

A REVIEW OF IMPORTANT FOREST  
INSECT AND DISEASE PROBLEMS  
IN THE ALGONQUIN PARK DISTRICT  
OF ONTARIO, 1950 - 1980

Compiled by

M.J. Thomson, D.C. Constable, C.A. Barnes, C.G. Jones, H.J. Evans,  
L.S. MacLeod and P.M. Bolan<sup>1</sup>

GREAT LAKES FORESTRY CENTRE

FORESTRY CANADA

GOVERNMENT OF CANADA

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<sup>1</sup>*Forest Research Technicians, Forest Insect and Disease Survey Unit*

## FOREWORD

The first forest surveys in Ontario were carried out in 1936 from the Dominion Entomological Laboratory in Ottawa and continued from this location until 1944, when the province of Ontario was divided, for the purpose of these surveys, into northern and southern Ontario. In 1945, personnel from Ottawa continued to conduct and report on surveys in the area south of the Algonquin Park and Parry Sound forest districts, while personnel from the Forest Insect Laboratory in Sault Ste. Marie carried out surveys in the area to the north. In 1950 responsibility for reporting insects for all of Ontario fell to the Sault Ste. Marie laboratory. In 1952 the Forest Disease Survey was initiated with headquarters in Maple, Ontario, then was moved to Sault Ste. Marie in 1967. The results of these surveys of insects and diseases are reported in the Annual Report of the Forest Insect and Disease Survey (FIDS) published by Forestry Canada headquarters in Ottawa. In addition, annual district and regional reports, begun in 1948, are prepared by FIDS technicians (Rangers) in Sault Ste. Marie. In 1980 a new provincial report was released in Ontario. The contents of the following review have been abstracted from these reports and compiled in alphabetical order by the scientific names of species in each of the following three categories:

*Major Insects or Diseases*

Capable of causing serious injury to or death of living trees or shrubs.

*Minor Insects or Diseases*

Capable of causing sporadic or localized injury but not usually a serious threat to living trees or shrubs.

*Abiotic Damage*

Damage caused by non-living factors.

All measurements in this review are in metric form and conversions from Imperial measurements given in the earliest reports are taken to the second decimal point [i.e. sq. mi. to km<sup>2</sup> = area (sq. mi.) x 2.59 = area km<sup>2</sup>]. Infestation maps in this review were copied from the original maps in the FIDS technicians' reports. Abbreviations for the common names of the host tree species, along with the scientific names, are shown in Appendices A and B. To facilitate the location of hosts, deciduous and coniferous species have been separated and listed alphabetically under the common names.

Appendix C is a series of maps for southeastern Ontario grouped alphabetically by insect species or disease pathogen and showing the location of infestations within a region or infestation boundaries that extend beyond regions.

## ACKNOWLEDGMENTS

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We also wish to acknowledge the following authors of the FIDS district and regional reports from which this review was abstracted.

1950-1952	L.S. MacLeod
1953-1956	M.J. Hildebrand, A.A. Harnden
1957-1965	H.J. Weir
1966-1969	R. Trieselmann
1970-1973	L.S. MacLeod, H.D. Lawrence
1974-1975	H.J. Weir, H.D. Lawrence
1976-1979	H.J. Weir, V. Jansons
1980	H.J. Weir, H.J. Evans

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Other Noteworthy Insects

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Scleroderris Canker, *Ascocalyx abietina*Dutch Elm Disease, *Ceratocystis ulmi*White Pine Blister Rust, *Cronartium ribicola*Hypoxylon Canker, *Hypoxylon mammatum*

Other Noteworthy Diseases

(cont'd)



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*Page*

## ABIOTIC DAMAGE

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Wind

## APPENDICES

## INTRODUCTION

This report is a review of significant forest insects and diseases that have occurred in the Algonquin Park District during the period 1950 to 1980, with a brief summary of outbreaks prior to 1950. The Algonquin Park District has undergone a number of boundary changes since 1950. In the selection of pests for this report, particular attention was paid to the major working groups of host species in the area, namely tolerant hardwoods (sugar maple, white birch, yellow birch and poplar), and coniferous hosts (such as white pine, red pine, jack pine, white spruce, balsam fir, tamarack and hemlock), as well as some ornamentals and shade trees. The insects and diseases described are capable of causing, or have caused, tree mortality or a reduction in growth. Also included are abiotic conditions that have caused tree damage, i.e., drought and wind.

## SUMMARY

## FOREST INSECTS

Birch Skeletonizer, *Bucculatrix canadensisella* Cham. [Major]  
pages

This late-season insect defoliates both white and yellow birch. Widespread outbreaks usually last 3-4 years, then virtually disappear, as was the case in 1959 to 1963 and between 1970 and 1972. Defoliation seldom causes mortality but weakened trees are hosts for secondary insects and diseases and this may be a predisposing factor in birch decline.

Spruce Budworm, *Choristoneura fumiferana* (Clem.) [Major]  
pages

This insect is a destructive pest of many coniferous species, the main hosts being balsam fir and white spruce. Though not major hosts, eastern hemlock and black spruce are attacked and considerable tree mortality of balsam fir and white spruce occurs. This report documents the beginning of the medium-to-heavy infestation in Algonquin Provincial Park in 1969, records mortality of balsam fir in 1974, and continues to 1980, by which time mortality of balsam fir was widespread.

Jack Pine Budworm, *Choristoneura pinus pinus* Free.  
pages

[Major]

This destructive pest of red, white and jack pine trees may persist for three to four years; thereafter, it usually collapses. Mortality can occur after approximately two years of severe defoliation. During the period from 1967 to 1971, moderate-to-severe defoliation was reported in the Lake Traverse area. In impact plots, 25% of the merchantable jack pine was killed and another 25% suffered top kill.

Greenstriped Mapleworm, *Dryocampa rubicunda* (F.)  
pages

[Major]

This defoliator feeds on sugar maple and red maple. Medium-to-heavy infestations were recorded in 1952-53, 1955 and between 1971 and 1975. In impact plots established in 1974 in Maria and Head townships, 10% mortality occurred in 1976.

Saddled Prominent, *Heterocampa guttivitta* (Wlk.)  
pages

[Major]

This insect is a defoliator of hardwoods, principally beech, birch and sugar maple. When there is severe defoliation for more than two years, mortality can occur and the surviving trees may suffer branch and top mortality. The only reported infestation occurred in 1968 and 1969. Some tree mortality was observed in Butt Township on the western boundary of Algonquin Park.

Eastern Hemlock Looper, *Lambdina fiscellaria fiscellaria* (Gn.)  
page

[Major]

No noticeable defoliation has been recorded in Algonquin Park. Although this insect is classified as a general feeder, it can be very destructive of mature hemlock and other conifers. Very low populations were observed between 1953 and 1958.

Forest Tent Caterpillar, *Malacosoma disstria* Hbn.  
pages

[Major]

Major outbreaks of this caterpillar have occurred periodically throughout Ontario and have caused severe defoliation of deciduous stands. Outbreaks in Algonquin Park caused moderate-to-severe defoliation from 1950 to 1953 and from 1963 to 1966. Trembling aspen, the preferred host, is seldom killed in an outbreak, but sugar maple is severely weakened and mortality can occur if an infestation persists or if there are secondary factors involved. No mortality studies have been carried out in Algonquin Park.

Redheaded Pine Sawfly, *Neodiprion lecontei* (Fitch)  
pages

[Major]

This insect, which is one of the most destructive sawflies, has caused widespread defoliation of red pine (the preferred host), white pine, jack pine and Scots pine trees. Generally, sapling-size and smaller trees are favored. Moderate-to-severe defoliation was common from 1952 to 1953, from 1955 to 1957, from 1963 to 1966, and in 1972, 1975, 1979 and 1980. Spray operations were carried out in 1964 and 1980.

Jack Pine Sawfly, *Neodiprion pratti banksianae* Roh.  
pages

[Major]

This sawfly is capable of causing significant reduction in increment of natural and plantation pine trees when population levels are high. In 1955 and 1956 moderate-to-severe defoliation was reported in three townships. Populations remained at trace levels from 1957 to 1980.

Bruce Spanworm, *Operophtera bruceata* (Hlst.)  
pages

[Major]

This insect defoliates sugar maple, birch, aspen and beech trees, but infestations seldom last more than 2 or 3 years. Infestations occurred along the western border of Algonquin Park in 1966 and from 1974 to 1976. No tree mortality has been recorded.

White Pine Weevil, *Pissodes strobi* (Peck)  
pages

[Major]

This pest attacks and kills the leaders of pine and spruce trees, causing a reduction in terminal growth and eventually resulting in unmerchantable, deformed trees if attacks are prolonged. The weevil is classified as the most serious insect pest of white pine in North America. Populations of the insect persisted throughout Algonquin Park from 1950 to 1980 in varying degrees of intensity.

Larch Sawfly, *Pristiphora erichsonii* (Htg.)  
pages

[Major]

Severe defoliation causes a loss of increment after 4 or 5 years, and mortality can occur after 6 to 9 years. Moderate defoliation was recorded at scattered locations in 1962 and 1967. Light infestations were common at many points from 1950 to 1980. Tree mortality has not been recorded in Algonquin Park.

Other Noteworthy Insects  
pages

These are insects with the potential for causing damage to natural stands, regeneration and plantations.

FOREST DISEASES

Scleroderris Canker, *Ascocalyx abietina* (Lagerb.) [Major]  
Shläpfer-Bernhard  
pages

This canker is a very serious problem on planted trees and on natural regeneration and is capable of causing considerable mortality. The disease was first detected in 1966 and by 1974, 35% of the trees in a plantation in Anglin Township were affected.

Dutch Elm Disease, *Ceratocystis ulmi* (Buism.) C. Moreau [Major]  
page

The principal carriers of this disease are the native elm bark beetle, *Hylurgopinus rufipes* (Eich.), and the smaller European elm bark beetle, *Scolytus multistriatus* (Marsh). The disease is spread by these beetles, which breed in dead or dying elm trees. They emerge and carry spores of the pathogen to healthy trees, where infection occurs in wounds caused by insect feeding. The disease was established in the district by 1961.

White Pine Blister Rust, *Cronartium ribicola* J.C. Fischer [Major]  
page

This rust is extremely destructive of white pine. Once a tree is infected, the main stem may be girdled killing the tree. The alternative hosts for the rust are currants and gooseberries. Varying degrees of damage have occurred since the disease was first reported in 1952 in the Achray area.

Hypoxylon Canker, *Hypoxylon mammatum* (Wahlenb.) J. Miller [Major]  
page

This disease usually attacks the stems of immature trees in the 8- to 13-cm diameter class, but also attacks the upper stem and branches of larger trees. It has been common in stands of aspen throughout the district since 1952, and has caused varying degrees of mortality.

Other Noteworthy Diseases  
pages

[Major]

These are diseases with the potential for causing damage to natural stands, regeneration and plantations.

ABIOTIC DAMAGE  
page

This condition refers to damage caused by non-living agents such as drought, frost, salt and winter drying. Abiotic factors have a great influence on all types of trees.

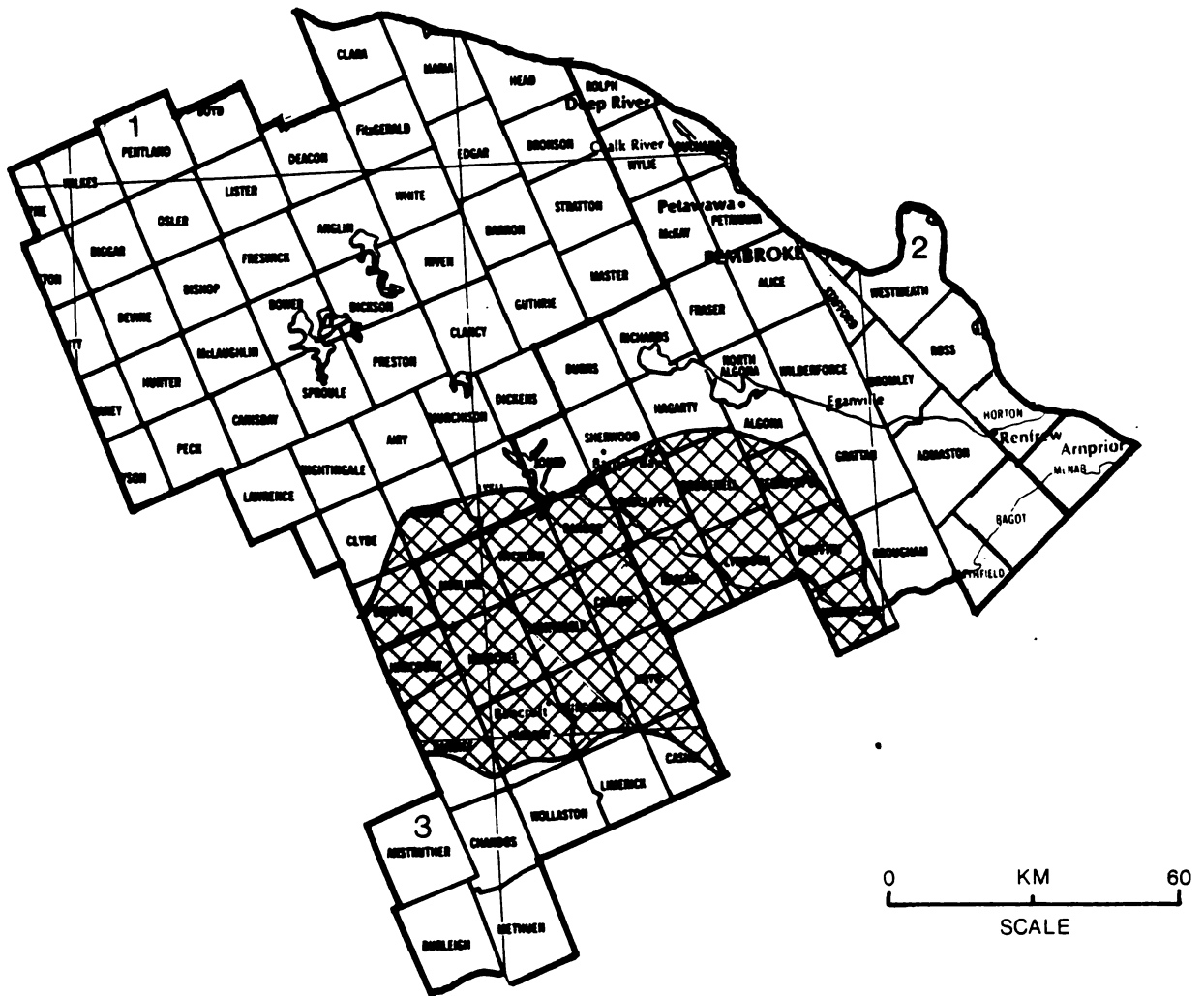
Birch Skeletonizer, *Bucculatrix canadensisella* Cham.

Host(s): birch

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1958	not reported
1959	Medium-to-heavy infestations occurred in Bruton Twp, in most of Clyde Twp, and east into Lyell and Sabine twps (see map, page ).
1960	Moderate-to-severe defoliation was reported south of a line running through the middle of Finlayson Twp east into Clancy Twp (see map, page ).
1961	High population levels were reported throughout the district (see map, page ).
1962	Except for several townships in the southern part, moderate-to-severe defoliation was observed throughout Algonquin Park District (see map, page ).
1963	Declining populations were reported; however, moderate-to-severe defoliation persisted in the northern part of the district. In the west-central portion of the district, light defoliation occurred throughout 12 townships (see map, page ).
1964	Infestations collapsed.
1965-1969	not reported
1970	Moderate-to-severe skeletonizing was reported in the northwestern part of Algonquin Park, and a small pocket of high population was reported in Airy Twp (see map, page ).
1971	Moderate-to-severe defoliation occurred throughout most of the district (see map, page ).
1972	High populations and resulting moderate-to-severe defoliation were reported in the central and western portions of the district (see map, page ).
1973	The infestation collapsed.
1974-1980	not reported

# ALGONQUIN PARK, PEMBROKE AND BANCROFT DISTRICTS



Birch Skeletonizer

Areas within which defoliation  
occurred in 1959

## LEGEND

Moderate-to-severe defoliation



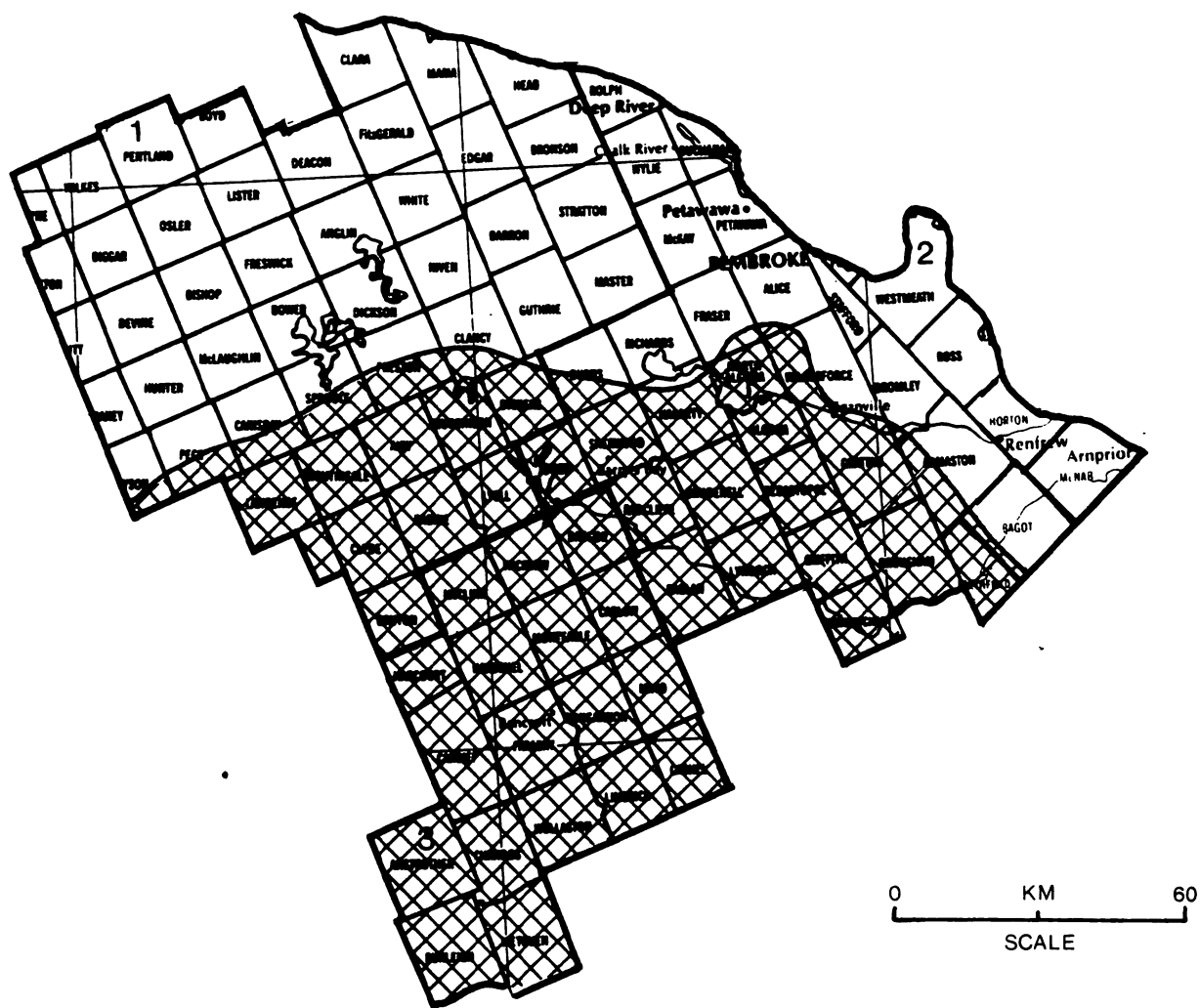
1 ALGONQUIN PARK

2 PEMBROKE

3 BANCROFT




# ALGONQUIN PARK, PEMBROKE AND BANCROFT DISTRICTS



Birch Skeletonizer

Areas within which defoliation  
occurred in 1960

LEGEND

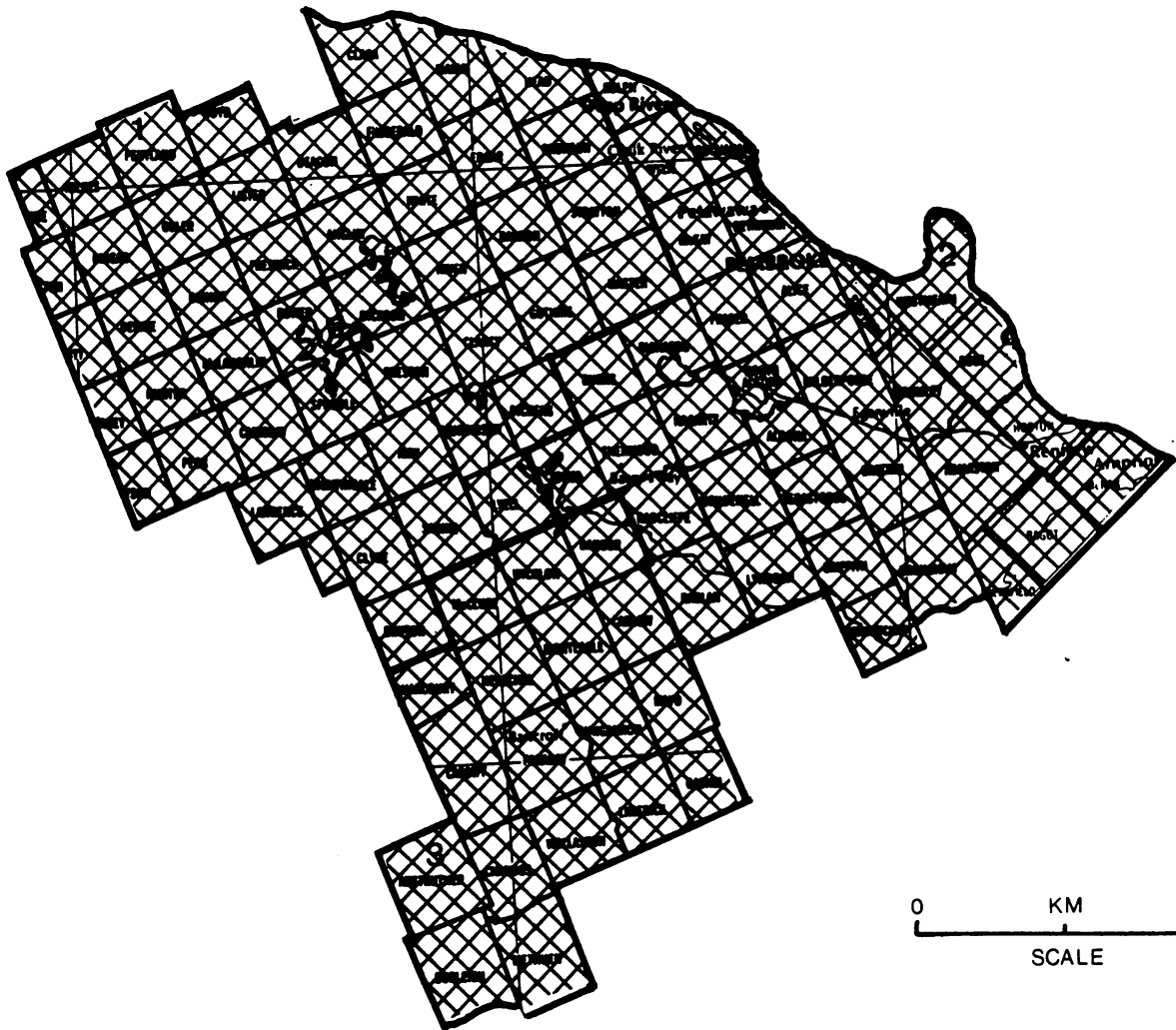
Moderate-to-severe defoliation 

1 ALGONQUIN PARK

2 PEMBROKE

3 BANCROFT

# ALGONQUIN PARK, PEMBROKE AND BANCROFT DISTRICTS



0 KM 60  
SCALE

Birch Skeletonizer

Areas within which defoliation  
occurred in 1961

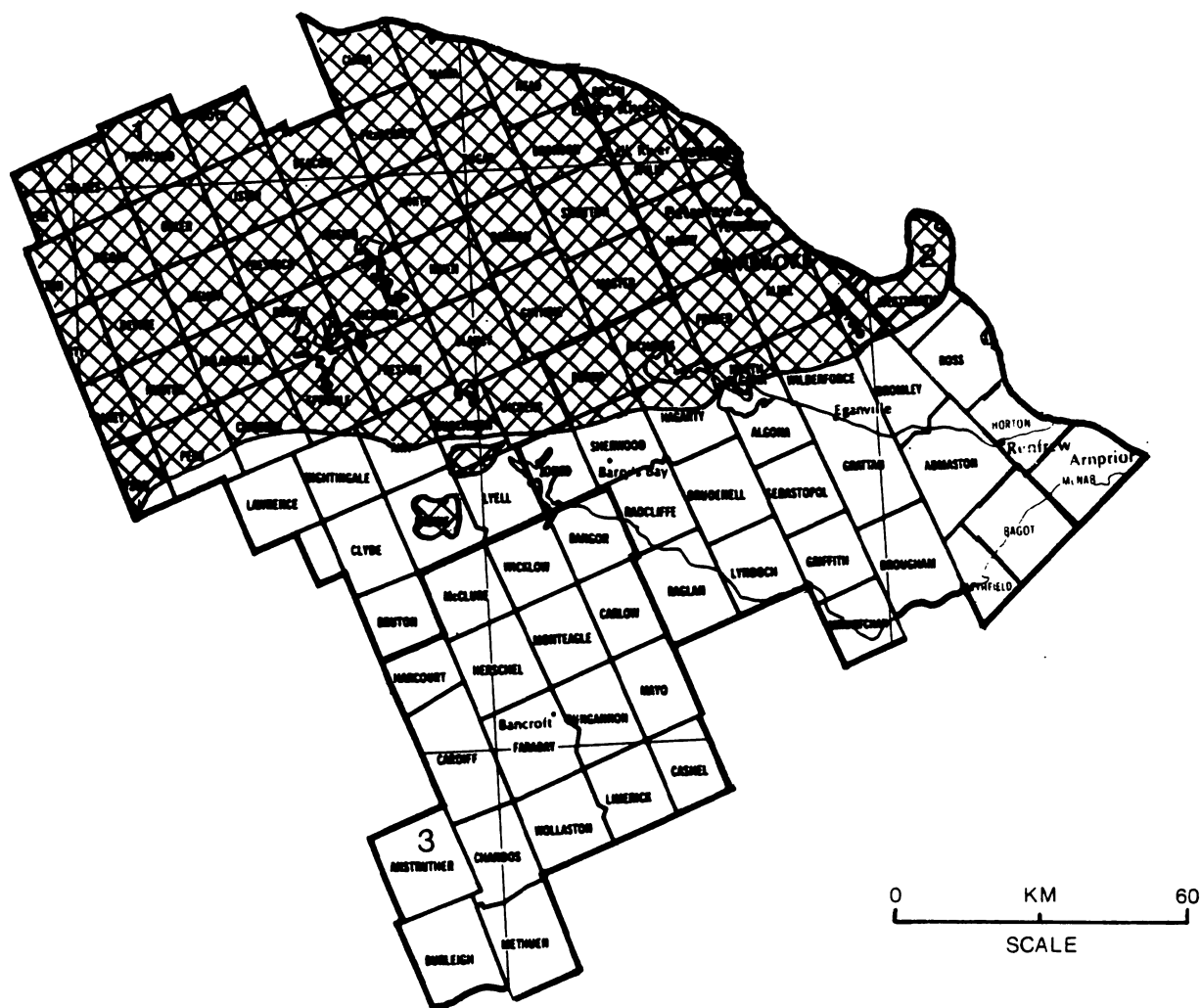
## LEGEND

Moderate-to-severe defoliation



- 1 ALGONQUIN PARK
- 2 PEMBROKE
- 3 BANCROFT

# ALGONQUIN PARK, PEMBROKE AND BANCROFT DISTRICTS



0 KM 60  
SCALE

1 ALGONQUIN PARK

2 PEMBROKE

3 BANCROFT

Birch Skeletonizer

Areas within which defoliation  
occurred in 1962

LEGEND

Moderate-to-severe defoliation



Map of the County of Durham showing its constituent parishes. The map is divided into numerous small rectangular areas, each labeled with a parish name. The map is oriented with North at the top. A scale bar at the bottom right indicates distances in kilometers (0 to 60). A legend at the bottom left shows three types of shading: a cross-hatch pattern for 'Urban Areas', a diagonal line pattern for 'Rural Areas', and a plain white area for 'Other Areas'. The map shows a dense network of parishes, with some larger areas like 'Durham' and 'South Durham' also labeled. The map is titled 'Map of the County of Durham' at the top left.

Areas within which defoliation  
occurred in 1963

### Light defoliation



Moderate-to-severe defoliation




## 2 PEMBROKE

### 3 BANCROFT

[illegible]

Areas within which defoliation  
occurred in 1970

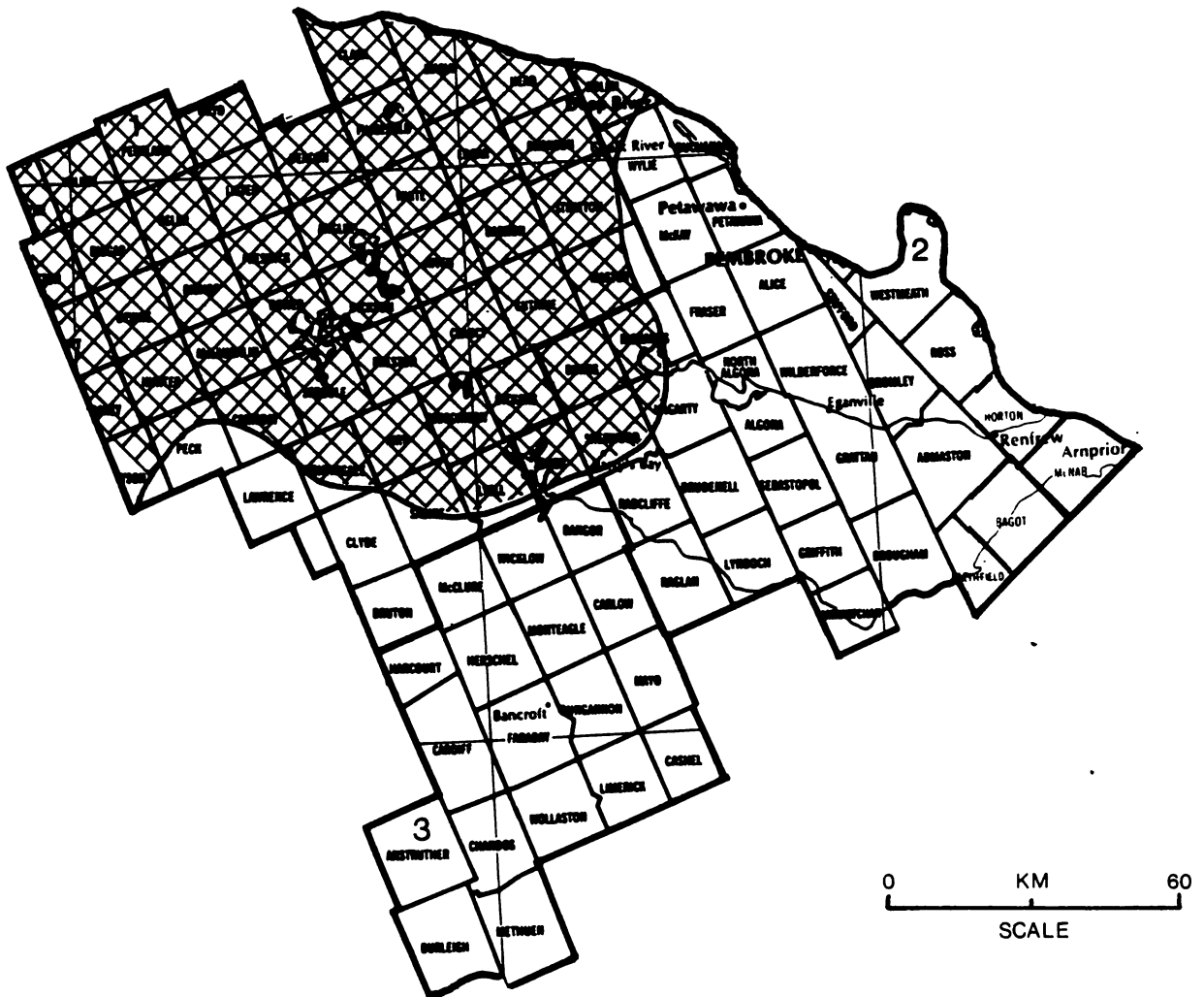
Moderate-to-severe    ●    or    

1 ALGONQUIN PARK

## 2 PEMBROKE

### 3 BANCROFT

# ALGONQUIN PARK, PEMBROKE AND BANCROFT DISTRICTS



Birch Skeletonizer

Areas within which defoliation  
occurred in 1971

## LEGEND

Moderate-to-severe defoliation

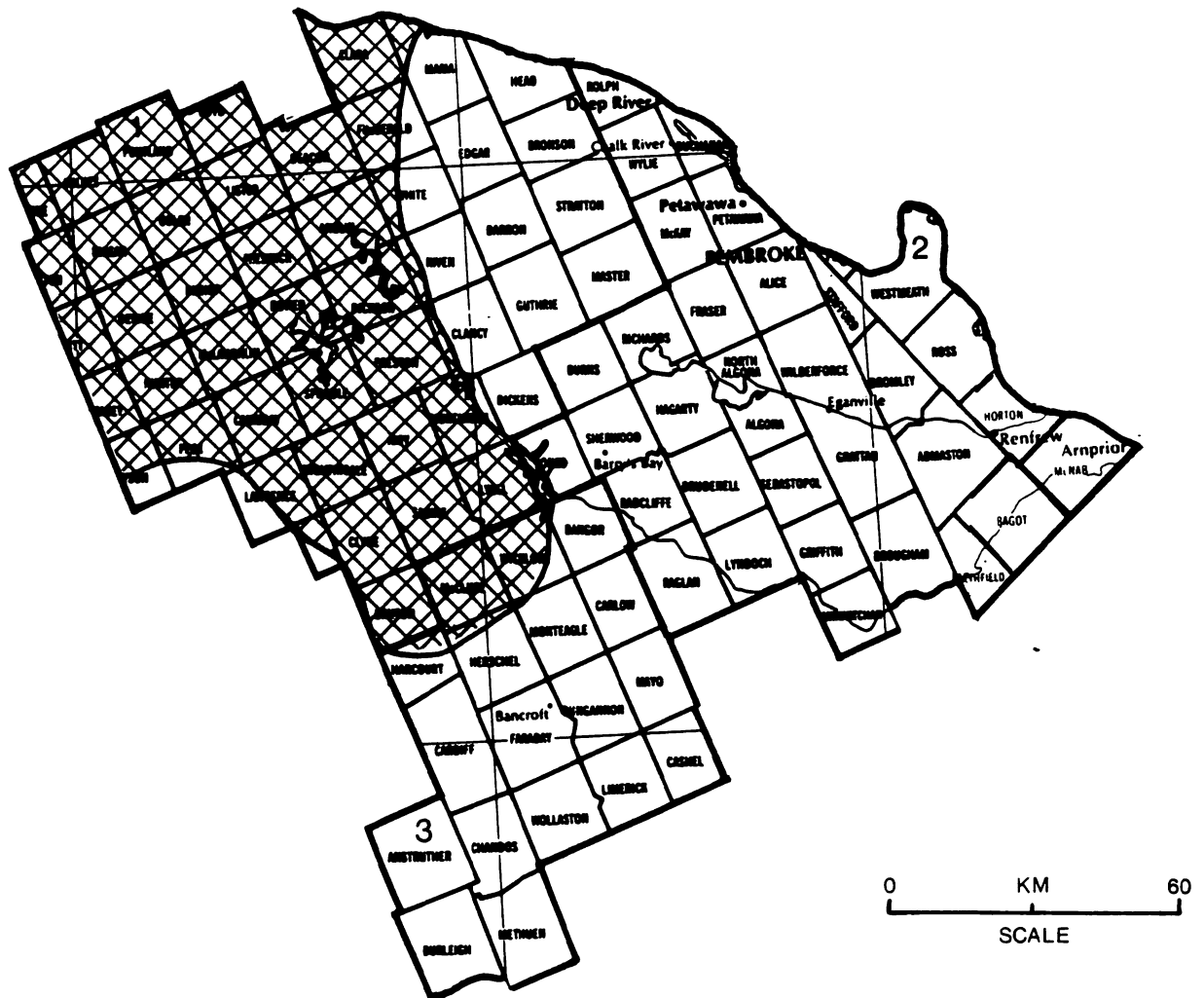


1 ALGONQUIN PARK

2 PEMBROKE

3 BANCROFT

# ALGONQUIN PARK, PEMBROKE AND BANCROFT DISTRICTS



Birch Skeletonizer

Areas within which defoliation  
occurred in 1972

## LEGEND

Moderate-to-severe defoliation



1 ALGONQUIN PARK

2 PEMBROKE

3 BANCROFT

Spruce Budworm, *Choristoneura fumiferana* (Clem.)

Host(s): bF, bS, wS, eH

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1962	not reported
1963	Trace populations were reported in Airy Twp.
1964-1965	Trace populations were reported in Sproule Twp.
1966	not reported
1967	A small pocket of light infestation occurred in Head and Canisbay twps (see map, page ).
1968	Light defoliation was reported in 11 townships in the eastern part of the district (see map, page ).
1969	Medium-to-heavy infestations were reported in Stratton twp (see map, page ).
1970	Moderate-to-severe defoliation occurred throughout Clyde and Sabine twps, northwards to McLaughlin, Bower and Dickson twps; in addition, 11 other townships were affected similarly (see map, page ).
1971	Population levels increased in the central and eastern parts of the district (see map, page ).
1972-1973	Moderate-to-severe defoliation occurred throughout most of Algonquin Park (see maps, pages ).
1974	Moderate-to-severe defoliation continued throughout the park (see map, page ). Balsam fir tree mortality was common in parts of Maria, Head, Stratton, McLaughlin, Bower Preston, Sproule, Sabine and Bruton twps (see mortality map, page ).
1975	There was an extension of the infestation boundaries from Boyd and Pentland twps to McLaughlin and Canisbay twps. Two small pockets of moderate-to-severe defoliation occurred in Devine Twp (see map, page ). Aerial spraying was conducted in high-value stands. Balsam fir mortality was reported in several townships in the district (see mortality map, page ).

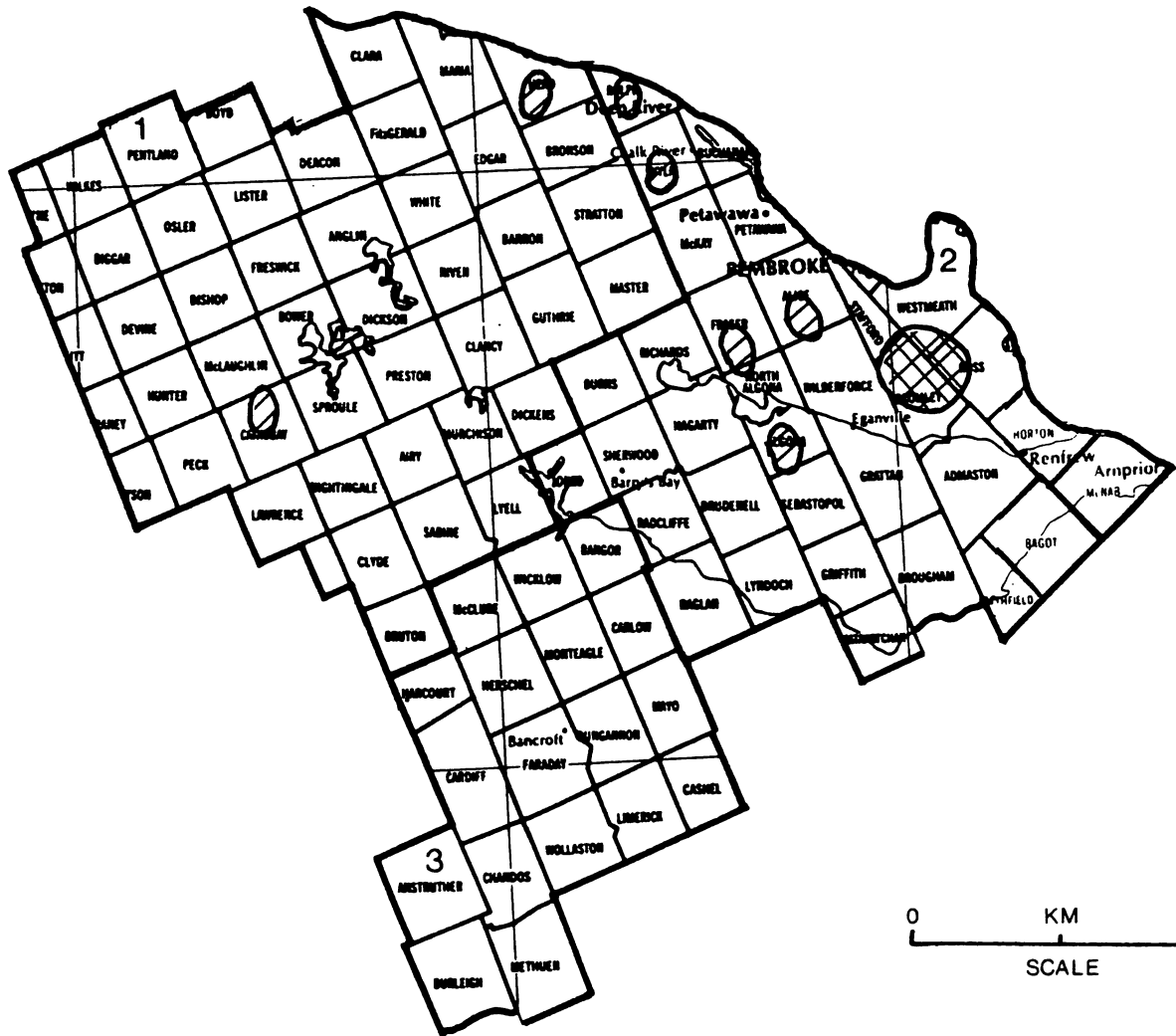
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Spruce Budworm, *Choristoneura fumiferana* (Clem.) (concl.)

