported in the Northeast Region and was often found feeding alongside forest tent caterpillar.

Regional summary

Northeast:

- In North Bay District, darkheaded aspen leafroller was observed causing low levels of defoliation on young trembling and largetooth aspen along roadsides. Defoliation was more prevalent in the southeast part of the district.
- In the north central part of Kirkland Lake District, low levels of defoliation were observed on young trembling aspen at the outer edge of stands and leafrollers were collected along Hwy 11 between Swan Lake and the north end of Sesekinika Lake in Maisonville Twp.

Dooks needle blight

Pest information

Common name:	Dooks needle blight
Scientific name:	*Lophophacidium dooksii* Corlett & Shoemaker
Pest origin:	Native to North America
Pest type:	Needle blight
Host species:	Eastern white pine
Infestation area:	N/A

Provincial key facts

- The first report of Dooks needle blight in Ontario was from a collection in 1979 near M^{c}Creight's Dam, north of Thessalon, Sault Ste. Marie District.
- Since then, reports of this disease have been periodic, with the last major event in 2009 causing widespread browning of eastern white pine in Ontario, Quebec, and New Brunswick.
- Consecutive years of infection may weaken or stress the tree and increase its susceptibility to secondary pests and disease.
- In 2017, low levels of dooks needle blight were recorded only in Northwest Region.

Regional summary

Northwest:

- Dooks needle blight was observed in a few small areas in Kenora District. The disease occurred on mature eastern white pine southwest and southeast of the town of Kenora. Damage was concentrated in the lower part of affected trees, with up to 30% of new foliage damaged, but overall damage was light (<25%).

Dutch elm disease

Pest information

Common name:	Dutch elm disease
Scientific name:	*Ophiostoma ulmi* (Buisman) Melin & Nannf.
Pest origin:	**Invasive** – native to Asia
Pest type:	Vascular disease
Host species:	White elm
Infestation area:	N/A

Provincial key facts

- First introduced to North America in the early 1930s, the disease quickly spread across eastern North America and made its way into Ontario in the mid 1940s.
- Dutch elm disease can now be found throughout the natural range of elm in Ontario.
- The main vectors of Dutch elm disease are the European elm bark beetle and the native elm bark beetle but it can also spread via root grafts.
- In 2017 symptoms were more noticeable than in the past several years, possibly because drought-like conditions in 2016 increased tree stress and predisposed elm to more bark beetle activity and, subsequently, increased spread of the pathogen.

Regional summary

Northeast:

- In North Bay District, brownish wilting and curling, referred to as flagging, of white elm leaves was seen on most mature white elm in the city of North Bay and in West Nipissing. High levels of infection were also observed along the Veuve River between the towns of Warren (Sudbury District) and Vernor on the west side of North Bay District.
- In the central area of Kirkland Lake District, flagging of white elm along riverbanks and open fields was observed on concession roads just northwest of New Liskeard (Temiskaming Shores).

Regional summary con't

Southern:

- Dutch elm disease was observed across southwestern Ontario and was more prevalent in rural areas along roadsides where elm were young and open-grown.
- In Guelph District, young, open-grown white elm and trees along the edges of woodlots were showing Dutch elm disease symptoms in Niagara Region around Fenwick, the town of Pelham, and along the Niagara Escarpment from Grimsby to Beamsville. Semi-mature white elm on the edge of woodlots around Port Maitland, Haldimand County, also showed signs of this invasive disease.
- In Aylmer District, young and semi-mature open-grown white elm, as well as elm along the edge of woodlots had Dutch elm disease along Hwy 401 between London and Dutton, Elgin County, and along Hwy 402 between Mandaumin Road (Lambton County Road 26) and Wellington Road in the city of London.
- In Midhurst District, the first symptoms appeared as flagging in mid-June and by early July leaves were brown and wilted. A specimen was collected in the municipality of Meaford where 50% of elm trees were affected by this disease. Each tree had at least one branch or several branches that were wilted or dead. Many mature trees were dead. Younger trees (<30 years) were less affected.

Early birch leaf edgeminer

Pest information

Common name:	Early birch leaf edgeminer
Scientific name:	*Fenusella nana (*Klug)
Pest origin:	**Invasive** - native to Europe
Pest type:	Defoliator
Host species:	White birch
Infestation area:	N/A

Provincial key facts

- This species has been found in Ontario since 1967, mainly along the north shore of Lake Ontario.
- It overwinters as a cocoon and emerges in May to mid-June as a small black sawfly.
- This pest has been monitored since its introduction to Ontario, but has not caused much defoliation in the past, affecting some areas across southern Ontario and a few small areas in northeastern and northwestern Ontario.
- In 2017, light defoliation was recorded in Northeast Region.

Regional summary

Northeast:

- On the west side of Chapleau District, light defoliation was observed on mature and semi-mature white birch trees at the entrance of Shoals Provincial Park. Early birch leaf edgeminer defoliation was recorded on 30% of the white birch in this area.

Eastern blackheaded budworm

Pest information

Common name:	Eastern blackheaded budworm
Scientific name:	*Acleris variana* Fern.
Pest origin:	Native to North America
Pest type:	Defoliator
Host species:	Black and white spruce
Infestation area:	N/A

Provincial key facts

- The eastern blackheaded budworm is often confused with spruce budworm.
- Its preferred host is balsam fir but it is also found on spruce and hemlock.
- Outbreaks have occurred in Newfoundland and Labrador, Quebec, and Maritime provinces but not in Ontario.
- Localized populations occur in Ontario with little damage.
- It was found in the Northwest Region in 2017.

Regional summary

Northwest:

- In Red Lake District, trace eastern blackheaded budworm defoliation was observed in mid-June on understory black spruce in a jack pine stand, east of Ear Falls. Light feeding had just begun as bud caps were still intact. In mid-August, trace-to-light eastern blackheaded budworm defoliation was recorded along Nungesser Road, north of Red Lake, on understory white spruce for the second consecutive year. The defoliation was concentrated to the new growth on a few understory spruce trees. Overall, defoliation by eastern blackheaded budworm was lower in 2017 than 2016.

Eastern tent caterpillar

Pest information

Common name:	Eastern tent caterpillar
Scientific name:	*Malacosoma americanum* (F.)
Pest origin:	Native to North America
Pest type:	Defoliator
Host species:	Cherry spp., apple, alder
Infestation area:	N/A

Provincial key facts

- Eastern tent caterpillar populations fluctuate year to year.
- The larvae usually defoliate roadside cherry and apple trees and occasionally mature black cherry.
- It is not considered a major pest, though nests can be unsightly.
- It causes little permanent damage to the host tree.
- In 2017, eastern tent caterpillar defoliation was recorded in Southern Region at endemic levels.

Regional summary

Southern:

- Minor defoliation by eastern tent caterpillar occurred throughout Midhurst District on road-side choke and black cherry regeneration. In Simcoe County, west of Everett, large ornamental fence row crab apple trees were severely defoliated.
- In Pembroke District, populations were fairly uniform throughout most of the district, but severe defoliation occurred on young cherry along Scenic Road, south of Round Lake in Renfrew County.
- In Kemptville District, eastern tent caterpillar nests were observed on roadside cherry and apple shrubs in early June.
- In Peterborough District, eastern tent caterpillar defoliation was observed near Madoc in Hastings County.

