

# Another Outbreak of Forest Tent Caterpillars



**Forestry  
Canada**

**Forêts  
Canada**



**Ontario**

**Ministry of  
Natural  
Resources**

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Minister



# INTRODUCTION

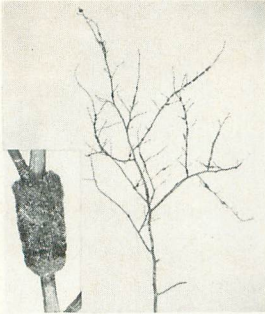
People in widely scattered parts of Ontario are occasionally bothered during the early summer by hordes of forest tent caterpillars (Malacosoma disstria Hbn.) crawling from stands of denuded broadleaf trees and wandering in search of food. The first known outbreak recorded in Ontario was described by Paul Kane in 1834: "It was a remarkable fact that the trees on each side of the river, and part of the Lake of the Woods, for full 150 miles of our route, were literally stripped of foliage by myriads of caterpillars, which had left nothing but the bare branches, and I was informed that the scourge extended to more than twice that distance, the whole country wearing the dreary aspect of winter at the commencement of summer." In the years following Kane's report some eruptions probably went unrecorded, but since 1868 there has been an outbreak somewhere in Ontario every 10 years, on the average.

The Forest Insect and Disease Survey (FIDS) Unit at the Canadian Forestry Service's Great Lakes Forestry Centre in Sault Ste. Marie maps the size and severity of these outbreaks, and by determining the number of overwintering egg bands on host trees forecasts the spread of infestations. The most recent defoliation map produced by the FIDS Unit, along with other relevant material, is included in an envelope attached at the back of this publication. If the map is missing, or you require further information not contained in this booklet, contact your nearest Ministry of Natural Resources district office.



1) A mass of migrating forest tent caterpillars; note defoliated trees in background.

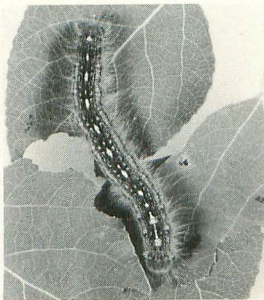
## LIFE HISTORY AND HABITS



2) Egg bands on a heavily infested aspen branch. Insert: close-up of an egg band.



3) Young, recently emerged caterpillars. The forest tent caterpillar does not form a tent despite its name.



4) A full grown caterpillar, with distinct white 'keyhole' markings on its back.

Eggs are laid during the summer by female moths in bands around branch tips that are less than 13 mm (1/2 in.) in diameter. After the developing caterpillars are fully formed inside the eggs, they enter diapause and overwinter. The hatching of eggs usually coincides with initial bud development on trees early the following spring and the tiny caterpillars feed openly in colonies on the unfolding leaves. These tent caterpillars do not form distinct silken tents. They grow gradually larger as they feed on developing foliage and by the time they reach a length of about 35 mm (1.5 in) their final body and pattern become evident. They are grey-blue with a broad blue band along each side and a row of keyhole-shaped white markings along the back. After six to eight weeks of feeding and four accompanying molts, caterpillars reach a length of 50 mm (2 in.). In mid to late June, they spin cocoons of silk among unconsumed leaves, or almost anywhere if leaves are absent. Pupae are formed within the cocoons and about two weeks later buff-coloured moths emerge. Following mating, the females each lay a band of some 150 eggs which encircle the twig. These bands are covered with a dark foam-like substance. Egg-laden moths have been known to disperse to adjacent areas where new infestations subsequently appeared. On warm evenings after dark, moths may be attracted to the artificial lighting of built-up areas.



**RELATIVE SIZE AND DURATION OF FOREST  
TENT CATERPILLAR INFESTATIONS  
IN ONTARIO 1900 - 1956**

\* Records prior to 1930 are not sufficiently  
detailed to provide data on extent of infestations.