<u>Year</u>	<u>Remarks</u>
1976	Population levels declined, however, several large pocket of moderate-to-severe defoliation persisted in 16 townships (see map, page ). Balsam fir mortality was reported in Canisbay Twp east to Clancy and north into Osler and Deacon twps and into the eastern and northeastern parts of Algonquin Park District (see mortality map, page ). Aerial and ground sprays of <i>Bacillus thuringiensis</i> were conducted in the park.
1977	Scattered pockets of moderate-to-severe defoliation were observed in Algonquin Park District (see map, page ). Mortality continued to increase in the southern, central and eastern parts of the park (see mortality map, page ).
1978	Budworm populations declined considerably in the western half of Algonquin Park District; however, moderate-to-severe defoliation was reported in 11 townships (see map, page 35). Mortality continued to increase at widely scattered locations (see mortality map, page ).
1979	Population levels increased in Ballantyne, Wilkes, and Pentland twps; populations spread north into Lister and Deacon twps, and west into Clara Twp (see map, page ). No change in mortality was reported (see mortality map, page ).
1980	Population levels increased in the northern part of Algonquin Park District from Paxton Twp east to Osler Twp, and south into Bishop, McLaughlin and Bower twps. Pockets of moderate-to-severe defoliation also occurred in Sproule, Airy and Head twps (see map, page ). Mortality increased in the the central and north central parts of the district. In Nightingale and Canisbay twps mortality of balsam fir was rated at 39% and 47%, respectively (see mortality map, page ).

# ALGONQUIN PARK, PEMBROKE AND BANCROFT DISTRICTS



Spruce Budworm

Areas within which defoliation  
occurred in 1967

## LEGEND

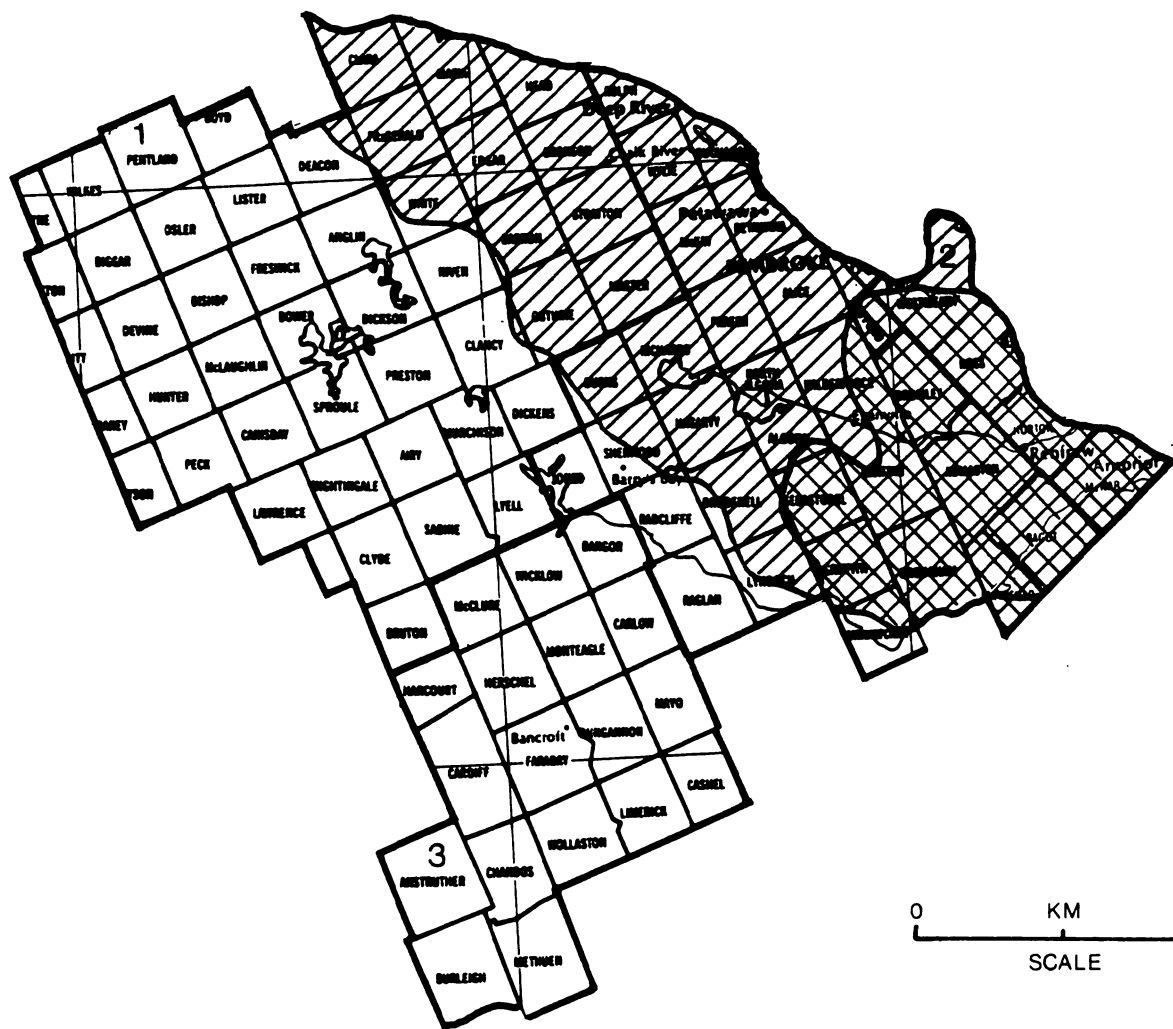
Light defoliation   
Moderate-to-severe defoliation 

1 ALGONQUIN PARK

2 PEMBROKE

3 BANCROFT

# ALGONQUIN PARK, PEMBROKE AND BANCROFT DISTRICTS



Spruce Budworm

Areas within which defoliation  
occurred in 1968

## LEGEND

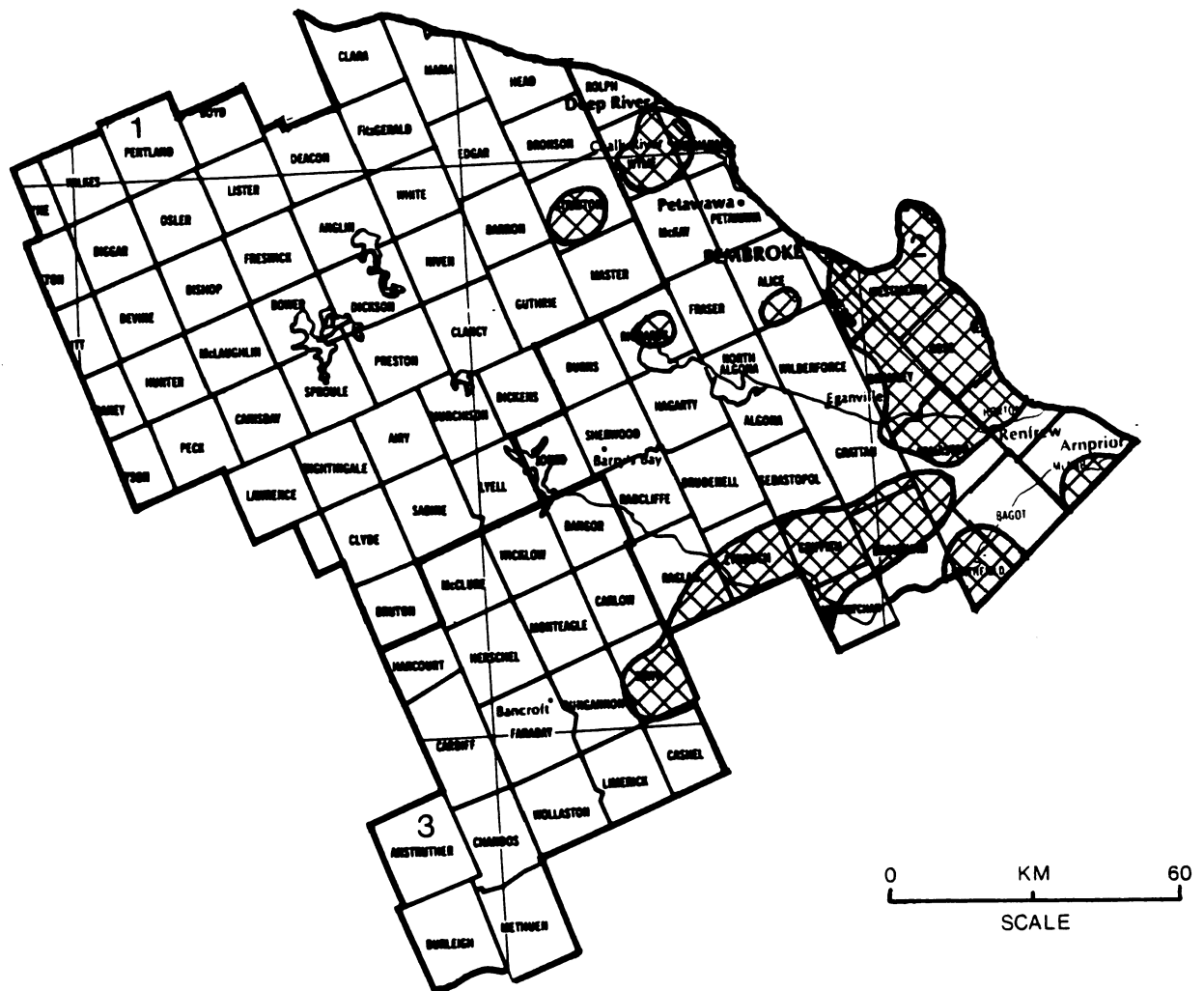
Light defoliation   
Moderate-to-severe defoliation 

1 ALGONQUIN PARK

2 PEMBROKE

3 BANCROFT

# ALGONQUIN PARK, PEMBROKE AND BANCROFT DISTRICTS



The map shows a study area with 1000 plots distributed across three numbered regions. Region 1 is in the northwest, Region 2 is in the northeast, and Region 3 is in the south. The plots are represented by small circles, many of which are shaded with a cross-hatch pattern. The map includes numerous place names, such as PERTLAND, DEACON, WHITE, RIVER, GUTHRIE, MASTER, FRISER, NORTH ALBION, ALBION, GRIFFITH, and others. A scale bar at the bottom right indicates a distance of 1 km.

Areas within which defoliation  
occurred in 1970

Moderate-to-severe defoliation

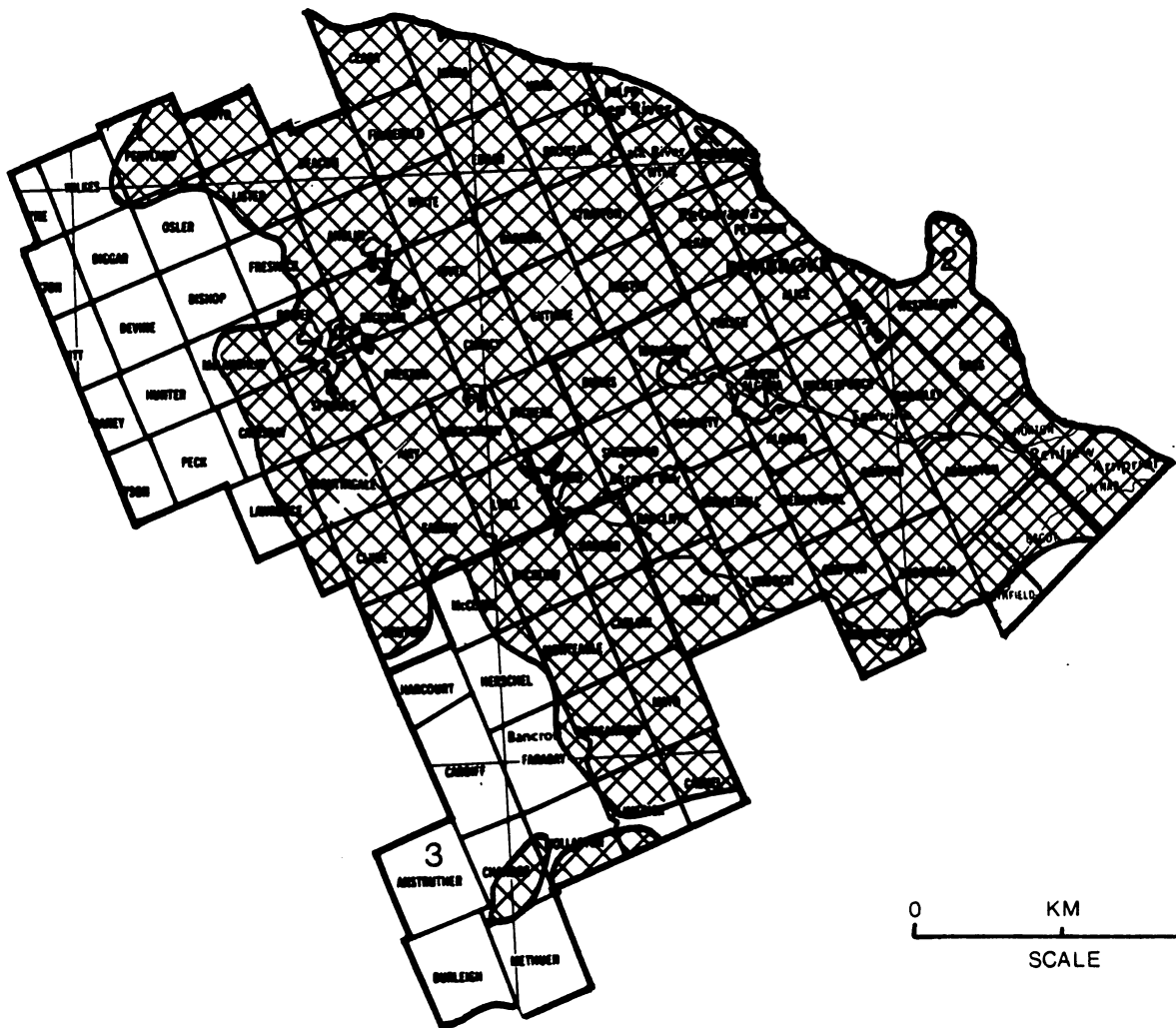


1 ALGONQUIN PARK

## 2 PEMBROKE

### 3 BANCROFT

# ALGONQUIN PARK, PEMBROKE AND BANCROFT DISTRICTS



Spruce Budworm

Areas within which defoliation  
occurred in 1971

## LEGEND

Moderate-to-severe defoliation

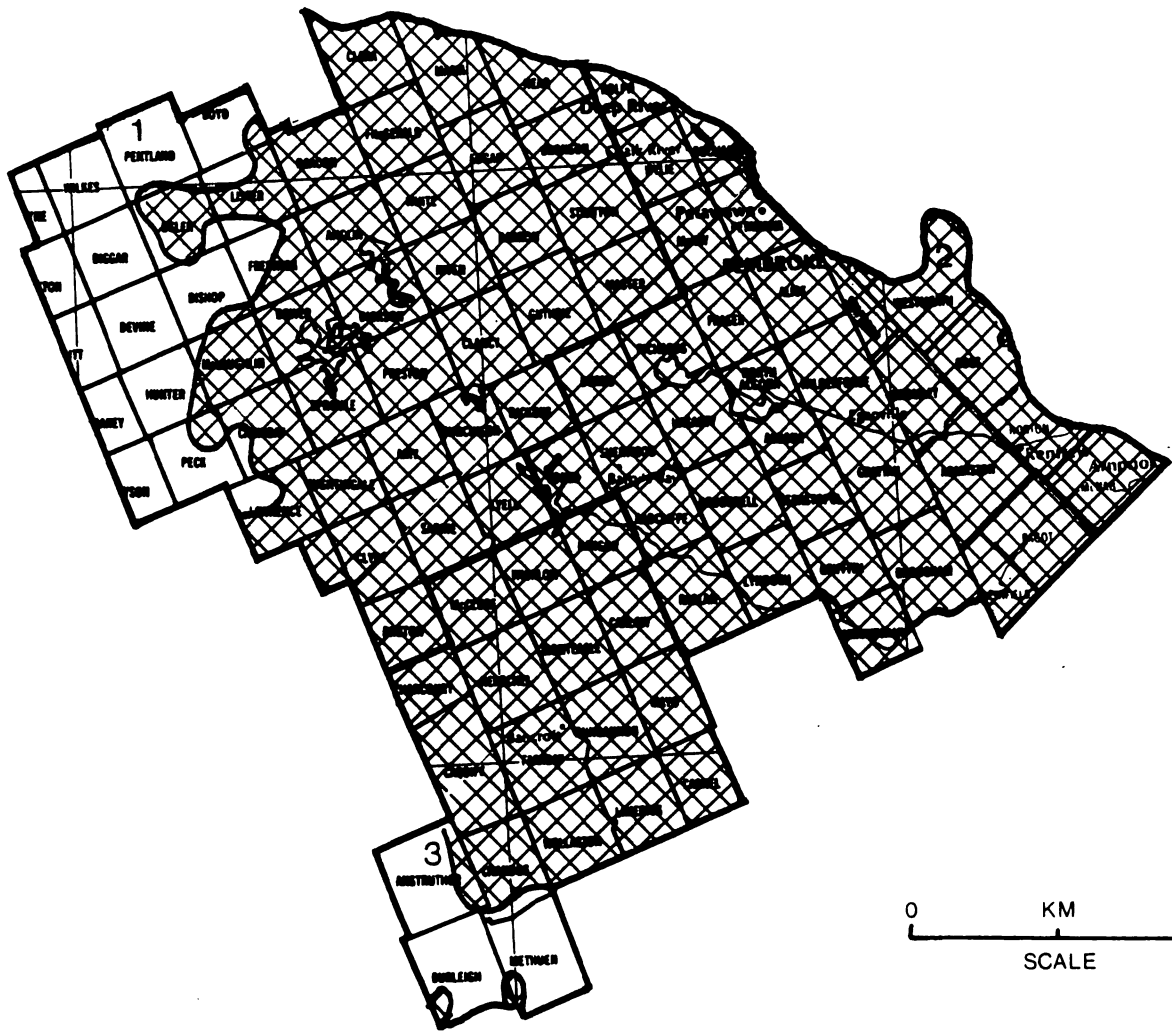


1 ALGONQUIN PARK

2 PEMBROKE

3 BANCROFT


# ALGONQUIN PARK, PEMBROKE AND BANCROFT DISTRICTS



Spruce Budworm

Areas within which defoliation  
occurred in 1972

LEGEND

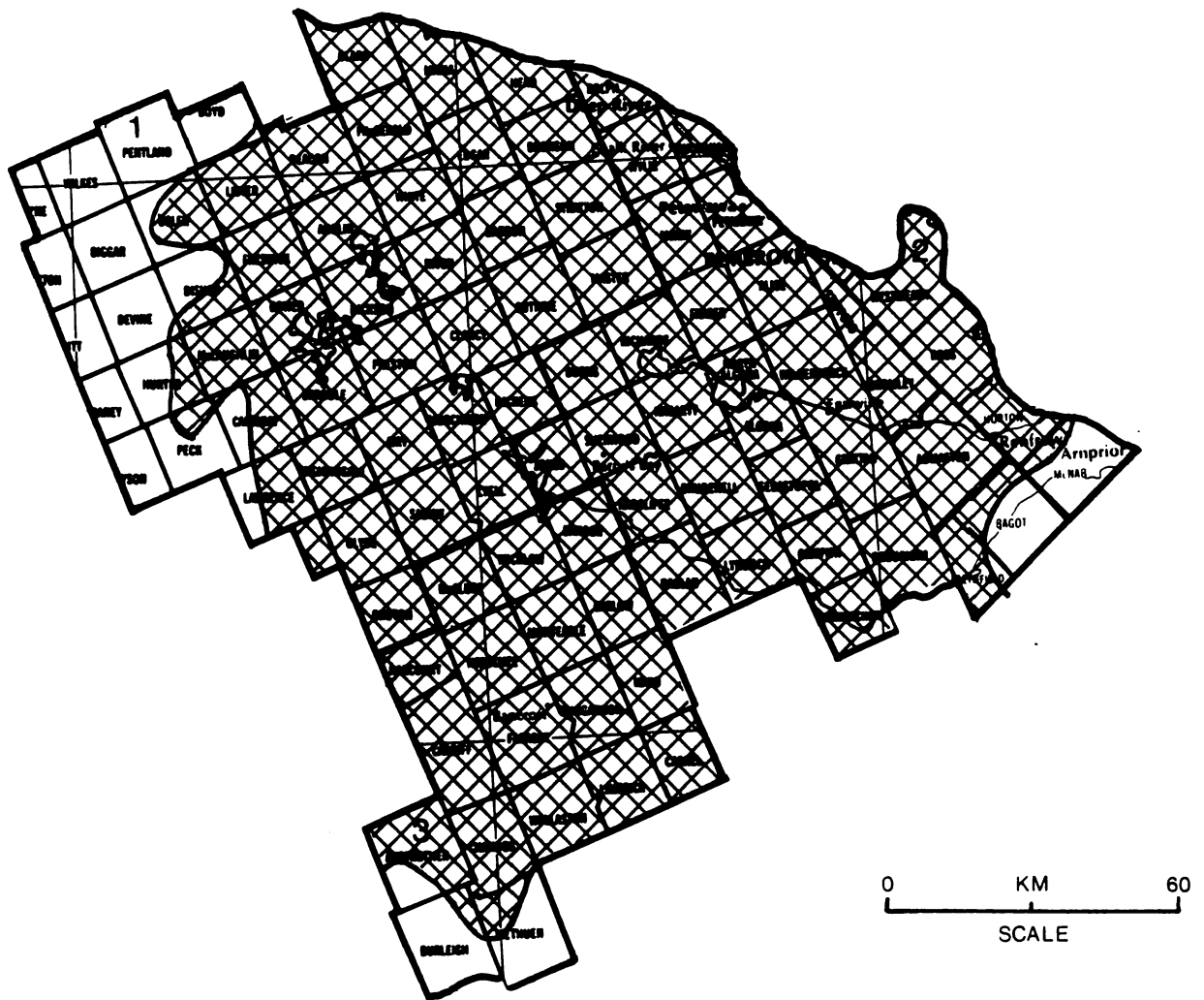
Moderate-to-severe defoliation 

1 ALGONQUIN PARK

2 PEMBROKE

3 BANCROFT

# ALGONQUIN PARK, PEMBROKE AND BANCROFT DISTRICTS



Spruce Budworm

Areas within which defoliation  
occurred in 1973

## LEGEND

Moderate-to-severe defoliation



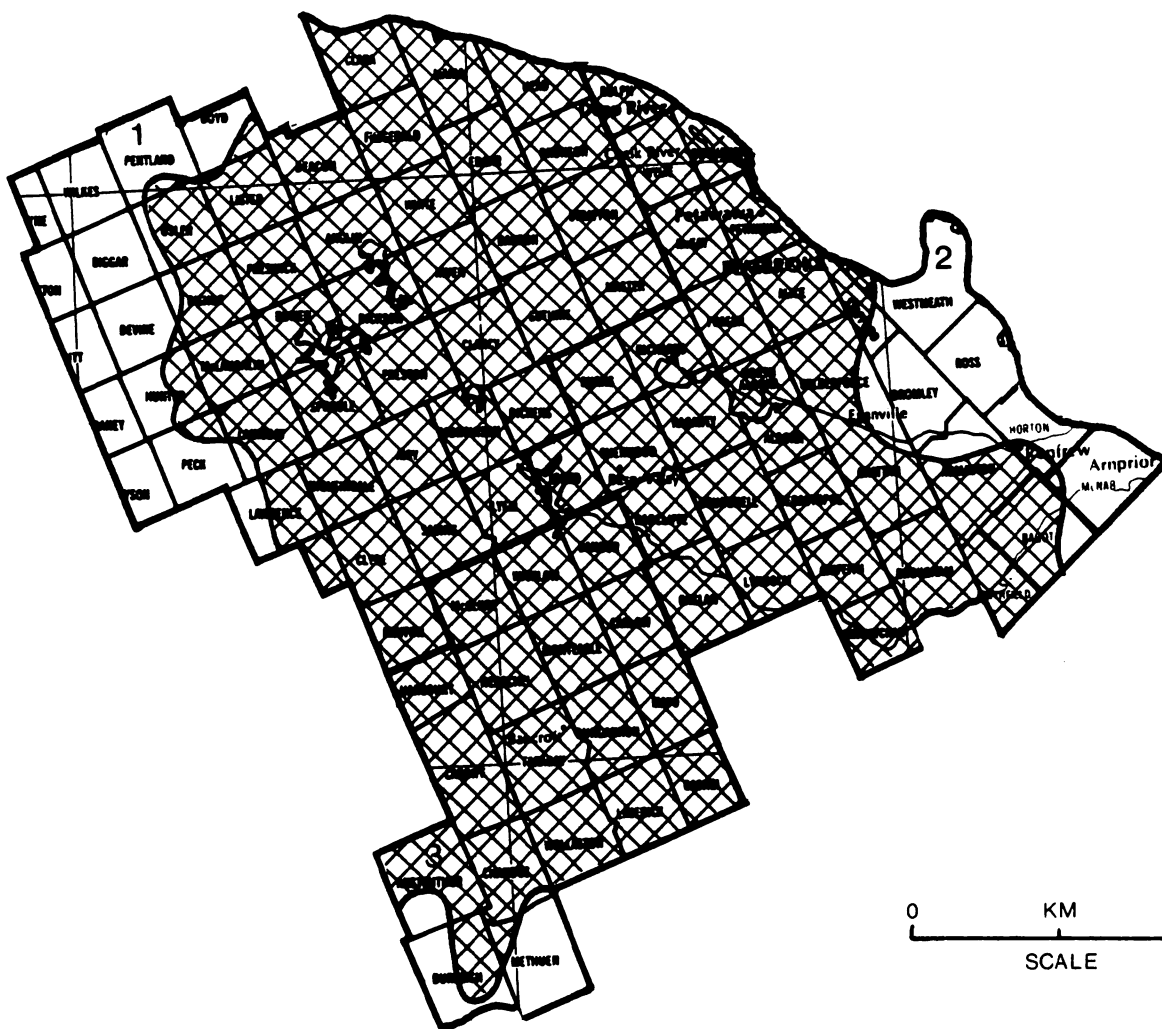
1 ALGONQUIN PARK

2 PEMBROKE

3 BANCROFT




# ALGONQUIN PARK, PEMBROKE AND BANCROFT DISTRICTS



Spruce Budworm

Areas within which defoliation  
occurred in 1974

## LEGEND

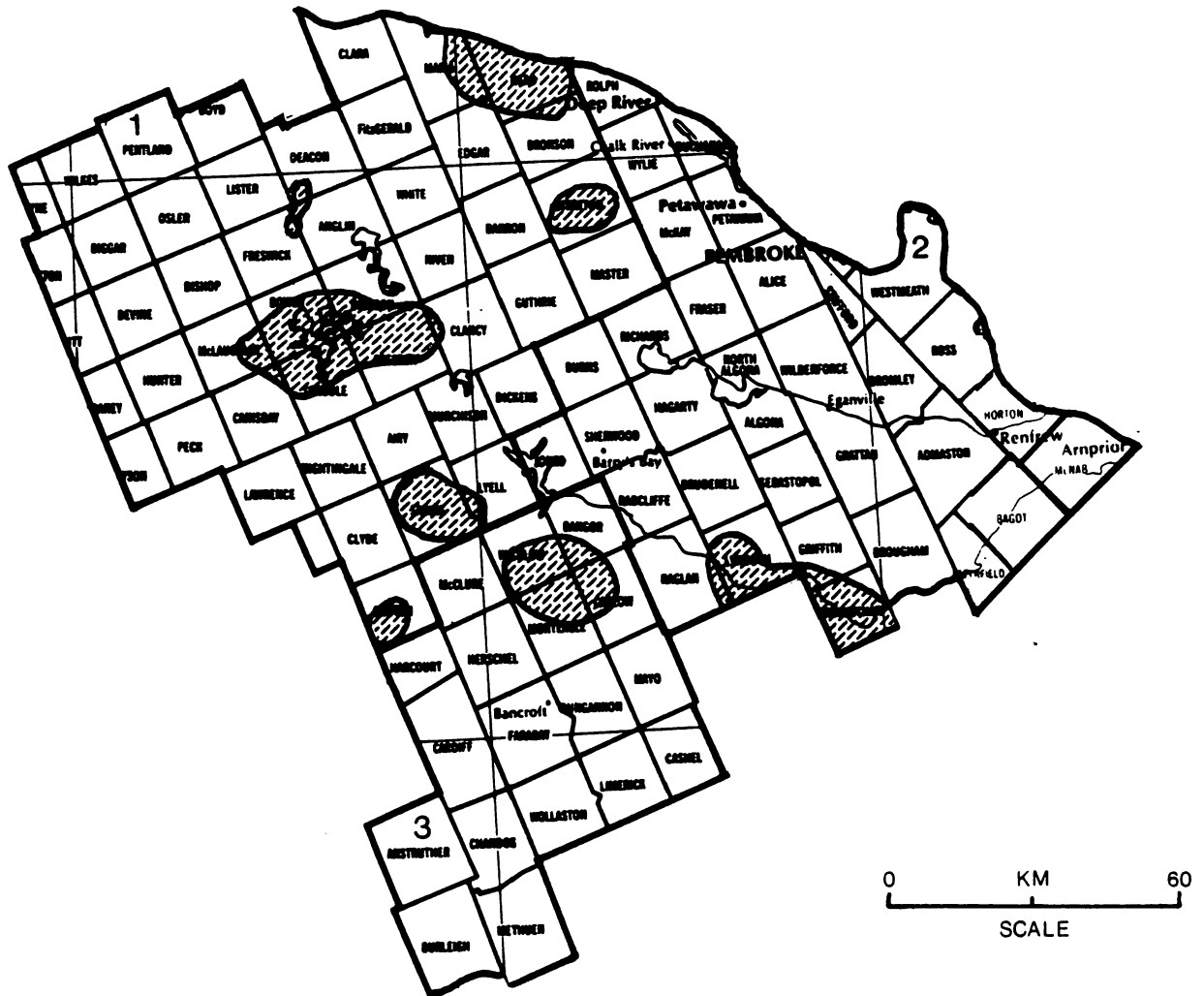
Moderate-to-severe defoliation 

1 ALGONQUIN PARK

2 PEMBROKE

3 BANCROFT


# ALGONQUIN PARK, PEMBROKE AND BANCROFT DISTRICTS



Spruce Budworm

Areas within which whole-tree and  
top mortality occurred in 1974

## LEGEND

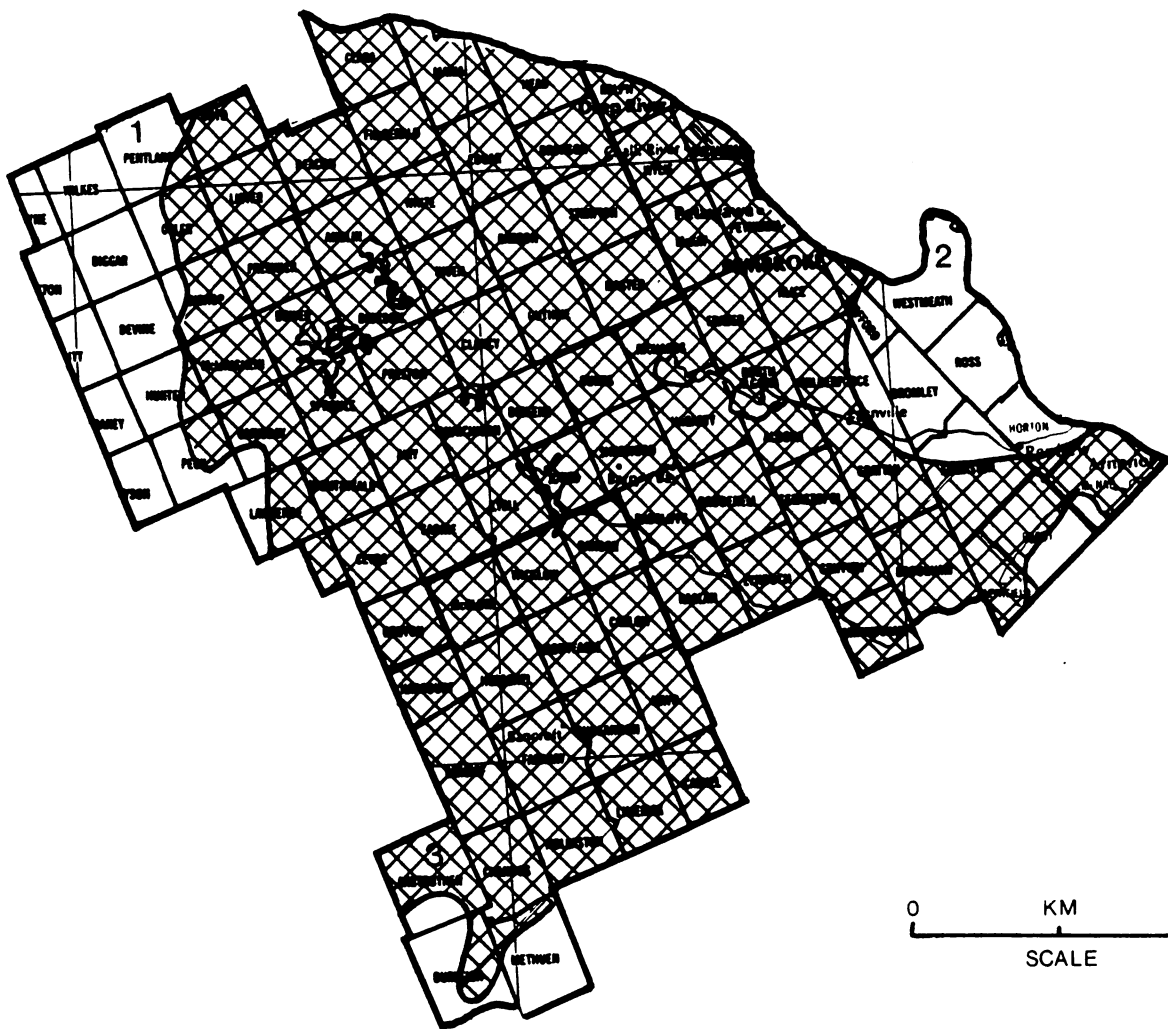
Mortality 

1 ALGONQUIN PARK

2 PEMBROKE

3 BANCROFT

# ALGONQUIN PARK, PEMBROKE AND BANCROFT DISTRICTS



Spruce Budworm

Areas within which defoliation  
occurred in 1975

## LEGEND

Moderate-to-severe defoliation

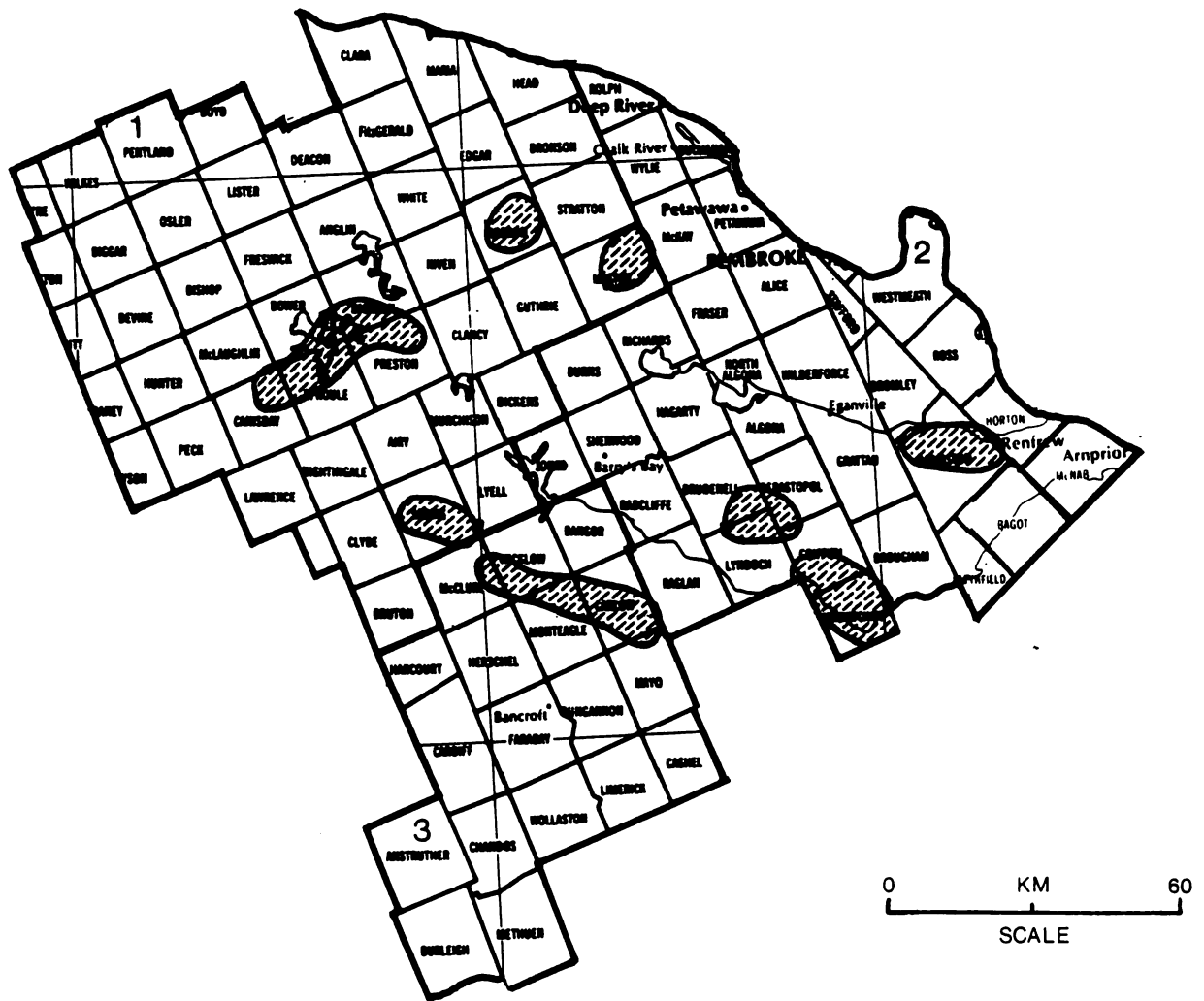


1 ALGONQUIN PARK

2 PEMBROKE

3 BANCROFT

# ALGONQUIN PARK, PEMBROKE AND BANCROFT DISTRICTS



Spruce Budworm

Areas within which whole-tree and  
top mortality occurred in 1975

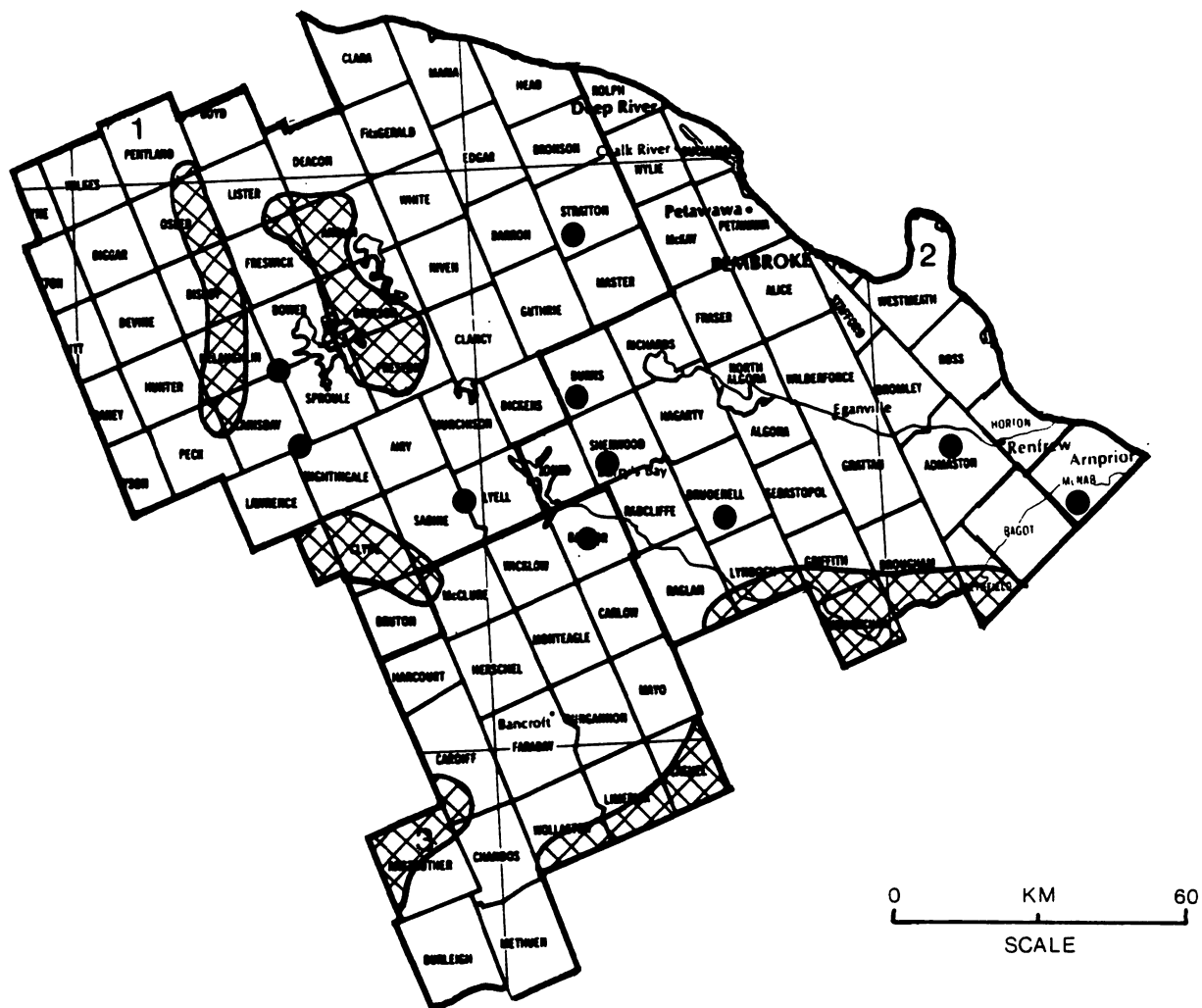
## LEGEND

Mortality



- 1 ALGONQUIN PARK
- 2 PEMBROKE
- 3 BANCROFT

# ALGONQUIN PARK, PEMBROKE AND BANCROFT DISTRICTS





0 KM 60  
SCALE

- 1 ALGONQUIN PARK
- 2 PEMBROKE
- 3 BANCROFT

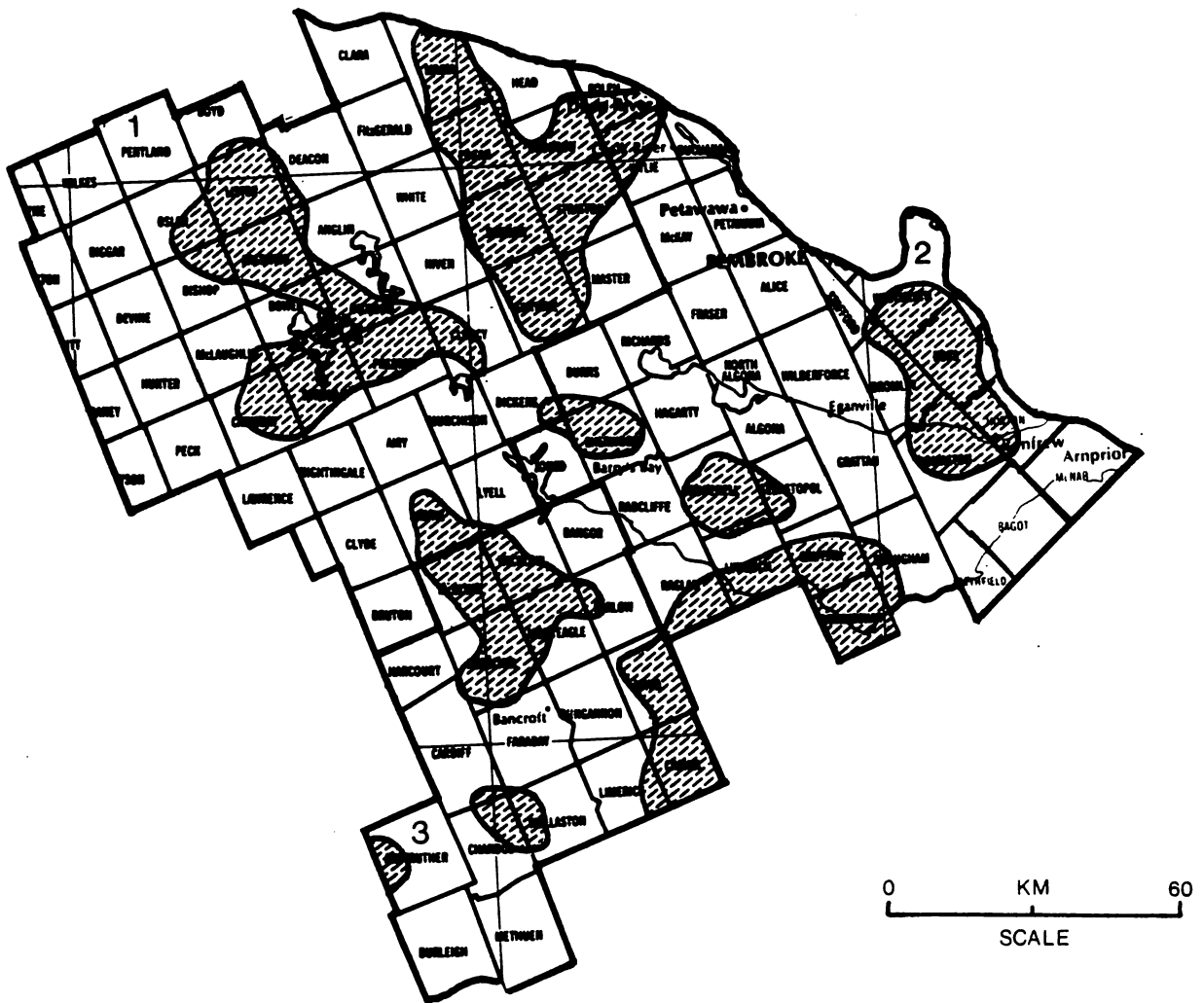
Spruce Budworm

Areas within which defoliation  
occurred in 1976

## LEGEND

Moderate-to-severe defoliation  or 


# ALGONQUIN PARK, PEMBROKE AND BANCROFT DISTRICTS



Spruce Budworm

Areas within which whole-tree and  
top mortality occurred in 1976 :