Fall webworm

Pest information

Common name:	Fall webworm
Scientific name:	*Hyphantria cunea* (Drury)
Pest origin:	Native to North America
Pest type:	Defoliator
Host species:	Variety of deciduous trees and shrubs
Infestation area:	N/A

Provincial key facts

- Fall webworm is one of the few native North American insects accidently introduced into Europe and Asia.
- Its effect on tree health is usually limited because defoliation occurs late in the growing season but persistent infestation can cause branch and crown dieback.
- In Canada only one generation of fall webworm will occur per year, compared to two in warmer climates.
- High populations of this pest often last only two to three years, making associated tree mortality unlikely.
- In 2017, fall webworm was reported in all three regions in Ontario, but with less defoliation than in previous years.

Regional summary

Northwest:

- Fall webworm was detected in Dryden, Sioux Lookout, and Red Lake districts.
- Populations in Red Lake District remained low with affected trees having only one to two nests per tree. In the southern part of the district, low levels of this defoliator were encountered on mature trembling aspen west of Ear Falls along Hwy 804.
- In Sioux Lookout District, fall webworm mostly occurred on pin cherry, with an average of three or less nests per tree along Hwy 516 north of the town of Sioux Lookout.

Regional summary con't

- In Dryden District, fall webworm was detected in several areas. One such detection occurred on Hwy 599 from Sandbar Provincial Park north to Hwy 642 near the community of Silver Dollar. Another area of fall webworm was recorded 60 km northeast of Dryden on Basket Lake Road, where defoliation was very light. In the northern part of the district, fall webworm damage was observed on speckled alder on Thaddeus Road, just east of Thaddeus Lake.

Northeast:

- Fall webworm was reported in most districts in Northeast Region.
- In Sault Ste. Marie District populations were down in 2017. Highest concentrations of fall webworm nests were found on the south end of Ranger Lake Road on alder and white birch. Defoliation was moderate-to-severe.
- In Chapleau and Wawa districts, populations were lower than in 2016 and were typically found on white birch, alder, and pin cherry. The bulk of the nests were along major forest road corridors, with only 1 to 2 nests per affected tree.
- Fall webworm was detected in several locations in Timmins and Cochrane districts on young to mature white birch, trembling aspen, and green ash but populations were lower than in 2016 and defoliation was at trace levels.
- In North Bay District, fall webworm caused low-to-moderate levels of defoliation, mainly on black ash along the Hwy 17 corridor from Beaucage to Sturgeon Falls. west of North Bay, and from North Bay east to Mattawa.
- In Sudbury District, infestations were down from 2016, with affected trees having only one to three nests per tree. Nests were more common on the east side of the district.

Southern:

- Parry Sound, Midhurst, Peterborough, Bancroft, Aylmer, and Guelph districts were affected by fall webworm. The pest was detected on a variety of hardwood species, most notably ash spp., cherry, white birch, poplar spp., black walnut, maple spp., basswood, hickory spp., and white elm. In most cases, infestations caused low to moderate damage.
- Fall webworm was also present in Parry Sound District, occurring primarily on pin cherry, white birch, and balsam poplar saplings. The southern part of the district had more occurrences of this pest on larger, co-dominant ash, maple, and elm, particularly south of Parry Sound on the Hwy 400 corridor. Trees averaged between two and five nests and, in some cases, more than 10 nests occurred.
- In Midhurst District, nests began in mid-July but in lower numbers than in 2016, averaging less than 5% defoliation to trees. Collections were made on Rocklyn Road, in Grey Highlands, and on County Road 40 near Walter's Falls. At the County Road 40 site, the host was eastern white poplar, which is a new host for this region.
- In both Aylmer and Guelph districts, black walnut, butternut, and maple were preferred hosts for fall webworm, with black cherry and bitternut hickory as secondary hosts. In Aylmer District, counties with the highest presence of fall webworm were Essex, Chatham Kent, Elgin, Middlesex, and Norfolk.

Greenstriped mapleworm

Pest information

Common name:	Greenstriped mapleworm
Scientific name:	*Dryocampa rubicunda* (F.)
Pest origin:	Native to North America
Pest type:	Defoliator
Host species:	Red maple
Infestation area:	N/A

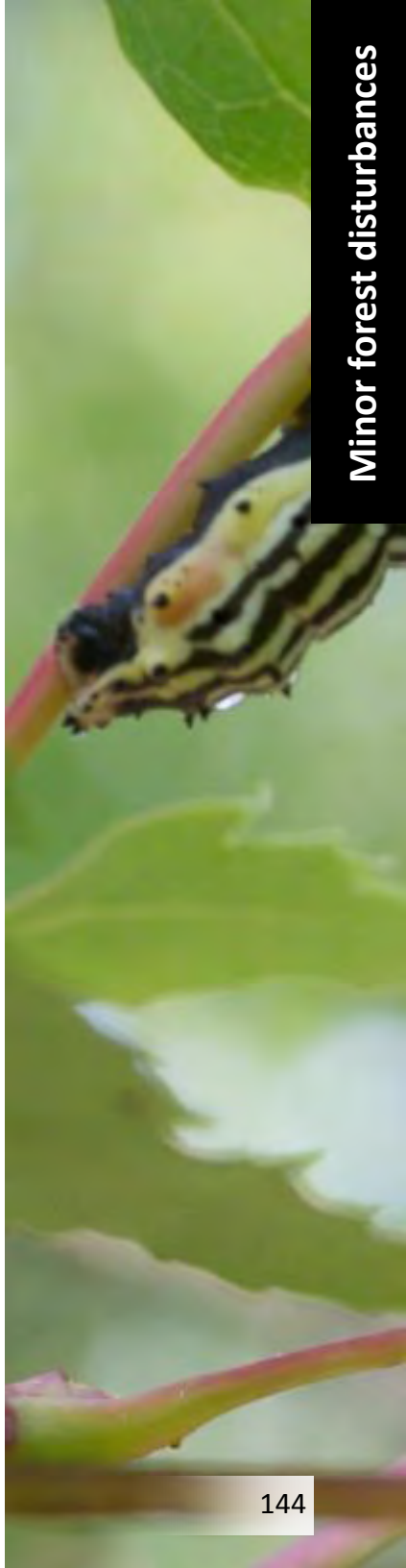
Provincial key facts

- Greenstriped mapleworm feeds primarily on red maple and sometimes on sugar maple.
- Early stage larvae feed in groups, whereas late stage larvae feed independently.
- Both early and late instars feed on the underside of leaves and consume most of the leaf tissue aside from the mid rib and larger veins.
- Severe infestations may reduce growth and cause crown dieback.
- Heavy defoliation can significantly reduce sugar maple sap quality.
- In Northeast Region, localized populations have been observed for several years with minimal effect on trees.

Regional summary

Northeast:

- In the central area of Timmins District, defoliation was recorded on understory red maple in mature jack pine stands in Vrooman and Westbrook townships. This is the fourth consecutive year of light defoliation in this area.
- In Sudbury District, 10% greenstriped mapleworm defoliation was recorded on understory red maple in Prescott Twp, along Massey Tote Road, north of the town of Massey. Greenstriped mapleworm larvae were also collected on understory red maple in Moses Twp, along Westbranch Road north of Webwood. Trace defoliation was evident but within 48 hours of collecting the larvae a parasitic wasp was observed emerging from one of the caterpillars.