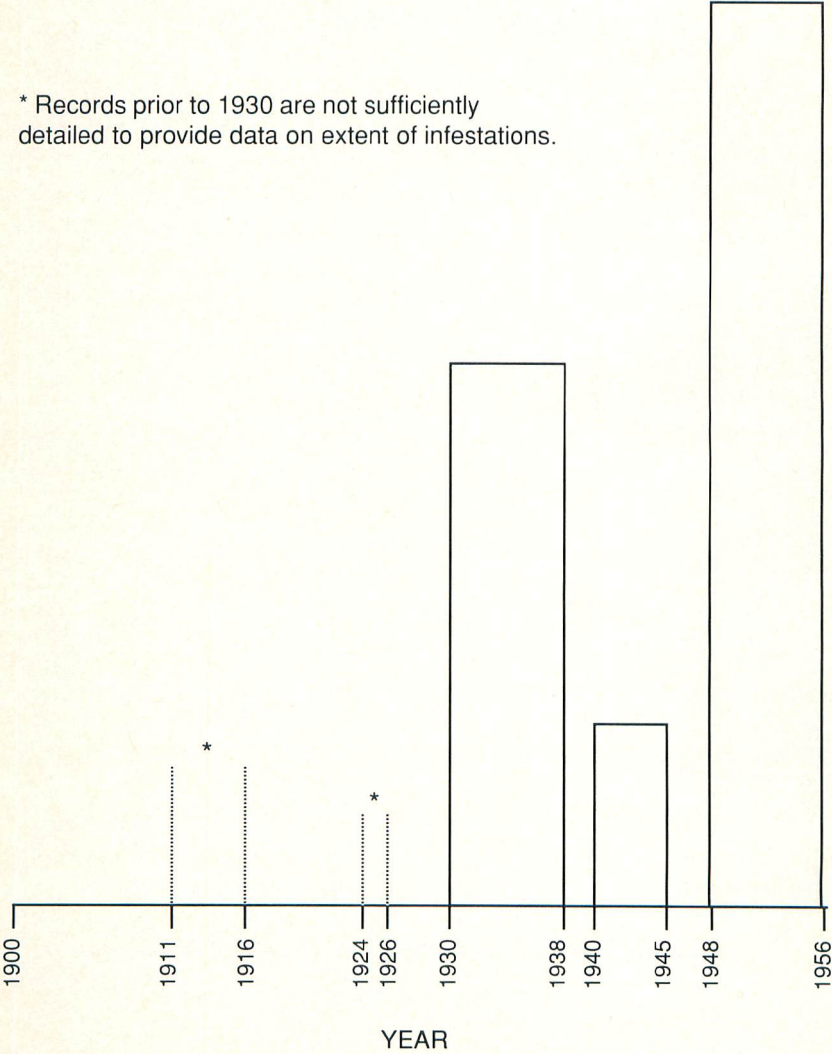


Figure 1

**ONTARIO FOREST TENT CATERPILLAR  
DEFOLIATION 1956 - 1988**

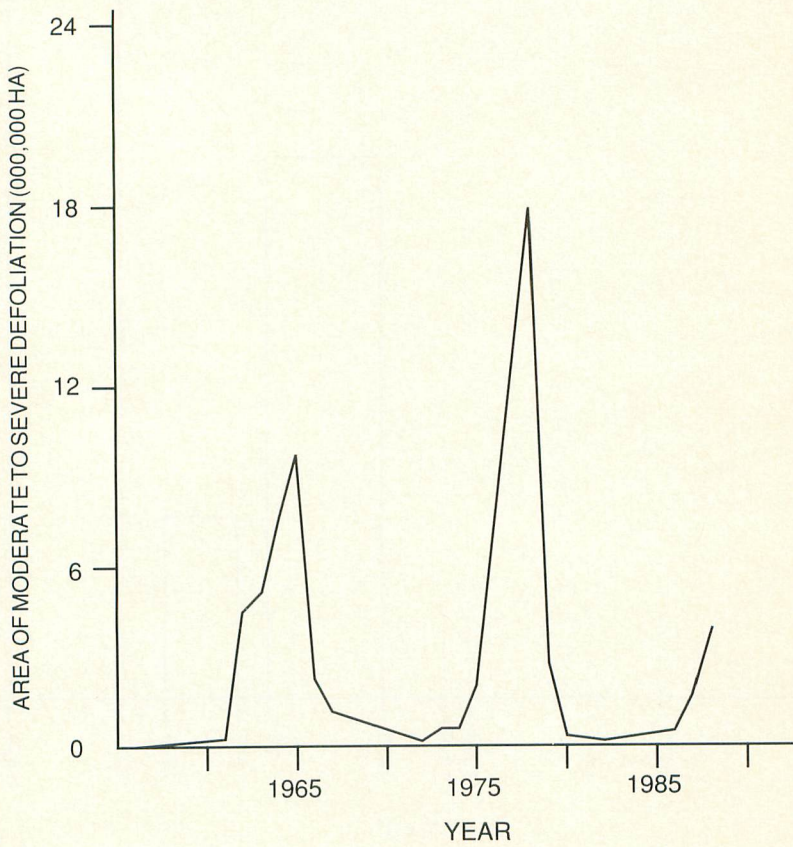
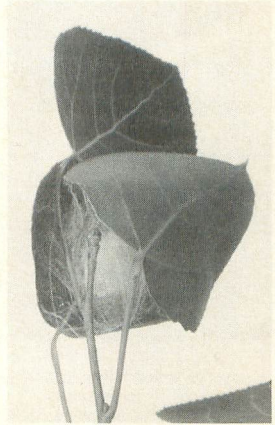