## LEGEND

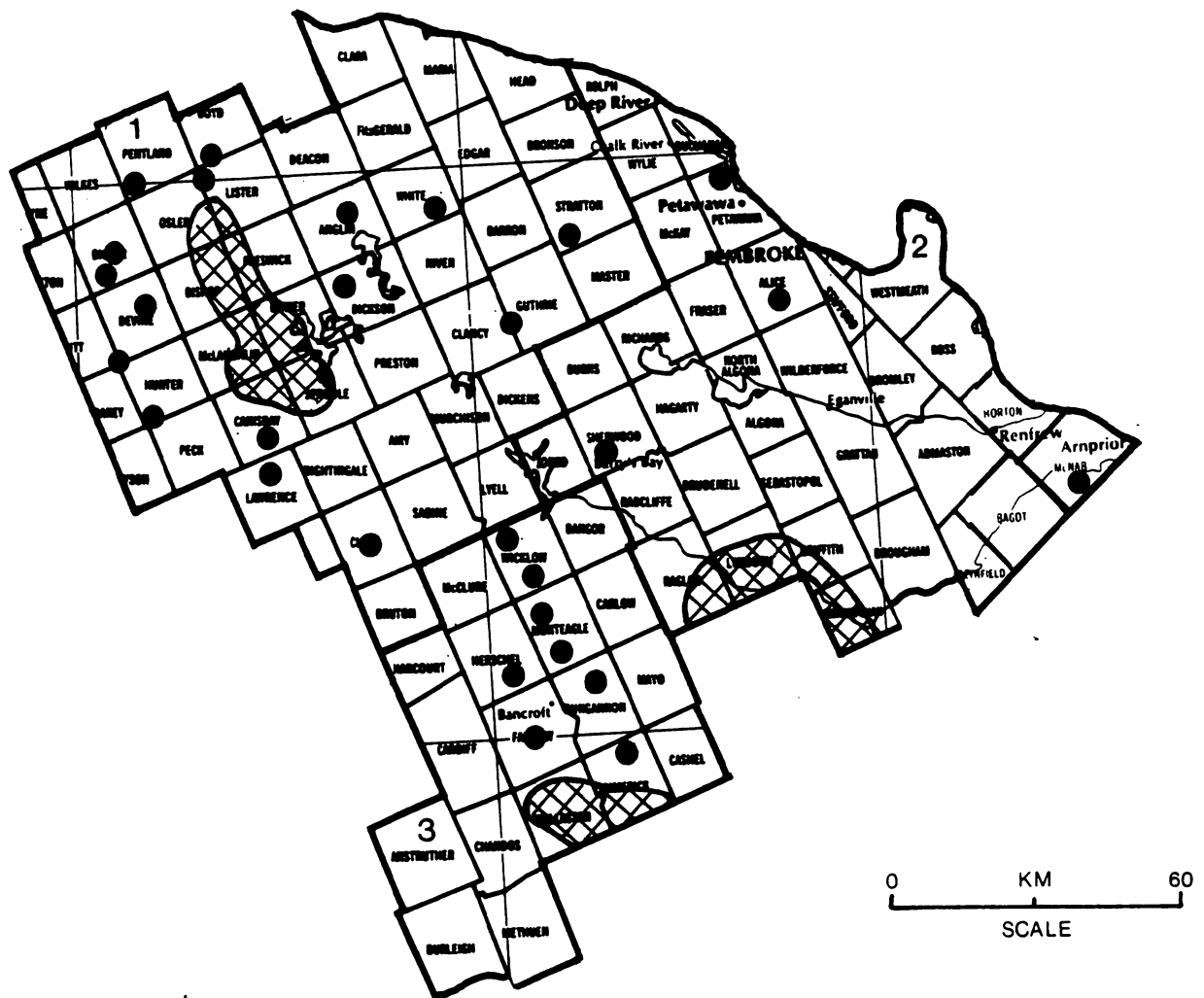
Mortality 

1 ALGONQUIN PARK

2 PEMBROKE

3 BANCROFT


# ALGONQUIN PARK, PEMBROKE AND BANCROFT DISTRICTS



Spruce Budworm

Areas within which defoliation  
occurred in 1977

## LEGEND

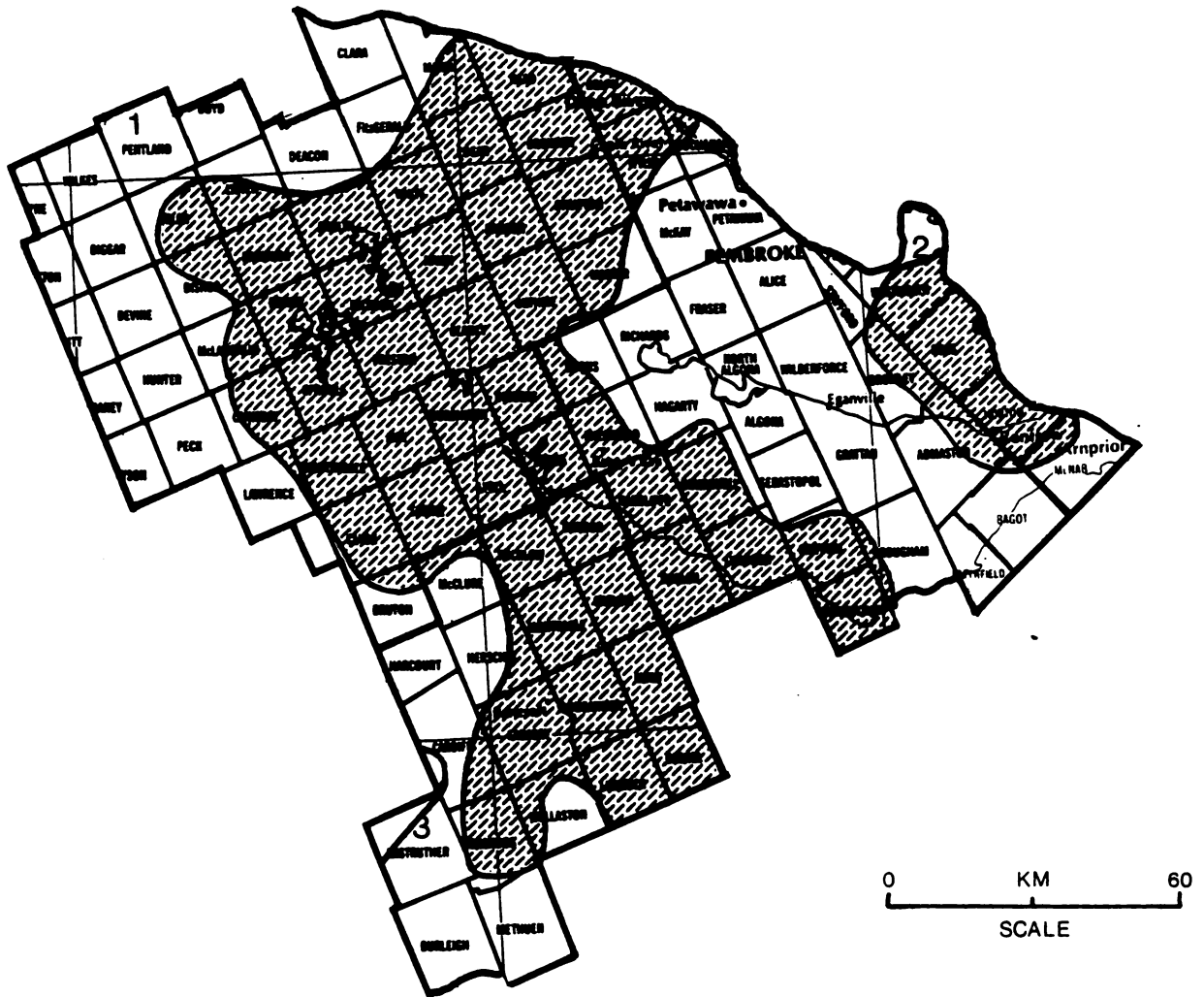
Moderate-to-severe defoliation ● or 

1 ALGONQUIN PARK

2 PEMBROKE

3 BANCROFT


# ALGONQUIN PARK, PEMBROKE AND BANCROFT DISTRICTS



## Spruce Budworm

Areas within which whole-tree and  
top mortality occurred in 1977

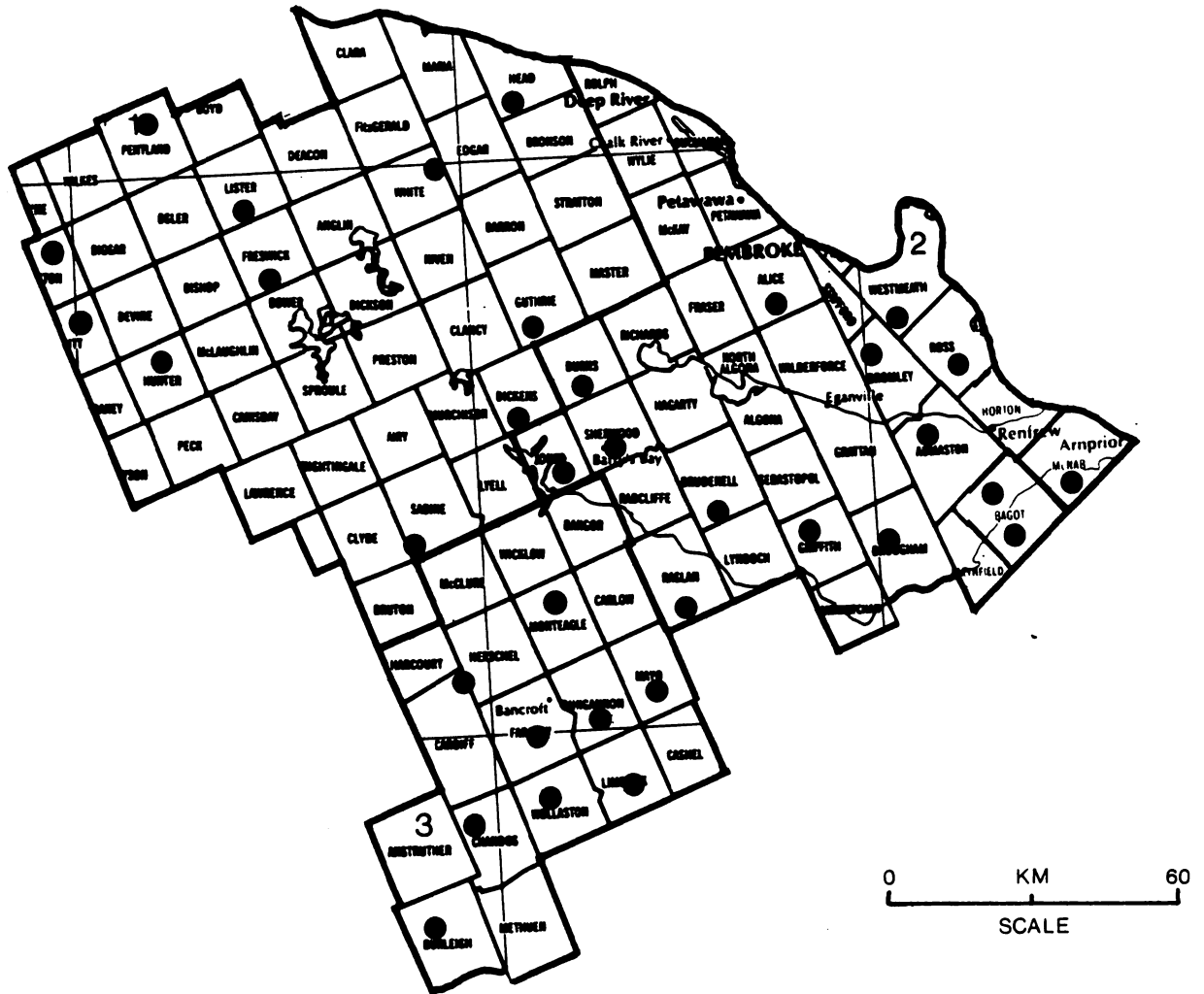
### LEGEND

Mortality 

- 1 ALGONQUIN PARK
- 2 PEMBROKE
- 3 BANCROFT



# ALGONQUIN PARK, PEMBROKE AND BANCROFT DISTRICTS



Spruce Budworm

Areas within which defoliation  
occurred in 1978

## LEGEND

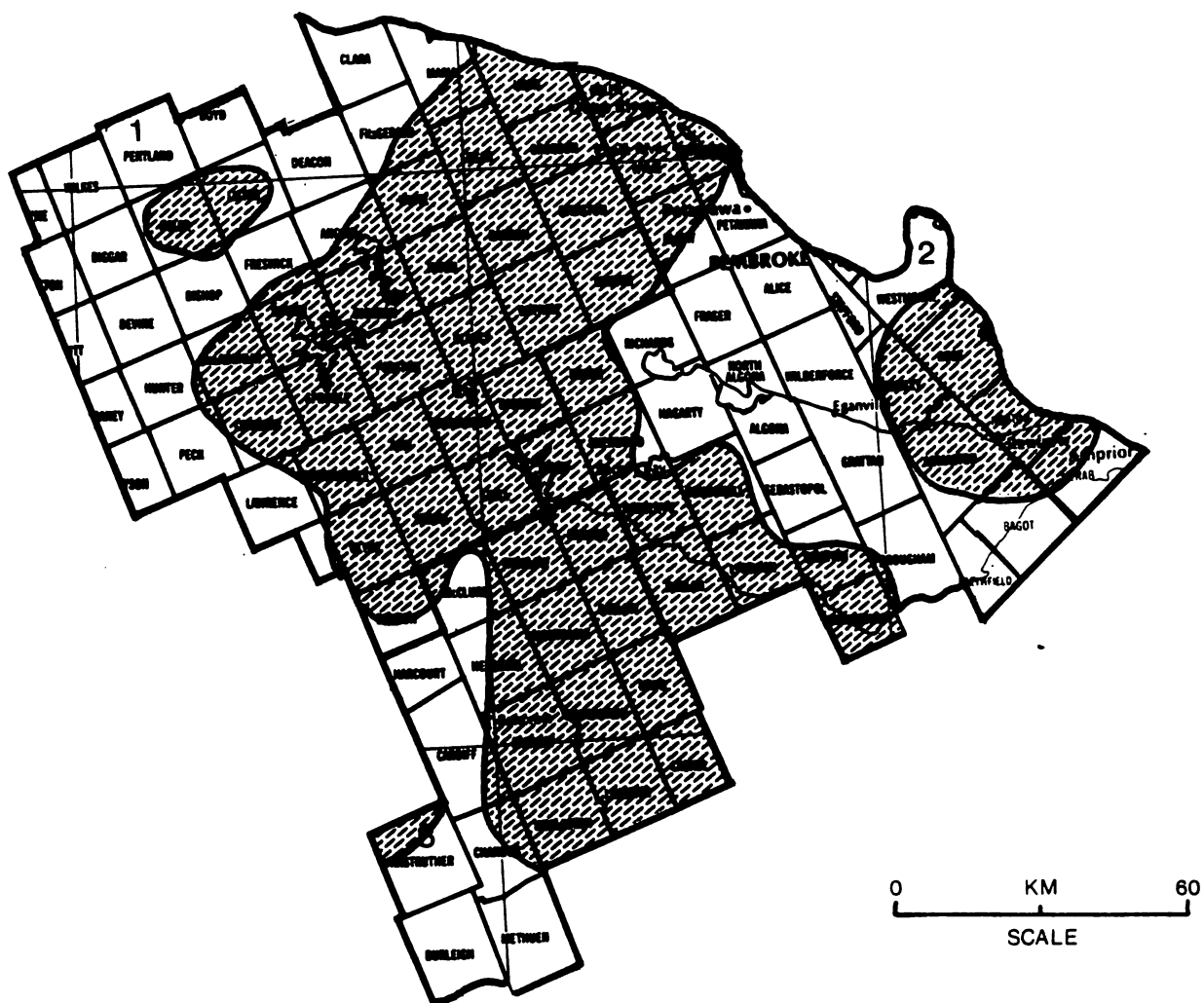
Moderate-to-severe defoliation ●

1 ALGONQUIN PARK

2 PEMBROKE

3 BANCROFT

# ALGONQUIN PARK, PEMBROKE AND BANCROFT DISTRICTS



Spruce Budworm

Areas within which whole-tree and  
top mortality occurred in 1978

## LEGEND

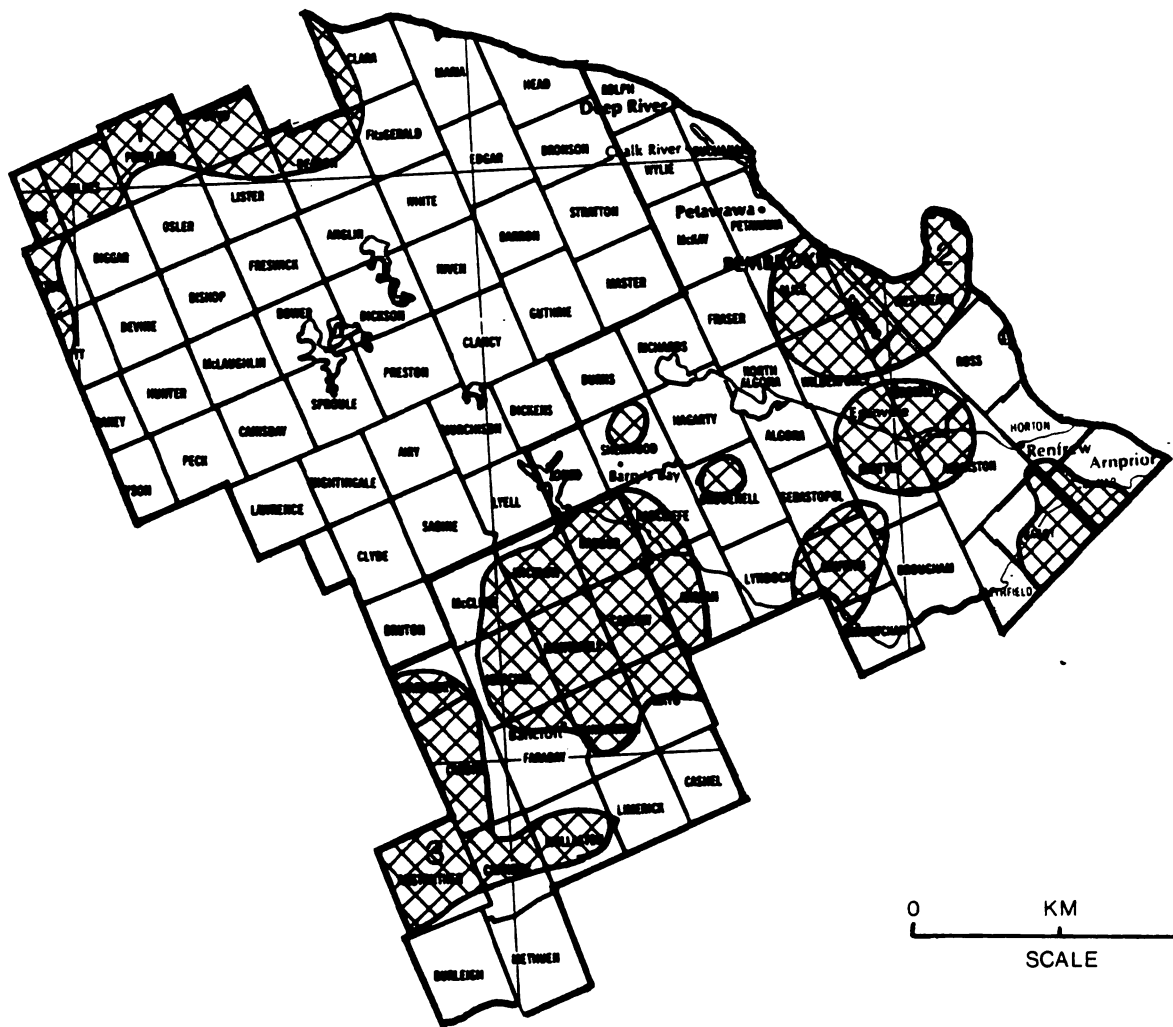
Mortality 

1 ALGONQUIN PARK

2 PEMBROKE

3 BANCROFT

# ALGONQUIN PARK, PEMBROKE AND BANCROFT DISTRICTS




0 KM 60  
SCALE

Spruce Budworm

Areas within which defoliation  
occurred in 1979

LEGEND

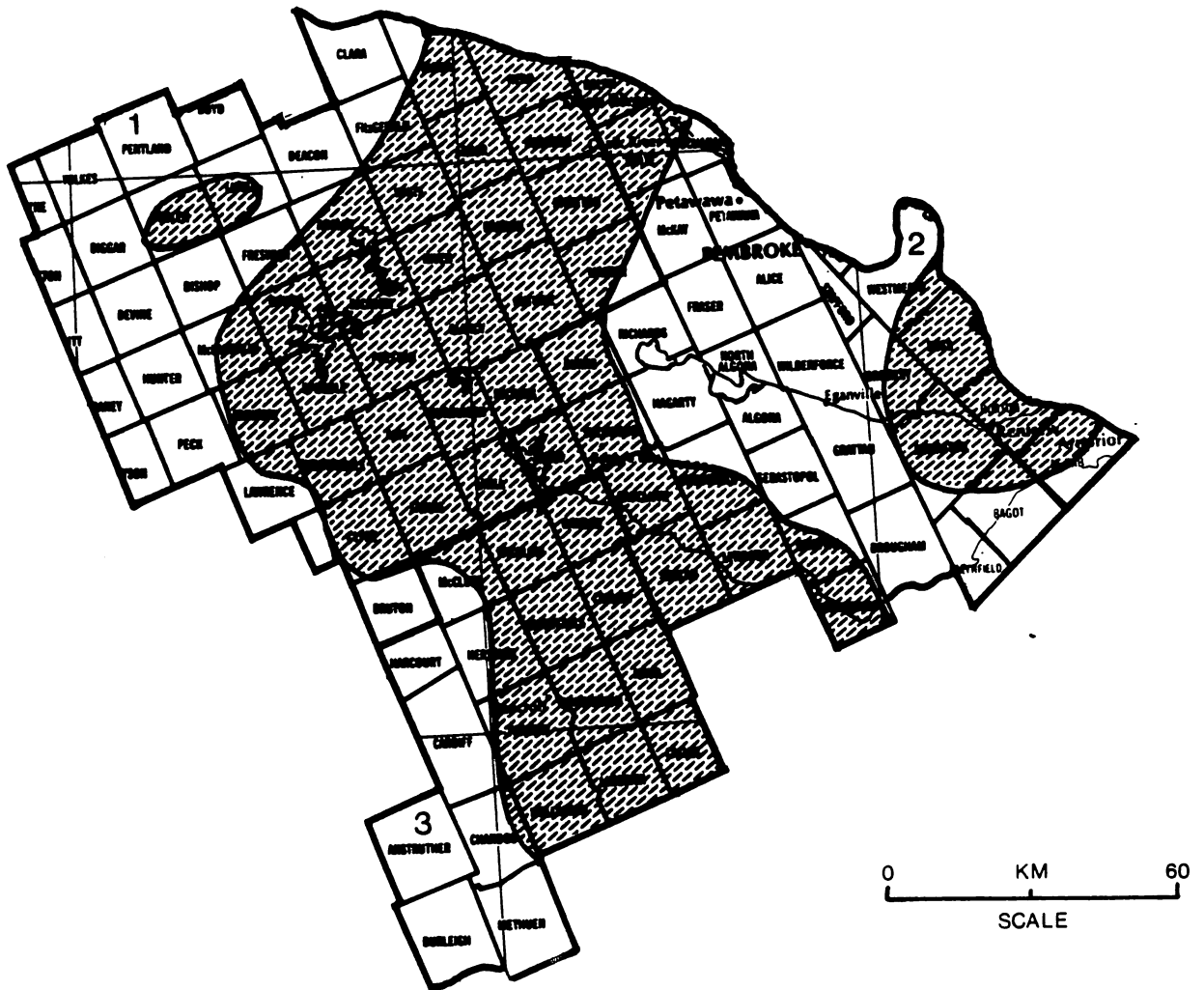
Moderate-to-severe defoliation 

1 ALGONQUIN PARK

2 PEMBROKE

3 BANCROFT

# ALGONQUIN PARK, PEMBROKE AND BANCROFT DISTRICTS



## Spruce Budworm

Areas within which whole-tree and  
top mortality occurred in 1979

### LEGEND

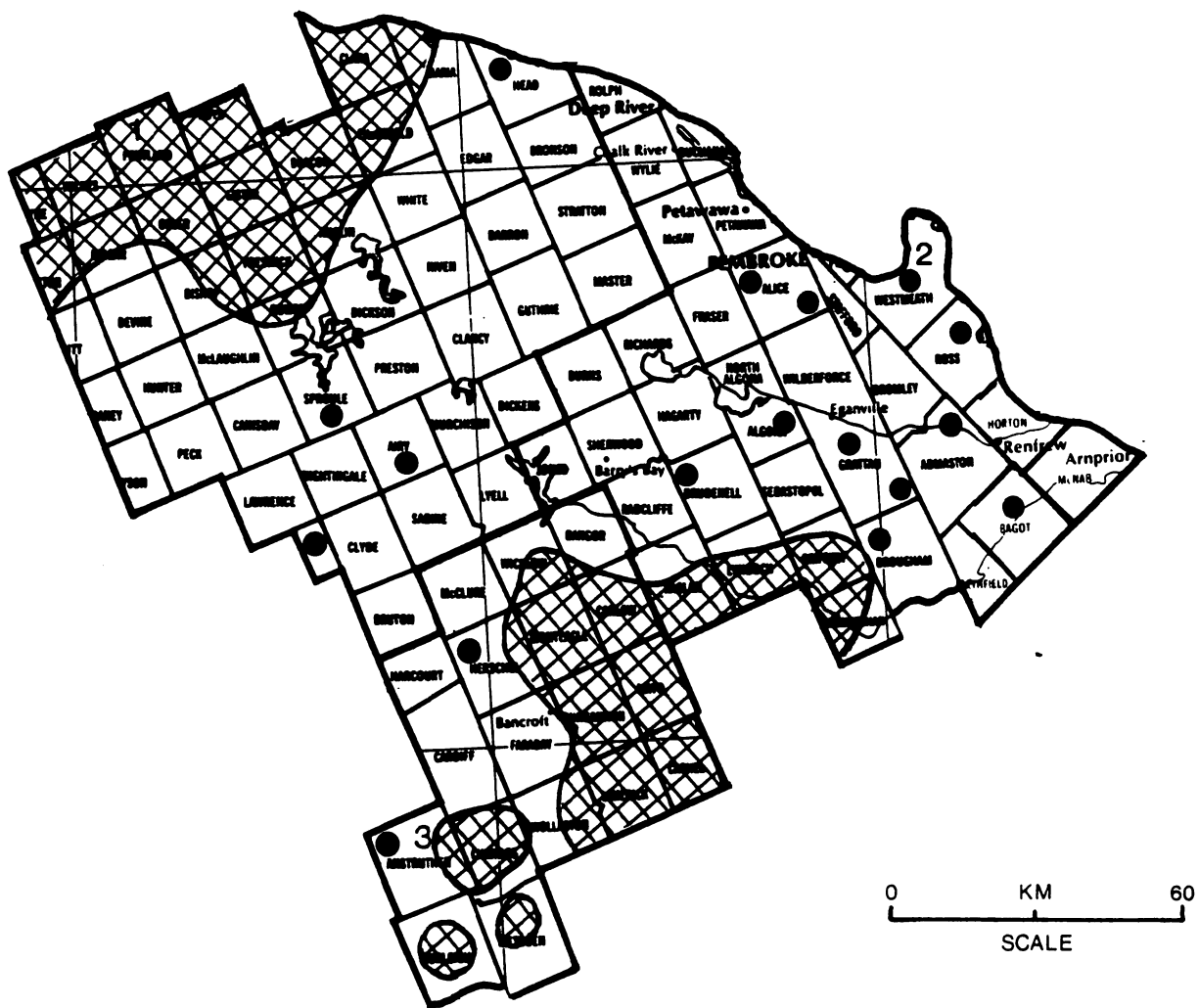
Mortality 

1 ALGONQUIN PARK

2 PEMBROKE

3 BANCROFT


# ALGONQUIN PARK, PEMBROKE AND BANCROFT DISTRICTS



Spruce Budworm

Areas within which defoliation  
occurred in 1980

## LEGEND

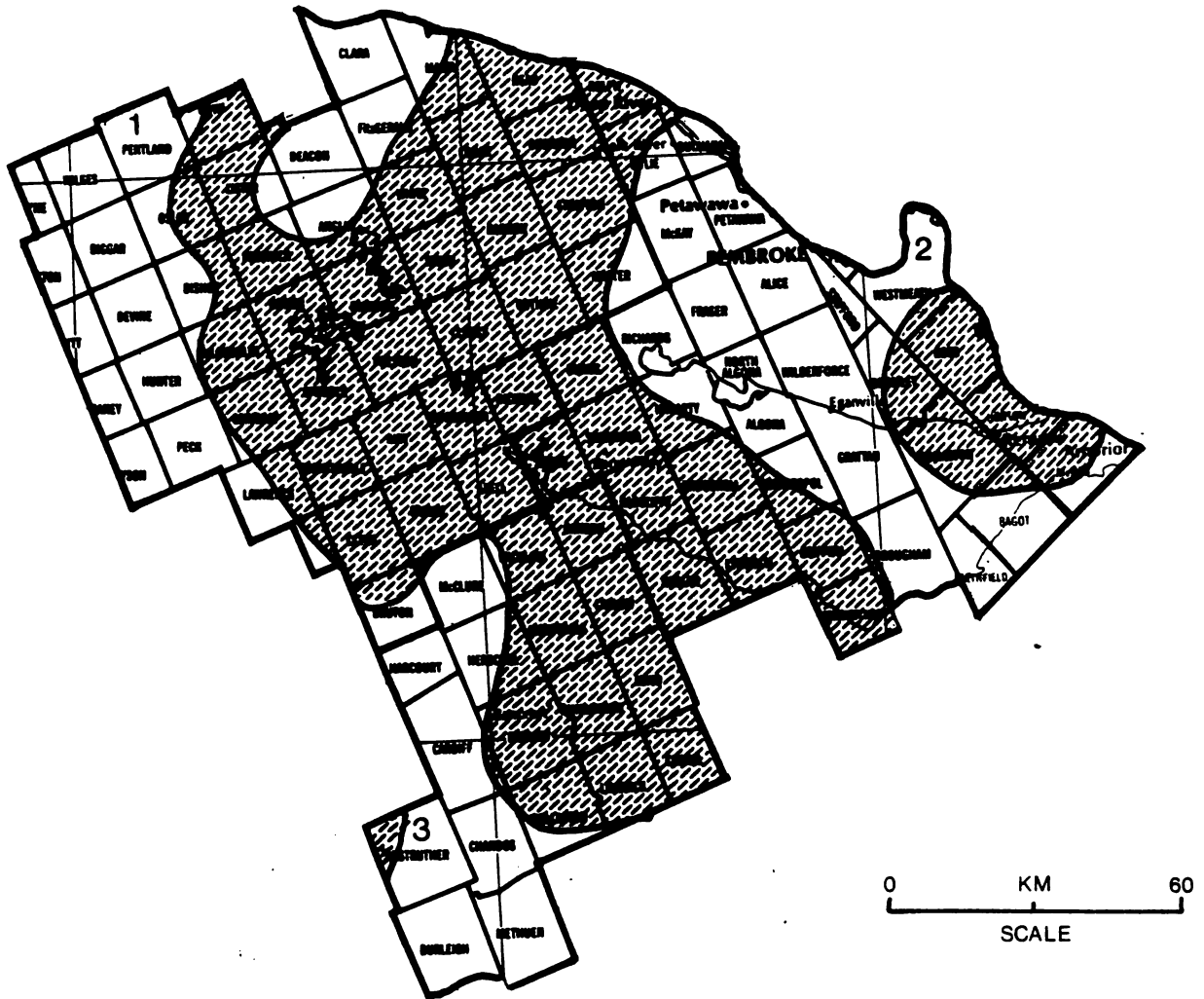
Moderate-to-severe defoliation ● or 

1 ALGONQUIN PARK

2 PEMBROKE

3 BANCROFT

# ALGONQUIN PARK, PEMBROKE AND BANCROFT DISTRICTS



## Spruce Budworm

Areas within which whole-tree and  
top mortality occurred in 1980

### LEGEND

Mortality 

1 ALGONQUIN PARK

2 PEMBROKE

3 BANCROFT

Jack Pine Budworm, *Choristoneura pinus pinus* Free.

Host(s): jP, wP, rP

[Major]

<u>Year</u>	<u>Remarks</u>
1946-1960	not reported
1961	Low numbers of larvae were found in Maria Twp.
1962-1966	not reported
1967	Moderate-to-severe defoliation occurred in White, Niven, Edgar, Barron, Bronson and Stratton twps (see map, page ).
1968	Pockets of moderate-to-severe defoliation were reported in White and Edgar twps. Light defoliation was encountered throughout the central and eastern portions of the district (see map, page ).
1969	Population levels increased markedly throughout the eastern half of the district (see map, page ). Considerable top mortality was evident at many points as a result of repeated defoliation.
1970	Moderate-to-severe defoliation was reported in Clara, Head, and Guthrie twps (see map, page ).
1971	Moderate-to-severe defoliation was encountered in Guthrie, Stratton, Head and Fitzgerald twps (see map, page ).
1972-1974	Trace population levels were reported.
1975-1980	not reported

[illegible]

Areas within which defoliation  
occurred in 1967

Moderate-to-severe defoliation

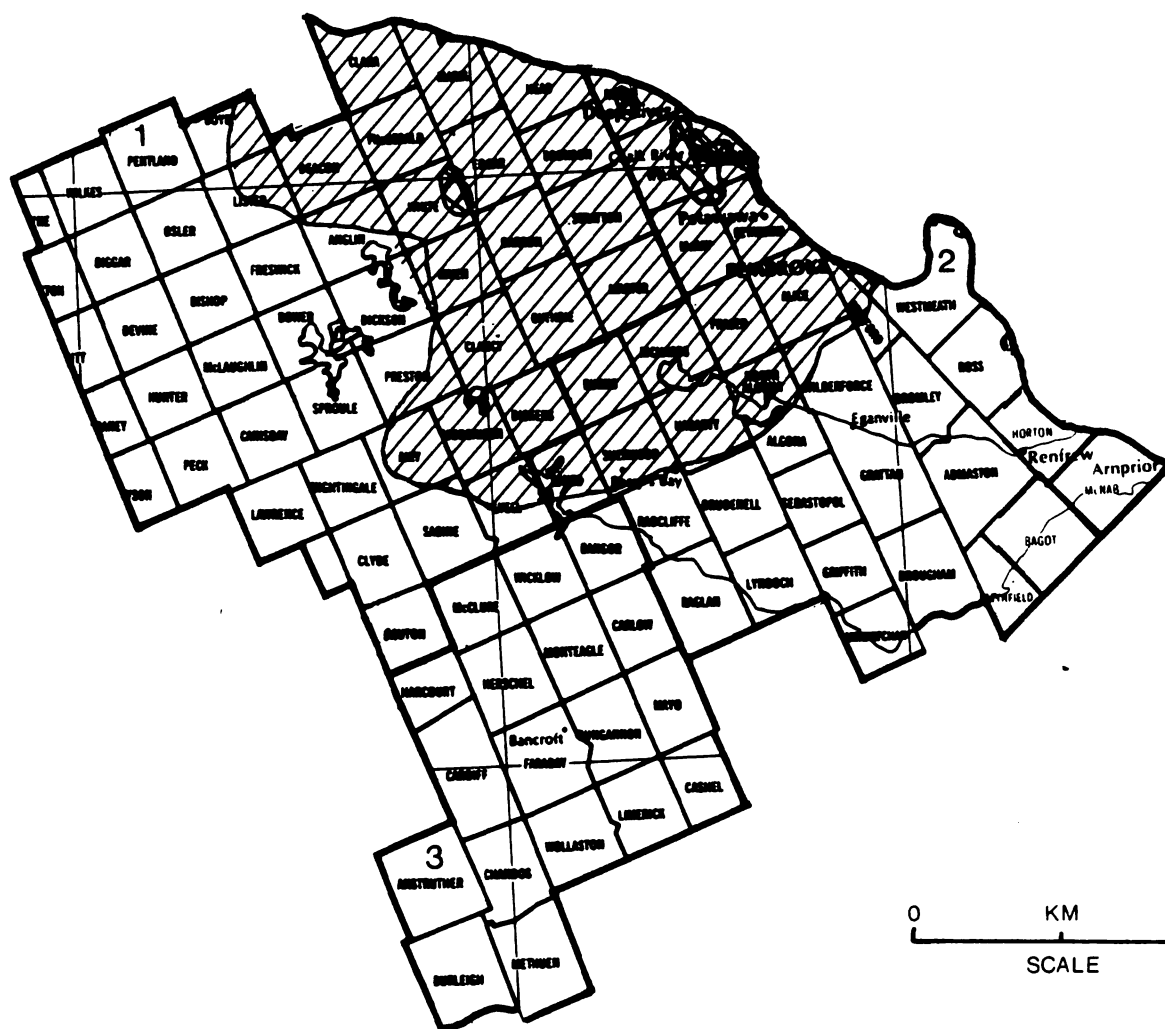


## 2 PEMBROKE

### 3 BANCROFT



# ALGONQUIN PARK, PEMBROKE AND BANCROFT DISTRICTS



0 KM 60  
SCALE

1 ALGONQUIN PARK

2 PEMBROKE

3 BANCROFT

Jack Pine Budworm

Areas within which defoliation  
occurred in 1968

## LEGEND

Light defoliation



Moderate-to-severe defoliation



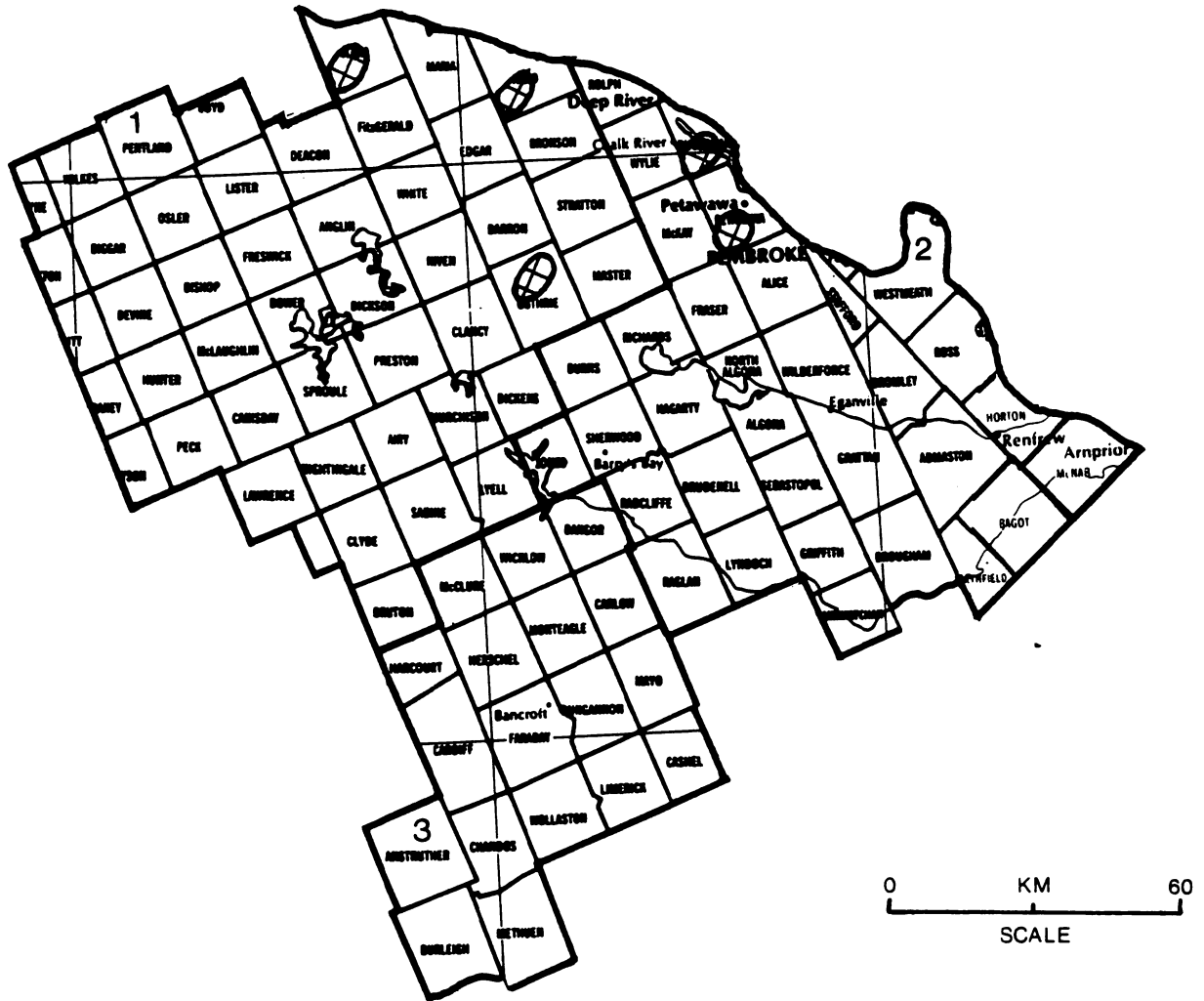
The map shows the south-east of England, with the counties of Kent, Surrey, and Sussex. The map is divided into three numbered regions: 1 (Kent), 2 (Surrey), and 3 (Sussex). Major towns and cities are labeled, including Maidstone, Dover, Canterbury, Dover, and Brighton. The map also shows the English Channel and the English coast. A scale bar indicates distances up to 60 km.