Imported willow leaf beetle

Pest information

Common name:	Imported willow leaf beetle
Scientific name:	*Plagiodera versicolora* (Laich.)
Pest origin:	**Invasive** – native to Europe
Pest type:	Defoliator
Host species:	Willow spp.
Infestation area:	N/A

Provincial key facts

- Imported willow leaf beetle was introduced to North America in 1915 and is now widely distributed across the range of willow in Ontario.
- Up to three generations of this insect can occur in a year.
- This pest has the potential to cause severe defoliation; however, damage to trees is not serious unless defoliation occurs in several consecutive years.
- In 2017, imported willow leaf beetle was reported during ground surveys in Southern Region.

Regional summary

Southern:

- In the southern part of Peterborough District, imported willow leaf beetle caused 20 to 50% defoliation of willow spp. in the town of Wooler, Murray Twp. Gypsy moth larvae were reported feeding in the same area. A little further south, imported willow leaf beetle defoliated 30% of roadside willow trees along County Road 18, near Athol in Prince Edward County.
- On the west side of Bancroft District, collections of willow leaf beetle were made along Hwy 35 north of the town of Minden. This predominantly Manitoba maple stand had low numbers of beetles on the willow in the stand. Defoliation was light.

Introduced pine sawfly

Pest information

Common name:	Introduced pine sawfly
Scientific name:	*Diprion similis* (Htg.)
Pest origin:	**Invasive** – native to Europe
Pest type:	Defoliator
Host species:	White pine, Scots pine
Infestation area:	N/A

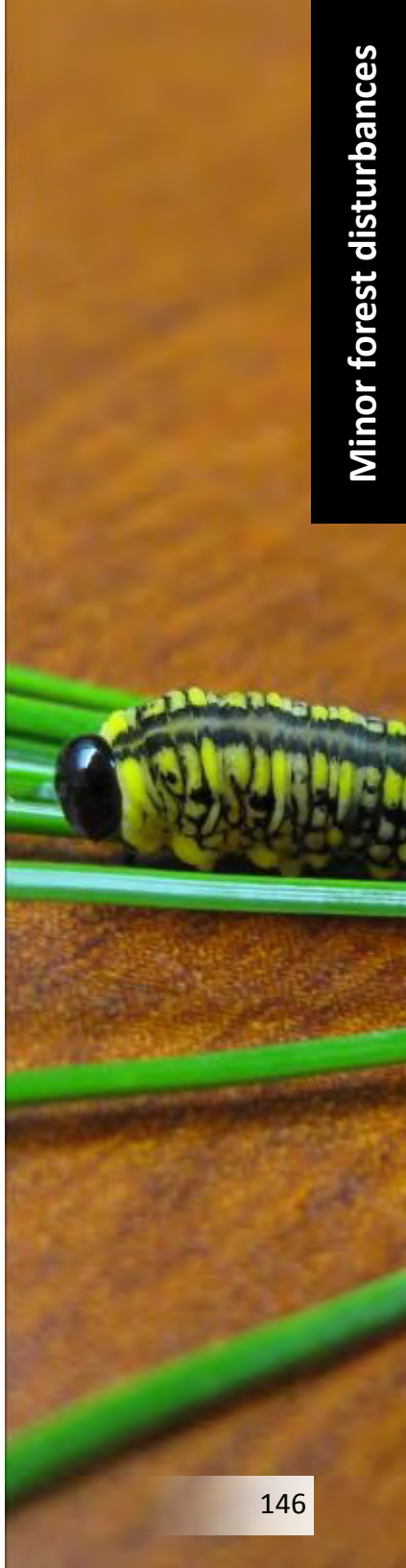
Provincial key facts

- First found in Ontario, near Oakville, in 1931.
- This sawfly causes severe defoliation that has often resulted in widespread tree mortality in affected areas.
- Natural control factors help keep populations low.
- Introduced pine sawfly has two generations per year, with the second generation usually more abundant in August and September.
- In 2017, low levels of introduced pine sawfly caused minimal defoliation in Southern Region.

Regional summary

Southern:

- In Midhurst District, one larva was found feeding on a two metre tall Scots pine at the Rathburn Tract of Simcoe County Forest, in Ramara Twp near Orillia. Trace defoliation was observed on this tree. North of this location, six introduced pine sawfly larvae were causing trace defoliation on a young three metre tall white pine on Hwy 169/11, at the Washago exit. At the Millennium Tract of Simcoe County Forest along Hwy 400, three larvae were feeding on small white pine in Oro Medonte, west of Craighurst.
- In Aylmer District, low numbers of pupal cases were found throughout a white pine plantation on Oxford County Road, between the communities of Innerkip and Drumbo, Oxford County. No defoliation was encountered at this site.



Japanese beetle

Pest information

Common name:	Japanese beetle
Scientific name:	*Popillia japonica* Newm.
Pest origin:	**Invasive** — native to Japan
Pest type:	Defoliator
Host species:	Basswood, buckthorn, linden, oak, sassafras, sumac, willow
Infestation area:	N/A

Provincial key facts

- Populations of this invasive insect have existed in Ontario since its discovery in the Niagara Peninsula, Southern Region, in 1939.
- Commonly encountered as an exotic horticultural pest, the Japanese beetle will also feed on many native tree species. Adults are heavy feeders, known to attack both foliage and fruit of more than 250 host plants. Preferred woody hosts in Ontario include basswood, oak, and white birch.
- In 2017, Japanese beetle was recorded in Southern Region defoliating hardwoods in Aylmer and Midhurst District.

Regional summary

Southern:

- Small pockets of this exotic beetle were observed in Aylmer District defoliating a variety of hosts in forests and in landscaped settings. Moderate-to-severe defoliation of basswood at the edges of woodlots and open-grown ornamental linden trees was observed along Longwoods Road (Middlesex County Road 2) between Delaware and Glencoe, Southwest Middlesex, and Middlesex Centre in Middlesex County. In Elgin County, moderate-to-severe defoliation of basswood, red oak, and sassafras on the edge of woodlots was reported along Hwy 401 at Furnival Road in West Elgin and similar defoliation was seen on understory sassafras between Point Bruce, Malahide Twp and Point Burwell in Bayham Twp. Light defoliation of basswood and sumac was observed at Sharon Creek Conservation Area in Delaware in Middlesex Centre, Middlesex County.
- In Midhurst District, moderate-to-severe Japanese beetle defoliation has historically been seen on white birch, elm, basswood, and oaks in the Midland area, but in 2017 only trace defoliation on roadside willow and buckthorn was observed at Hodgins Road in Simcoe County.

Leaf spot of ash

Pest information

Common name:	Leaf spot of ash
Scientific name:	*Mycosphaerella fraxinicola* (Schwein.) House
Pest origin:	Native to North America
Pest type:	Foliar disease
Host species:	Ash
Infestation area:	N/A

Provincial key facts

- Leaf spot of ash is an uncommon, yet widely distributed foliar disease native to North America.
- Symptoms appear in mid- to late summer as rounded or irregular pale green blotches that turn light brown in mid-September.
- Severe outbreaks of the disease can cause the blotches to enlarge and coalesce, damaging the entire leaf and causing pre-mature leaf drop.
- Repeated, consecutive infections can cause slower incremental tree growth.
- In 2017, this leaf spot was reported in Southern Region.