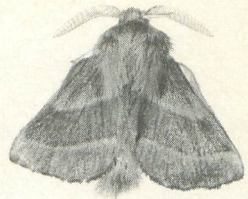
Figure 2

## HOST TREES AND IMPACT

Selection of the host tree on which young caterpillars will begin to feed is made by the female moth when she lays her eggs. In northern Ontario, trembling aspen and oak are preferred whereas in southern Ontario, sugar maple and oak are the most common trees selected. During epidemics, after the foliage of primary host trees is completely consumed, caterpillars feed on various other broad-leaf trees and shrubs, thereby completely denuding forests of green leaves. White birch, for instance, is seldom if ever chosen by the moth for laying eggs and hence is not included in the list of primary host trees, yet frequently it is stripped of leaves where it is growing in mixture with infested trembling aspen. However, a loss of leaves does not mean that the trees will die. Trees that have lost their foliage to the caterpillars will produce a second, less dense set of leaves in five or six weeks. Although the insect rarely kills healthy trees, it may weaken them, making them more susceptible to other pests and of course reducing their annual growth of wood. Damage to the foliage of sugar maple can reduce the sugar content of sap the following spring, especially if an infestation persists for several consecutive years.



5) A cocoon located within a curled leaf.



6) The adult moth is brown and rather unspectacular.



7) Extensive defoliation caused by the feeding of forest tent caterpillars.

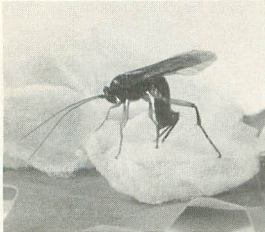


## CONTROLS

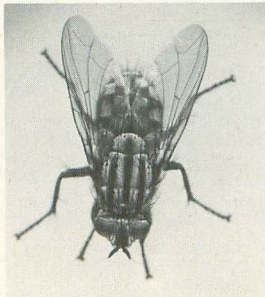


8) Natural controls bring the forest tent caterpillar infestation to an end after three or four years in any one area:

- a) caterpillars killed by a naturally occurring virus;



b) a female parasitic wasp laying an egg within a forest tent caterpillar cocoon; and



c) one of the best known control factors, a parasitic fly.

Like most naturally occurring pests, the forest tent caterpillar has a complete set of natural control agents which ultimately bring the infestation to an end, i.e. diseases, parasites, lack of food and weather. During major outbreaks, an infestation in any one area tends to collapse in the third or fourth year. The collapse is frequently brought on by a buildup of natural viral, bacterial and fungal diseases, as well as numerous parasites. Overpopulation of the forest tent caterpillar can result in reduced availability of food, thus weakening the insects and making them even more susceptible to these diseases and parasites. Occasionally, extremely cold weather following an early hatch of eggs in the spring can reduce caterpillar numbers or wipe out entire populations.