### Areas within which defoliation occurred in 1969

Moderate-to-severe defoliation  or 

### 3 BANCROFT

# ALGONQUIN PARK, PEMBROKE AND BANCROFT DISTRICTS



Jack Pine Budworm

Areas within which defoliation  
occurred in 1970

## LEGEND

Moderate-to-severe defoliation



1 ALGONQUIN PARK

2 PEMBROKE

3 BANCROFT

[illegible]

1 ALGONQUIN PARK  
2 PEMBROKE  
3 BANCROFT

Greenstriped Mapleworm, *Dryocampa rubicunda* (F.)

Host(s): maple

[Major]

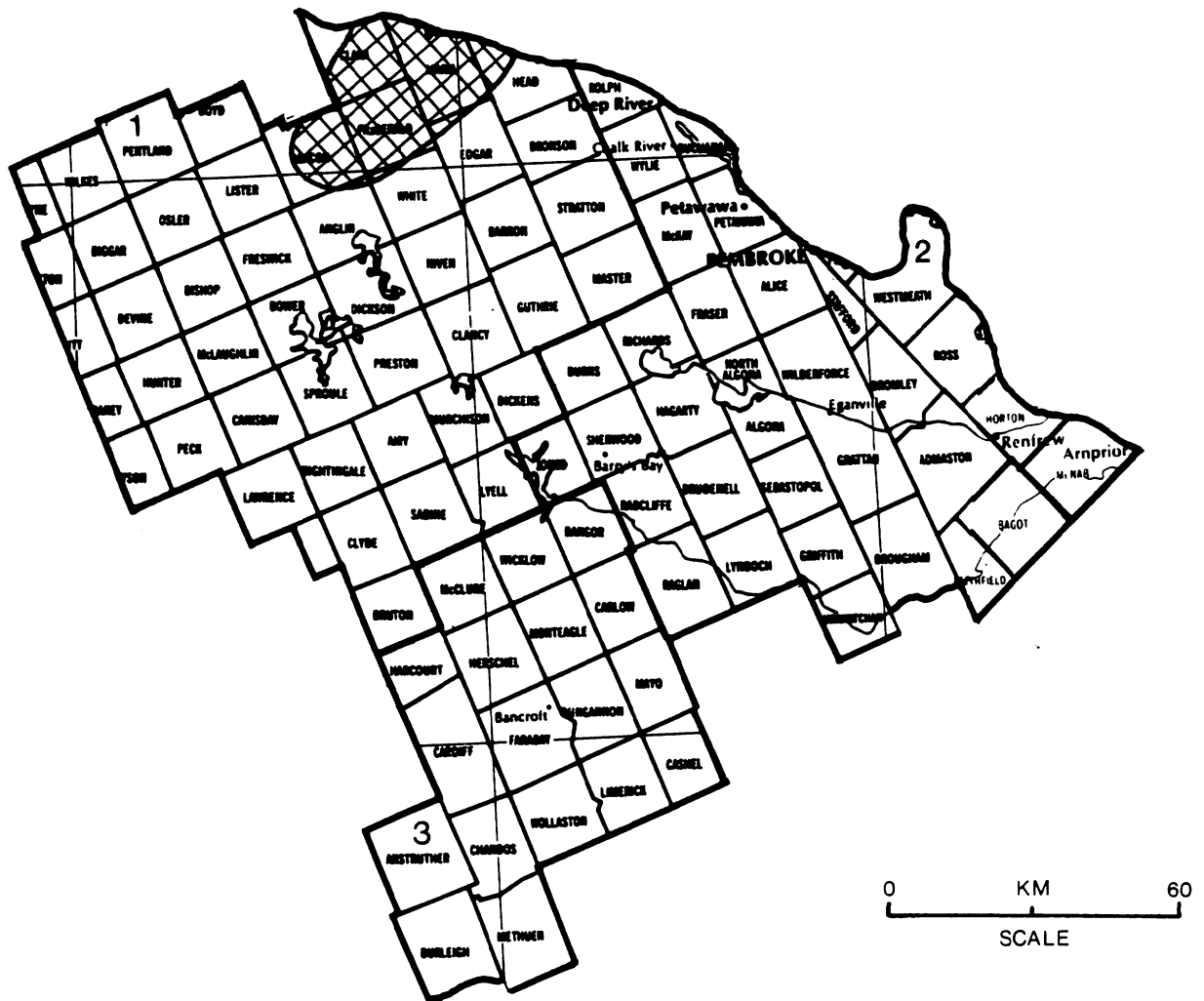
<u>Year</u>	<u>Remarks</u>
1946	Light infestations were reported in White, Deacon, and Anglin twps.
1947	Light infestations were reported in White, Deacon, Anglin and Lyell twps.
1948-1949	The infestation collapsed.
1950-1951	Low numbers were collected.
1952-1953	Pockets of moderate-to-severe defoliation were reported in Peck and Clara twps.
1954	Infestations collapsed in Peck Twp and declined to light intensity in Clara Twp.
1955	Moderate-to-severe defoliation was reported in Clara Twp. Light infestations occurred in Peck, Niven and Dickson twps.
1956	Infestations collapsed.
1957-1958	not reported
1959	Low numbers were reported in Wilkes Twp.
1960-1969	not reported
1970	Light defoliation was reported in Peck, Canisbay, Clara, Boyd and Anglin twps.
1971	Moderate-to-severe defoliation occurred in Clara, Deacon, Edgan, Fitzgerald, and Maria twps and in the northern part of Head Twp (see map, page ).
1972	Pockets of moderate-to-severe defoliation were reported in Head, Maria, White and Edgar twps (see map, page ).
1973	Moderate-to-severe defoliation was observed in Deacon, Fitzgerald and White twps (see map, page ).

(cont'd)

Greenstriped Mapleworm, *Dryocampa rubicunda* (F.) (concl.)

<u>Year</u>	<u>Remarks</u>
1974	Moderate-to-severe defoliation occurred in Lister, Deacon, Fitzgerald, Freswick, Boyd and Anglin twps. Light infestations were reported along the Ottawa River in Head, Maria and Clara twps (see map, page ).
1975	New infestations were reported in Boyd and Pentland twps (see map, page ).
1976	Infestations collapsed, and only light defoliation was reported.
1977	Low populations were reported.
1978-1979	Trace populations were found in Head and Maria twps.
1980	not reported

# ALGONQUIN PARK, PEMBROKE AND BANCROFT DISTRICTS



Greenstriped Mapleworm

Areas within which defoliation  
occurred in 1971

## LEGEND

Moderate-to-severe defoliation

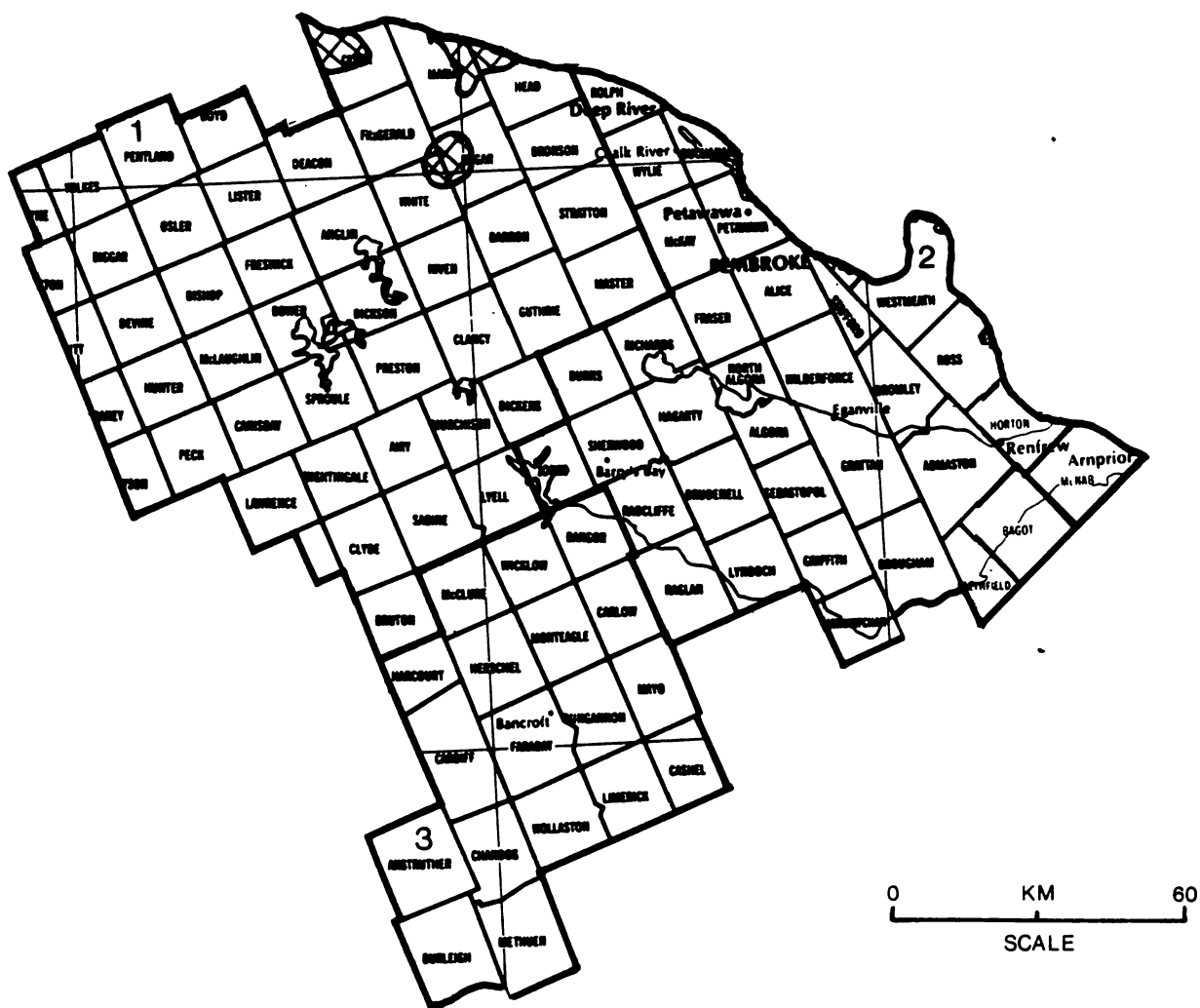


1 ALGONQUIN PARK

2 PEMBROKE

3 BANCROFT

# ALGONQUIN PARK, PEMBROKE AND BANCROFT DISTRICTS



Greenstriped Mapleworm

Areas within which defoliation  
occurred in 1972

## LEGEND

Moderate-to-severe defoliation



- 1 ALGONQUIN PARK
- 2 PEMBROKE
- 3 BANCROFT



### Areas within which defoliation occurred in 1973

**Moderate-to-severe defoliation**

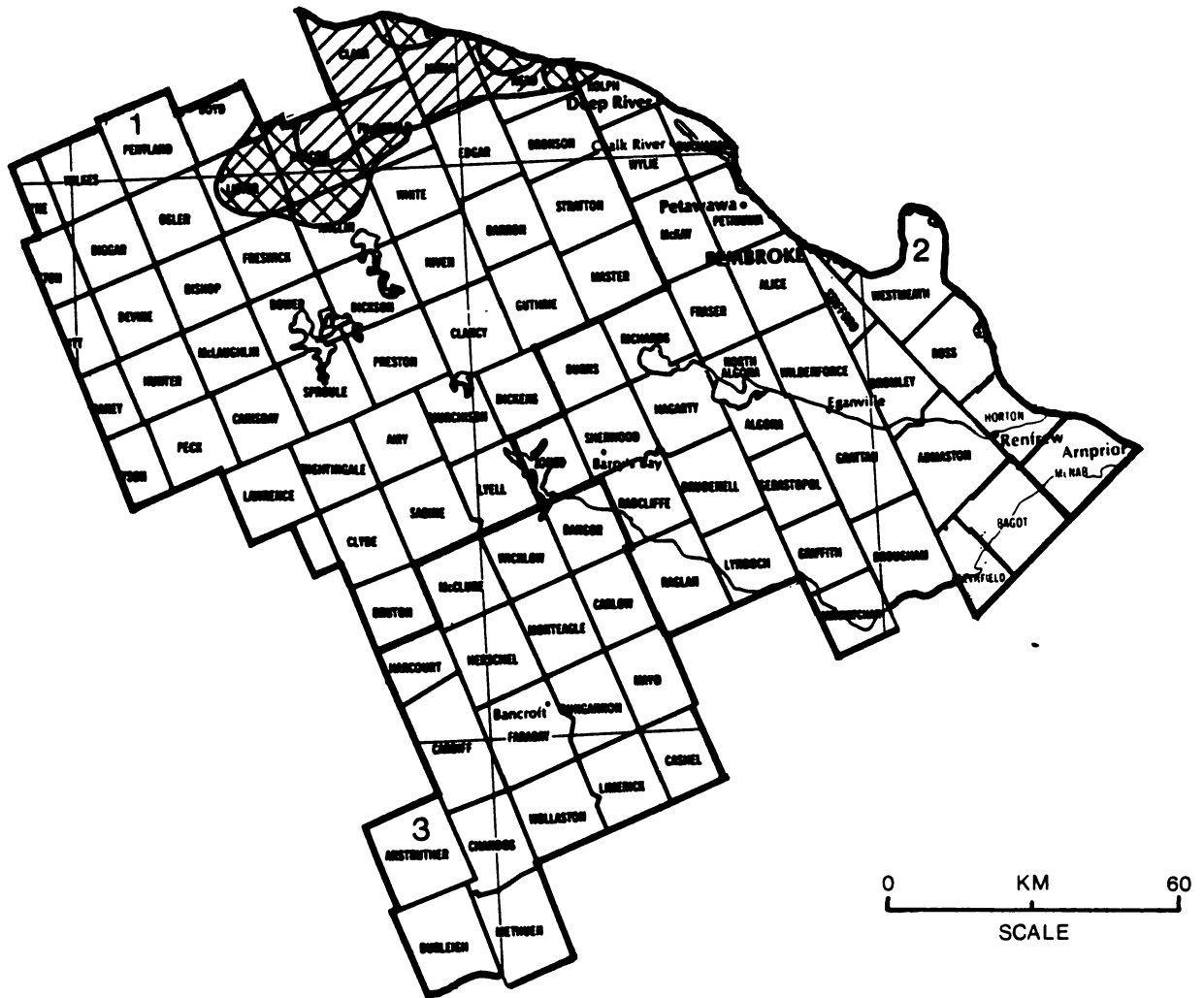


1 ALGONQUIN PARK

## 2 PEMBROKE

### 3 BANCROFT


# ALGONQUIN PARK, PEMBROKE AND BANCROFT DISTRICTS



Greenstriped Mapleworm

Areas within which defoliation  
occurred in 1974

## LEGEND

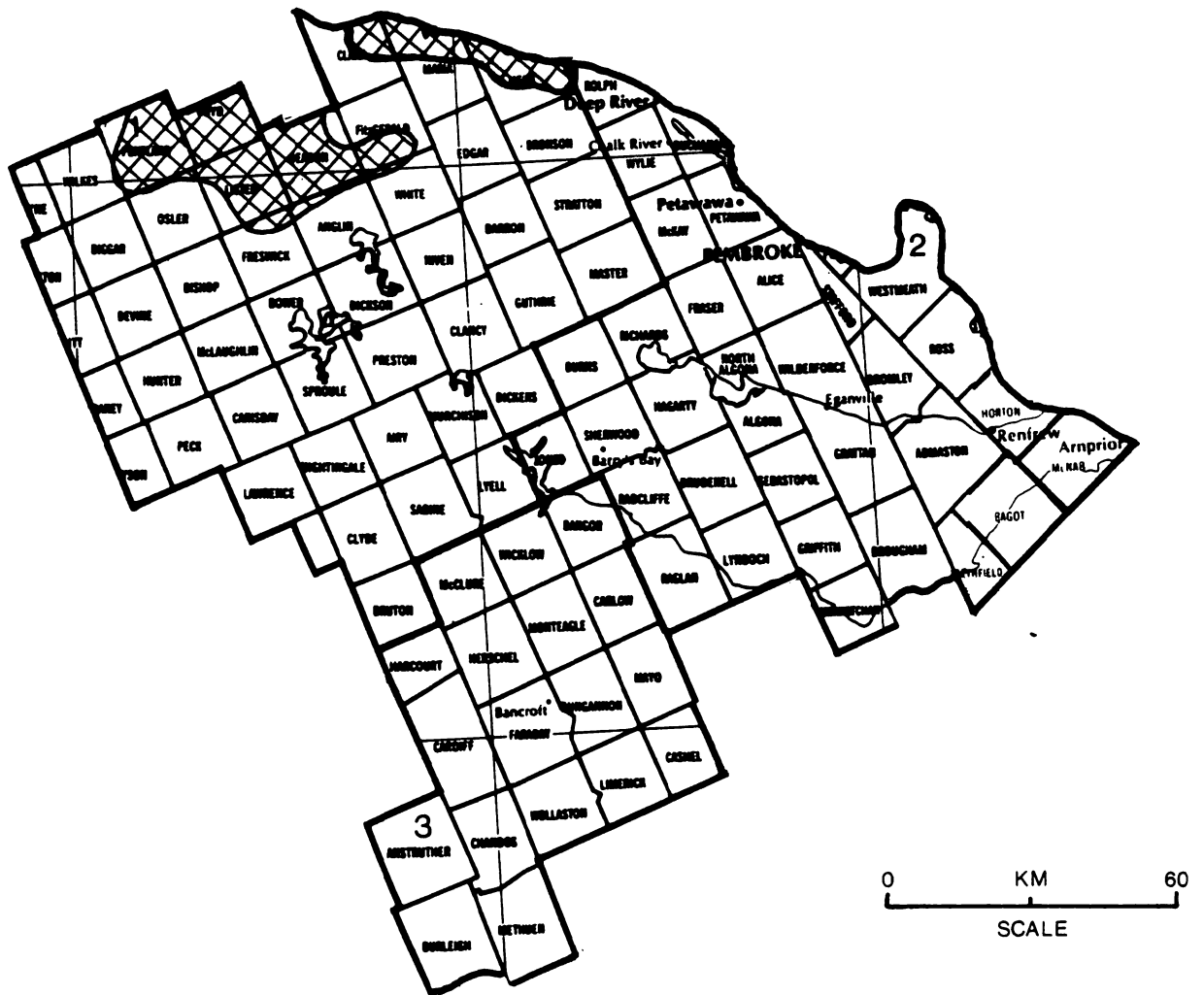
Light defoliation   
Moderate-to-severe defoliation 

1 ALGONQUIN PARK

2 PEMBROKE

3 BANCROFT

# ALGONQUIN PARK, PEMBROKE AND BANCROFT DISTRICTS



0 KM 60  
SCALE

- 1 ALGONQUIN PARK
- 2 PEMBROKE
- 3 BANCROFT

Greenstriped Mapleworm

Areas within which defoliation  
occurred in 1975

## LEGEND

Moderate-to-severe defoliation



Saddled Prominent, *Heterocampa guttivitta* (Wlk.)

Host(s): deciduous hosts

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1967	not reported
1968	Moderate-to-severe defoliation was reported on the west side of Algonquin Park, covering an area of 2,560 km <sup>2</sup> (see map, page . ).
1969	Infestations expanded and additional areas of moderate-to-severe defoliation were reported in Nightingale and McLaughlin twps (see map, page . ).
1970	The infestation declined to light intensity.
1971-1980	not reported

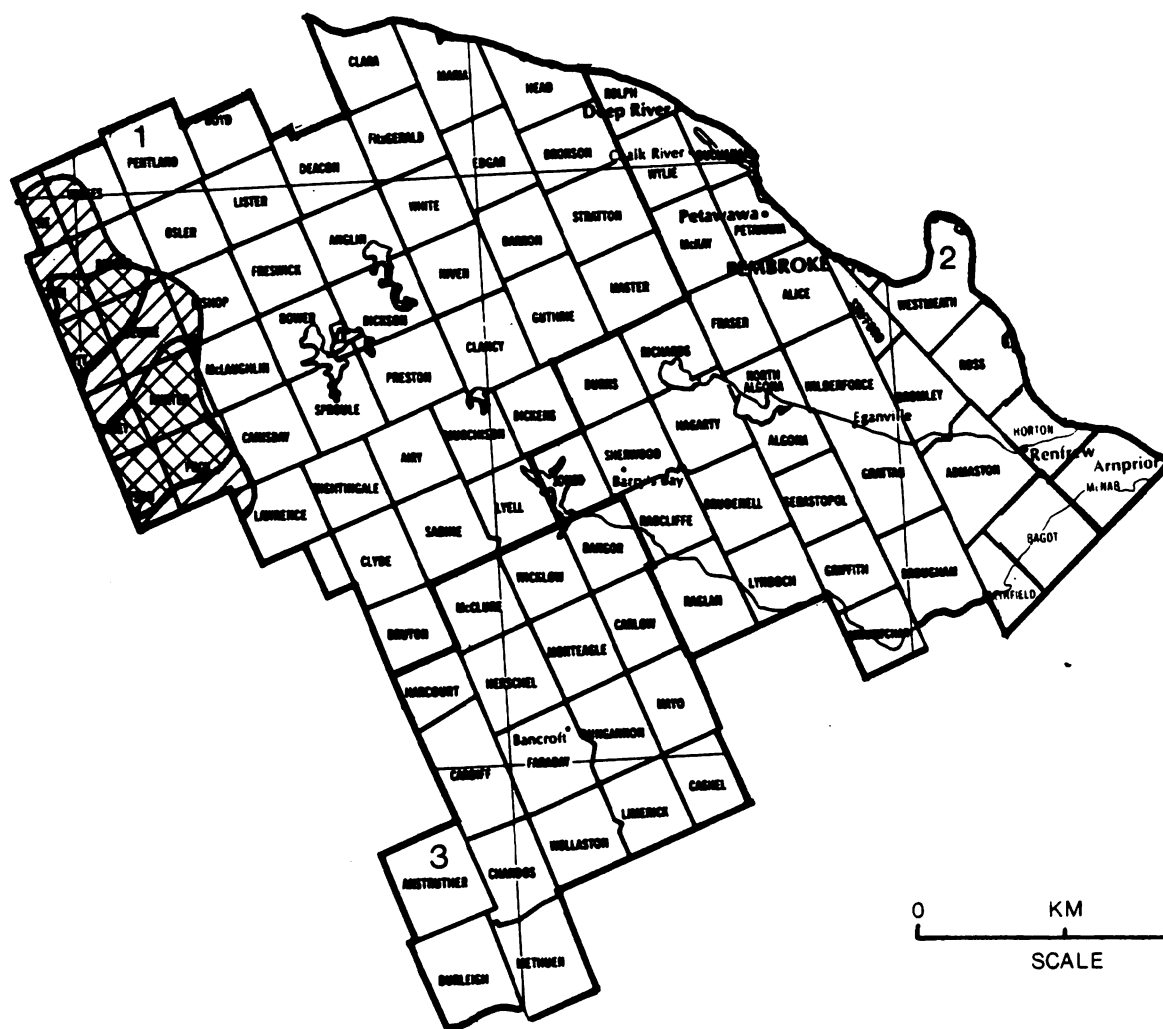
Eastern Hemlock Looper, *Lambdina fiscellaria fiscellaria* (Gn.)

Host(s): eH, bF

[Major]

<u>Year</u>	<u>Remarks</u>
1945-1952	not reported
1953	Trace populations were found in eight locations.
1954	Trace populations were found in Freswick and Ballantyne twps.
1955-195	Trace populations were found in Canisbay Twp.
1957-1958	Trace populations were found in beating tray samples.
1959-1965	not reported
1966-1969	Trace population levels were reported.
1970-1980	not reported

# ALGONQUIN PARK, PEMBROKE AND BANCROFT DISTRICTS



Saddled Prominent

Areas within which defoliation  
occurred in 1968

## LEGEND

Light defoliation



Moderate-to-severe defoliation

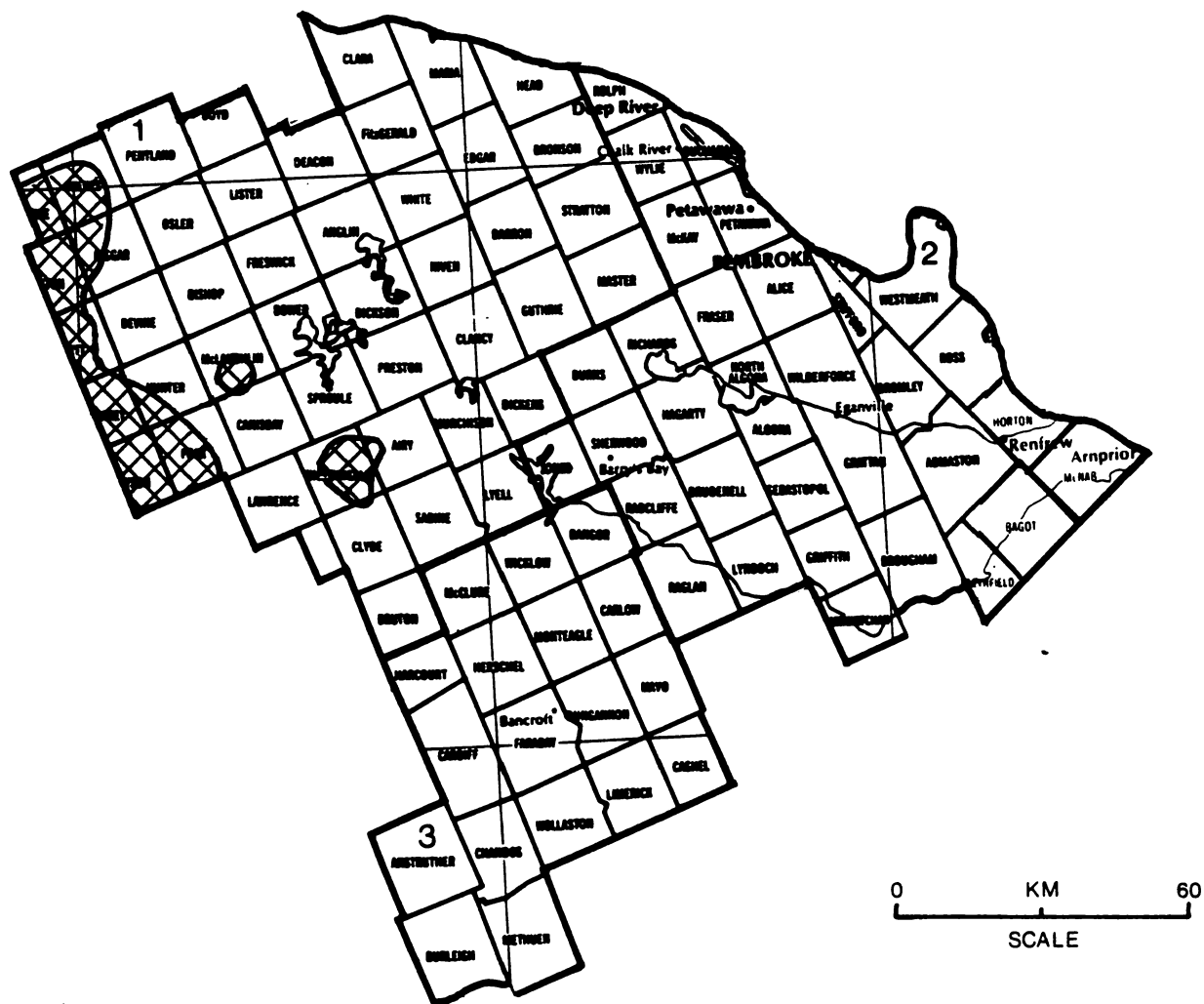


1 ALGONQUIN PARK

2 PEMBROKE

3 BANCROFT

# ALGONQUIN PARK, PEMBROKE AND BANCROFT DISTRICTS



Saddled Prominent

Areas within which defoliation  
occurred in 1969

## LEGEND

Moderate-to-severe defoliation



1 ALGONQUIN PARK

2 PEMBROKE

3 BANCROFT

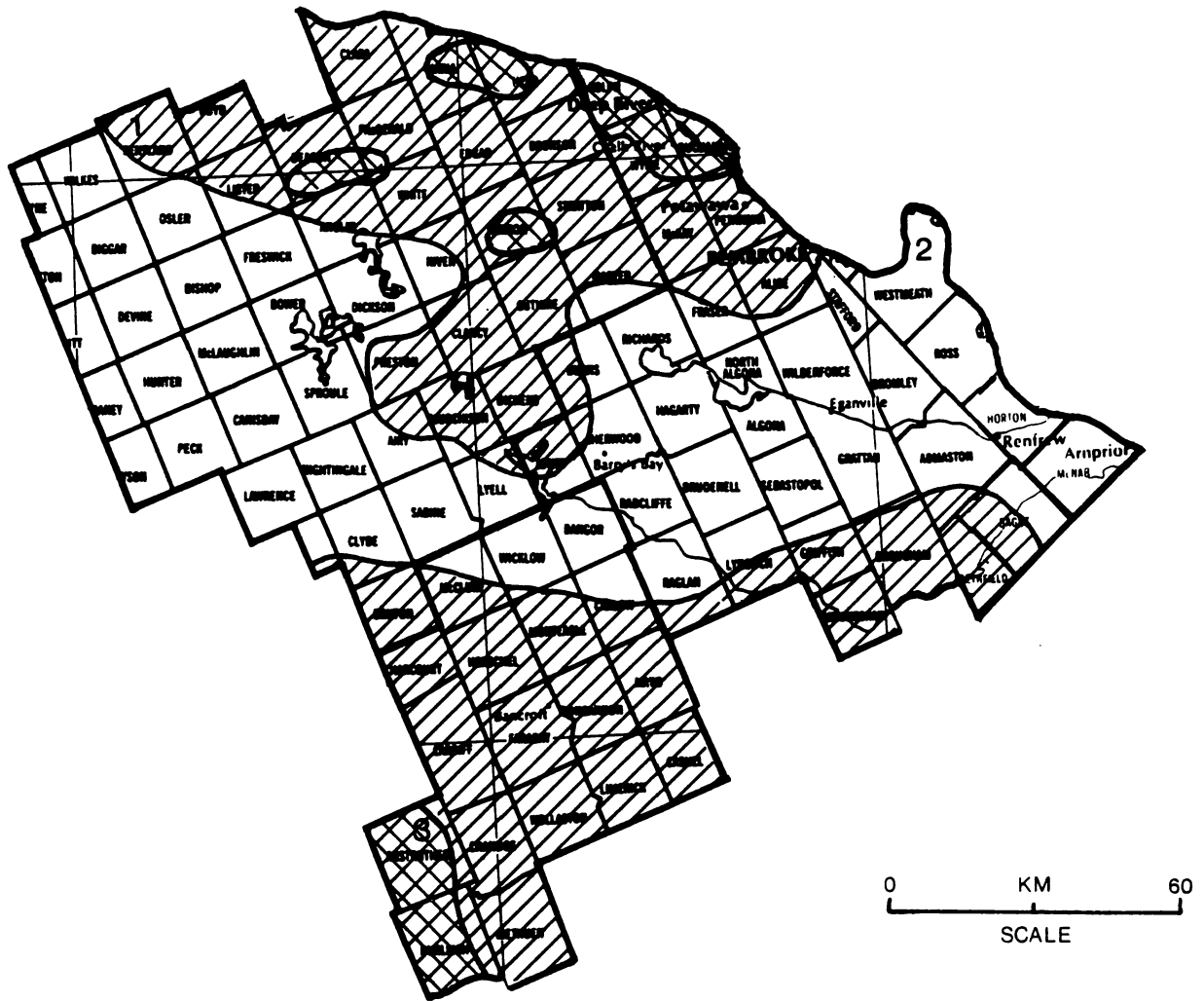
Forest Tent Caterpillar, *Malacosoma disstria* Hbn.