Regional summary

Southern:

- In Midhurst District, moderate-to-severe damage and pre-mature leaf drop was observed in August through Simcoe County as far north as Coldwater, and west through Grey and Bruce Counties to Kincardine. Ash trees with up to 80% crown damage were observed along Lake Huron in areas surrounding Port Elgin in Bruce County. By mid-September, the leaf spots caused foliar browning and leaf drop from the bottom two-thirds of crowns, making it difficult to distinguish from fall leaf colour and senescence.

Linospora leaf blight

Pest information

Common name:	Linospora leaf blight
Scientific name:	*Linospora tetraspora* (G.E. Thomps.)
Pest origin:	Native to North America
Pest type:	Disease
Host species:	Balsam poplar
Infestation area:	N/A

Provincial key facts

- Linospora leaf blight is a foliar disease affecting all ages of balsam poplar.
- When severe, infection causes early leaf drop.
- Several consecutive years of severe infection can reduce tree vigour and increase susceptibility to other pathogens.
- In 2017, light damage from linospora leaf blight was reported in Northeast Region.

Regional summary

Northeast:

- In Chapleau District, linospora leaf blight damage was found north of the town of Chapleau on semi-mature balsam poplar trees along the road to Missinaibi Provincial Park in the southeast corner of Mageau Twp. This area was just west of Racine Lake and damage was minimal.
- In Timmins District, leaf blight damage was detected on semi-mature balsam poplar southeast of the city of Timmins in Eldorado Twp. Damage was light with an average damage of 5%.
- In Cochrane District, damage was detected on semi-mature balsam poplar east of the town of Cochrane in Stimson Twp. Damage was light averaging 15% damage.

Maple decline

Pest information

Common name:	Maple decline
Scientific name:	N/A
Pest origin:	N/A
Pest type:	Various factors
Host species:	Maple spp.
Infestation area:	N/A

Provincial key facts

- No one singular causal agent has been identified as leading to maple decline but drought from previous growing seasons may be a primary factor.
- Other factors contributing to maple decline in two districts in Southern Region include insect defoliation, armillaria root rot, anthracnose, *Stegonsporium* species, and other secondary fungi.

Regional summary

Southern:

- Declining maple trees have been observed across Aylmer District and in some areas of Guelph District. Reported symptoms on a variety of maple species include reduced tree vigour, crown dieback and thinning, foliar chlorosis, and branch/twig mortality. Norway maple trees of all age classes were observed in decline in a variety of urban settings in both districts. Declining mature and overmature sugar and black maples were also observed in woodlots and along agricultural fence lines in rural settings across both districts.

Maple webworm

Pest information

Common name:	Maple webworm
Scientific name:	*Pococera asperatella* (Clem.)
Pest origin:	Native to North America
Pest type:	Defoliator
Host species:	Sugar maple and American beech
Infestation area:	N/A

Provincial key facts

- Provincial distribution of maple webworm is from southern Ontario north to North Bay.
- Since many parasites and predators attack this pest, populations seldom reach outbreak levels.
- Maple webworm was not considered important until the 1950s when it was found to contribute to the development of maple blight, which killed thousands of sugar maple in Wisconsin. This has not been the case in Ontario.
- In 2017, maple webworm was only reported in Southern Region.

Regional summary

Southern:

- In Aylmer District, light defoliation and nests were observed on distal branches of all canopy and understory sugar maple and American beech of all age classes in John E. Pearce Provincial Park and EM Warwick Conservation Area near Wallacetown and at Yarmouth Natural Heritage area near Sparta in Elgin County. Light defoliation and nests were also observed on American beech and sugar maple at Meadowlily Woods in London. Trace-level defoliation and nests were observed on distal branches of understory sugar maple at Jaffa Tract, Springwater Forest, in the Municipality of Central Elgin, Elgin County, as well as at Jackson Gunn Forest in Norfolk County.

Regional summary con't

- On the northwest side of Midhurst District, moderate maple webworm defoliation (30%) was observed on roadside sugar maple along Kemble Rock Road in Georgian Bluffs, Grey County. In the adjacent county (Bruce), very light maple webworm defoliation was recorded along Budvet Road west of Hwy 6 in North Bruce Peninsula, but in this area the American beech were defoliated. In some cases in Midhurst District, maple webworm defoliation, along with damage from anthracnose and septoria leaf blight caused maple and beech crowns to turn brown in late summer, before natural leaf colour change.

Marssonina leaf spot

Pest information

Common name:	Marssonina leaf spot
Scientific name:	*Marssonina brunnea* (Ellis & Everh.)
Pest origin:	Native to North America
Pest type:	Foliar disease
Host species:	Trembling aspen, largetooth aspen, and eastern cottonwood
Infestation area:	N/A

Provincial key facts

- Marssonina leaf spot is a disease that affects poplar species.
- Both a wet spring and late summer can promote leaf spot infection rates.
- Heavy infections of this disease cause early leaf drop.
- Repeated infections can cause branch dieback and increase susceptibility to other damage agents.
- In 2017, a wetter than normal spring and summer occurred in Ontario and marssonina leaf spot was found in all three regions.

Regional summary

Northwest:

- In Kenora District. marssonina leaf spot was collected west of Kenora in the northeast corner of Gidley Twp. At the east end of Pickerel Lake, trembling aspen leaves that had been previously defoliated by forest tent caterpillar were collected in early August and diagnostics confirmed they were showing evidence of leaf spot.

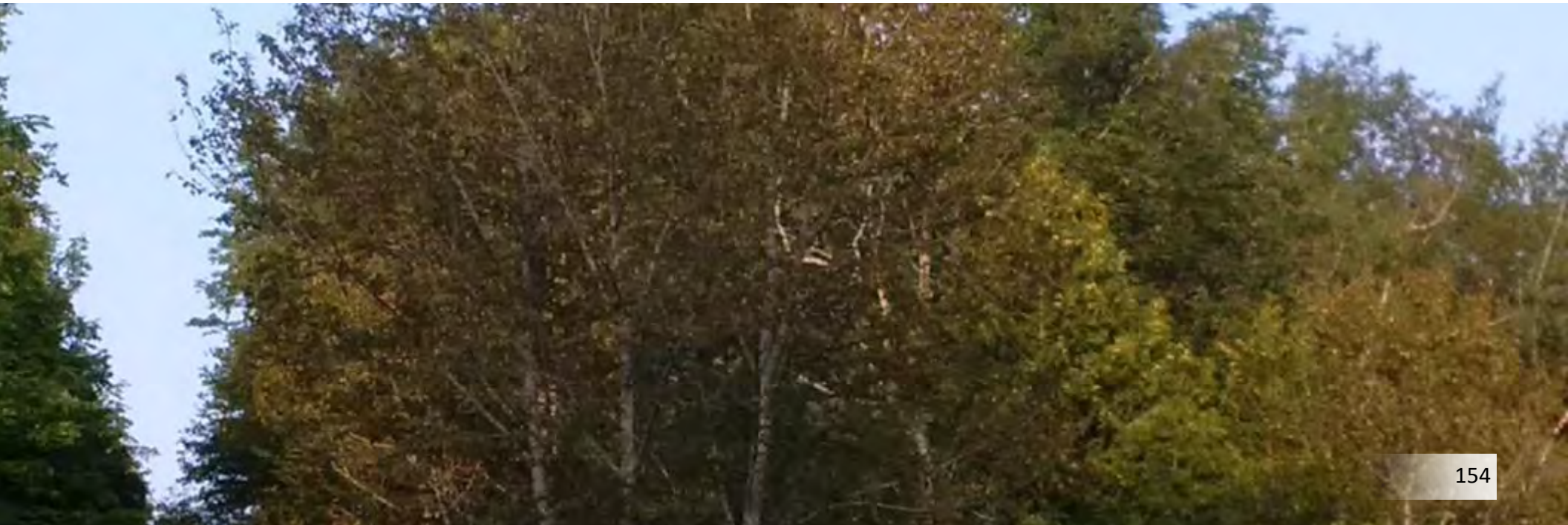
Northeast:

- In Chapleau District, marssonia leaf spot was recorded at the southeast end of Shoals Provincial Park along Hwy 101 (Peters Twp). Leaves collected from trembling aspen trees in late August were 80 to 90% damaged.