One of the more common parasites of the forest tent caterpillar is a fly (*Sarcophaga aldrichi* Park.), which resembles a large house fly. The female fly gives birth to living maggots on the tent caterpillar cocoon, and the maggots crawl through the silk, subsequently killing the larva or pupa inside. As forest tent caterpillar populations begin to collapse, these flies may, for a short period of time, become a nuisance themselves.

It is impossible to predict precisely the location and timing of initial forest tent caterpillar eruptions; the cost of large scale control operations is high; and this native pest of our forests rarely kills trees. For these reasons, it is best to focus pest management activities. Such a strategy would centre on the protection of high-value, high-use areas until the outbreak is dampened through the natural causes noted above.

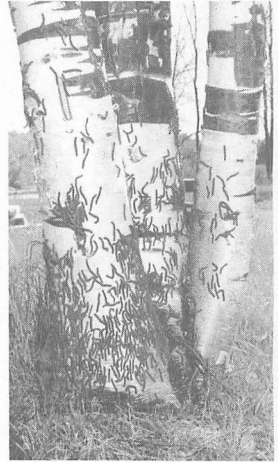
The first step in recognizing a forest tent caterpillar infestation is to survey for overwintering egg bands. To determine the number of egg bands on the host trees, examine the vigorously growing branch tips of poplar, maple or oak. Pull down and examine branch tips until you learn to recognize egg bands. If you find them readily you need go no further; you do have a problem. If you wish to learn more about numbers on larger trees, choose

a sunny day and scan branch tips with binoculars. As a very rough guide, 10 to 20 egg bands on a host tree 8-15 m (25 to 50 ft. ) tall represent a heavy infestation. Even fewer egg bands could indicate that you have a problem because more susceptible trees may be harbouring greater numbers than the trees you are able to examine carefully.

A recognized forest tent caterpillar problem may be dealt with in one of four ways: (a) by removing the egg bands, (b) by spraying with insecticide, (c) by planning to avoid activities in the problem area, or (d) by simply waiting for nature to bring the infestation to an end.

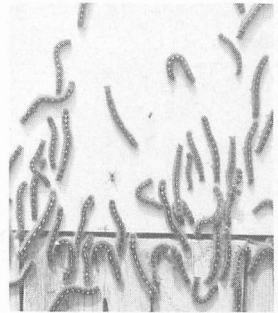
Removal of egg bands as a means of control is practical in rather unusual situations, e.g., where a property owner has only a few small trees and can remove all egg bands before egg hatch begins in early May. Include in your search and removal action both wild and cultivated fruit trees along with the primary host trees mentioned earlier, using ladders where required. Throughout southern Ontario (from Sault Ste. Marie and Sudbury southward), egg clusters of the closely related eastern tent caterpillar, (Malacosoma americanum F.), which feeds from a distinct silken tent, may also be found. They can be distinguished from egg bands of the forest tent caterpillar by the fact that they are confined to fruit trees and by their failure to encircle the twig completely. To be certain of eliminating the forest tent caterpillars remove and destroy both types.

Insecticides are most effective if applied when caterpillars are young, i.e., after the first week of warm spring weather in May. It is very important to use only registered insecticides and to FOLLOW ALL LABEL DIRECTIONS. Only insecticides that are federally registered and provincially approved for control of forest tent caterpillar may be used against this pest. There are two major types available: (1) a biological insecticide containing the bacterium *Bacillus thuringiensis*, often referred to as B.t., and (2) chemical contact and stomach insecticides. Bt and the chemical stomach



9) As forest tent caterpillars migrate and search for more food, they will climb over anything in their path:

a) a tree



b) the wall of a house



insecticides must be eaten by the caterpillar to be effective. Contact insecticides are effective when the insect comes in contact with them.

The registered label is the final authority for use of the pesticide product. **READ THE LABEL** prior to using the pesticide in order to determine whether the pest you intend to control is listed on the label. Read and follow the directions and precautionary statements on the label. All pesticides are potentially hazardous and should be used by a responsible individual in a safe and proper manner. Store pesticides in original containers, inaccessible to children, pets, livestock and wildlife.