Host(s): deciduous species

[Major]

<u>Year</u>	<u>Remarks</u>
1945-1949	not reported
1950	Moderate-to-severe defoliation occurred in the southern part of Deacon Twp, the southwestern part of Fitzgerald Twp (see map, page ), the southern portion of Barron Twp and the central parts of Maria and Head twps.
1951-52	Moderate-to-severe defoliation occurred throughout most of the district (see map, page ).
1953	Population levels declined, however, moderate-to-severe defoliation persisted in the northern and southern parts of the district (see map, page ).
1954	Population levels collapsed; only trace numbers were reported.
1955-1961	not reported
1962	Light infestations occurred in Dickens and Head twps.
1963	Moderate-to-severe defoliation occurred in Pentland, Boyd, Deacon, Anglin and Dickens twps. Light damage was observed in Sabine and Clyde twps (see map, page ).
1964	Moderate-to-severe defoliation was reported in the eastern part of Algonquin Park District (see map, page ).
1965	The infested area was comparable to that of 1964; however, light infestations increased to medium-to-heavy intensity (see map, page ).
1966	Population levels declined; however, moderate-to-severe defoliation occurred in Clancy and Guthrie twp (see map, page ).
1967	Population levels collapsed; only light defoliation occurred in the southeastern part of the district (see map, page ).
1968	Infestations collapsed.
1969-1972	not reported
1973	Trace population levels were reported.
1974-1980	not reported



# ALGONQUIN PARK, PEMBROKE AND BANCROFT DISTRICTS



Forest Tent Caterpillar

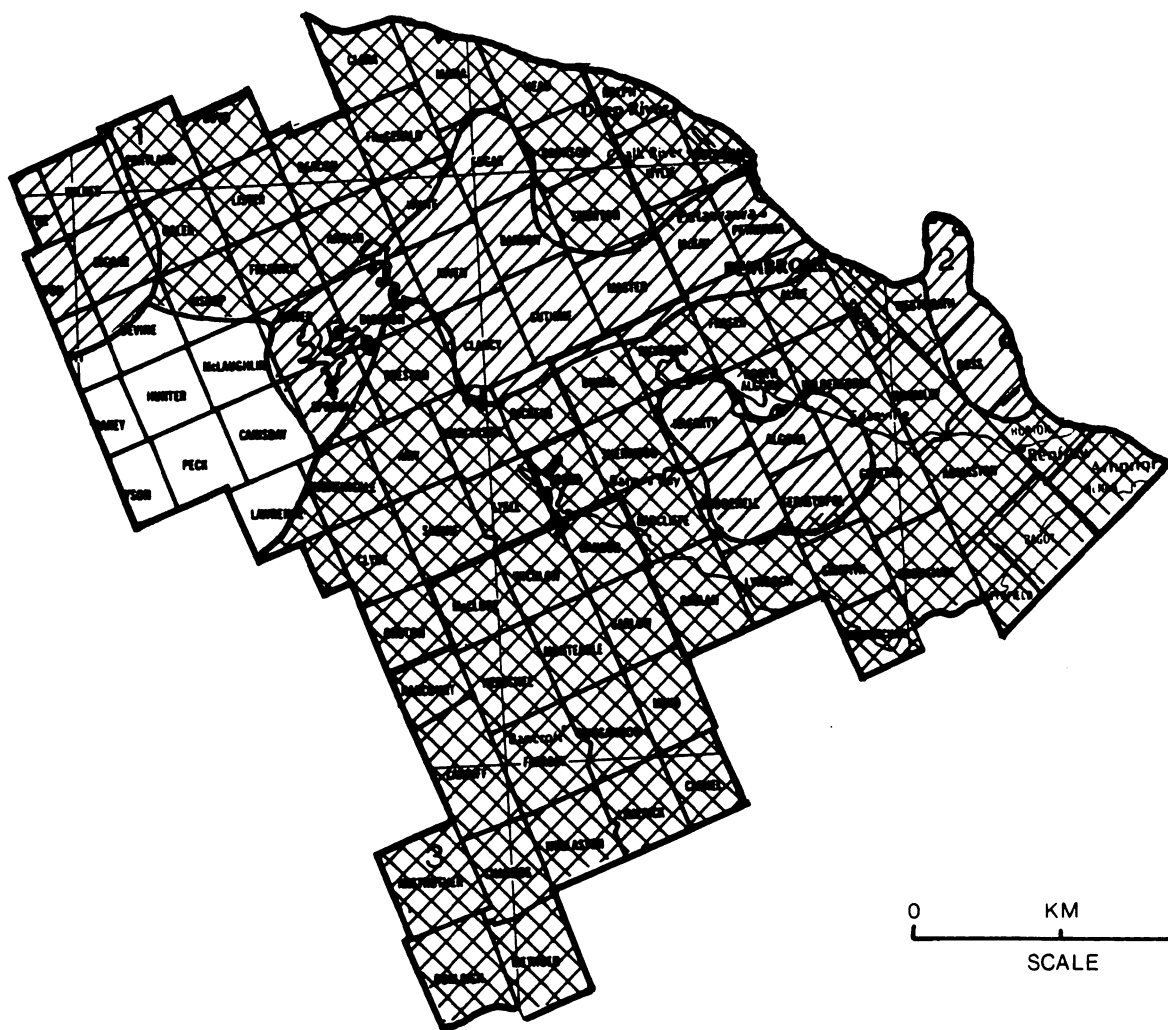
Areas within which defoliation  
occurred in 1950

## LEGEND

Light defoliation   
Moderate-to-severe defoliation 




# ALGONQUIN PARK, PEMBROKE AND BANCROFT DISTRICTS




## Forest Tent Caterpillar

Areas within which defoliation  
occurred in 1951

### LEGEND

Light defoliation 

Moderate-to-severe defoliation 

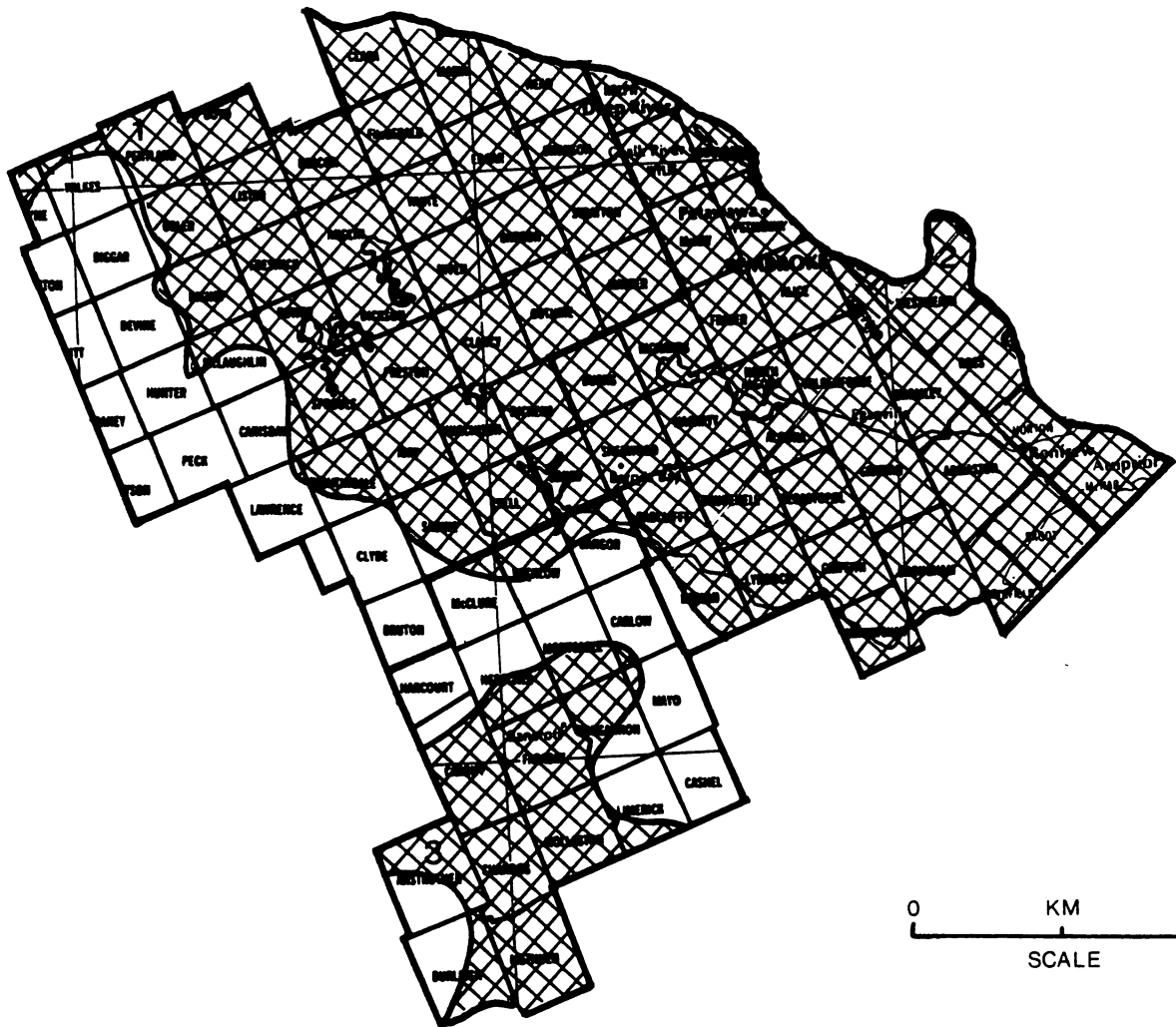
0 KM 60  
SCALE

1 ALGONQUIN PARK

2 PEMBROKE

3 BANCROFT

# ALGONQUIN PARK, PEMBROKE AND BANCROFT DISTRICTS



Forest Tent Caterpillar

Areas within which defoliation  
occurred in 1952

## LEGEND

Moderate-to-severe defoliation



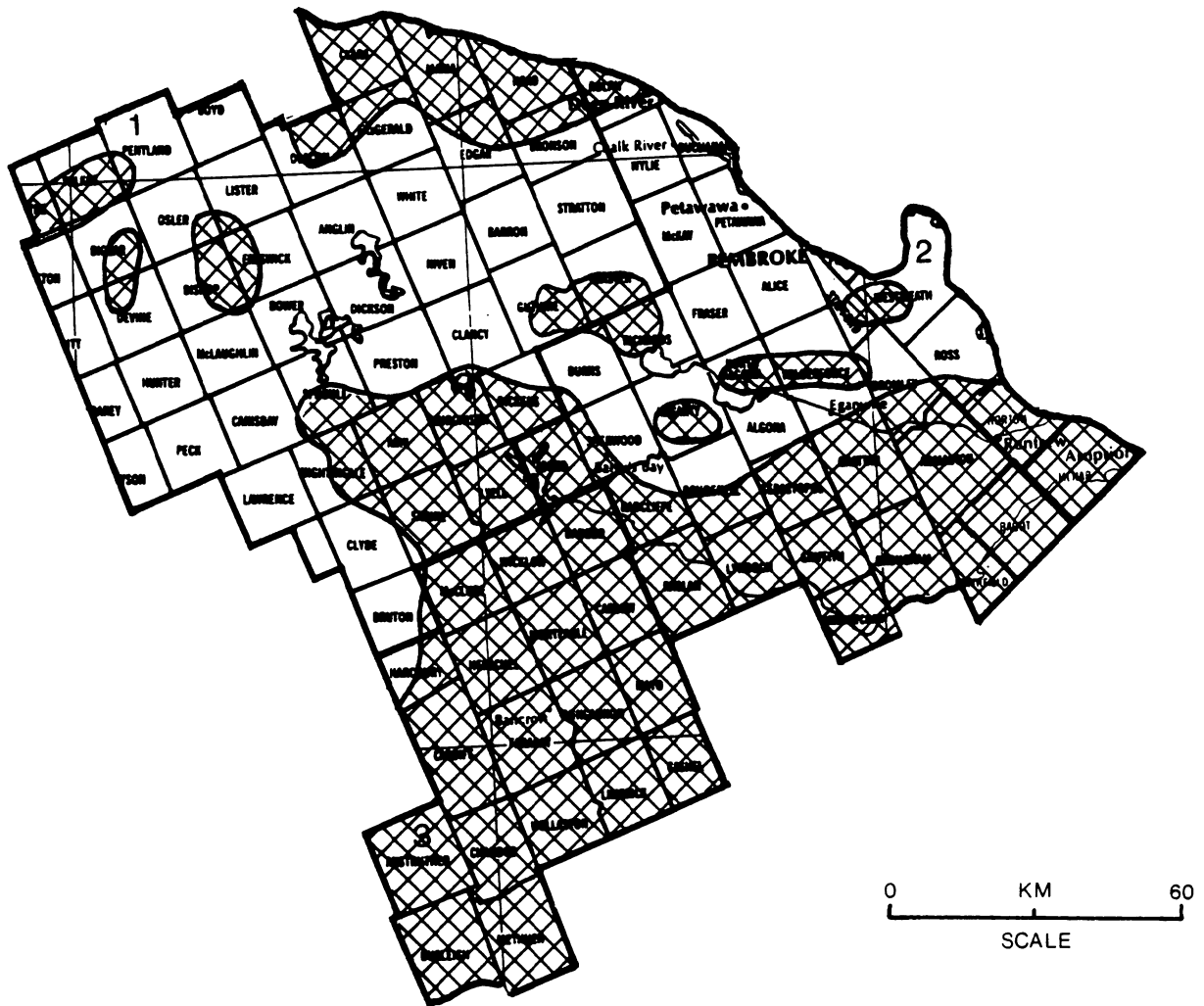
0 KM 60  
SCALE

1 ALGONQUIN PARK

2 PEMBROKE

3 BANCROFT


# ALGONQUIN PARK, PEMBROKE AND BANCROFT DISTRICTS



Forest Tent Caterpillar

Areas within which defoliation  
occurred in 1953

## LEGEND

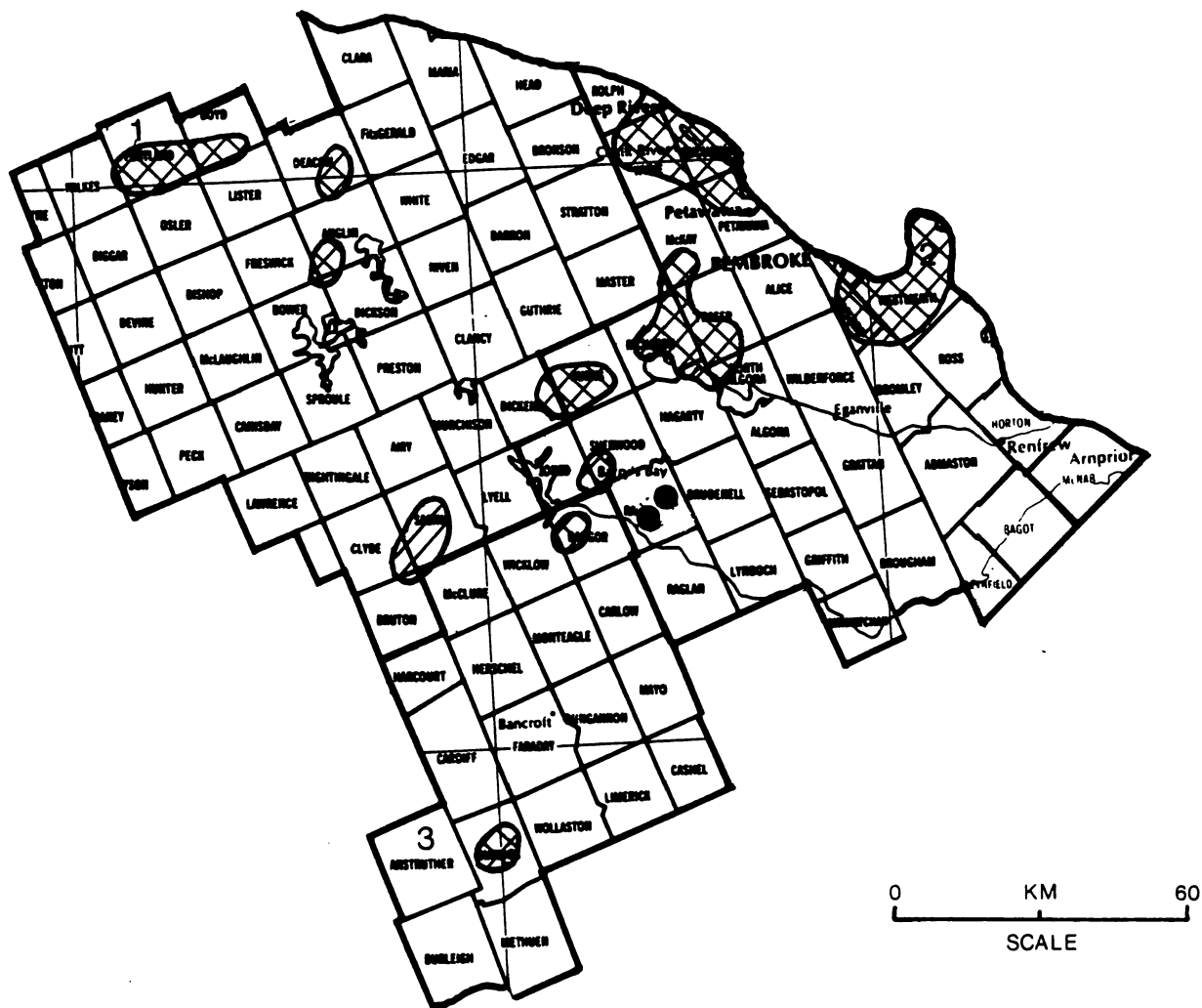
Moderate-to-severe defoliation 

1 ALGONQUIN PARK

2 PEMBROKE

3 BANCROFT

# ALGONQUIN PARK, PEMBROKE AND BANCROFT DISTRICTS



Forest Tent Caterpillar

Areas within which defoliation  
occurred in 1963

## LEGEND

Light defoliation



Moderate-to-severe defoliation

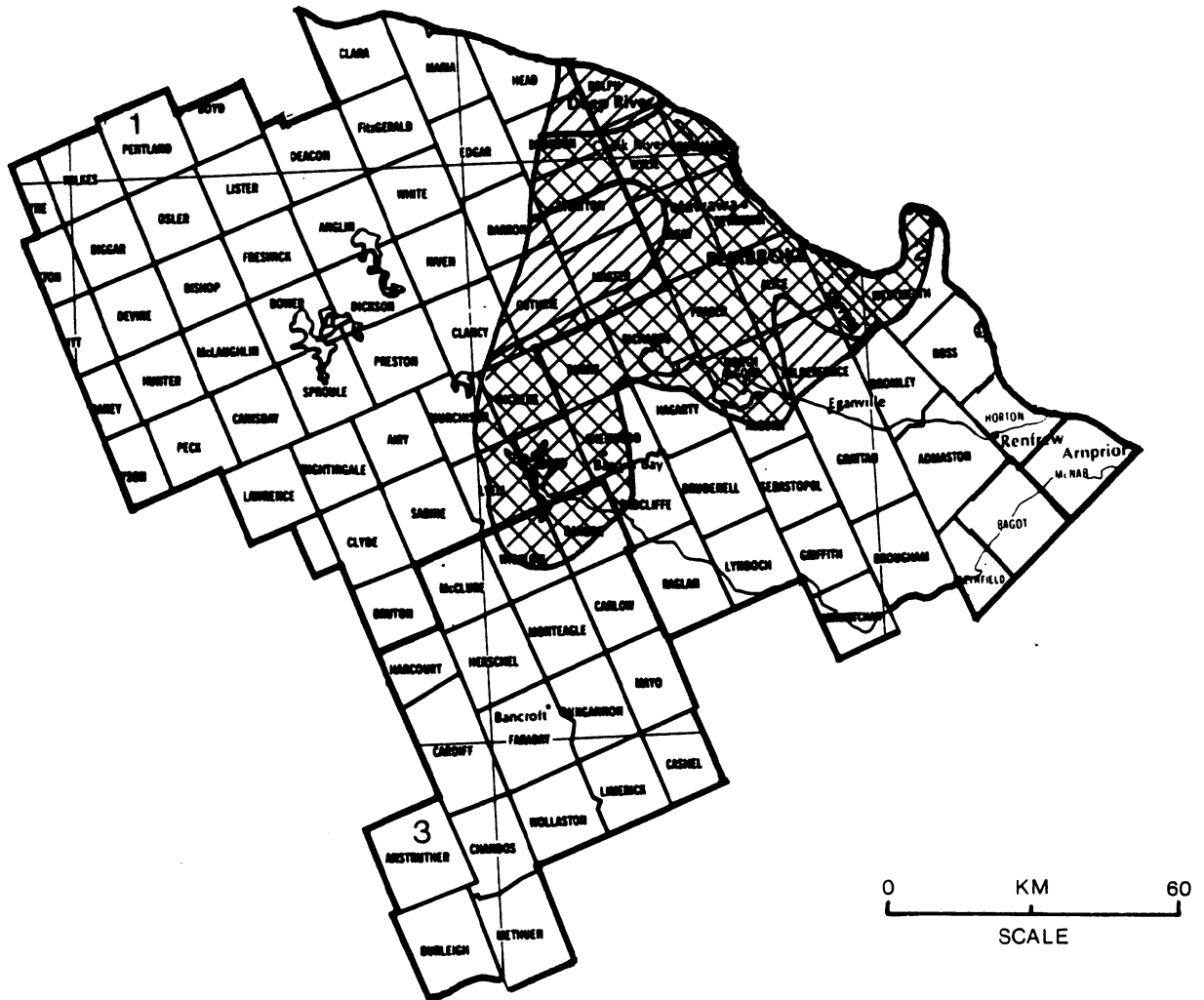


1 ALGONQUIN PARK

2 PEMBROKE

3 BANCROFT

# ALGONQUIN PARK, PEMBROKE AND BANCROFT DISTRICTS



Forest Tent Caterpillar

Areas within which defoliation  
occurred in 1964

## LEGEND

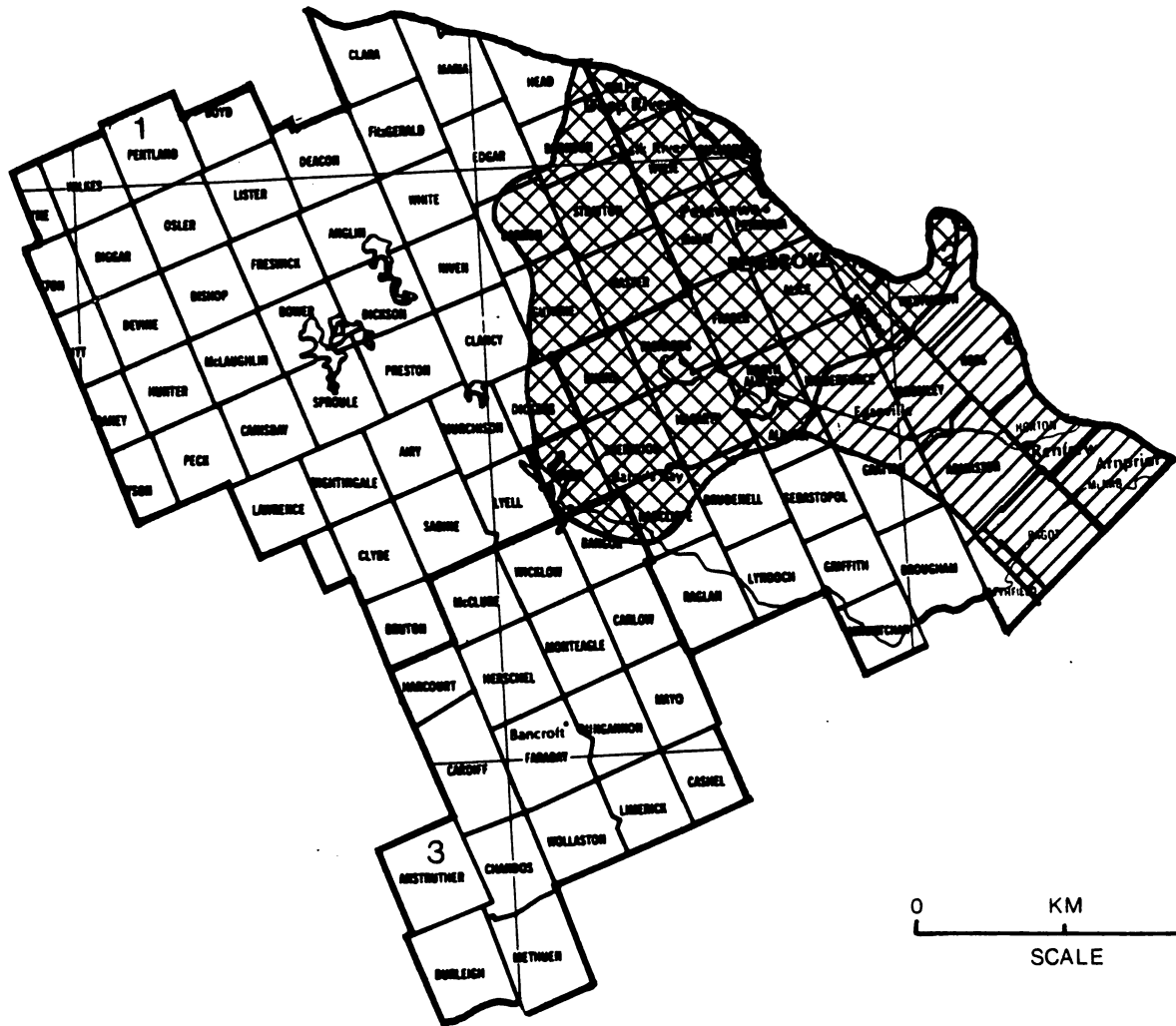
Light defoliation   
Moderate-to-severe defoliation 

1 ALGONQUIN PARK

2 PEMBROKE

3 BANCROFT



# ALGONQUIN PARK, PEMBROKE AND BANCROFT DISTRICTS



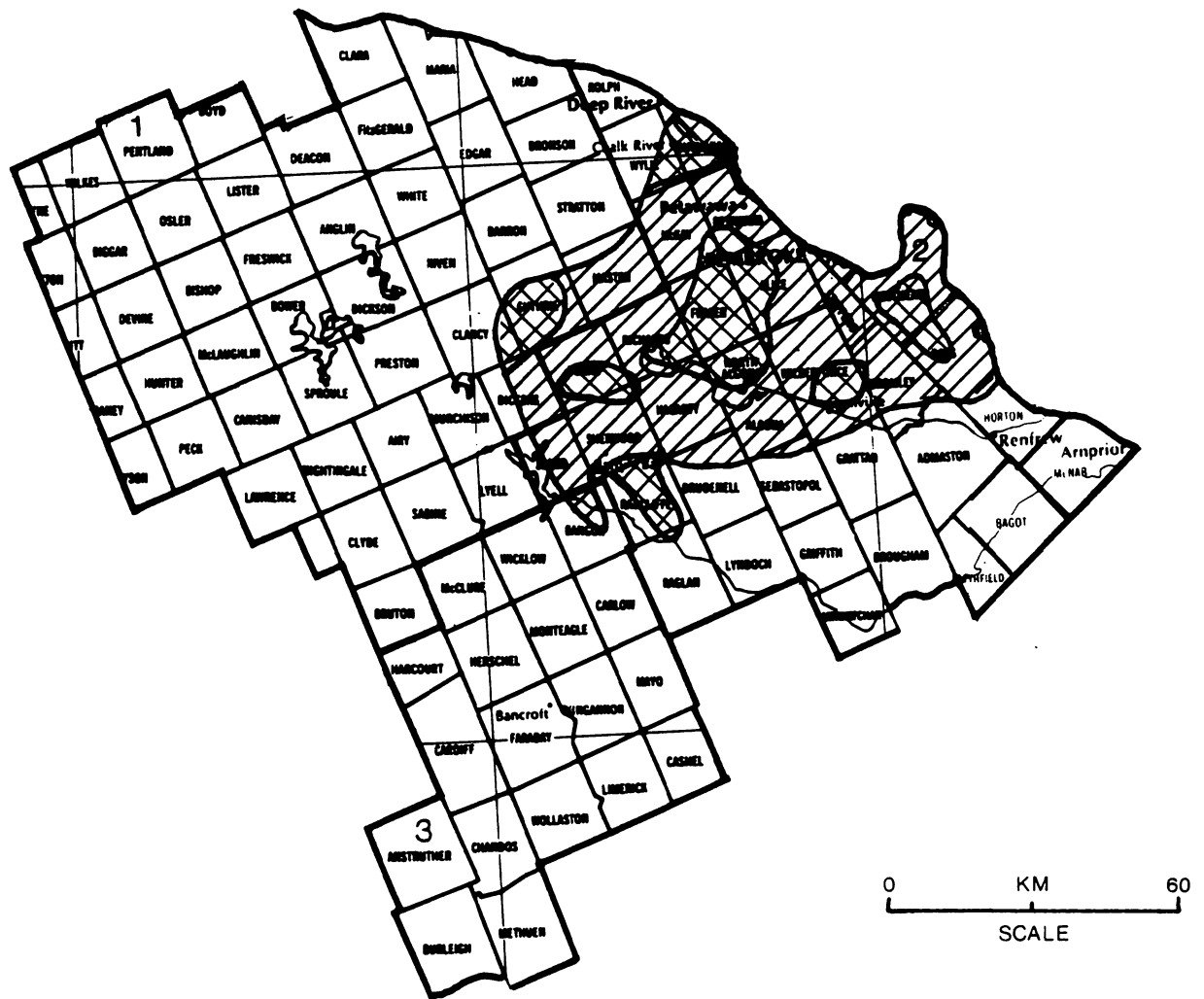
Forest Tent Caterpillar

Areas within which defoliation  
occurred in 1965

## LEGEND

Light defoliation   
Moderate-to-severe defoliation 

# ALGONQUIN PARK, PEMBROKE AND BANCROFT DISTRICTS



Forest Tent Caterpillar

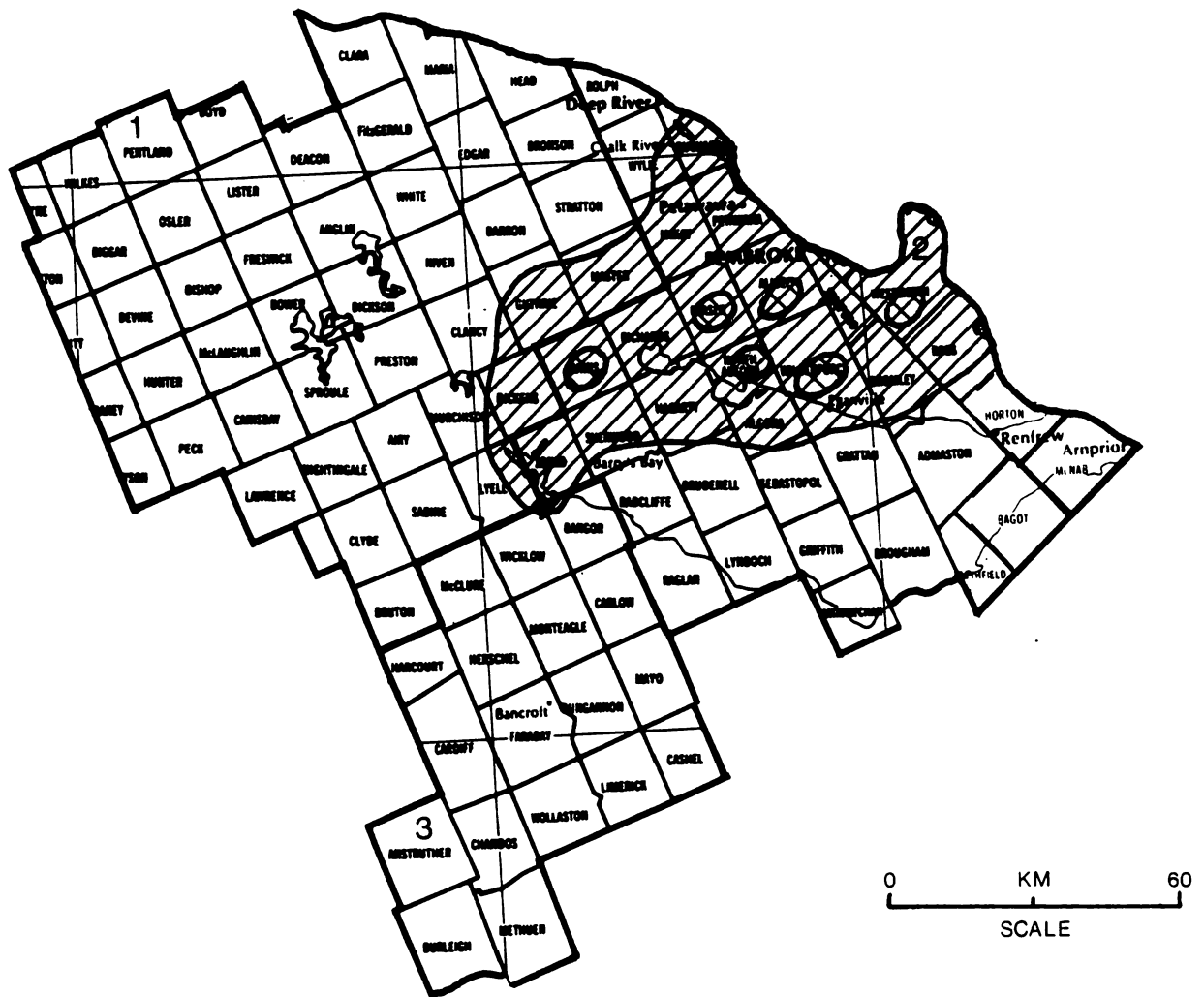
Areas within which defoliation  
occurred in 1966

1 ALGONQUIN PARK

2 PEMBROKE

3 BANCROFT

# ALGONQUIN PARK, PEMBROKE AND BANCROFT DISTRICTS



Forest Tent Caterpillar

Areas within which defoliation  
occurred in 1967

## LEGEND

Light defoliation



Moderate-to-severe defoliation



1 ALGONQUIN PARK

2 PEMBROKE

3 BANCROFT



Redheaded Pine Sawfly, *Neodiprion lecontei* (Fitch)

Host(s): pine

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1951	not reported
1952	Small pockets of moderate-to-severe defoliation were reported on small islands in lakes in McLaughlin and Wilkes twps.
1953	Moderate-to-severe defoliation was recorded on small red pine trees in Wilkes, Clara and Sproule twps. Light infestations occurred in Canisbay, Lyell, Dickens and Head twps.
1954	A decline in population levels was noted in all previously infested plantations.
1955	The moderate-to-severe defoliation reported in Wilkes Twp declined to light defoliation.
1956	Moderate-to-severe defoliation occurred on young red pine trees in Dickens and Maria twps. Light infestations were reported in Airy, Canisbay and Murchison twps.
1957	Moderate-to-severe defoliation of red pine was noted on an island in Manitou Lake in Wilkes Twp and light defoliation continued in Canisbay and Murchison twps.
1958	Population levels declined at all sample points.
1959	Trace population levels were reported.
1960-1961	not reported
1962	Light infestations were reported in Head and Airy twps.
1963	Moderate-to-severe defoliation occurred in Head and Airy twps. Light infestations were reported along the hydro line in Clancy and Barron twps and on regeneration jack pine in Maria Twp.
1964	Moderate-to-severe infestations were reported in Guthrie, Airy and Clara twps. The infestation in Airy Twp was treated with an insecticide (nuclear polyhedrosis virus [NPV]).
1965	Moderate-to-severe infestations were reported in Clara and Maria twps.
1966	Moderate-to-severe defoliation was observed along the hydro line in Bronson Twp.

(cont'd)

Redheaded Pine Sawfly, *Neodiprion lecontei* (Fitch) (concl.)

<u>Year</u>	<u>Remarks</u>
1967	Light defoliation occurred in several red pine plantations in Bronson, Clara and Maria twps.
1968-1971	Trace populations were found at sample points.
1972	Moderate-to-severe defoliation was reported in jack pine plantations in Peck Twp.
1973-1974	trace population levels observed
1975	Moderate-to-severe defoliation was observed in Lyell Twp; trace populations were recorded elsewhere.
1976	low populations
1977-1978	Low population levels were observed throughout Algonquin Park District.
1979	Moderate-to-severe defoliation of red pine was observed in Sabine Twp.
1980	Moderate-to-severe defoliation was reported at widely scattered locations. Populations were treated with nuclear polyhedrosis virus and with a followup application of Malathion (see map, page ). Results were good.

[illegible]

1 ALGONQUIN PARK  
2 PEMBROKE  
3 BANCROFT

Townships in which nuclear polyhedrosis virus was applied by means of ground and aerial treatments in 1980

Aerial application ■  
Ground application ●

Jack Pine Sawfly, *Neodiprion pratti banksianae* Roh.

Host(s): jP

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1954	not reported
1955-1956	Moderate-to-severe infestations occurred in Bronson, Stratton and Barron twps. Light infestations occurred in Maria and Clara twps (see maps, pages       ).
1957-1960	Population levels declined, especially in Bronson Twp.
1961-1980	Trace population levels were reported.

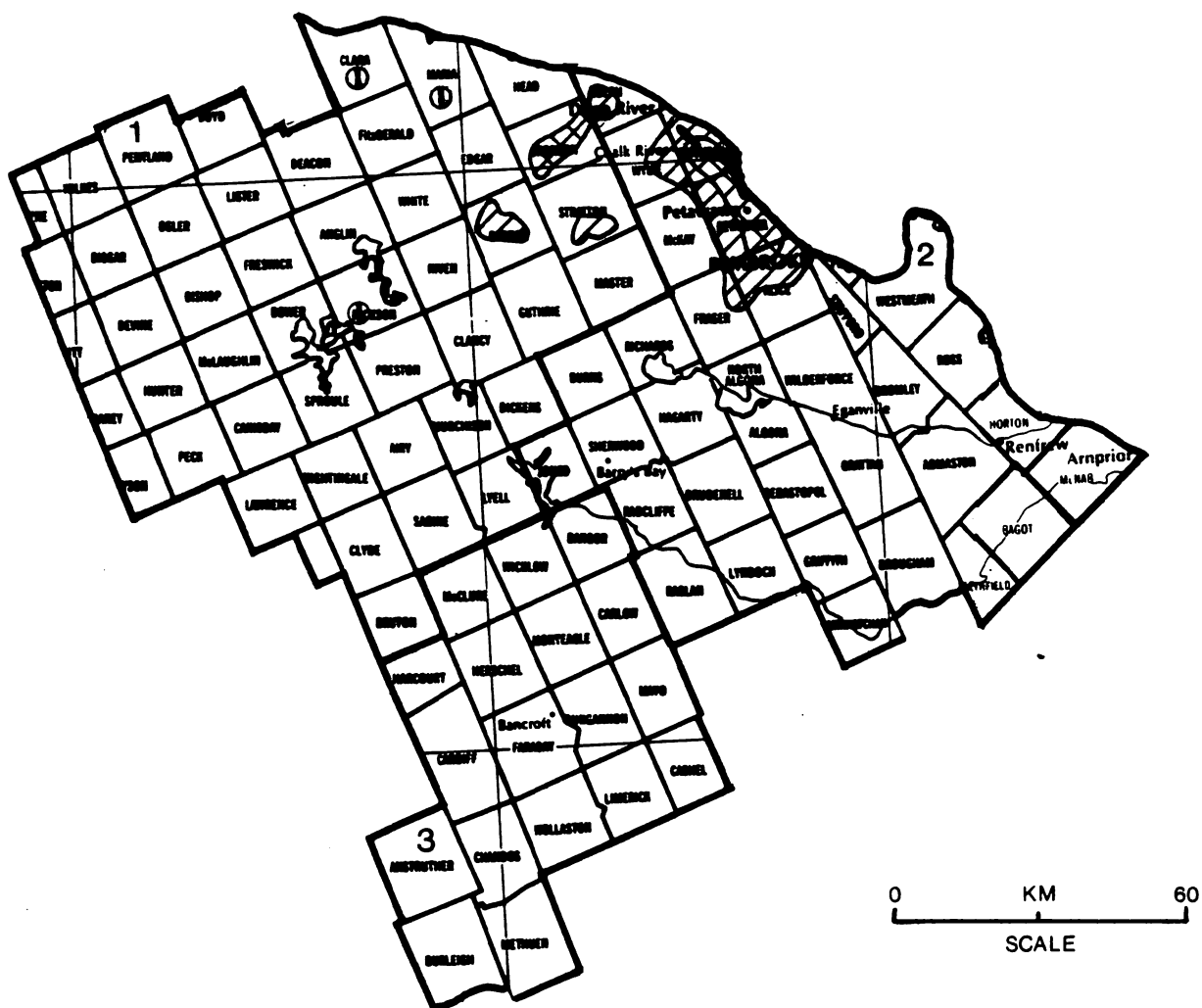
Bruce Spanworm, *Operophtera bruceata* (Hlst.)

Host(s): sM, wB, Be

[Major]

<u>Year</u>	<u>Remarks</u>
1945-1965	not reported
1966	A sugar maple stand in the southeast corner of Peck Twp was moderately to severely defoliated (see map, page   ).
1967	Populations collapsed.
1968-1973	not reported
1974	Moderate-to-severe defoliation of sugar maple, beech and white birch was reported in Lawrence and Nightingale twps (see map, page   ).
1975	Light defoliation occurred along the western border of Algonquin Park, and within this area, moderate-to-severe defoliation of understory sugar maple was recorded (see map, page   ).
1976	Moderate-to-severe defoliation was reported in Paxton, Biggar, Butt and Devine twps. Low numbers of larvae were found in Lawrence, Peck and Canisbay twps.
1977	Infestations collapsed.
1978-1980	not reported