Regional summary con't

Southern:

- In Peterborough District, marssonina leaf spot was found in several locations in the Rice Lake area, in Otonabee, Monaghan south, Alnwick and Haldimand townships. Damage to foliage was found on both largetooth and trembling aspen. Secondary insects such as forest tent caterpillar were found lightly defoliating the same stands.
- In Aylmer District, frost damage and marssonina leaf spot caused moderate-to-severe damage to a cluster of young, open-grown aspen trees at the corner of West Quarter Line Road and County Road 24, Norfolk County.
- In Guelph District, marssonina leaf spot was found throughout the district, but damage was most severe in the western part of the district in Wellington, Brant, North Perth, and Huron counties.
- Marssonina leaf spot was collected from the southeast corner of Aurora District, southeast of Newcastle Village on Stephenson Road, south of Hwy 401 (Clark Twp). Only 30% of the trees were affected with low levels of damage but it was still early in the growing season.
- Collections in Midhurst District were in the townships of Holland, south of Owen Sound and Collingwood, and west of the town of Collingwood. These areas had 60 to 70% damage from this disease by the end of August; symptoms included leaf spots, leaf drop, and leaves with a brownish hue.



Northern tent caterpillar

Pest information

Common name:	Northern tent caterpillar
Scientific name:	*Malacosoma californicum pluviale* (Dyar)
Pest origin:	Native to North America
Pest type:	Defoliator
Host species:	Pin cherry
Infestation area:	N/A

Provincial key facts

- Emergence of northern tent caterpillar larvae coincides with budbreak on host trees.
- Larvae feed mainly on pin cherry and willow, but can be found on a wide range of trees and shrubs in Ontario.
- Young larvae protect themselves in silken nests in the crotches of branches. Nests enlarge as the larvae grow.
- Even when infestations are severe or persist in an area for a few years, damage is limited to growth loss and branch dieback.
- In 2017, this insect was detected in Northeast and Northwest regions, with infestations light and effects minimal.

Regional summary

Northwest:

- In Dryden District, northern tent caterpillar was detected at a rest area along Hwy 17 between the communities of Borups Corners and Iganace (Ilsley Twp). Light defoliation was seen on young roadside pin cherry.

Northeast:

- In the northwestern part of Sudbury District, moderate-to-severe defoliation was observed in the Ritchie Falls area on young pin cherry in Monestime and Olinyk townships.
- In the southern part of Timmins District, light-to-moderate defoliation was detected on young pin cherry along Hwy 560 between Hwy 144 and Shining Tree for the fourth consecutive year. Affected trees were less than two metres in height and defoliation ranged from 10-30%.

Oak skeletonizer

Pest information

Common name:	Oak skeletonizer
Scientific name:	*Bucculatrix ainsliella* Murt.
Pest origin:	Native to North America
Pest type:	Defoliator
Host species:	Oak
Infestation area:	NA

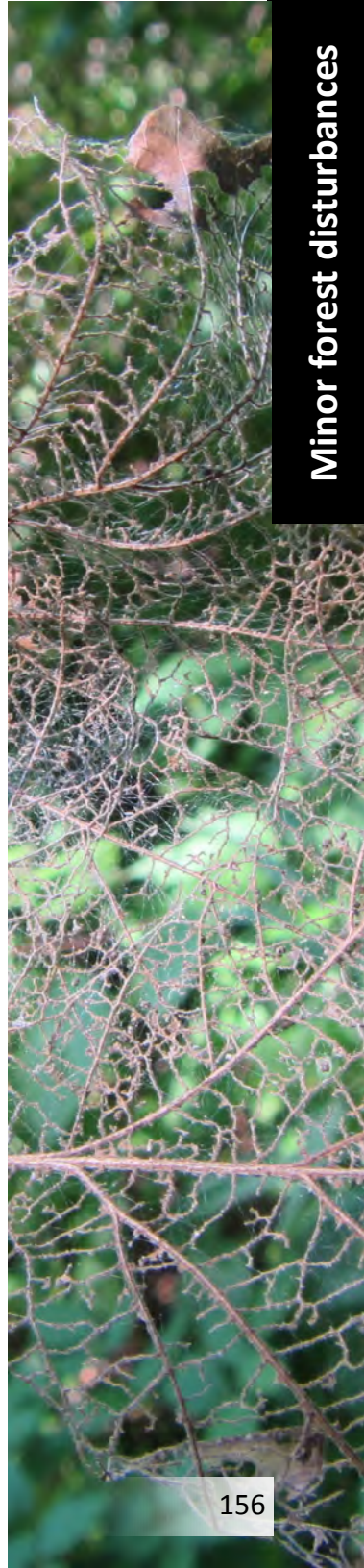
Provincial key facts

- Oak skeletonizer is a perennial pest of oak across southern Ontario and Quebec.
- This pest produces two generations per year and its preferred host is red oak. First generation moths are seen in early spring, and second generation occur in July to early August.
- Periodic outbreaks of oak skeletonizer have been recorded in Ontario since 1961.
- Consecutive years of severe defoliation reduce growth and may cause some crown dieback.
- In 2017, oak skeletonizer was only reported in Southern Region.

Regional summary

Southern:

- In Midhurst District, this insect was present on all canopy and age classes of red oak in north and central Simcoe County and central Dufferin County on the east side of the district. Early defoliation by the first generation of larvae was light. Defoliation caused by the second generation averaged 60%, and abundant larvae were seen dropping from the trees to overwinter in the soil. In Grey County south of Owen Sound and south of Meaford, trace (<5%) defoliation was observed on leaves of ornamental oaks late in the season. In the north end of Bruce County, near Tobermory, defoliation was very light (5%) throughout a hardwood stand of oak, beech, and sugar maple.



Oak slug sawfly

Pest information

Common name:	Oak slug sawfly
Scientific name:	*Caliroa fasciata* (Norton)
Pest origin:	Native to North America
Pest type:	Defoliator
Host species:	Red oak
Infestation area:	N/A

Provincial key facts

- Oak slug sawfy is associated with red oak.
- Larvae feed gregariously through summer to early fall and, depending on climate and location, have one to two generations per year.
- The larvae are covered in a transparent slimy substance and skeletonize leaves.
- In 2017, oak slug sawfly was collected in Southern Region.