Ground spray equipment may be useful on individual shade trees, but for larger trees and areas such as forests and woodlots, best results are obtained by hiring a licensed and experienced aerial applicator using spray-equipped aircraft. For further information on obtaining the services of an aerial applicator ask your MNR District Office for a copy of "Organizing Aerial Spraying for Forest Insect Defoliators".

Sometimes early recognition of a potential forest tent caterpillar problem will permit planning to avoid activities at trouble spots when caterpillars reach their peak. They are not likely to be a serious nuisance for more than a week. This week will coincide with the time they run out of food on the original host trees and begin to migrate en masse, most likely during the last week of May or the first three weeks of June. The first signs of cocoon spinning indicate that wandering will soon cease since most caterpillars spin their cocoons and disappear at much the same time.

Little advice can be given to property owners who, without warning, find themselves inundated by thousands of caterpillars. Insecticides are not as effective against the full-grown caterpillars, and control action at this point is difficult if not futile. The best advice is to gather as many caterpillars as possible where they are concentrated and destroy them. They have not appeared suddenly;

rather, they may have run out of food and are now dropping or crawling from the original host trees in search of more food.

Remember, the forest tent caterpillar is a native pest, here for only a short time until natural controls can bring the population back to normal levels.



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Bracebridge District  
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P0B 1C0  
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Minden, Ontario  
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Parry Sound, Ontario  
P2A 1S8  
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Cornwall, Ontario  
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Lindsay, Ontario  
K9V 4T7  
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Maple District  
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Maple, Ontario  
L0J 1E0  
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L0S 1E0  
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Chatham, Ontario  
N7M 5L8  
(519) 354-7340

Owen Sound District  
611-9th Avenue East  
Owen Sound, Ontario  
N4K 3E4  
(519) 376-3860

Simcoe District  
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548 Queensway West  
Simcoe, Ontario  
N3Y 4T2  
(519) 426-7650

Wingham District  
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N0G 2W0  
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Ignace District P.O. Box 448 Highway 599 Ignace, Ontario P0T 1T0 (807) 934-2233	Kenora District P.O. Box 5080 808 Robertson Street Kenora, Ontario P9N 3X9 (807) 468-9841
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Geraldton District P.O. Box 640 208 Beamish Ave. W. Geraldton, Ontario P0T 1M0 (807) 854-1030	Nipigon District P.O. Box 970 Highway 17 Nipigon, Ontario P0T 2J0 (807) 887-2120
Terrace Bay District P.O. Box 280 Terrace Bay, Ontario P0T 2W0 (807) 825-3205	Thunder Bay District Basement, Ontario Government Building 435 James St. S. Thunder Bay, Ontario P7C 5G6 (807) 475-1471

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Chapleau, Ontario  
P0M 1K0  
(705) 864-1710

Cochrane District  
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2 Third Avenue  
Cochrane, Ontario  
P0L 1C0  
(705) 272-4365

Gogama District  
P.O. Box 129  
Low Avenue  
Gogama, Ontario  
P0M 1W0  
(705) 894-2000

Hearst District  
P.O. Box 670  
631 Front Street  
Hearst, Ontario  
P0L 1N0  
(705) 362-4346

Kapuskasing District  
6 Government Road  
Kapusukasing, Ontario  
P5N 2W4  
(705) 335-6191

Kirkland Lake District  
P.O. Box 129  
Swastika, Ontario  
P0K 1T0  
(705) 642-3222

Moosonee District  
P.O. Box 190  
Revillion Road  
Moosonee, Ontario  
P0L 1Y0  
(705) 336-2987

Timmins District  
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Timmins, Ontario  
P4N 3W2  
(705) 267-7951

## NORTHEASTERN REGION

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62 Queen Street East  
Blind River, Ontario  
P0R 1B0  
(705) 356-2234

Espanola District  
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148 Fleming Street  
Espanola, Ontario  
P0P 1C0  
(705) 869-1330