# ALGONQUIN PARK, PEMBROKE AND BANCROFT DISTRICTS



## Jack Pine Sawfly

Areas within which defoliation  
occurred in 1955

### LEGEND

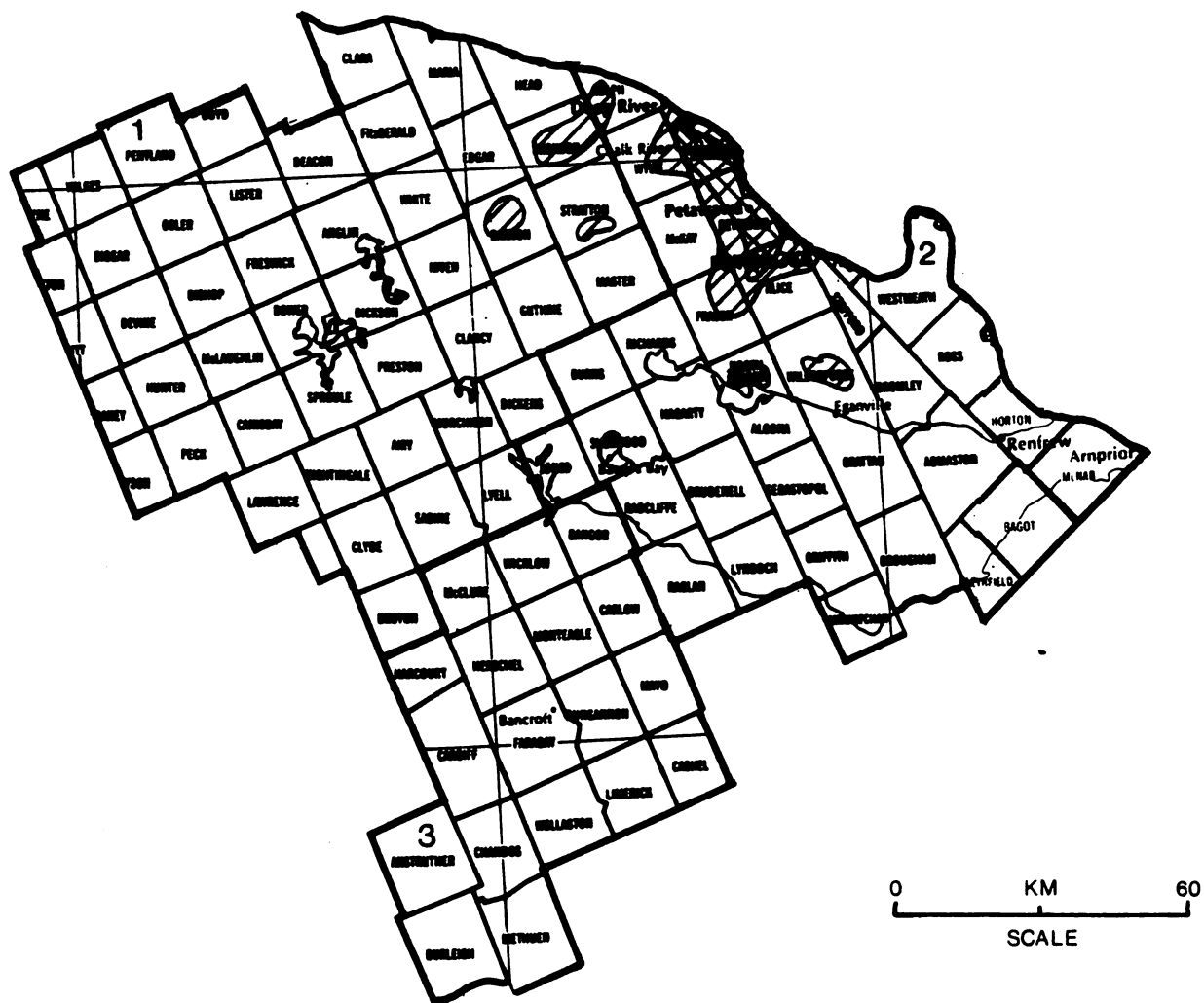
Light defoliation



Moderate-to-severe defoliation



# ALGONQUIN PARK, PEMBROKE AND BANCROFT DISTRICTS



1 ALGONQUIN PARK

2 PEMBROKE

3 BANCROFT

Jack Pine Sawfly

Areas within which defoliation  
occurred in 1956

## LEGEND

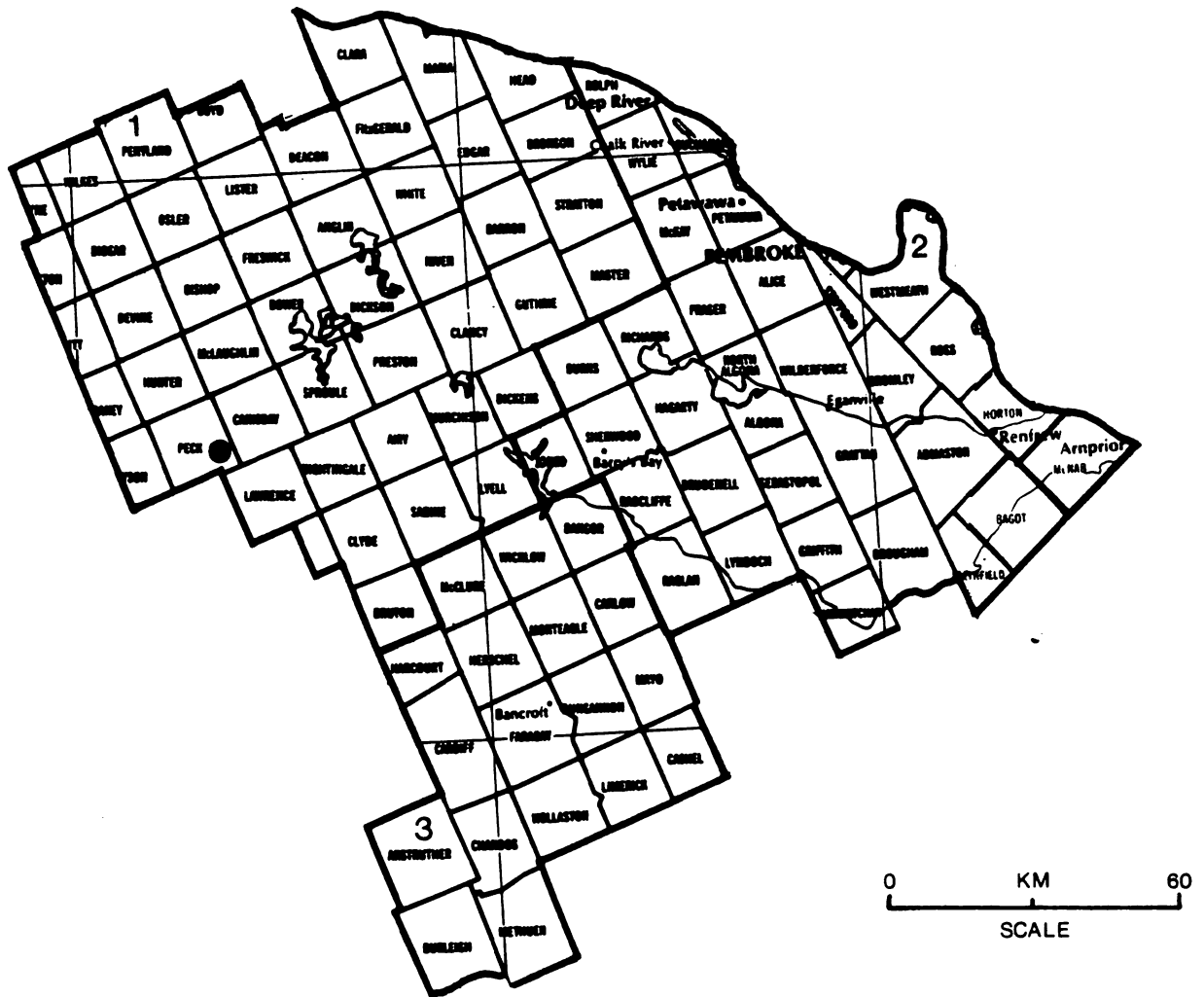
Light defoliation



Moderate-to-severe defoliation



# ALGONQUIN PARK, PEMBROKE AND BANCROFT DISTRICTS



Bruce Spanworm

Areas within which defoliation  
occurred in 1966

## LEGEND

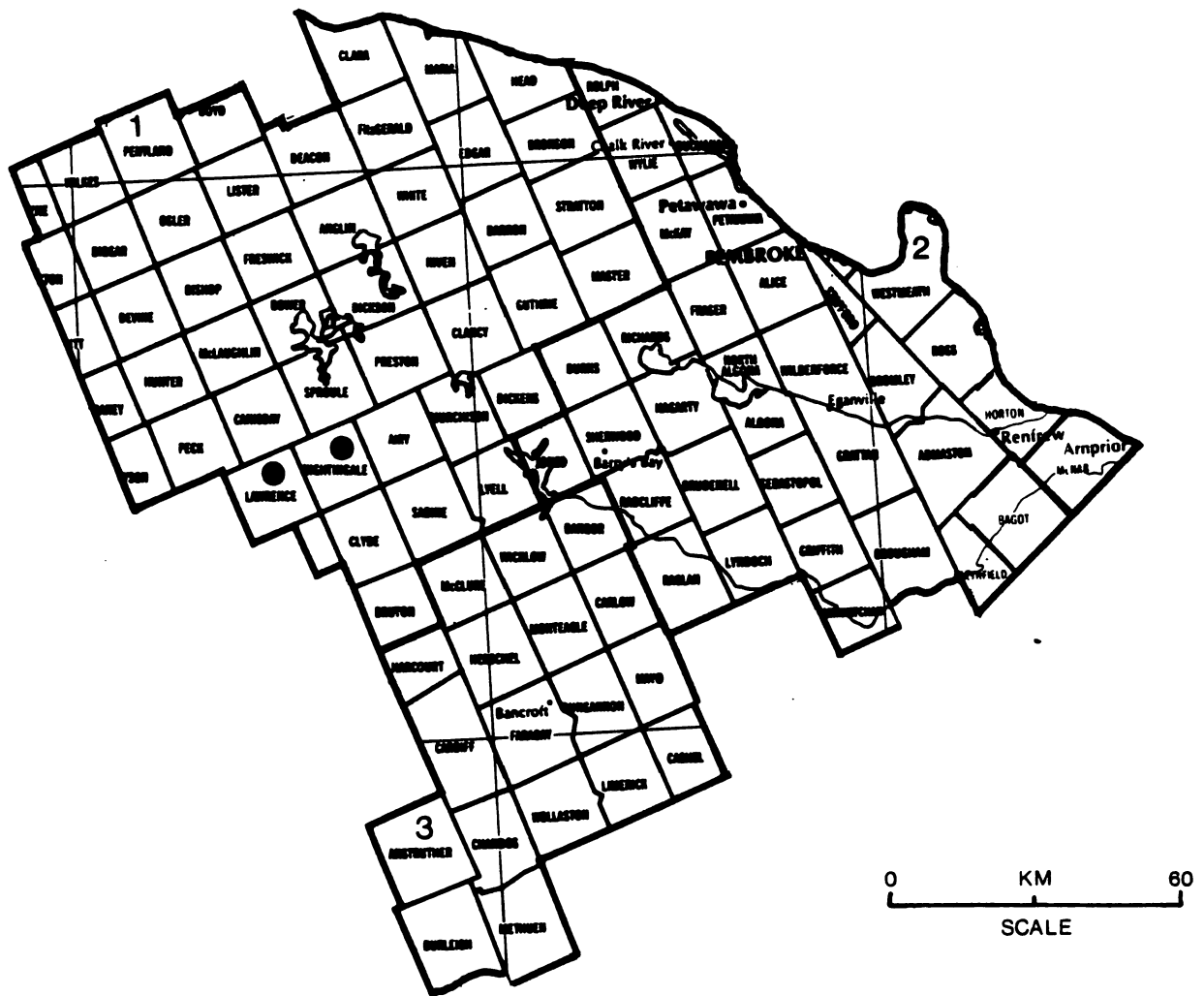
Moderate-to-severe defoliation ●

1 ALGONQUIN PARK

2 PEMBROKE

3 BANCROFT

# ALGONQUIN PARK, PEMBROKE AND BANCROFT DISTRICTS



Bruce Spanworm

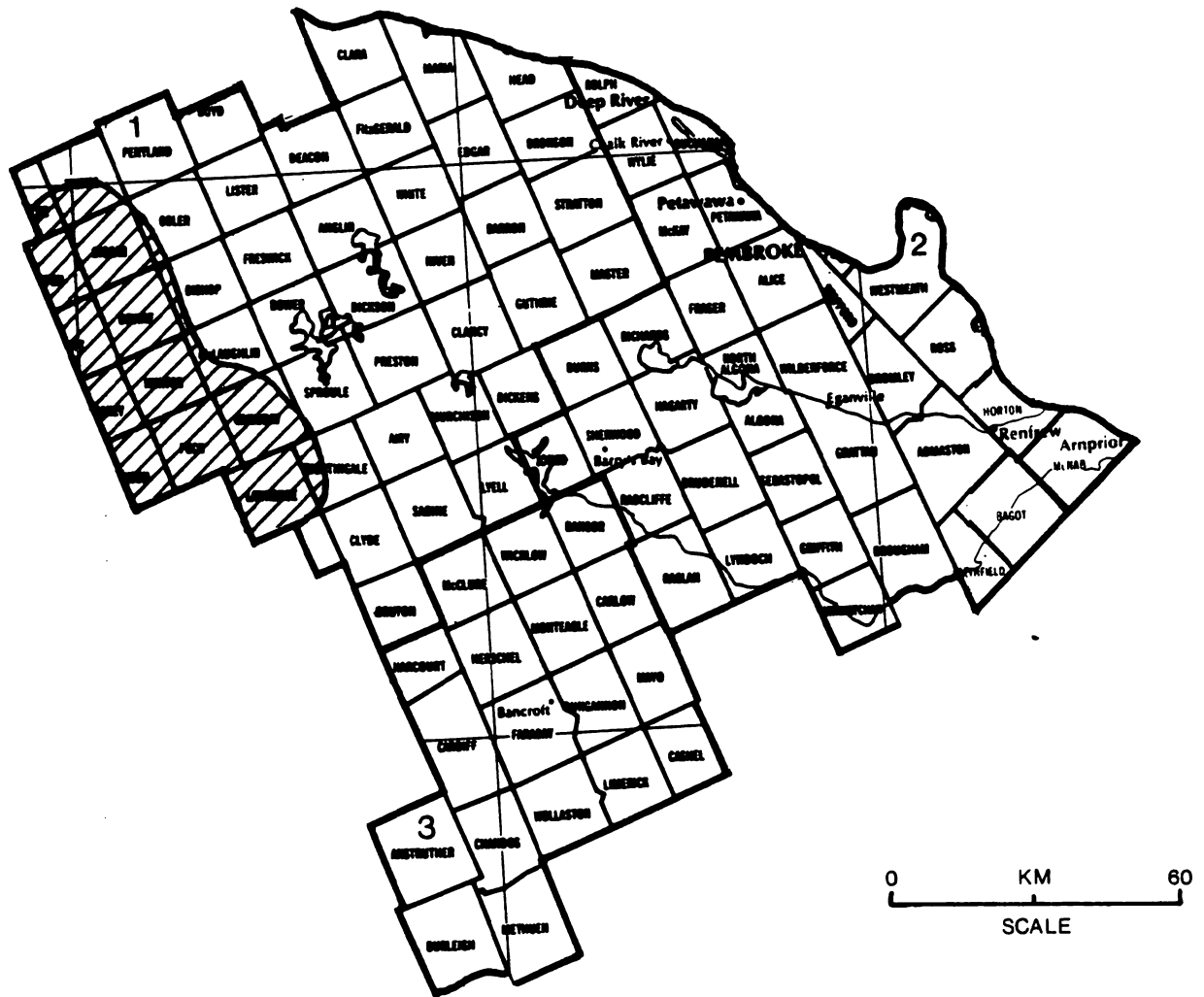
Areas within which defoliation  
occurred in 1974

## LEGEND

Moderate-to-severe defoliation ●



# ALGONQUIN PARK, PEMBROKE AND BANCROFT DISTRICTS



Bruce Spanworm

Areas within which defoliation  
occurred in 1975

## LEGEND

Light defoliation



1 ALGONQUIN PARK

2 PEMBROKE

3 BANCROFT

White Pine Weevil, *Pissodes strobi* (Peck)

Host(s): pine, spruce

[Major]

<u>Year</u>	<u>Remarks</u>
1950	Light damage was reported in Master, Maria and Lister twps.
1951-1952	not reported
1953	Considerable damage occurred in white and jack pine plantations at several locations. In a white pine plantation in Sproule Twp, 87% of the leaders were weeviled.
1954	Varying degrees of leader mortality were observed at numerous locations.
1955	Moderate-to-severe damage was observed in a 25-year-old white pine plantation near Whitefish Lake in Sproule Twp.
1956-1957	Moderate-to-severe infestations persisted in Sproule Twp.
1958-1959	Moderate-to-severe infestations were reported in Sproule and Pentland twps.
1960	Numerous ornamentals were attacked on the southern shoreline of Opeongo Lake. The infestation in Sproule Twp declined to low levels.
1961	Moderate-to-severe damage was observed in Stratton Twp. Light damage occurred in a jack pine provenance test site in Maria Twp.
1962	Moderate-to-severe damage occurred in Stratton Twp, at the provenance test site in Maria Twp and near Shirley Lake in Preston Twp. Control measures were conducted near Shirley Lake.
1963	Moderate-to-severe infestations persisted on white and jack pine regeneration in Stratton and Maria twps. Aerial spraying was carried out in the Shirley Lake area in Preston and Clancy twps.
1964	Light infestations were common throughout the southwestern part of Algonquin Park. Moderate-to-severe infestations persisted in the Shirley Lake area.

(cont'd)

White Pine Weevil, *Pissodes strobi* (Peck) (concl.)

<u>Year</u>	<u>Remarks</u>
1965	A slight decrease in population levels occurred in 1965. Clipping and burning of infested shoots were carried out in Murchison and Airy twps.
1966-1971	Minor fluctuations in population levels occurred during this period.
1972	Population levels increased at scattered locations.
1973	Moderate-to-severe infestations occurred in Pentland, Bronson, Stratton and Edgar twps. Up to 40% weeviling was observed in Pentland Twp and 10% in Bronson Twp.
1974-1979	Low population levels were observed during this period.
1980	Medium-to-heavy infestations were observed in Lyell, White and Stratton twps.

Larch Sawfly, *Pristiphora erichsonii* (Htg.)

Host(s): tL, eL

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1952	not reported
1953	Severe defoliation of one tree was noted at the end of Lake of Two Rivers in Canisbay Twp.
1954-1955	A light infestation was reported in the northeastern corner of Algonquin Park.
1956-1961	not reported
1962	Moderate defoliation occurred near Whitney, in Airy Twp.
1963	The infestation reported in Airy Twp decreased to light intensity.
1964-1965	Low numbers were reported throughout Algonquin Park.
1966	Trace defoliation was reported in Sproule Twp.
1967	Moderate damage was reported in Clara Twp and light damage in Maria Twp.
1968	Light defoliation occurred in Barron, Maria and Clara twps.
1969-1970	Low population levels were reported.
1971-1976	not reported
1977-1978	Light infestations occurred in several stands of larch at scattered locations.
1979-1980	Populations remained at low levels.

## Other Noteworthy Insects

Birch Sawfly, *Arge pectoralis* (Leach)

Host(s): birch

[Major]

<u>Year</u>	<u>Remarks</u>
1950	Light defoliation was observed at scattered locations in Sproule and Murchison twps.
1951-1952	Light infestations occurred in the western part of Algonquin Park and in Murchison, Peck and Preston twps.
1953	Moderate-to-severe defoliation was observed in Peck, Sproule, Ballantyne and Finlayson twps.
1954	not reported
1955	Low populations were encountered.
1956-1966	not reported
1967	Moderate-to-severe defoliation occurred on open-growing and windbreak trees in Bromley Twp.
1968-1980	Low numbers of larvae were observed at widely scattered locations.

Large Aspen Tortrix, *Choristoneura conflictana* (Wlk.)

Host(s): tA

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1969	not reported
1970-1971	Moderate-to-severe defoliation occurred in Sproule, Nightingale, Airy, and Preston twps.
1972	Moderate-to-severe defoliation was noted in a small area south of Opeongo Lake.
1973	Moderate-to-severe defoliation occurred in the northern part of Algonquin Park, particularly in Pentland, Osler, Lister and Maria twps.
1974-1975	Moderate-to-severe defoliation occurred in Osler, Deacon, Lister, Maria and Airy twps.
1976	An overall decline in population levels was observed.
1977	Infestations collapsed in the northern townships. An isolated pocket of moderate-to-severe defoliation was observed in Murchison Twp.
1978-1980	not reported

Larch Casebearer, *Coleophora laricella* (Hbn.)

Host(s): tL

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1951	Moderate population levels of casebearers were observed at one location in Finlayson Twp, and light population levels were observed in Airy Twp.
1952-1980	Low numbers of larvae were observed.

Oak Leaf Shredder, *Croesia semipurpurana* (Kft.)

Host(s): oak

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1972	not reported
1973	Several small stands of red oak were moderately to severely defoliated in Head Twp.
1974	Population levels decreased in Head Twp.
1975	Small pockets of moderate-to-severe defoliation were reported in Head, Guthrie, Master and Stratton twps (see map, page ).
1976	Populations declined to low levels.
1977	Small pockets of light defoliation were reported in Finlayson Twp.
1978-1980	Light population levels were reported.

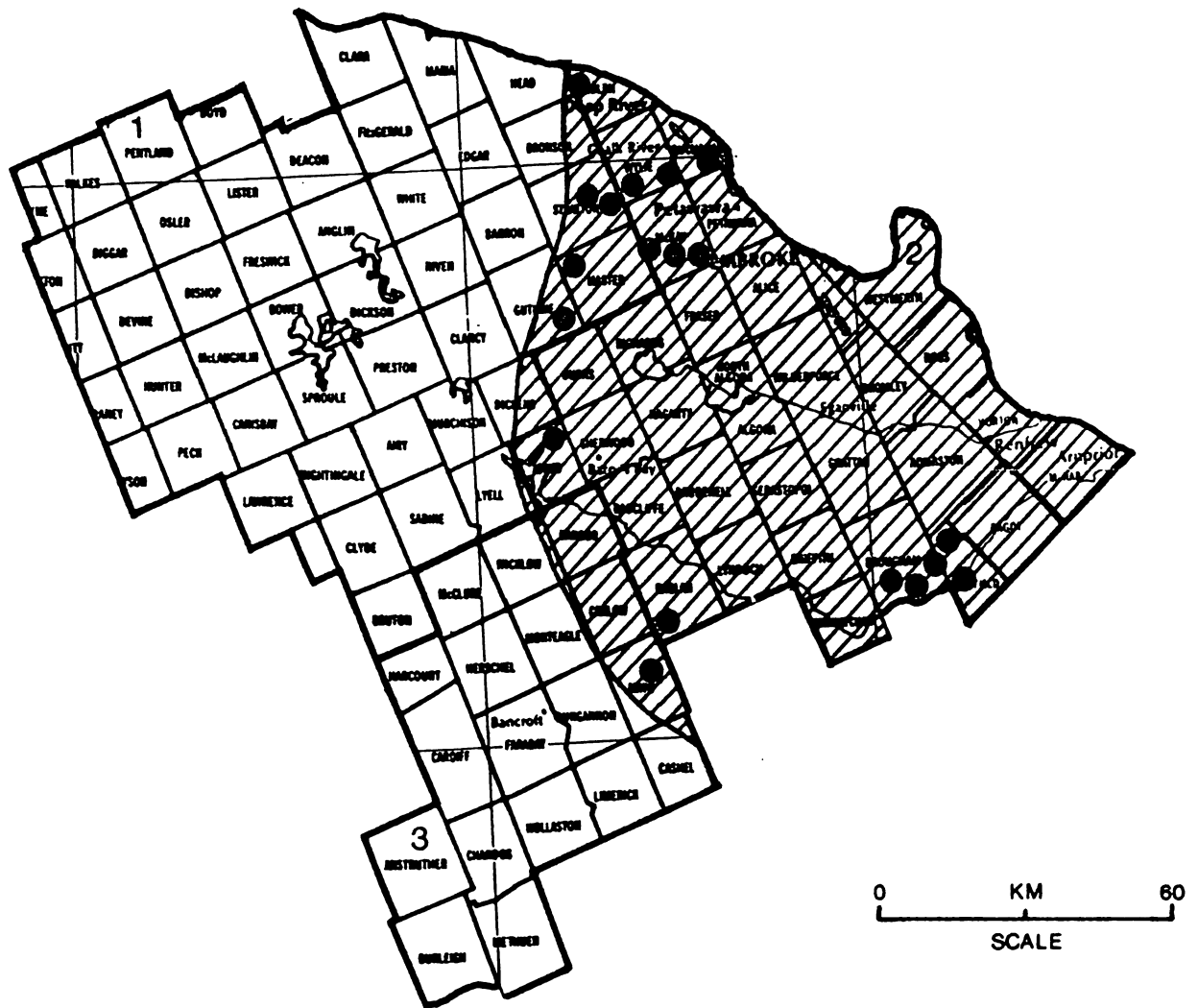
Aspen Twoleaf Tier, *Enargia decolor* (Wlk.)

Host(s): tA

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1969	not reported
1970-1971	High populations caused moderate-to-severe defoliation in the southwestern corner of Algonquin Park.
1972	Population levels declined at all sample locations.
1973	Low population levels were reported.
1974-1980	not reported

# ALGONQUIN PARK, PEMBROKE AND BANCROFT DISTRICTS



Oak Leaf Shredder

Areas within which defoliation  
occurred in 1975

Legend

Light defoliation



Moderate-to-severe defoliation



- 1 ALGONQUIN PARK
- 2 PEMBROKE
- 3 BANCROFT



Birch Leafminer, *Fenusa pusilla* (Lep.)

Host(s): birch

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1951	not reported
1952	The leafminer was commonly found at many locations.
1953-1963	Trace numbers were found.
1964	Moderate-to-severe defoliation occurred in Sproule and Preston twps; light infestation was common in the southern part of Algonquin Park.
1965-1974	Infestation levels fluctuated and caused some concern to property owners.
1975-1976	Moderate leafmining was common in eight townships.
1977	Moderate-to-severe leafmining was reported along Highway 60.
1978	Populations decreased to low levels.
1979-1980	Moderate-to-severe leafmining was observed along Highway 60.

European Spruce Sawfly, *Gilpinia hercyniae* (Htg.)

Host(s): spruce

[Minor]

<u>Year</u>	<u>Remarks</u>
1950	Larvae were occasionally obtained in Butt, Head and Canisbay twps.
1951	Trace numbers of larvae were found in the northern part of Algonquin Park, and near the west gate.
1952	Low numbers of larvae were found in Canisbay Twp.
1953-1954	Low numbers were found in several townships.
1955	Low numbers of larvae were found in beating tray samples in Clara Twp.
1956	Moderate-to-severe defoliation of roadside trees and shrubs was reported in Clara Twp; light infestation was common along Highway 60.

(cont'd)

European Spruce Sawfly, *Gilpinia hercyniae* (Htg.) (concl.)

<u>Year</u>	<u>Remarks</u>
1957-1958	Light infestations persisted along Highway 60.
1959	Moderate-to-severe infestations occurred in Finlayson Twp, and nests were abundant in Airy, Head and Peck twps.
1960	Moderate-to-severe defoliation occurred, especially on alder and willow in Head, Airy and Peck twps.
1961	Population levels remained high in Peck and Airy twps.
1962	Infestations remained high in Airy Twp; however, only trace levels were found in Peck and Head twps.
1963	Population levels declined at all locations.
1964-1980	Trace population levels were observed.

Fall Webworm, *Hyphantria cunea* (Dru.)

Host(s): deciduous [Major]

<u>Year</u>	<u>Remarks</u>
1950	not reported
1951	Light infestations were observed at many points in Algonquin Park and on roadside trees along Highway 60.
1952-1953	Population levels declined, with only a few nests being observed along Highway 60.
1954	low populations levels
1955	commonly observed at many points along Highway 60 from the east and west gates
1956	Moderate-to-severe defoliation of roadside trees and shrubs was reported in Clara Twp. Light infestations were common along Highway 60.
1957-1958	Light infestations persisted along Highway 60.
1959	Moderate-to-severe infestations occurred in Finlayson Twp and nests were abundant in Airy, Head and Peck twps.

(cont'd)

Fall Webworm, *Hyphantria cunea* (Dru.) (concl.)

<u>Year</u>	<u>Remarks</u>
1960	Moderate-to-severe defoliation was recorded on alder and willow in Head, Airy and Peck twps.
1961	Population levels remained high in Peck and Airy twps.
1962	Infestation levels remained high in Airy Twp; however, trace levels were found in Peck and Head twps.
1963	Population levels declined at all locations.
1964-1980	Trace population levels were observed.

Eastern Tent Caterpillar, *Malacosoma americanum* F.

Host(s): deciduous [Major]

<u>Year</u>	<u>Remarks</u>
1950-1953	The caterpillar was commonly found throughout the district.
1954-1959	only trace populations observed
1960	Low population levels were observed at widely scattered locations.
1961	Moderate-to-severe infestations occurred in Lyell Twp.
1962-1964	Infestations declined in Lyell Twp.
1965	Moderate-to-severe infestations were observed in Lyell Twp.
1966-1980	Light population levels were observed at widely scattered points.

Balsam Fir Sawfly, *Neodiprion abietis* complex

Host(s): bF, wS, bS

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1953	not reported
1954	Moderate-to-severe infestations were observed in Canisbay and Peck twps.
1955	Trace levels of defoliation were observed.
1956-1957	Low population levels were observed.
1958	The sawfly caused up to 25% defoliation of occasional trees in Peck Twp and 30% defoliation at one location in Canisbay Twp.
1959	Up to 60% defoliation occurred in Canisbay Twp.
1960-1961	Population levels declined at all sample points.
1962-1966	not reported
1967	Light infestations were reported in Guthrie and Masters twps.
1968	Scattered pockets of light defoliation occurred on balsam fir and white spruce in Boyd, Pentland, Clara and Deacon twps.
1969	Moderate-to-severe defoliation of balsam fir was reported near Opeongo Lake in Bower Twp, and light defoliation occurred elsewhere.
1970	Infestation levels declined throughout Algonquin Park.
1971-1974	not reported
1975	Moderate-to-severe defoliation occurred in Lister Twp.
1976	Light defoliation occurred in Lister Twp.
1977	Light infestations were common along Highway 17 in Maria and Clara twps.
1978-1980	not reported

Red Pine Sawfly, *Neodiprion nanulus nanulus* Schedl.

Host(s): jP, rP

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1958	not reported
1959-1960	Light infestations occurred in Bronson, Barron, Niven and Dickson twps.
1961	Light infestations occurred in Guthrie, Barron, Niven, Bronson, and White twps.
1962	Small numbers of colonies were found in Bronson, Niven, and White twps.
1963-1980	trace populations.

Jack Pine Sawfly, *Neodiprion pratti paradoxicus* Ross

Host(s): jP

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1960	not reported
1961	Occasional colonies were reported.
1962	Light infestations occurred in Bronson and Maria twps.
1963	Trace population levels were observed in Bronson and Maria twps.
1964	Low population levels were reported.
1965-1966	Trace population levels were observed in Bronson and Maria twps.
1967	Light defoliation occurred in Maria and Bronson twps.
1968	Infestation levels collapsed.
1969-1972	not reported
1973-1980	Light defoliation was reported.

Poplar Leaffolding Sawfly, spp. *Phyllocolpa* = *Nematus* spp.

Host(s): tA

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1958	not reported
1959	Moderate-to-severe defoliation occurred in Finlayson, Dickson, Canisbay and Pentland twps.
1960-1963	not reported
1964	Moderate-to-severe defoliation was observed in Finlayson and Sabine twps.
1965-1966	trace populations
1967-1980	not reported

Aspen Leafblotch Miner, *Phyllonorycter ontario* (Free.)

Host(s): tA

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1951	not reported
1952-1953	Light leafmining occurred at several points in the district.
1954	Moderate-to-severe browning of foliage occurred in Bronson, Lyell and Master twps.
1955	Moderate-to-severe browning of foliage was observed in Clara, Maria, Head, Stratton and Barron twps.
1956	Low populations were reported in all areas examined.
1957-1973	not reported
1974-1978	Moderate-to-severe defoliation occurred in Fitzgerald and Clara twps.
1979-1980	not reported

Yellowheaded Spruce Sawfly, *Pikonema alaskensis* (Roh.)

Host(s): spruce

[Major]

<u>Year</u>	<u>Remarks</u>
1950	not reported
1951-1952	Ornamental spruce plantings were moderately to severely defoliated at many points along Highway 60.
1953	Ornamental trees were lightly defoliated.
1954-1956	Moderate-to-severe defoliation of ornamental spruce was observed along Highway 60 as far as the western boundary of Algonquin Park.
1957-1959	Moderate-to-severe defoliation continued along Highway 60 as far as the western boundary of Algonquin Park. Mortality of young spruce near the park entrance was a result of 3 successive years of moderate-to-severe defoliation.
1960	Moderate-to-severe defoliation of white spruce occurred in Barron Twp.
1961	Medium-to-heavy infestations persisted on black and white spruce in Edgar and Bishop twps.
1962	Moderate defoliation of open-grown white and black spruce was observed at Opeongo Lake in Sproule Twp and along Hwy 60 in Airy and Sabre twps. Light infestations persisted in Edgar Twp.
1963	Pockets of medium infestation persisted along Hwy 60 in Algonquin Park and the shoreline of Pretty Lake in Edgar Twp.
1964	Light infestations were encountered in Bower, Freswick and Lawrence twps.
1965-1966	Moderate-to-severe defoliation occurred along the Hydro line in Clancy and Barron twps. Light defoliation was observed in Nightingale and Freswick twps.
1967	The sawfly caused 55% defoliation of 2.5 m tall spruce in Lyell Twp.
1968	Moderate-to-severe defoliation continued in Lyell Twp and caused upwards of 60% loss of foliage.
1969	The infestation collapsed in Lyell Twp.
1970-1980	Varying degrees in defoliation were reported, especially on young trees.

Mountain-ash Sawfly, *Pristiphora geniculata* (Htg.)

Host(s): aMo

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1951	not reported
1952	Moderate-to-severe defoliation occurred on shoreline trees in Preston, Sproule and Nightingale twps.
1953-1954	trace populations
1955	Moderate-to-severe defoliation occurred at many points in Algonquin Park, particularly in Airy, Sabine, Peck and Fitzgerald twps.
1956	Moderate-to-severe defoliation was observed in Sabine Twp and light defoliation was noted in Murchison Twp.
1957	Medium-to-heavy infestations persisted in Sabine Twp.
1958-1963	Trace populations were observed during this period.
1964	Moderate-to-severe defoliation was observed along Highway 127 in Sabine Twp and at Aylen Lake in Dickens Twp.
1965-1980	No infestations were reported; however, trace populations persisted.

Aspen Leafroller, *Pseudexentera oregonana* Wlshm.

Host(s): poplar

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1963	not reported
1964	Moderate-to-severe defoliation was observed at many locations along Highway 60, especially in Murchison and Sproule twps. Light infestations were common in Airy and Sabine twps.
1965	Moderate-to-severe infestations persisted in Murchison Twp.
1966	Infestations declined in Murchison Twp. Light infestations were common in Clara, Head, Sproule and Guthrie twps.
1967-1980	not reported



DISEASES

Scleroderris Canker, *Ascocalyx abietina* (Lagerb.) Schläpfer-Bernhard

Host(s): pine

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1965	not reported
1966	The canker caused 0.9% mortality in Murchison Twp and 2.3% mortality in Guthrie Twp.
1967-1968	No new areas of infection were reported from general surveys.
1969-1970	not reported
1971	Low levels of infection were reported in Guthrie Twp.
1972-1973	not reported
1974	The canker affected 35% of trees in a plantation in Anglin Twp.
1975-1978	Little change was observed in the status of this disease.
1979-1980	No change was observed in the status of this disease (see map, page ).

Dutch Elm Disease, *Ceratocystis ulmi* (Buism.) C. Moreau

Host(s): elm

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1960	not reported
1961	The northern boundary of the infection extended from Stonecliffe to Parry Sound.
1962	The disease is now found commonly in elm stands throughout the district.
1963-1965	There was no change in the status of this disease.
1966	The disease caused up to 6% mortality in the district.

(cont'd)

Map of St. Lawrence County, New York, showing 100 townships. The map is divided into three numbered regions: 1 (northwest), 2 (northeast), and 3 (south). Townships are labeled with names such as CLARK, HARRIS, HEAD, ROLPH, DEER, FRANKLIN, EDGAR, BROWN, WYLLIE, STANTON, MASTER, FRASER, ALICE, WESTHEATH, BOSS, HORTON, ARNOLD, ARNOLD, BACOT, and others. A scale bar at the bottom right indicates 0 to 60 kilometers.

### 3 BANCROFT

Areas within which infection  
centres were recorded  
up to and including 1980 ●

Dutch Elm Disease, *Ceratocystis ulmi* (Buism.) C. Moreau (concl.)

<u>Year</u>	<u>Remarks</u>
1967-1968	The disease continued to cause appreciable mortality in elm stands throughout the district.
1969-1970	There was no change in the status of this disease.
1971-1973	An increasing number of trees were reported to be dying throughout the district.
1974	Mortality ranging from 7.5% to 21% was reported in the district.
1975-1980	Mortality continued among the remaining elms scattered throughout the district.

White Pine Blister Rust, *Cronartium ribicola* J.C. Fischer

Host(s): wP [Major]

<u>Year</u>	<u>Remarks</u>
1950-1951	not reported
1952	A survey of 476 white pine in the Achray area revealed that 7% were infected and that mortality had reached 2%.
1953-1963	Blister rust was very commonly observed on white pine at many locations throughout the district.
1964	Quantitative sampling indicated that 14% of trees were affected in Wilkes Twp.
1965-1973	No major changes were reported during this period.
1974	Infection levels of 25%, 30% and 35% of trees were reported in Anglin, Clara and Stratton twps, respectively.
1975-1980	No significant increases in infection levels were reported during this period.

Hypoxyylon Canker, *Hypoxyylon mammatum* (Wahlenb.) J. Miller

Host(s): tA, lA

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1952	not reported
1953	The canker was commonly found throughout the range of aspen.
1954-1955	A high percentage of mortality was reported on young aspen in the 2.5-cm diameter class.
1956-1961	not reported
1962	Stem cankers were commonly found in Head, Lyell and Stratton twps.
1963-1967	not reported
1968-1971	A low incidence of infection was reported at several locations.
1972	not reported
1973	High levels of infection were reported in Airy, Lyell, Osler and Sproule twps.
1974-1980	High levels of incidence were reported, with varying degrees of mortality.

## Other Noteworthy Diseases

Ink Spot of Aspen, *Ciborinia whetzelii* (Seaver) Seaver

Host(s): tA

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1959	not reported
1960-1963	Light infections were observed at numerous locations.
1964	Patches of light damage were observed in the district.
1965	not reported
1966	Small pockets of light infection were observed in Sproule, Airy, Preston and Murchison twps.

(cont'd)

Ink Spot of Aspen, *Ciborinia whetzellii* (Seaver) Seaver (concl.)

<u>Year</u>	<u>Remarks</u>
1967	Moderate-to-severe foliar damage occurred on regeneration and sapling-size trees at many locations.
1968	Trace levels of infection were reported in Airy Twp.
1969	Trace and light foliar damage were recorded at many points.
1970	not reported
1971-1973	Low levels of infection were reported throughout the district.
1974	In Lister Twp, 60% infection and 40% foliar damage were reported.
1975	Low levels of infection were reported throughout the district.
1976-1977	Trace levels of infection were reported at several locations in the district.
1978	Moderate foliar damage was reported in Fitzgerald and Murchison twps.
1979-1980	Trace levels of infection were reported in the district.

ABIOTIC DAMAGE

## Drought

<u>Year</u>	<u>Remarks</u>
1950-1965	not reported
1966	Below-normal precipitation during the summer resulted in drought symptoms on oak, maple and birch at many locations.
1967-1974	not reported
1973	Light damage occurred on small branches of eastern white cedar and extensive browning of aspen and white birch foliage was observed at several locations.
1976	not reported
1977	Moderate-to-severe browning of largetooth aspen foliage was apparent, especially on hillsides and rocky ridges.
1978-1980	not reported

## Wind

<u>Year</u>	<u>Remarks</u>
1950-1963	not reported
1964	Severe damage occurred in the Portal Lake area of Bishop and Osler twps, and affected an area approximately 16 km long and 0.5 km wide.
1965-1971	not reported
1972	A strip of timber approximately 0.5 km wide, extending from the Thomas Lake area in Dickson Twp to Foys Lake in Guthrie Twp, was damaged.
1973	Approximately 20 km <sup>2</sup> of forest land were damaged between Wilkes and Biggar lakes.
1974-1980	not reported



APPENDICES



## APPENDIX A

## DECIDUOUS HOST

<u>Common Name</u>	<u>Scientific Name</u>	<u>Abbreviations</u>
Alder	<i>Alnus</i> spp.	Al
Apple	<i>Malus</i> spp.	Ap
Ash, black	<i>Fraxinus nigra</i> Marsh.	As
Aspen, largetooth trembling	<i>Populus grandidentata</i> Michx. <i>tremuloides</i> Michx.	lA tA
Basswood	<i>Tilia</i> spp.	Ba
Beech	<i>Fagus grandifolia</i> Ehrh.	Be
Birch, white yellow	<i>Betula papyrifera</i> Marsh. <i>alleghaniensis</i> Britton	wB yB
Butternut	<i>Juglans cinerea</i> L.	Bu
Cherry, eastern choke pin	<i>Prunus virginiana</i> L. <i>pensylvanica</i> L.f.	eaCh pCh
Elm, white	<i>Ulmus americana</i> L.	wE
Horse-chestnut	<i>Aesculus hippocastanum</i> L.	hChe
Ironwood	<i>Ostrya</i> spp.	I
Maple, Manitoba red sugar	<i>Acer negundo</i> L. <i>rubrum</i> L. <i>saccharum</i> Marsh.	mM rM sM
Mountain-ash, American	<i>Sorbus americana</i> Marsh.	aMo
Oak, bur red	<i>Quercus macrocarpa</i> Michx. <i>rubra</i> L.	bO rO
Poplar, balsam Carolina Lombardy silver	<i>Populus balsamifera</i> L. X <i>canadensis</i> Moench <i>nigra</i> var. <i>Italica</i> Muenchh. <i>alba</i> L.	bPo cPo lPo sPo
Willow	<i>Salix</i> spp.	W

## APPENDIX B

## CONIFEROUS HOST

<u>Common Name</u>	<u>Scientific Name</u>	<u>Abbreviations</u>
Cedar, eastern white	<i>Thuja occidentalis</i> L.	eC
Fir, balsam	<i>Abies balsamea</i> (L.) Mill.	bF
Larch	<i>Larix laricina</i> (Du Roi) K. Koch	tL
Pine, Austrian	<i>Pinus nigra</i> Arnold	aP
eastern white	<i>strobilus</i> L.	wP
jack	<i>banksiana</i> Lamb.	jP
mugho	<i>mugo</i> Turra var. <i>mughus</i> Zenari	mP
red	<i>resinosa</i> Ait.	rP
Scots	<i>sylvestris</i> L.	scP
Spruce, black	<i>Picea mariana</i> (Mill.) B.S.P.	bS
Colorado	<i>pungens</i> Engelm.	colS
Norway	<i>abies</i> (L.) Karst.	nS
red	<i>rubens</i> Sarg.	rS
white	<i>glauca</i> (Moench) Voss	wS

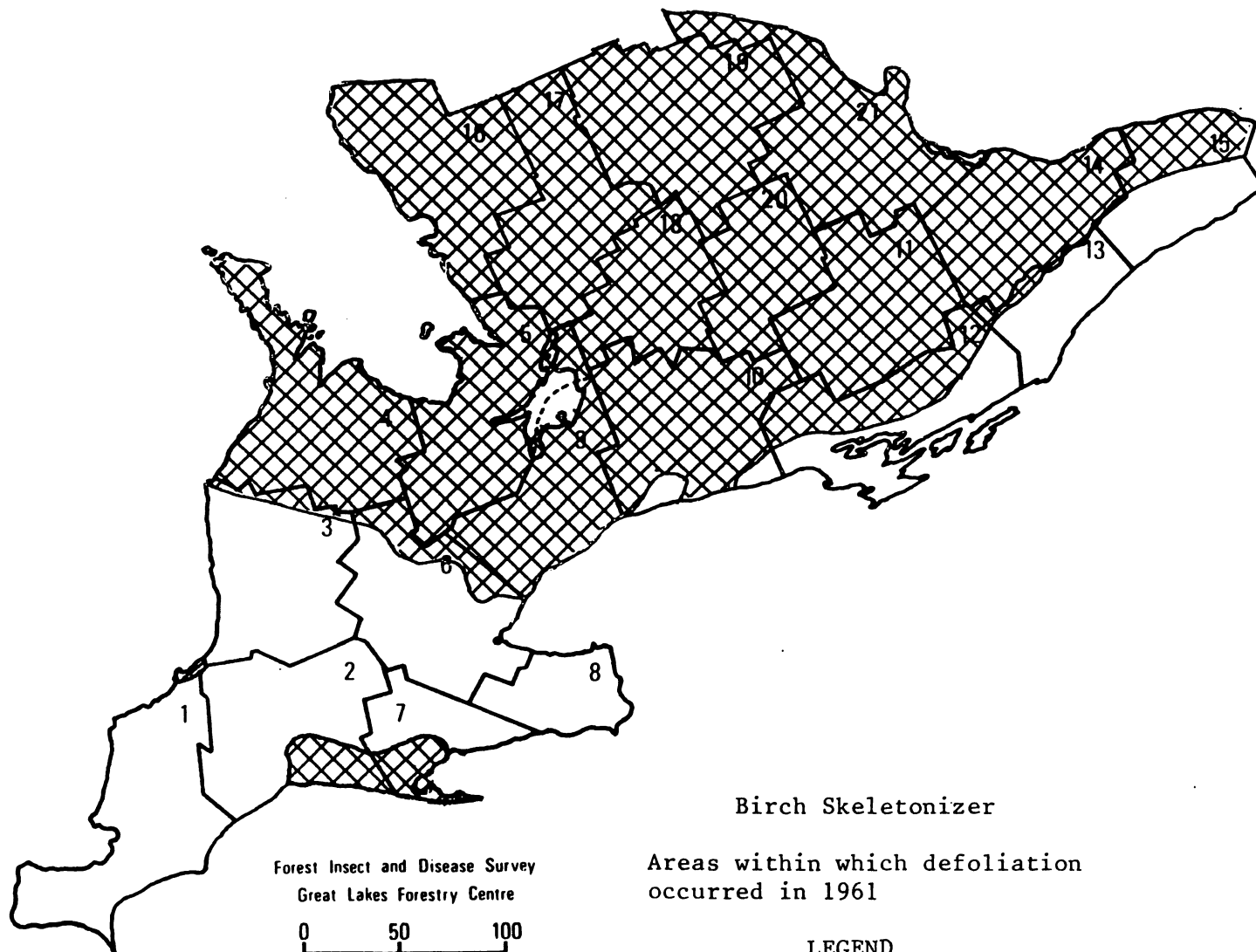
APPENDIX C

MAPS - SOUTHEASTERN ONTARIO

# SOUTHERN ONTARIO

## DISTRICTS

1. CHATHAM
2. AYLMER
3. WINGHAM
4. OWEN SOUND
5. HURONIA
6. CAMBRIDGE
7. SIMCOE
8. NIAGARA
9. MAPLE
10. LINDSAY
11. TWEED
12. NAPANEE
13. BROCKVILLE
14. CARLETON PLACE
15. CORNWALL
16. PARRY SOUND
17. BRACEBRIDGE
18. MINDEN
19. ALGONQUIN PARK
20. BANCROFT
21. PEMBROKE