Regional summary

Southern:

- In Midhurst District, oak slug sawfly was observed in a young red oak plantation south of the town of Meaford, in central Grey County. On most host trees, defoliation averaged 30%. It has been a common pest on this property in the past but in 2017 its numbers were low. Oak slug sawfly larvae were also feeding on red oak at Randwick Tract of Dufferin County Forest, north of Orangeville, causing 5% defoliation.

Pine spittlebug

Pest information

Common name:	Pine spittlebug
Scientific name:	*Aphrophora cribrata* (Wlk.)
Pest origin:	Native
Pest type:	Sucking insect
Host species:	Jack pine
Infestation area:	N/A

Provincial key facts

- Pine spittlebug is found in central and eastern Canada.
- This insect is a serious pest of Scots pine Christmas tree plantations.
- It feeds on sap of twigs and forms a frothy mass (spittle) that protects it from predators. When feeding is done the spittle mass dries up and a black sooty mould forms.
- Following heavy infestations of spittlebug, twigs, branches, and even whole trees can die.
- In 2017, light damage from pine spittlebug was recorded in Northwest and Northeast regions.

Regional summary

Northwest:

- In Red Lake District, pine spittlebug adults were collected on Pine Ridge Road near the northeast side of Corallen Lake (Graves Twp). Light damage was recorded on young open grown jack pine.

Northeast:

- In Wawa District, pine spittlebug was spotted on about 80% of semi-mature jack pine in early summer east of the town of Wawa, around the intersection of Hwy 101 and Hwy 547. Damage was light (10-20%) and contained to about a one hectare area. Spittlebug was also found in the southern part of the district along Sand Road on the east side of Anjigami Lake, also on semi-mature jack pine with similar damage levels.
- In Hearst District, spittlebug was collected at Ed Bonner Tree Improvement Center, near Moonbeam. A small area of young understory jack pine, less than one metre tall, had light damage.

Poplar serpentine leafminer

Pest information

Common name:	Poplar serpentine leafminer
Scientific name:	*Phyllocnistis populiella* Cham.
Pest origin:	Native
Pest type:	Defoliator
Host species:	Trembling aspen
Infestation area:	N/A

Provincial key facts

- Poplar serpentine leafminer is found across Canada, but is more common in the west.
- Severe infestations of this pest have been recorded only in western Canada.
- Its main host is trembling aspen, but it can be found on other poplar species as well.
- Mortality and growth reduction can occur from consecutive severe infestations.
- In 2017, this leafminer was observed in Northeast and Southern regions.

Regional summary

Northeast:

- In Wawa District, a collection of poplar serpentine leafminer was made along Crossover Road, east of the town of Wawa on one semi-mature trembling aspen. Damage was light.
- In the southern part of Chapleau District, trace-to-light defoliation was observed on understory trembling aspen in the Flame Lake area on the east side of Hwy 129.

Southern:

- In Peterborough District, this leafminer was recorded on young and semi-mature trembling aspen on Webb Road at the north end of Alnick Twp, south of Rice Lake. It was also found in the southern part of the district, on Old Wooler Road in the central part of Murray Twp. In both areas, defoliation was light but all trembling aspen were affected.

Regional summary con't

- Poplar serpentine leafminer was also found in a few areas in Midhurst District. One area was south of Collingwood along Osprey Clearview Townline, on the northeast side of Osprey Twp, where young eastern cottonwood had light defoliation. Defoliation was also observed in another area in the central part of the district in the northern part of Holland Twp. Young largetooth aspen and European white poplar along Grey County Road 40, south of the community of Walters Falls, had light defoliation.

Redheaded pine sawfly

Pest information

Common name:	Redheaded pine sawfly
Scientific name:	*Neodiprion lecontei* (Fitch)
Pest origin:	Native to North America
Pest type:	Defoliator
Host species:	Red pine and jack pine
Infestation area:	N/A

Provincial key facts

- Redheaded pine sawfly is the most serious pest of red pine plantations in Ontario.
- It can kill branches, reduce diameter growth, and eventually kills young trees.
- Trees less than three metres tall are most susceptible.
- In 2017, it was reported in Northeast and Southern regions.

Regional summary

Northeast:

- In Sault Ste. Marie District, a young red pine plantation had moderate-to-severe defoliation on a third of the red pine trees on a north facing slope east of Thessalon at Maple Ridge gravel pit. This was the third consecutive year of severe defoliation for some trees but less than 10% of the trees had died. Redheaded pine sawfly continues to spread throughout the plantation with higher levels of defoliation on younger trees (<5 years) and low levels on older trees (<15 years).
- On the northwest side of Sudbury District, one colony of redheaded pine sawfly was detected on a young understory jack pine tree in an overmature jack pine stand south of Ritchie Falls. This was detected while doing jack pine forest health plots in Prescott Twp on Hwy 810. Defoliation was light.

Southern:

- During plantation surveys in Parry Sound District, redheaded pine sawfly was recorded in a young red pine plantation in Lount Twp, west of South River. This was the only plantation on Nipissing Road that had redheaded pine sawfly. Defoliation was trace, but young larvae had just begun to feed.

Satin moth

Pest information

Common name:	Satin moth
Scientific name:	*Leucoma salicis* (L.)
Pest origin:	**Invasive** — native to Europe
Pest type:	Defoliator
Host species:	Poplar spp
Infestation area:	N/A

Provincial key facts

- Satin moth can be found across North America, including most of southern Ontario. This pest continues to expand its range in Ontario, spreading from the south and reaching Sault Ste. Marie in 2011 and Thunder Bay in 2016.
- Satin moth normally prefers individual or small groups of ornamental poplar trees, especially European white and Carolina poplar, but will occasionally defoliate poplar stands.
- In 2017, satin moth defoliation was observed in two regions in Ontario.

Regional summary

Northwest:

- In Thunder Bay District, isolated areas of severe satin moth defoliation were noted in the city of Thunder Bay. Defoliation of a two hectare balsam poplar stand at the junction of Carrick Street and Harbour Expressway averaged 80%. A cluster of 10 white and four Lombardi poplar trees off Memorial Avenue averaged 75% defoliated. During an extension call to Court Street, three large cottonwood trees were almost totally stripped of foliage and larvae numbers were high. All defoliated trees had re-flushed by mid-August.

Regional summary con't

Southern:

- In the northwest corner of Peterborough District, samples were collected during ground surveys at multiple locations along County Road 48 in Eldon Twp where satin moth defoliation occurred on balsam and white poplar. Populations were abundant and average defoliation was 70% and 80% at two sample sites.
- In Midhurst District, satin moth defoliation was observed along Hwy 12 West, north of Orillia to Price's Corners at Simcoe County Rd 22. European poplar was the host and average defoliation was 50%. At two other locations, low numbers of larvae were present in areas surrounding Washago in Ramara Twp, as well as near the community of Dobbington, along Bruce County Road 40. Defoliation in these areas was very light.
- In Kemptville District, satin moth severely defoliated open grown Carolinian poplar trees on Northdale Drive in the city of Cornwall and 20 mature poplar trees south of Cumberland (Ottawa) along Dunning Road/Hwy 35.

Septoria leaf spot of maple

Pest information

Common name:	Septoria leaf spot
Scientific name:	*Phloeospora aceris* (Lib.) Sacc.
Pest origin:	Native to North America
Pest type:	Disease
Host species:	Sugar maple
Infestation area:	N/A

Provincial key facts

- Septoria leaf spot is a fungal disease exacerbated by wet springs.
- It is only aesthetically damaging, causing only minor stress to affected trees although it consecutive years of severe infection rates may reduce their growth.
- Heavy infestation of this leaf spot can cause early leaf drop.
- In 2017, septoria leaf spot was recorded only in Southern Region.