North Bay District  
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R.R. #3, Highway 63  
North Bay, Ontario  
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Sault Ste. Marie District  
875 Queen Street East  
Sault Ste. Marie,  
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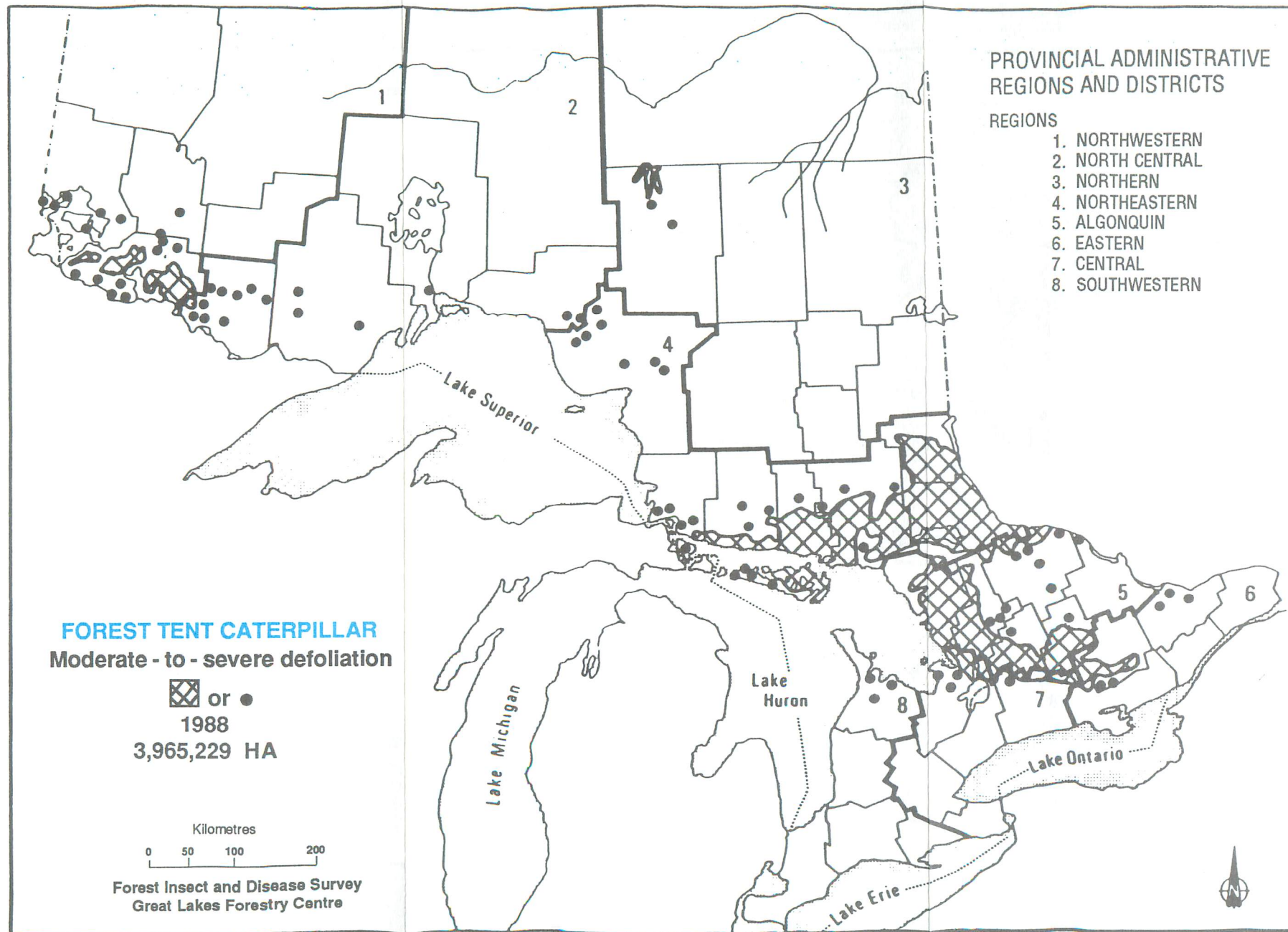


## NORTHEASTERN REGION, continued

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P3A 4S2  
(705) 522-7823

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Wawa, Ontario  
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Current map of moderate to severe defoliation by the forest tent caterpillar in Ontario (courtesy of the Forest Insect and Disease Survey Unit, Canadian Forestry Service, Sault Ste. Marie).