Birch Skeletonizer

Areas within which defoliation  
occurred in 1961

LEGEND

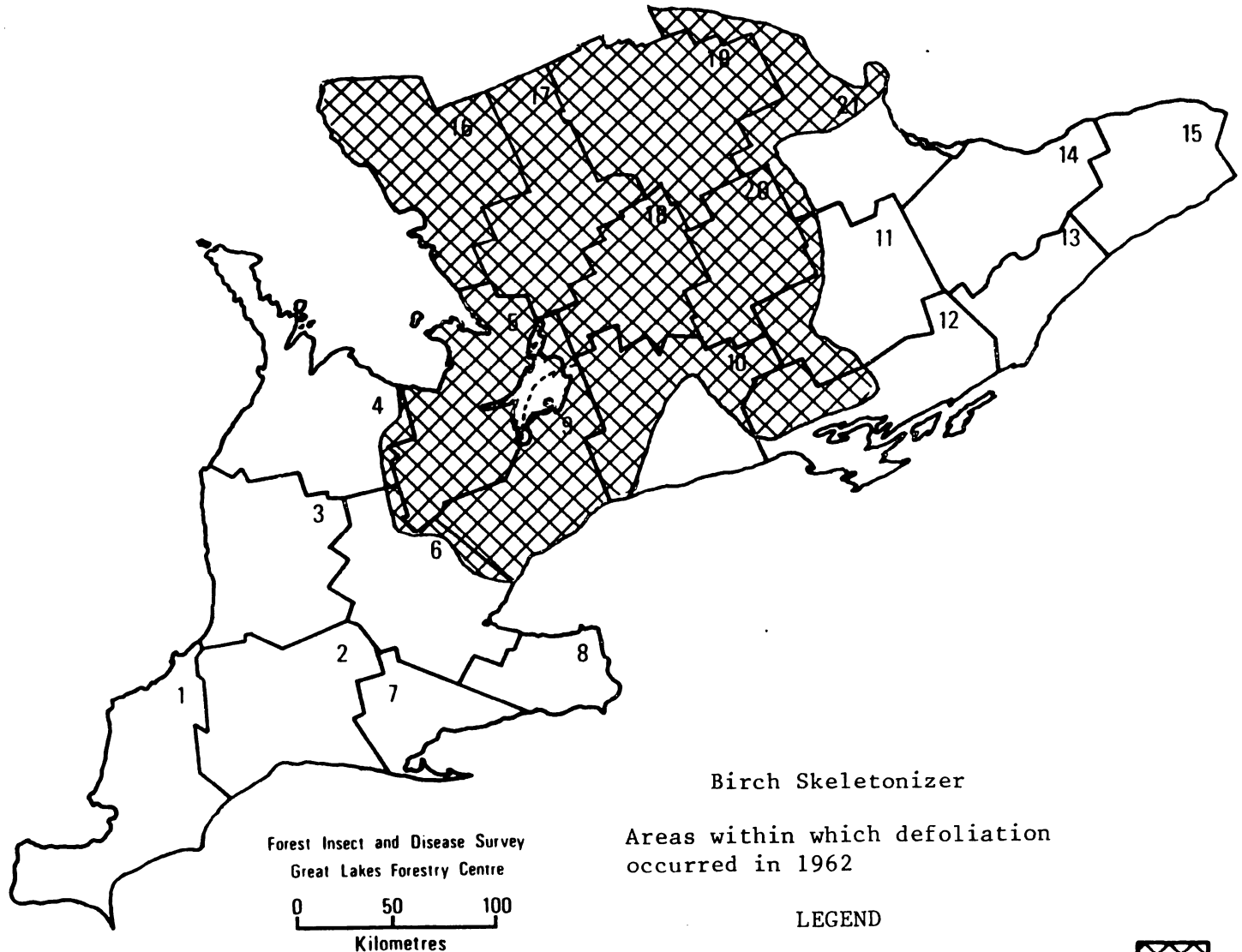
Moderate-to-severe defoliation



# SOUTHERN ONTARIO

## DISTRICTS

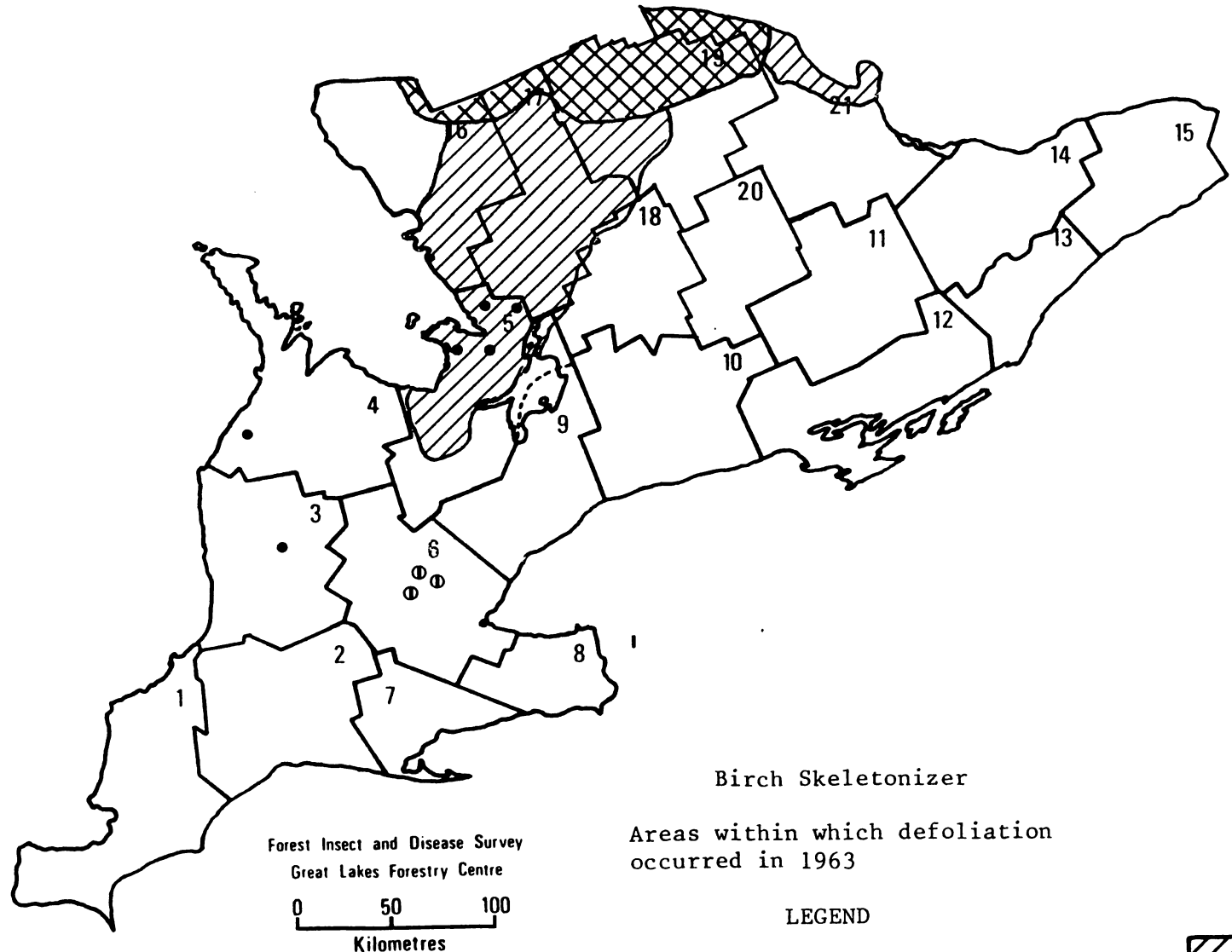
1. CHATHAM
2. AYLMER
3. WINGHAM
4. OWEN SOUND
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18. MINDEN
19. ALGONQUIN PARK
20. BANCROFT
21. PEMBROKE



# SOUTHERN ONTARIO

## DISTRICTS

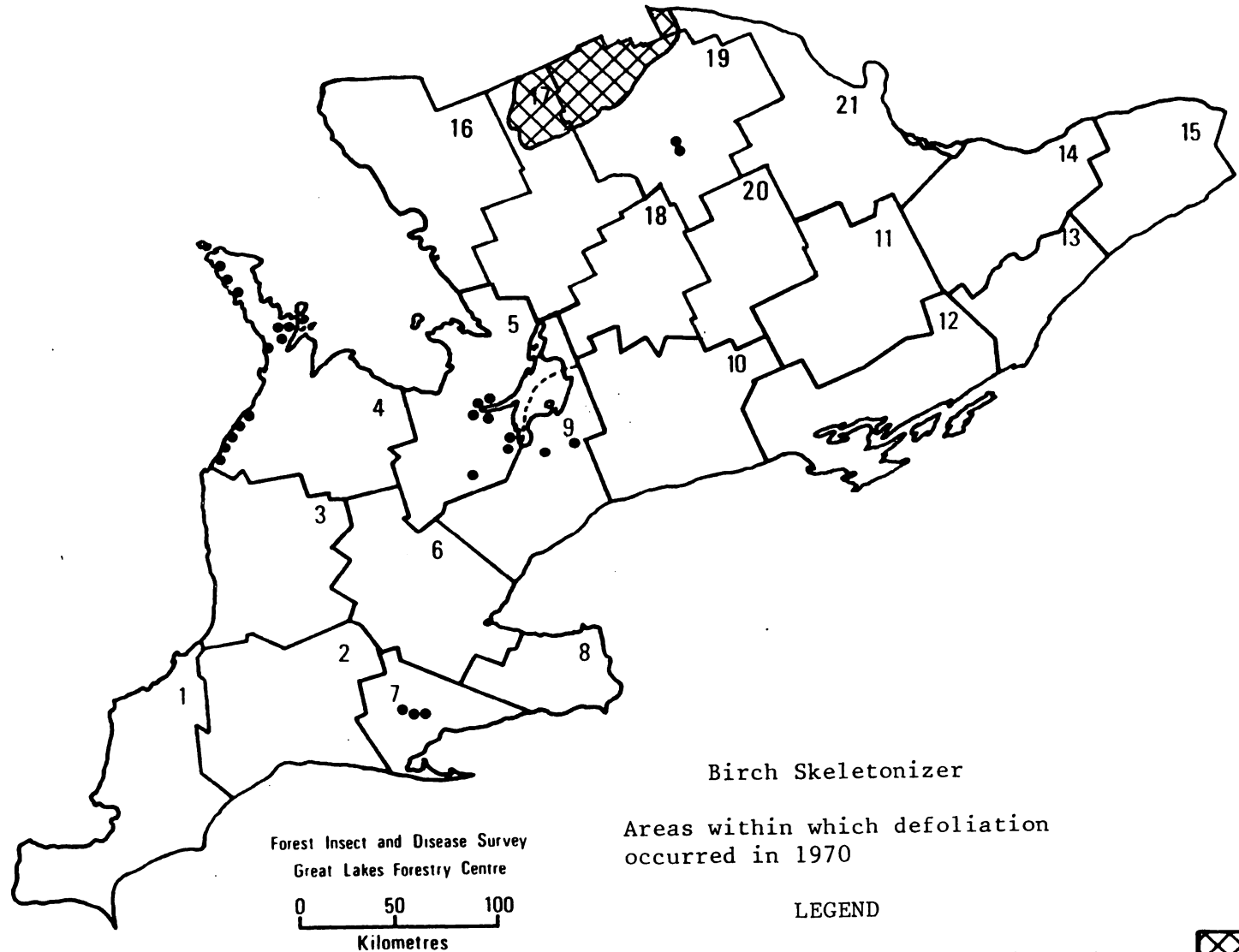
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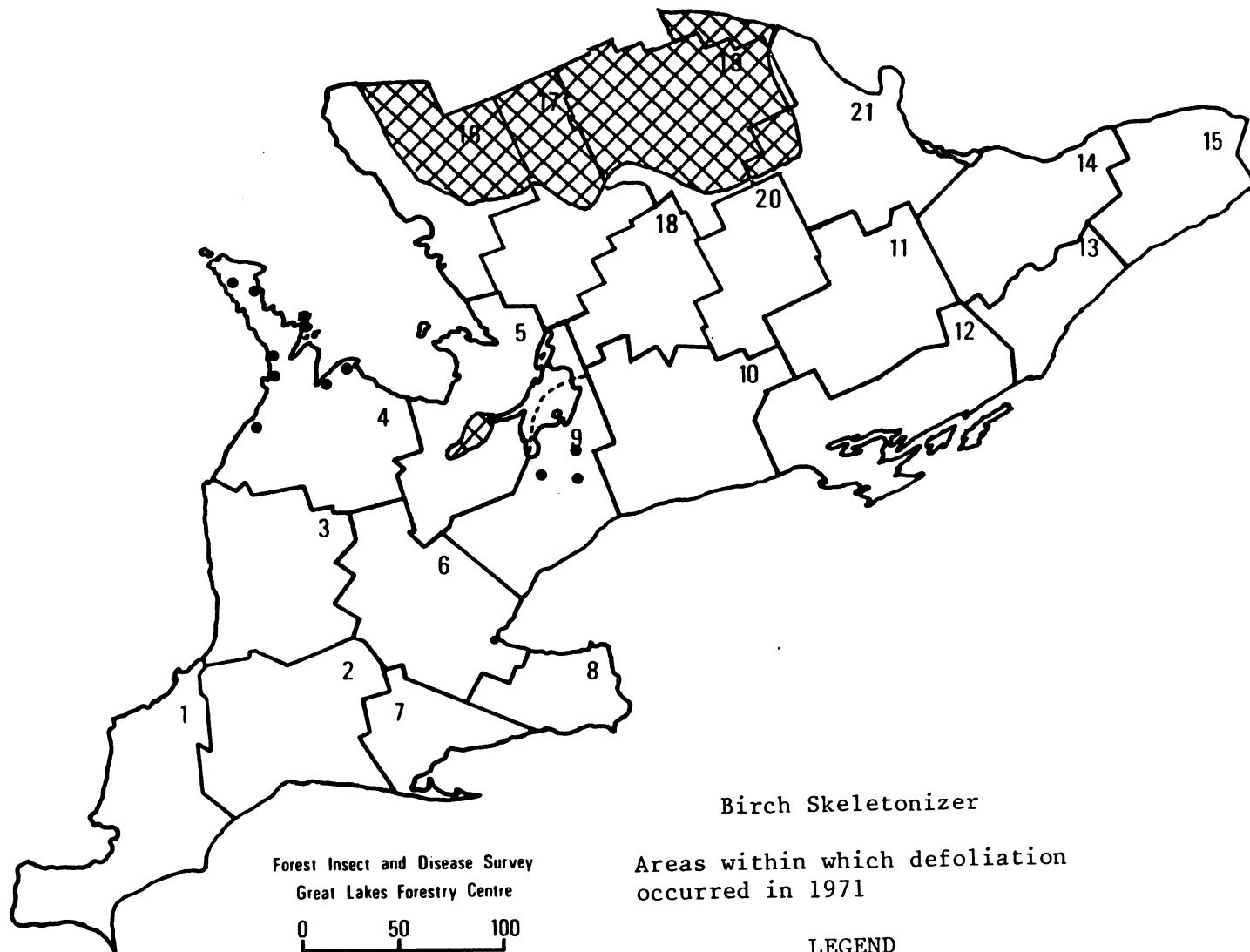




# SOUTHERN ONTARIO

## DISTRICTS

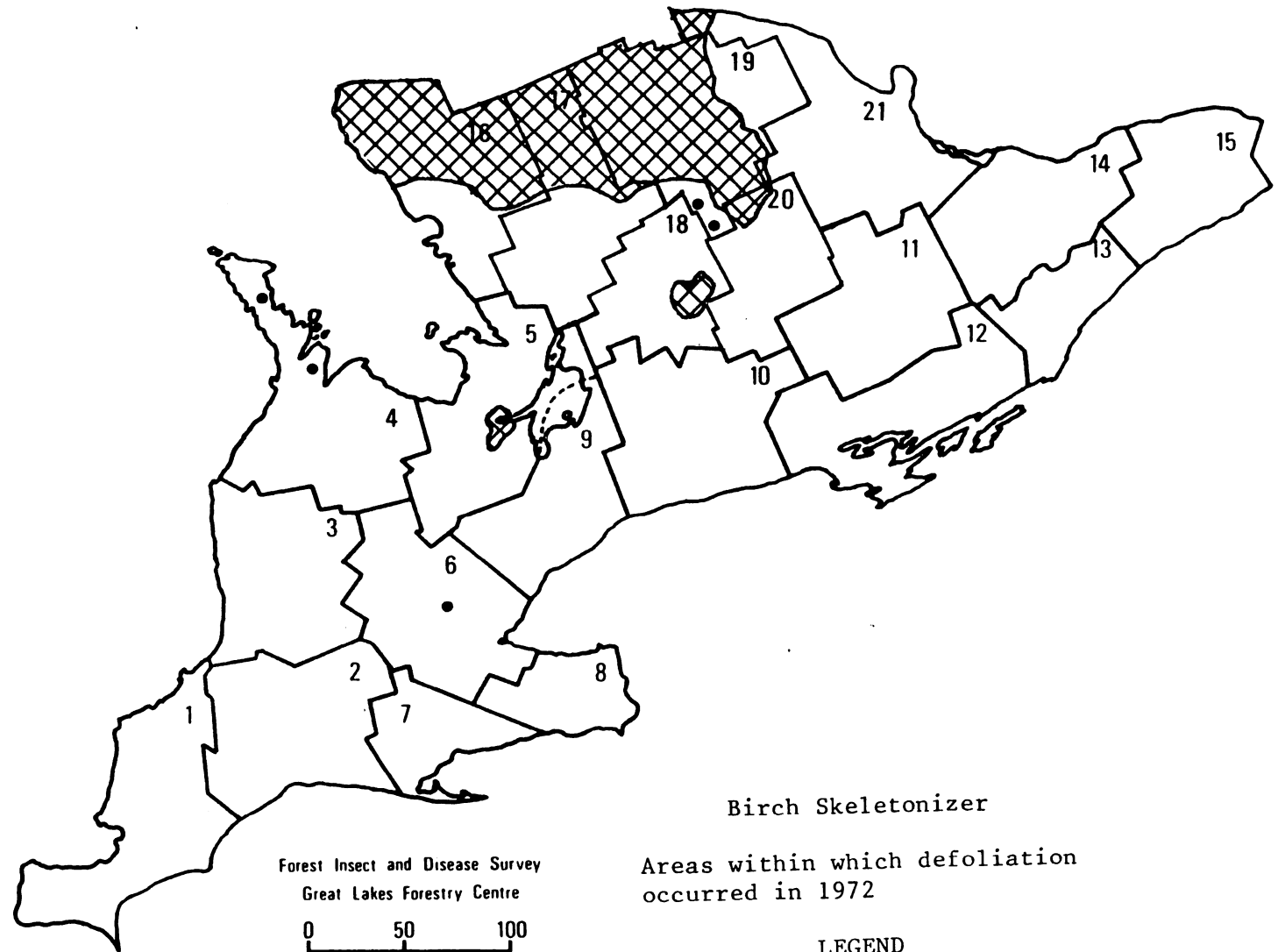
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# SOUTHERN ONTARIO

## DISTRICTS

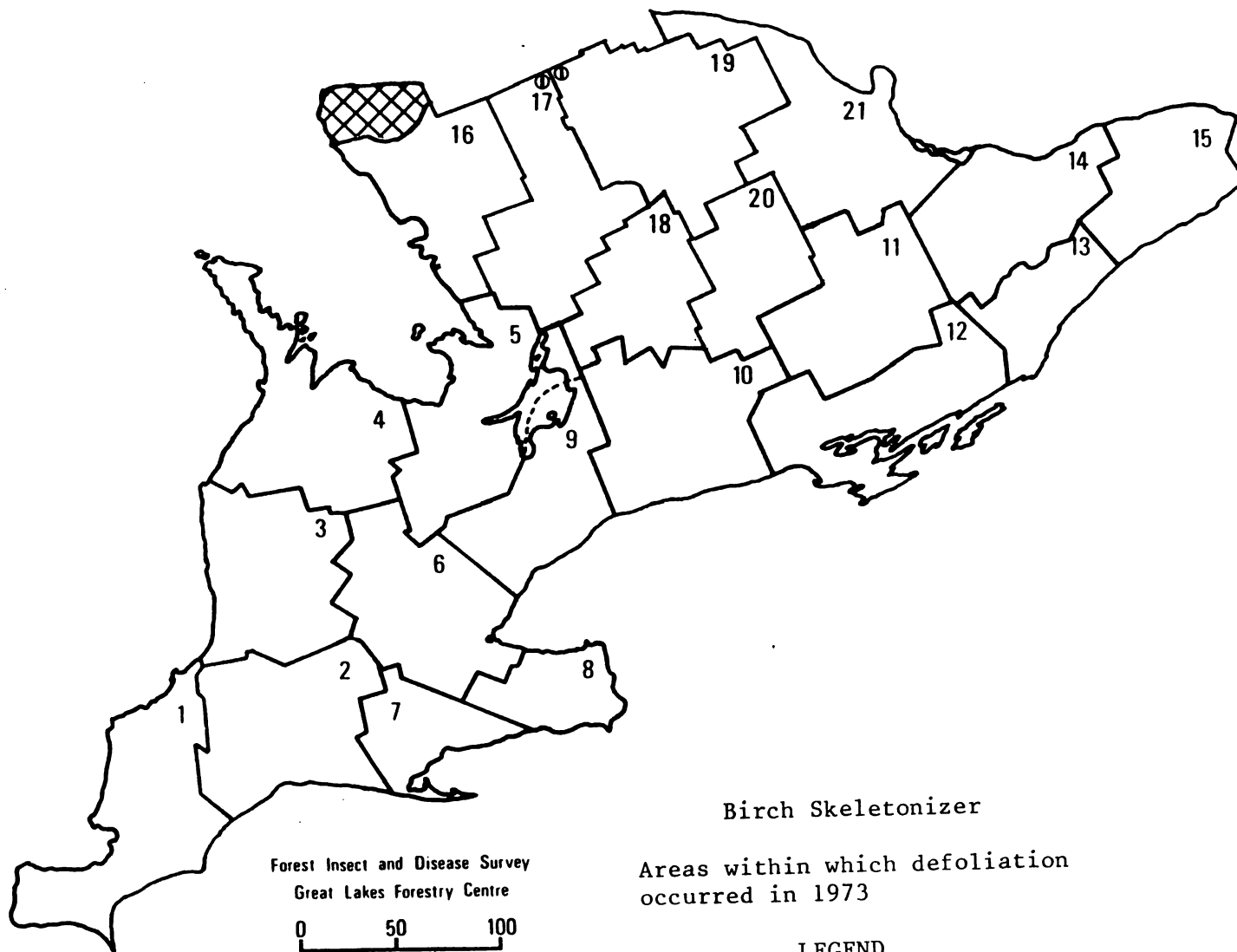
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21. PEMBROKE



Birch Skeletonizer

Areas within which defoliation  
occurred in 1973

## LEGEND

Light defoliation

Mo' ate to severe defoliation

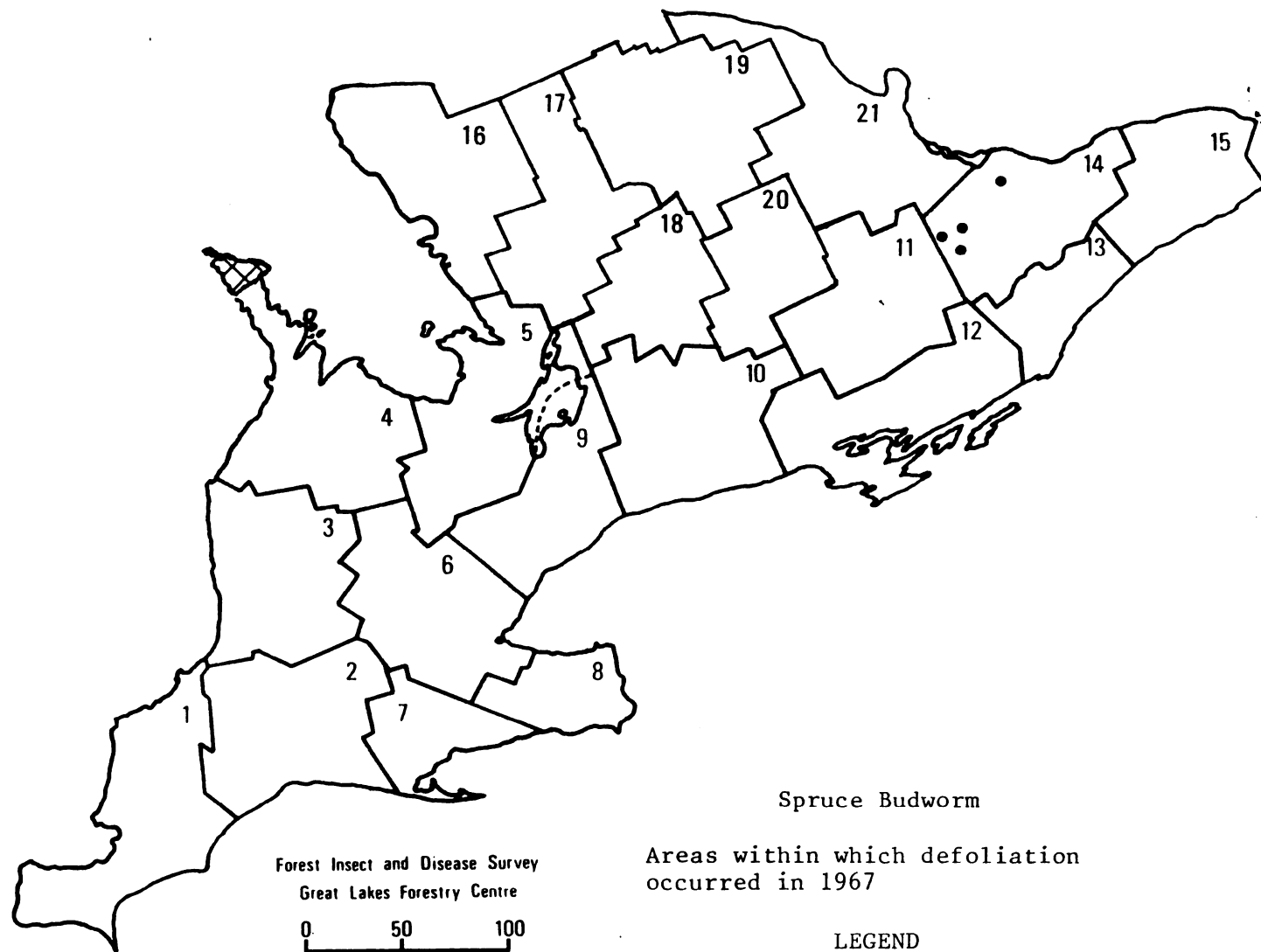
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# SOUTHERN ONTARIO

## DISTRICTS

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21. PEMBROKE



Spruce Budworm

Areas within which defoliation  
occurred in 1967

## LEGEND

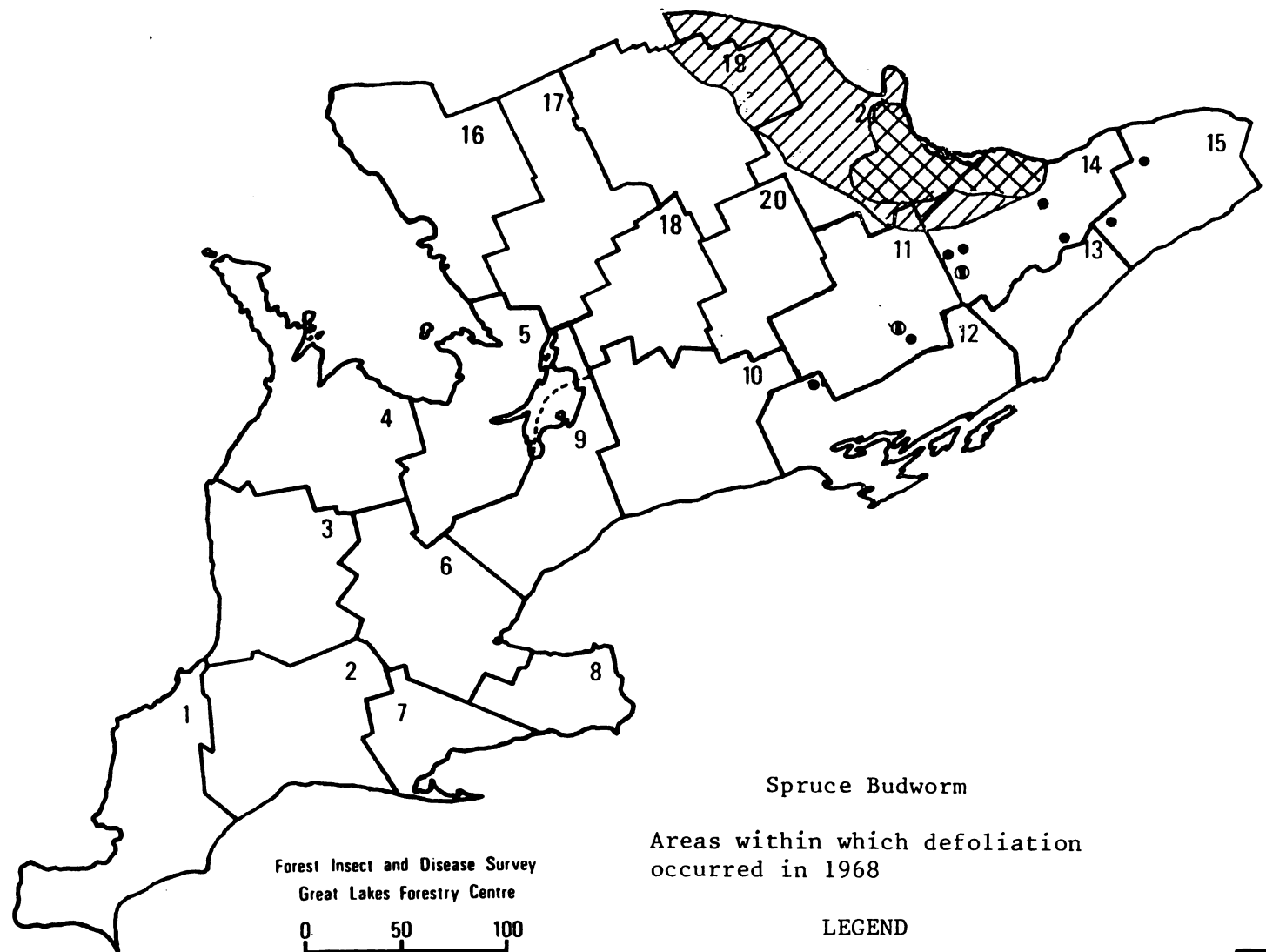
Moderate-to-severe defoliation • or



# SOUTHERN ONTARIO

## DISTRICTS

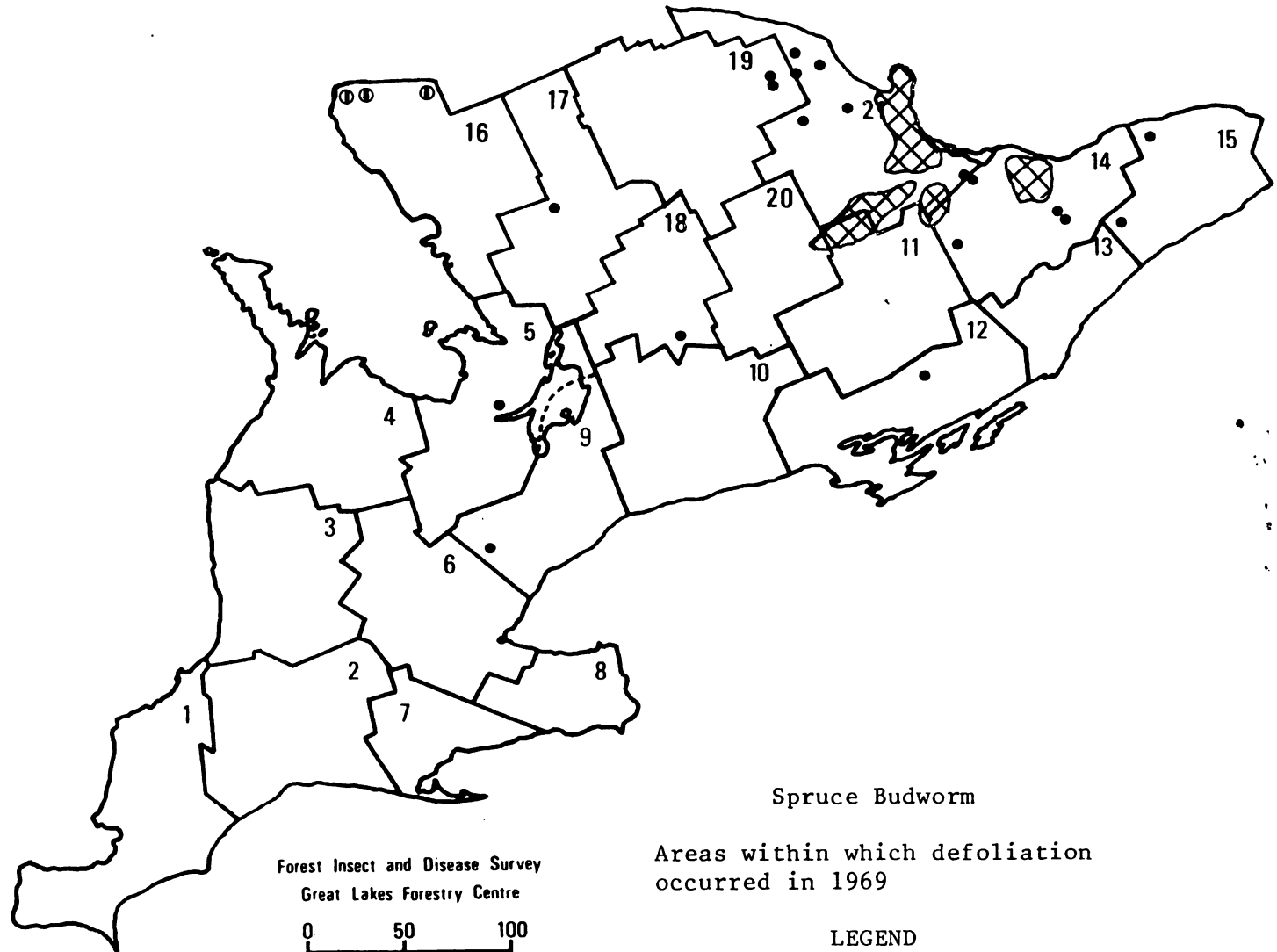
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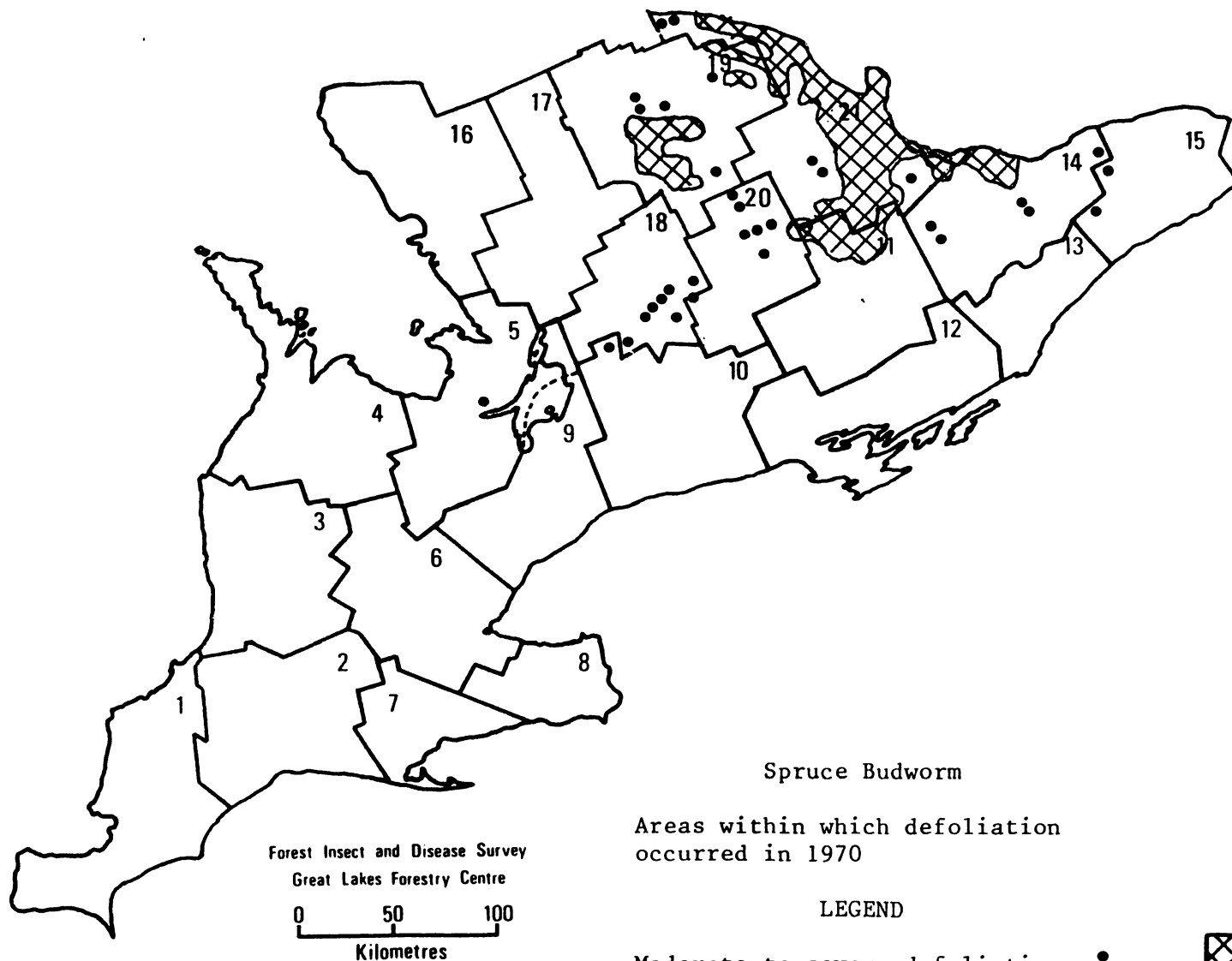
Light defoliation ○

Moderate-to-severe defoliation • or

# SOUTHERN ONTARIO

## DISTRICTS

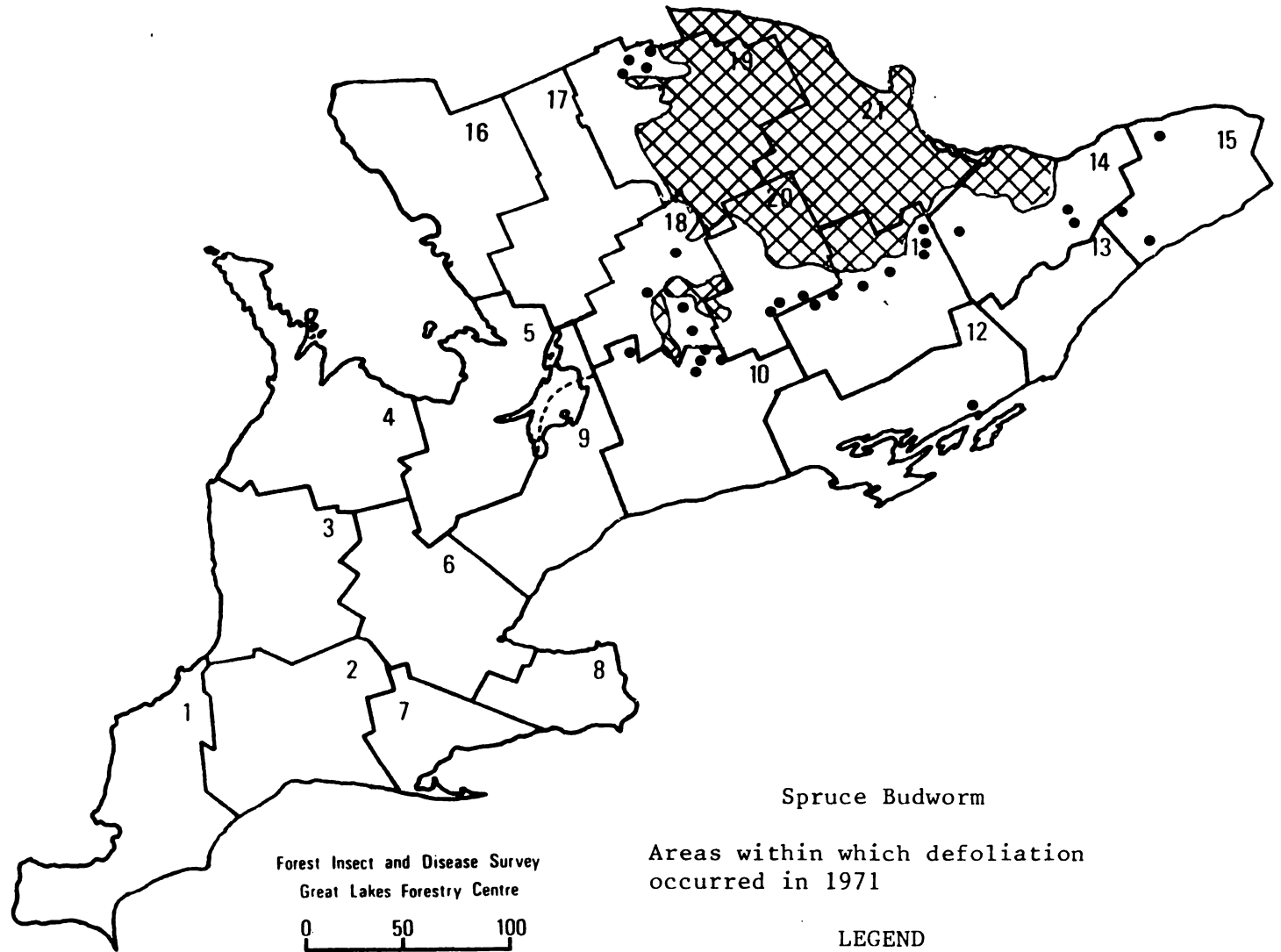
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Spruce Budworm