Regional summary

Southern:

- In Midhurst District, this leaf disease occurred from central Grey County and west through Bruce County to Lake Huron. Sugar maple suffered 20 to 80% damage to foliage, including spots, yellowing, and early leaf drop. In some cases, the damage was accompanied by anthracnose, causing larger brown splotches on leaves. These leaf spots left maples in the western part of the district yellow and browned instead of red through the autumn colour change.

Shoot blight of aspen

Pest information

Common name:	Shoot blight of aspen
Scientific name:	*Venturia moreletii* Rulamort
Pest origin:	Native
Pest type:	Fungal wilt
Host species:	Trembling aspen
Infestation area:	N/A

Provincial key facts

- This shoot blight kills terminal and lateral shoots, reducing growth and creates a deformed stem. Small trees can die from repeated infection.
- Tips of infected shoots turn black and wither, resembling shepherd's crook.
- The disease can be a serious problem in plantations but is of little economic importance in natural stands.
- Trees more than five years of age are often not affected.
- It was reported in Northeast Region in 2017.

Regional summary

Northeast:

- In the north end of North Bay District, high levels of shoot blight were observed on roadside trembling aspen saplings south of Latchford, at the south end of Rosevelt Forest Road by McNab Lake (Best Twp).
- In Kirkland Lake District, moderate levels of shoot blight of aspen were recorded west of Elk Lake on roadside trembling aspen at the intersection of Beauty Lake Road and Hwy 560 (Lawson Twp).
- In the southeast part of Chapleau District, shoot blight of aspen was recorded on young trembling aspen along Opee Lake Road by Sultan. Young aspen showed damage symptoms along Hwy 129 from the intersection of Hwy 101 south to Flame Lake near the Sault Ste. Marie District boundary.

Sirococcus shoot blight

Pest information

Common name:	Sirococcus shoot blight
Scientific name:	*Sirococcus conigenus* (DC.) P.F. Cannon & Minter
Pest origin:	Native to North America
Pest type:	Disease
Host species:	Red pine
Infestation area:	N/A

Provincial key facts

- This fungal disease overwinters in needles, seeds, and shoots and only attacks new shoots.
- The fungus attacks many conifers, but is most damaging to red pine.
- Seedling mortality is quick when infection is severe but mature trees only die after several consecutive years of severe infection.
- In 2017, sirococcus shoot blight was reported in Northwest Region.

Regional summary

Northwest:

- In Dryden District, sirococcus shoot blight was seen on Ojibway Drive approximately 20 km southwest of the town of Dryden. The area has a mixture of 15,000 planted tree species and most of the young to semi-mature red pine had light-to-moderate damage on the new outer shoots and tips were red-brown and drooped.

Swaine jack pine sawfly

Pest information

Common name:	Swaine jack pine sawfly
Scientific name:	*Neodiprion swainei* Midd.
Pest origin:	Native to North America
Pest type:	Defoliator
Host species:	Jack pine
Infestation area:	N/A

Provincial key facts

- Swaine jack pine sawfly is considered a serious defoliator of jack pine and has been reported to have damaged large stands of jack pine in both Quebec and Ontario. Its distribution range corresponds with the range of jack pine in both provinces.
- This insect has caused jack pine mortality in overmature jack pine stands in the past.
- Sawfly larvae feed primarily on old foliage and severe defoliation can lead to mortality as early as the following year.
- In 2017, a small population of Swaine jack pine sawfly was detected on individual trees in Southern Region.

Regional summary

Southern:

- In Kemptville District, Swaine jack pine sawfly larvae were observed feeding on two semi-mature trees in a jack pine plantation on March Road in Ramsey Twp south of the town of Almonte. No defoliation was seen at this location, but a collection was made to confirm that it was indeed Swaine jack pine sawfly.

Tar spot on maple

Pest information

Common name:	Tar spot on maple
Scientific name:	*Rhytisma acerinum* (Pers.)
Pest origin:	Native to North America
Pest type:	Disease
Host species:	Red, silver, sugar maples
Infestation area:	N/A

Provincial key facts

- Tar spot on maple is exacerbated by wet springs.
- Damage from tar spot is solely aesthetic.
- During severe infections, black spots coalesce to infect entire leaves and reduce the tree's photosynthetic ability.
- Heavy infestation of tar spot can cause early leaf drop.
- Fallen infected leaves should be raked up and disposed of to lessen infection rates the following year.
- In 2017, tar spot on maple was only recorded in Southern Region.

Regional summary

Southern:

- In Midhurst District, tar spot was prevalent throughout west Grey County, affecting Norway maple from Simcoe County north of Barrie across to Lake Huron in Southampton, where damage was severe. Tar spot has historically been an issue in Southampton and Port Elgin along Lake Huron. Leaves were brown and falling in August due to the fungal lesions.

Western gall rust

Pest information

Common name:	Western gall rust
Scientific name:	*Peridermium harknessii* J.P. Moore
Pest origin:	Native to North America
Pest type:	Fungal disease
Host species:	Jack pine
Infestation area:	N/A

Provincial key facts

- This rust disease is common across Ontario.
- It typically causes malformations, stunting, and aesthetic degradation of infected trees.
- It can be a significant pest in nurseries and plantations.
- Branch galls can kill branches and galls on the main stem of trees less than 10 years old can kill the tree.
- This rust can infect pine to pine and does not require an alternate host to complete its life cycle.
- In 2017, western gall rust found in both Northwest and Northeast regions, with one jack pine plantation in the Northeast severely damaged by the disease.

Regional summary

Northwest:

- Western gall rust was observed in Kenora, Red Lake, Dryden, and Sioux Lookout districts. In all four districts, most of the gall rust was observed during evaluations of jack pine health plots (for details see jack pine health plot assessments – jack pine budworm).
- Moderate-to-severe western gall rust infections were recorded on jack pine along the edge of stands north of Pickle Lake, Sioux Lookout District, along a considerable stretch of Hwy 808 heading towards Windigo Lake. The damage was visible from the highway and the trees had both current and previous year's galls.
- In Red Lake District, a young jack pine stand on Nungesser Road had moderate levels of western gall rust. In some cases, potentially lethal galls were present on the main stems. Low levels of western gall rust resulted in some tree top mortality in young and semi-mature jack pine on Pine Ridge Road, 30 km north of the town of Red Lake.

Regional summary con't

Northeast:

- Western gall rust was detected in Sault Ste. Marie, Timmins, Chapleau, North Bay, Kirkland Lake and Sudbury districts, with most of the detections occurring during evaluations of jack pine health plots (see jack pine health plot assessments – jack pine budworm).
- In Sudbury District, a young jack pine plantation, averaging seven metres tall, was severely infected with western gall rust. The plantation was located on Klondike Road between Kukagami and Wanapitei lakes (Scadding Twp), northeast of Sudbury. A 150 tree survey was done and all the trees had western gall rust and 67% of these trees had a lethal infection (main stem). This was a new area of infection and only two trees had died, but more mortality is expected in 2018.
- Low levels of western gall rust were seen in various locations in Kirkland District. Gall rust was collected in four areas, three of which were in the north central part of the district and one in the southwest. All collections in the north central part were on jack pine, two on young trees along the edge of stands and the other on semi-mature trees. In both cases, the levels of galls on the sampled trees were moderate-to-severe, but overall incidence was low. The collection in the southern part of the district was west of Elk Lake along Hwy 560 at the south end of Longpoint Lake (Lawson Twp). It was on jack pine along the edge of a black spruce stand. Damage was light.
- In North Bay District, western gall rust was recorded in the southeast part of the district, northeast of the city of North Bay. During regular ground surveys on a forest road, off Hwy 63, moderate damage by western gall rust was seen on some jack pine along the edge of stands in the southeast corner of French Twp, near Twenty Minute Lake.

White pine blister rust

Pest information

Common name:	White pine blister rust
Scientific name:	*Cronartium ribicola* J. C. Fisch. ex Rabenh.
Pest origin:	**Invasive** – native to Asia, Europe
Pest type:	Rust
Host species:	White pine
Infestation area:	N/A

Provincial key facts

- This disease is relatively common throughout Ontario where *Ribes* spp. (the alternate host) occur near five needle pine.
- It causes branch dieback, reduces growth, and, if infection reaches the stem, eventually kills the tree.
- In 2017, white pine blister rust was found in Northwest and Northeast regions.

Regional summary

Northwest:

- White pine blister rust was observed on many young white pine trees throughout Fort Frances, Nipigon, and Thunder Bay districts.
- In Thunder Bay District, several mature white pine trees on 25th Sideroad were infected with white pine blister rust. A young white pine plantation on Oliver Lake Road and a semi-mature plantation on Adrian Lake Road, both just west of the city of Thunder Bay, had branch infections as well as some top mortality from white pine blister rust.
- In Fort Frances District, white pine blister rust was sampled from a cluster of planted semi-mature white pine in Quetico Provincial Park. In a group of about 20 trees, almost 50% of them had multiple branch infections and some main stem infections.
- In Dryden District, white pine blister rust caused moderate-to-severe damage on young white pine trees at the edge of stands, south of the town of Dryden along Hwy 594, just north of Hwy 502.

Regional summary con't

Northeast:

- In Kirkland Lake District, white pine blister rust was found at all three white pine tree improvement sites in Eby, Evantural, and Ingram townships. Evanturel had the highest occurrence of the disease with 34.7% of the trees infected and 53.8% of these were lethal infections (on main stem). In addition, porcupine feeding damage was evident on 13.3% of the trees in this plantation, as porcupines love to eat the fruiting bodies of the rust. The Eby and Ingram plantations had much lower occurrences of blister rust with 2.7% and 6.7% of the trees infected, respectively.
- In North Bay District, the white pine tree improvement site in Gurd Twp had low levels of white pine blister rust with 1.3% of the trees infected.

White pine weevil

Pest information

Common name:	White pine weevil
Scientific name:	*Pissodes strobe* (Peck)
Pest origin:	Native to North America
Pest type:	Shoot borer
Host species:	Jack pine, white pine, spruce
Infestation area:	N/A

Provincial key facts

- White pine weevil is most prevalent on white pine, but other species of pines and spruces can be affected.
- Most heavily infested are young trees less than two metres tall.
- This pest targets the terminal leader of a tree and can kill it.
- Repeated attacks can result in deformed and multi-topped trees, reducing wood quality.
- In 2017, low levels of weevil damage were reported in four districts in Northwest Region.

Regional summary

Northwest:

- In Sioux Lookout District, areas of white pine weevil damage were observed on young and semi-mature jack pine along Hwy 808 stretching northwest to Windigo Lake. For 30 to 40 km along the highway, leader damage was seen on intermittent trees.
- Dryden District had low levels of white pine weevil damage 60 km northeast of Dryden on Basket Lake Road. Young roadside white spruce showed signs of damage.
- In Kenora District, low levels of weevil damage were observed on young jack and white pine regeneration north of Kenora, near Big Sand Lake, north of Ena Road. Damage was also noted northwest of Kenora, along the eastern portion of Pickerel Lake Road, Gidley Twp. Damage was minimal in a young jack pine plantation.
- In Thunder Bay District, low levels of white pine weevil damage were seen on young blue and Norway spruce southwest of the city of Thunder Bay. Leader damage by white pine weevil was also observed in a young white spruce and white pine plantation located in Rosslyn, west of Thunder Bay. Damage was minimal.

Willow flea weevil

Pest information

Common name:	Willow flea weevil
Scientific name:	*Isochnus rufipes* (LeConte)
Pest origin:	Native
Pest type:	Defoliator
Host species:	Willow spp., balsam poplar and trembling aspen
Infestation area:	N/A

Provincial key facts

- Found in eastern Canada, the willow flea weevil prefers willow but can be found on a variety of hardwoods.
- During heavy infestations of the weevil, the leaves turn brown to grey-brown giving them a scorched look.
- Consecutive years of severe defoliation may result in twig mortality.
- In 2017, localized infestations of willow flea weevil were found in Northeast Region.

Regional summary

Northeast:

- In Wawa District, moderate defoliation occurred on willow, balsam poplar, and trembling aspen along Hwy 17 corridor, from White Lake Provincial Park west to the junction of the highway to Manitouwadge (Hwy 614). In this area, 75 to 85% of trees were affected, with average defoliation ranging from 60 to 70% on individual trees. Willow flea weevil was also found at the east end of Wawa Lake, on the south side of Hwy 101. In a small balsam poplar stand, all trees were defoliated with an average defoliation of 60%.

Yellowheaded spruce sawfly

Pest information

Common name:	Yellowheaded spruce sawfly
Scientific name:	*Pikonema alaskensis* (Roh.)
Pest origin:	Native
Pest type:	Defoliator
Host species:	White spruce
Infestation area:	N/A

Provincial key facts

- Yellowheaded spruce sawfly is a common pest in Ontario.
- It's a serious pest of Christmas tree plantations, open-grown trees, and plantations.
- This sawfly generally feeds on open-grown roadside trees less than 10 years of age.
- Severe defoliation by this sawfly can kill branches or the entire tree; less severe defoliation can impede growth.
- In 2017, yellowheaded sawfly was reported in all three regions in Ontario.

Regional summary

Northwest:

- In Red Lake District, low levels of yellowheaded spruce sawfly defoliation were observed in mid-June on open grown semi-mature white spruce south of Ear Falls, at Perrault Lake rest stop. Light feeding on new growth was observed on four trees. Light yellowheaded spruce sawfly defoliation was also noted in late June on young white spruce at Centennial Park in the town of Red Lake.

Northeast:

- In North Bay District, moderate defoliation of two young, open-grown white spruce trees were observed along the boardwalk in the town of New Liskeard.
- In Kirkland Lake District, moderate defoliation of several young white spruce were observed at the Fire Memorial rest stop near the town of Earlton and by Bear Lake, west of the community of Virginiatown.

Regional summary con't

Southern:

- In Aurora District, yellowheaded spruce sawfly was found mainly on white spruce highway plantings in Peel, York, and Durham. Defoliation ranged from low-to-moderate and would start at the top of the crown and move down to the lower branches.
- In Aurora and Midhurst District, yellowheaded spruce sawfly was causing low-to-moderate levels of defoliation on white spruce planted along the 400 series highways.