Areas within which defoliation  
occurred in 1971

## LEGEND

Moderate-to-severe defoliation • or

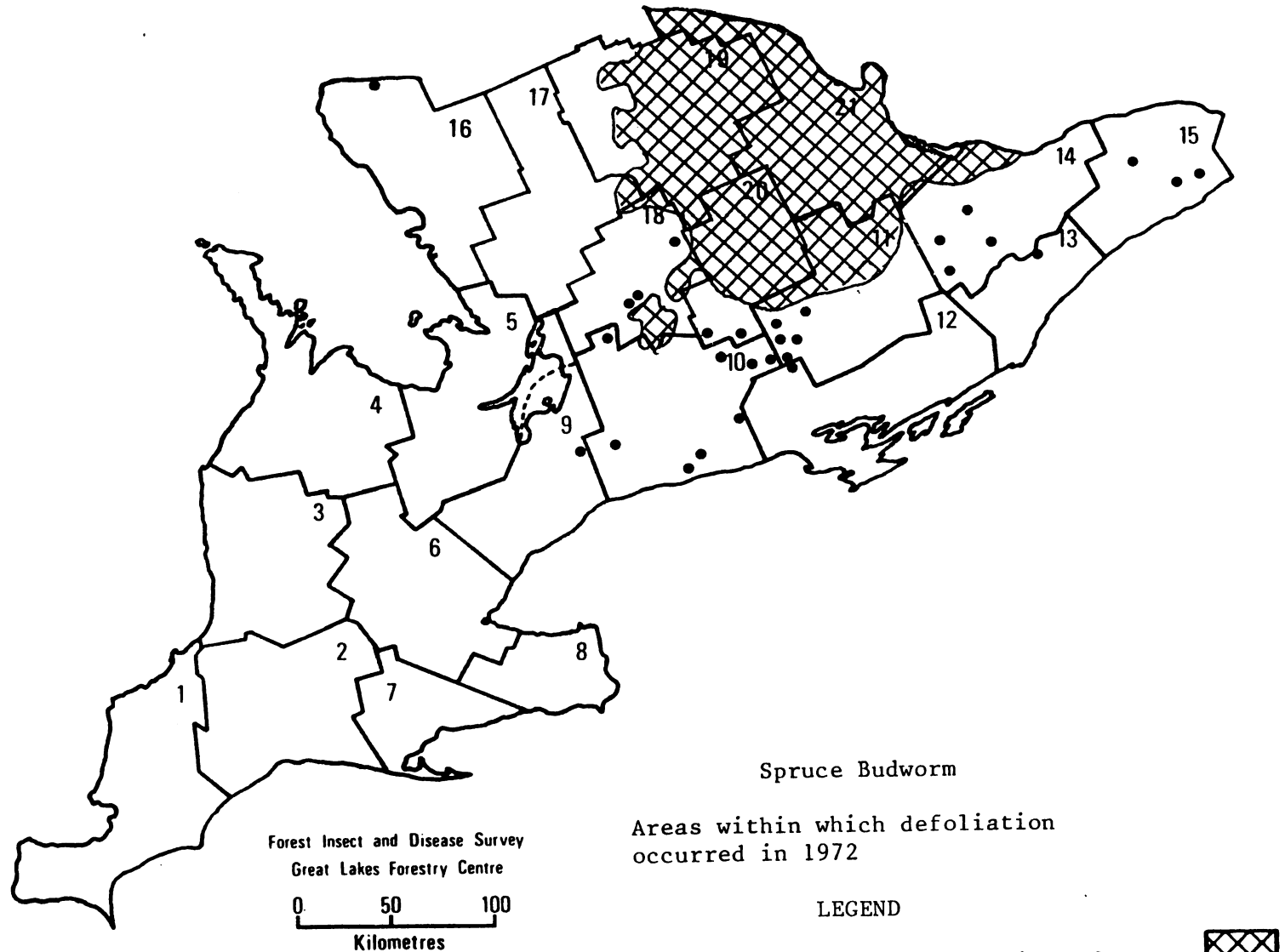




# SOUTHERN ONTARIO

## DISTRICTS

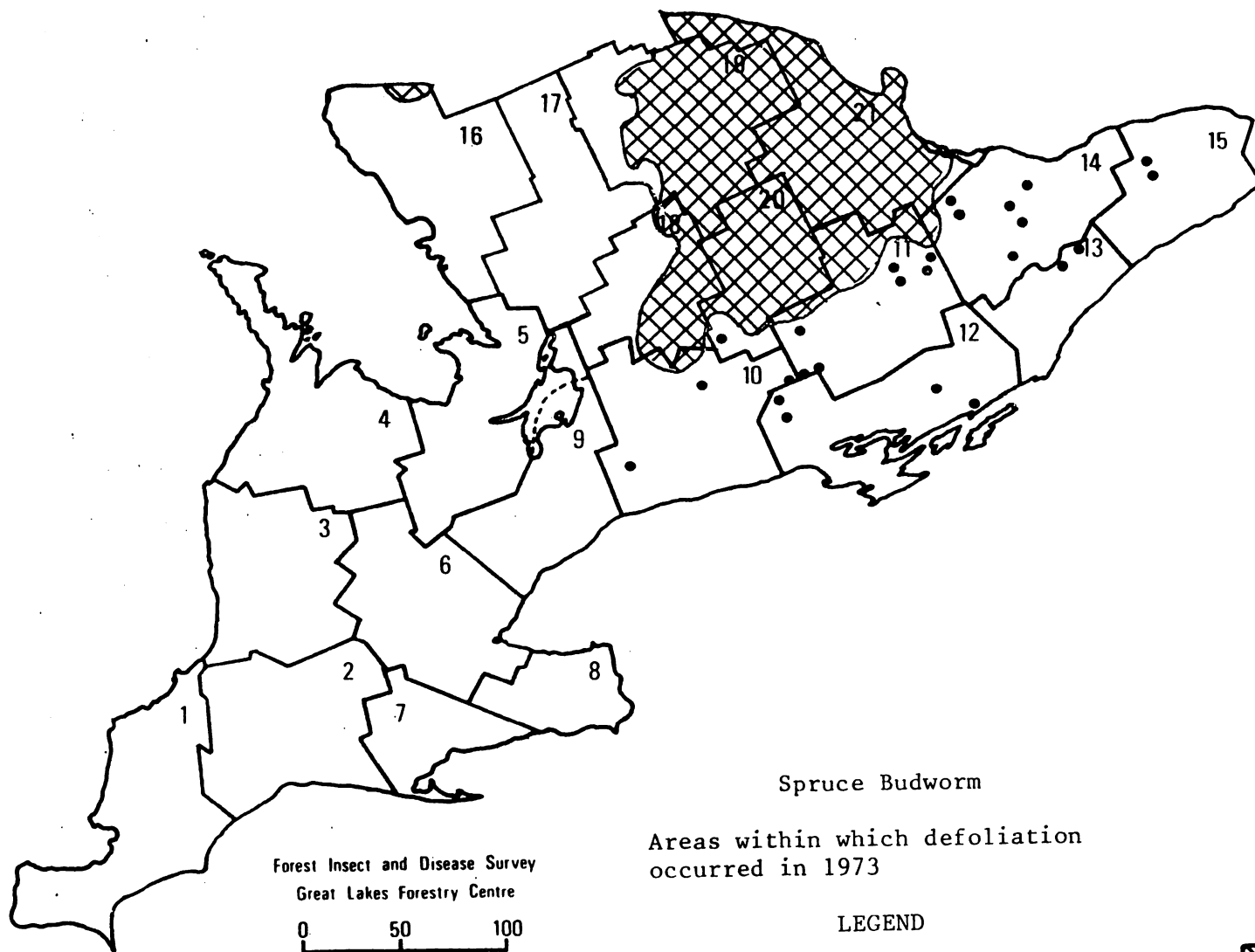
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Spruce Budworm

Areas within which defoliation  
occurred in 1973

## LEGEND

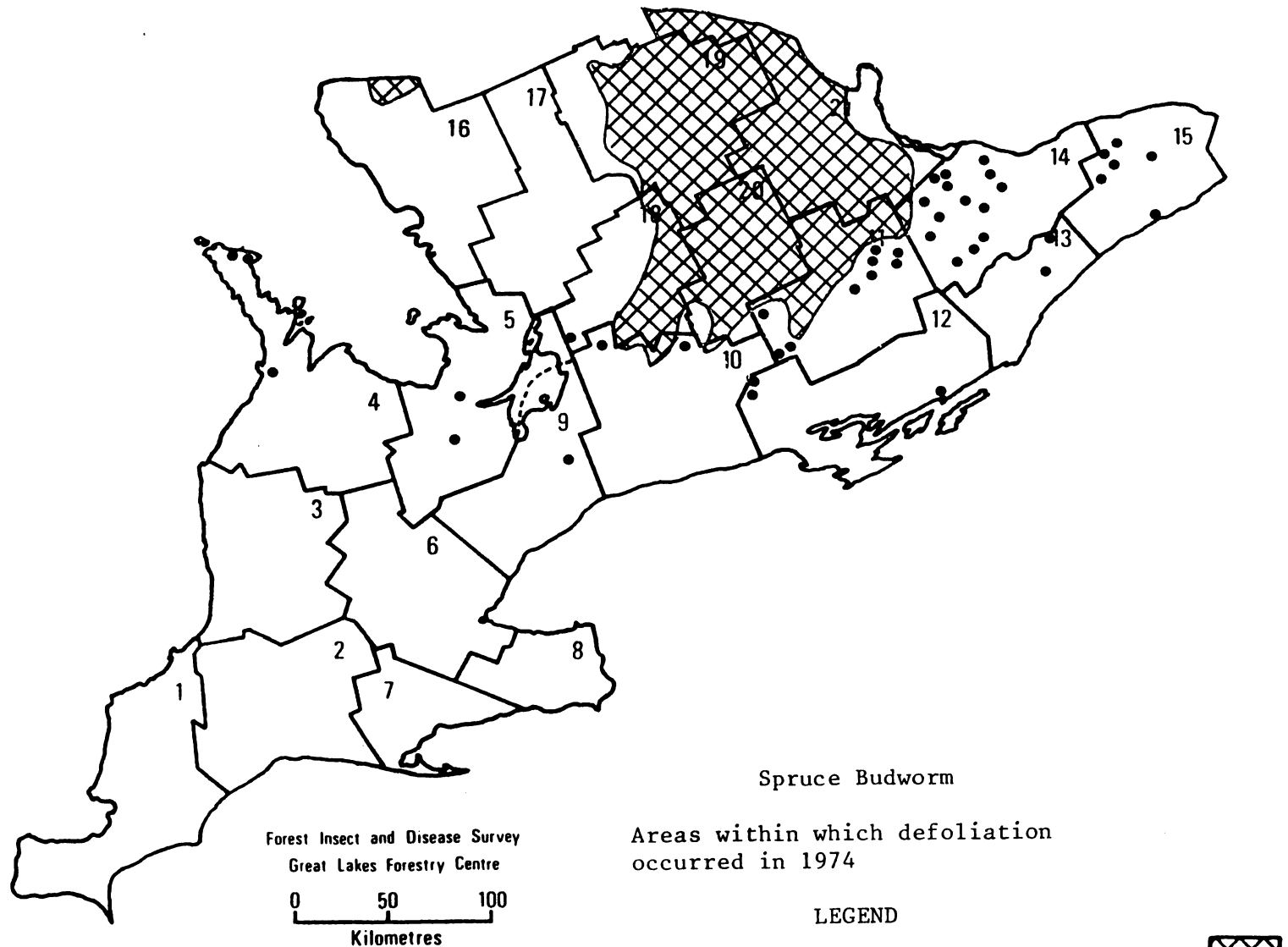
Moderate-to-severe defoliation • or



# SOUTHERN ONTARIO

## DISTRICTS

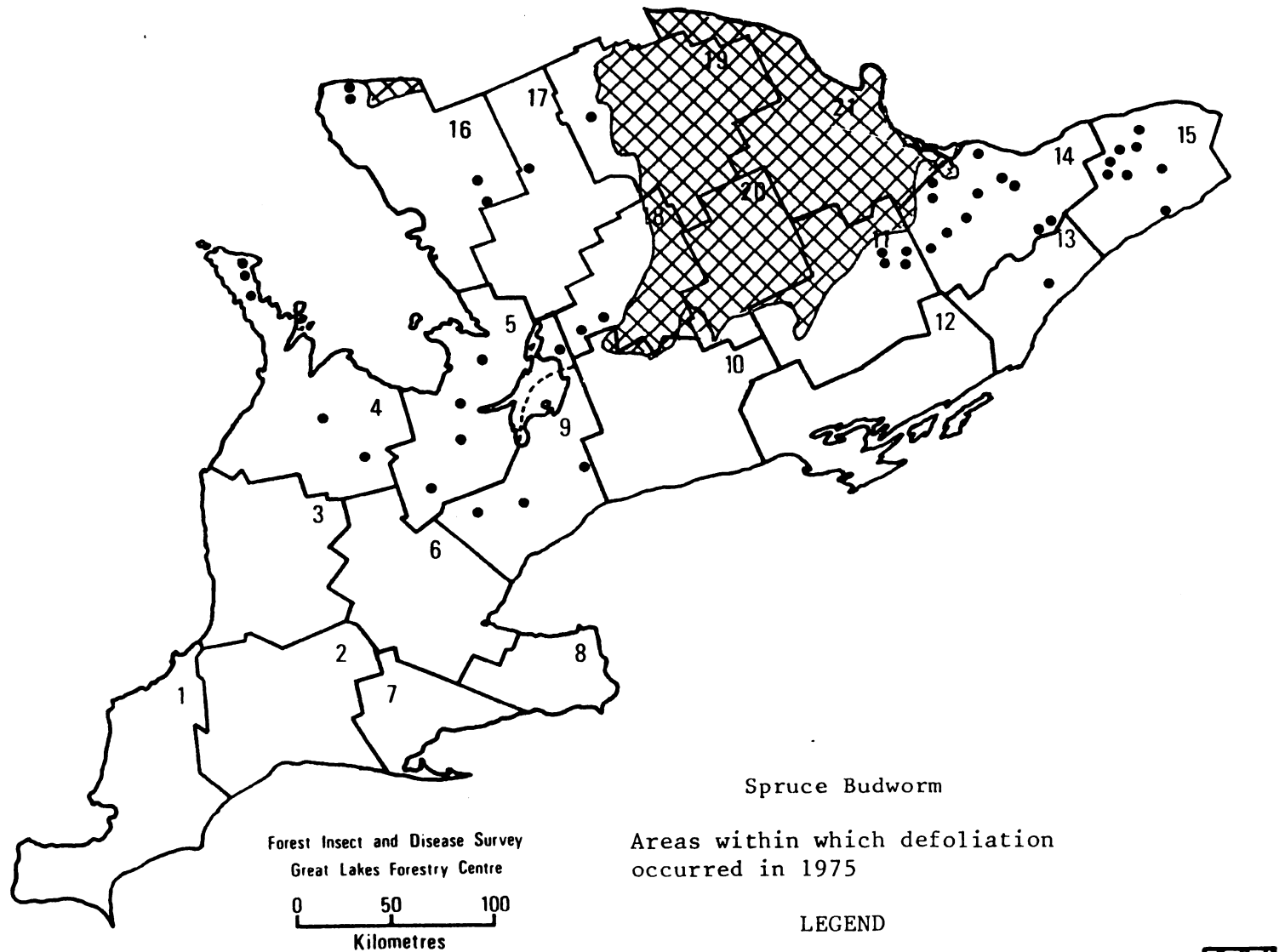
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# SOUTHERN ONTARIO

## DISTRICTS

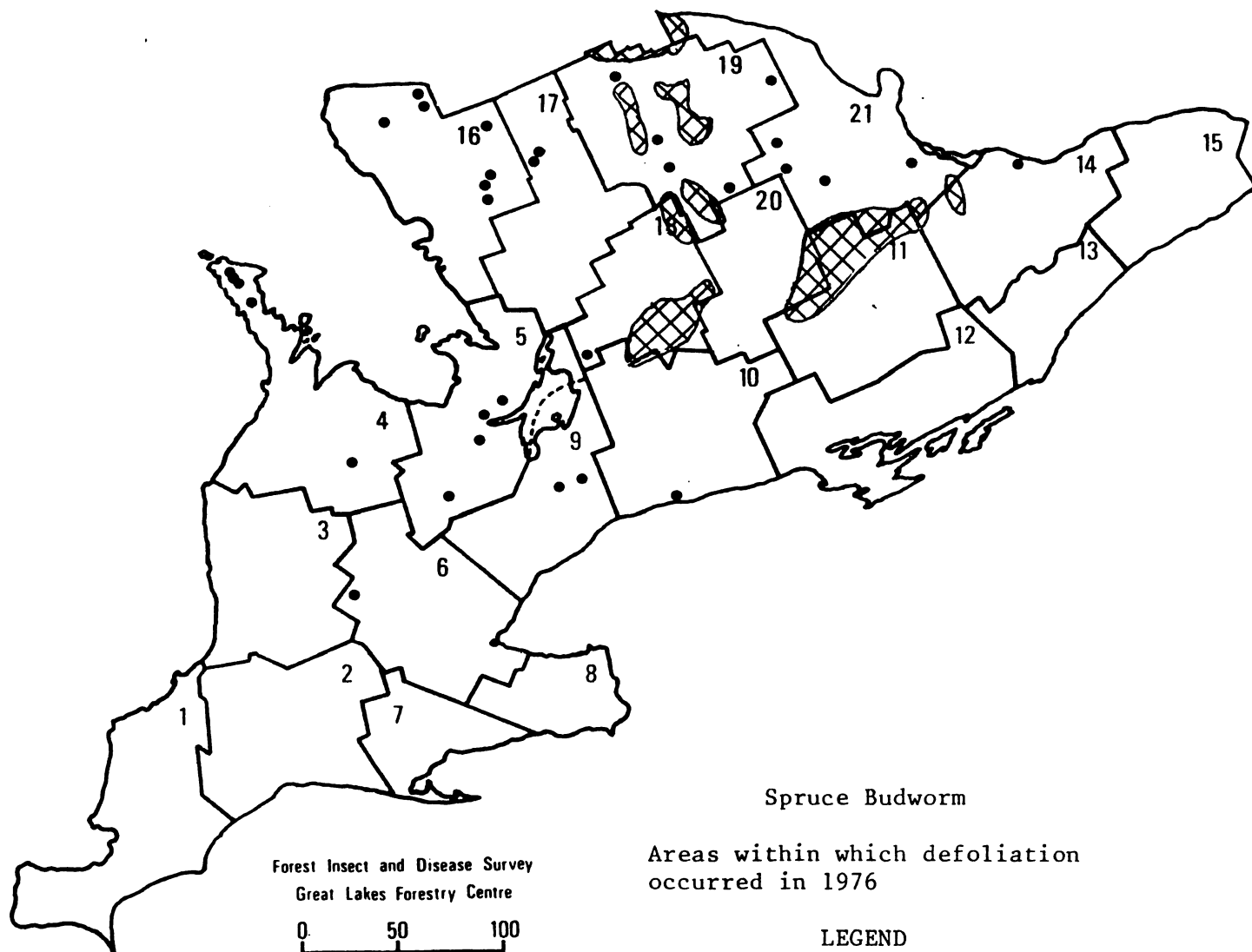
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# SOUTHERN ONTARIO

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Spruce Budworm

Areas within which defoliation  
occurred in 1976

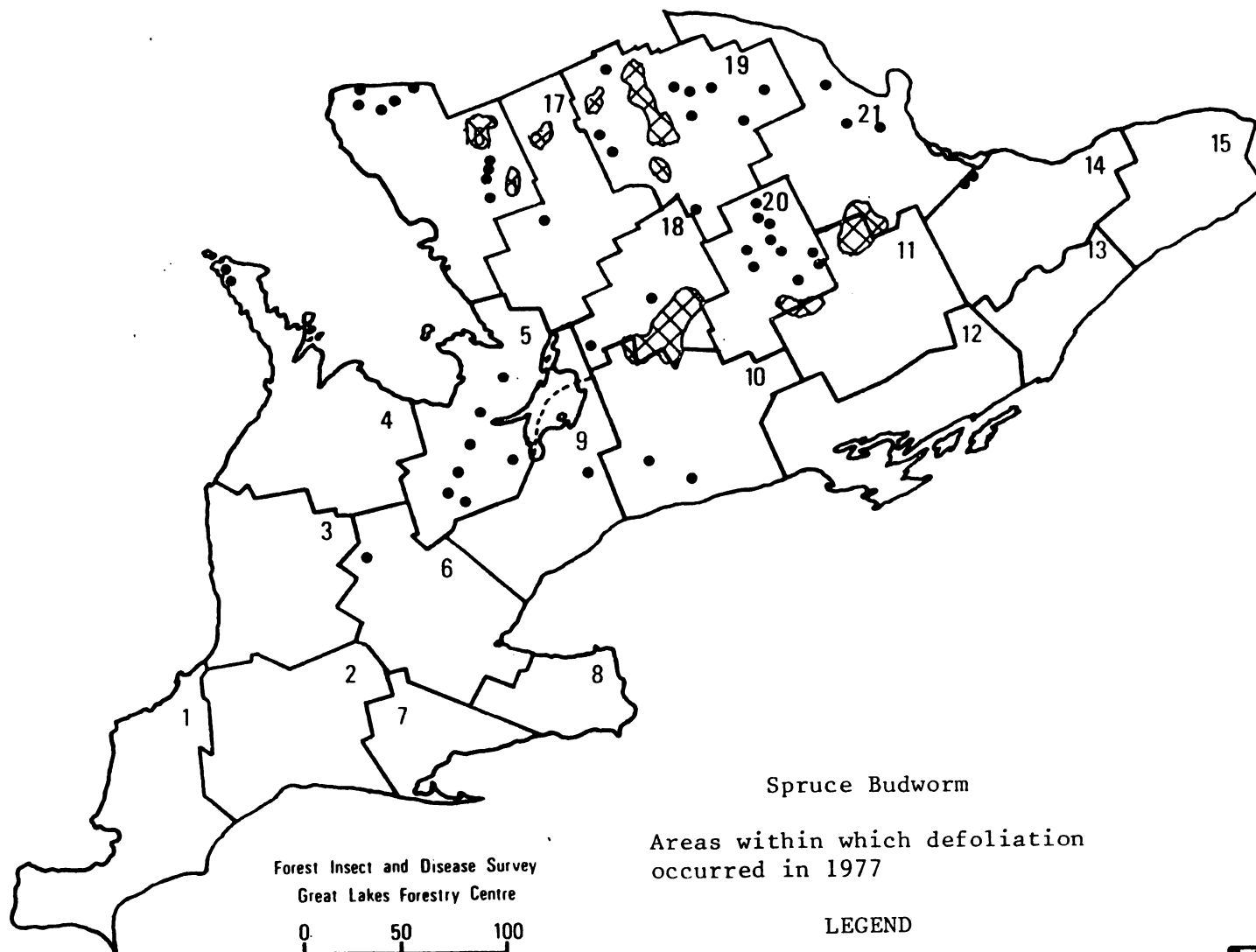
## LEGEND

Moderate-to-severe defoliation • or 

# SOUTHERN ONTARIO

## DISTRICTS

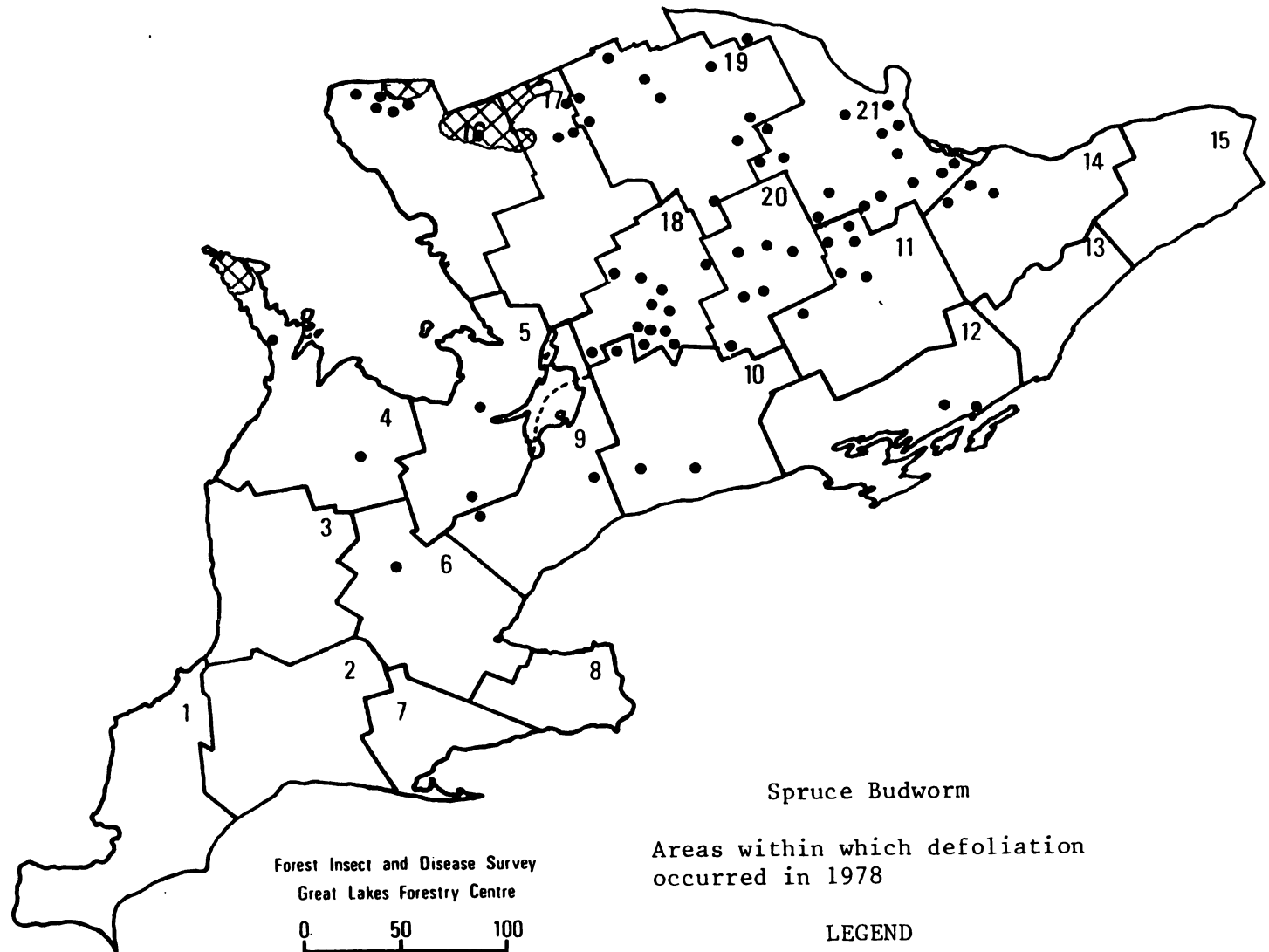
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# SOUTHERN ONTARIO

## DISTRICTS

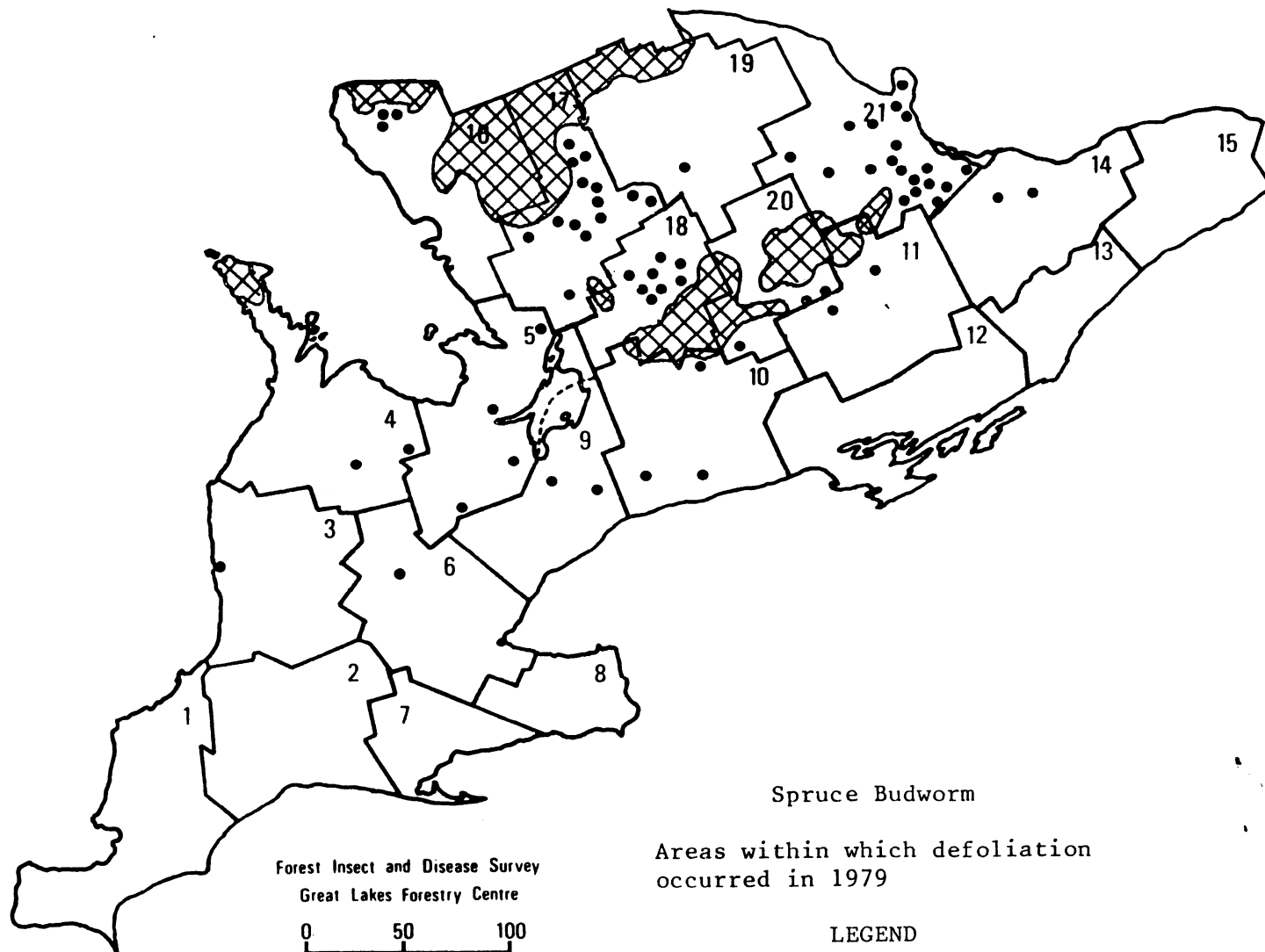
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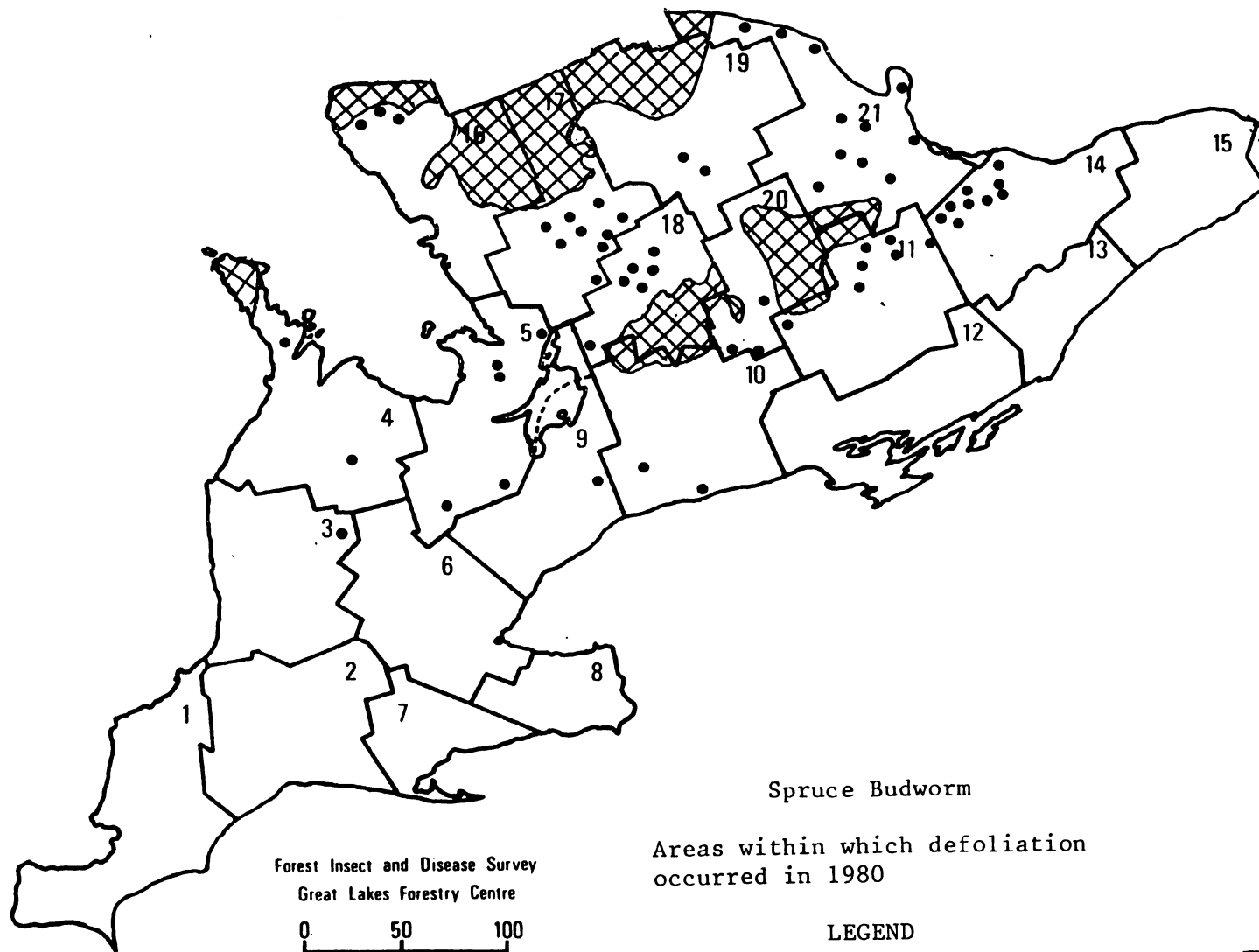




# SOUTHERN ONTARIO

## DISTRICTS

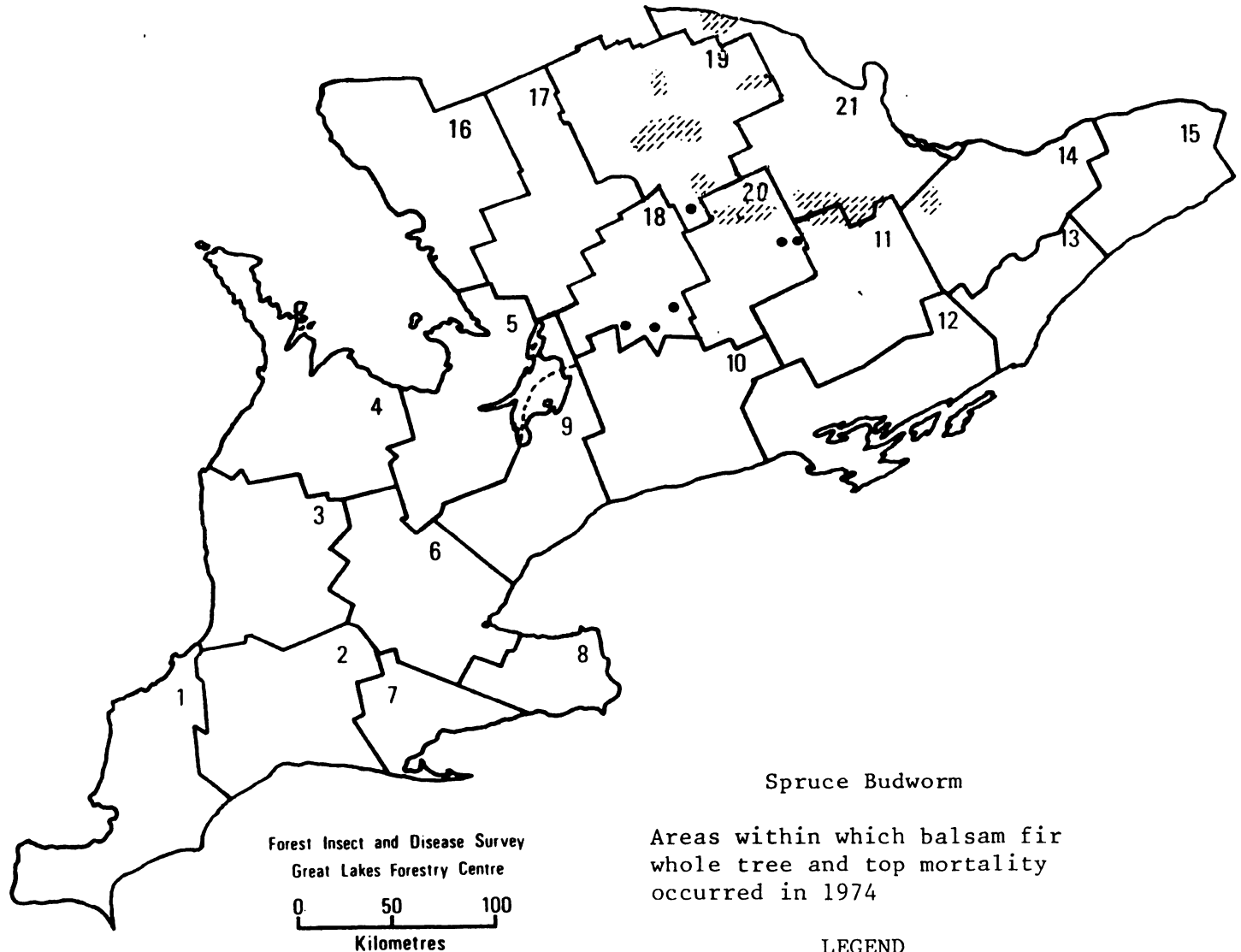
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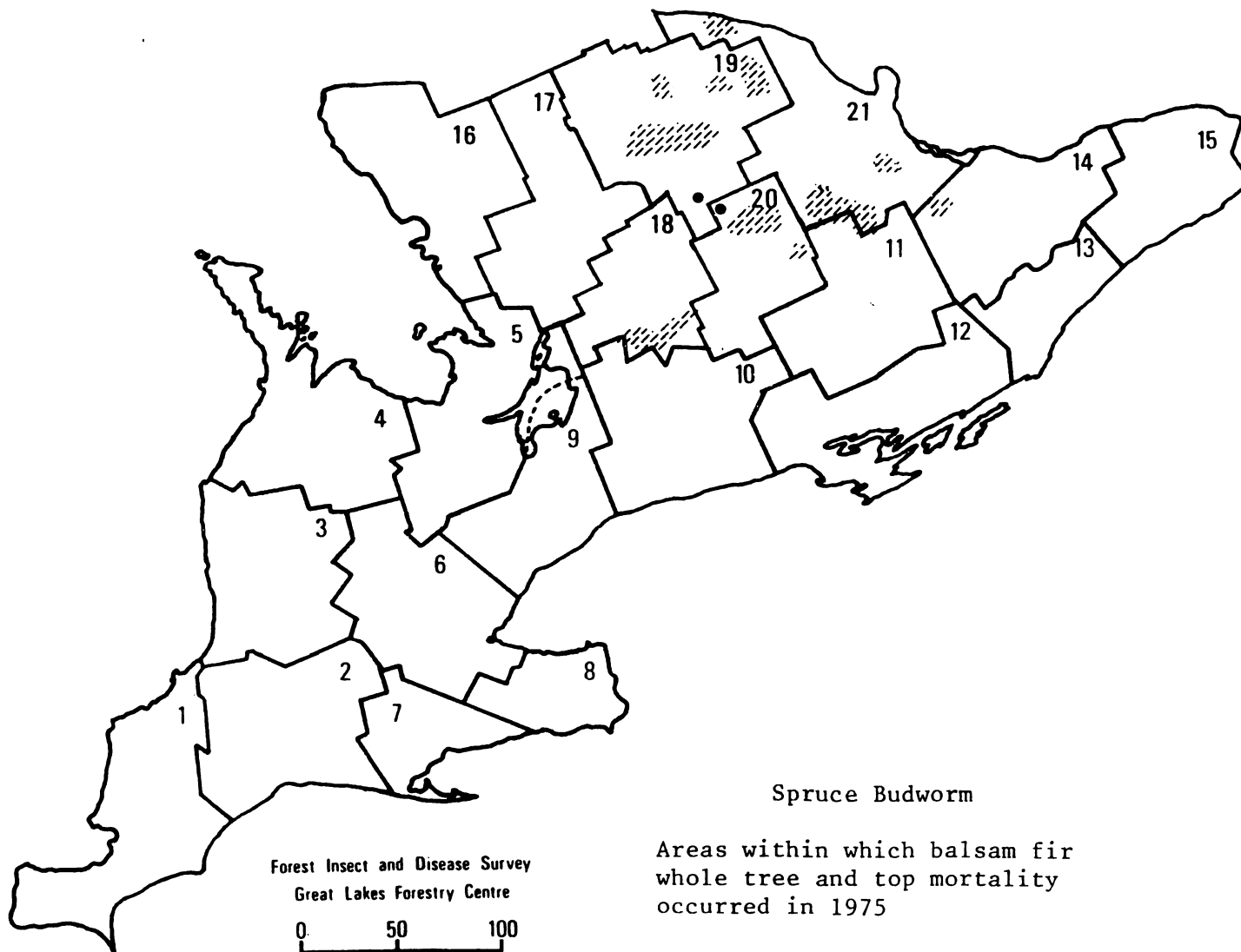
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Spruce Budworm

Areas within which balsam fir  
whole tree and top mortality  
occurred in 1975

## LEGEND

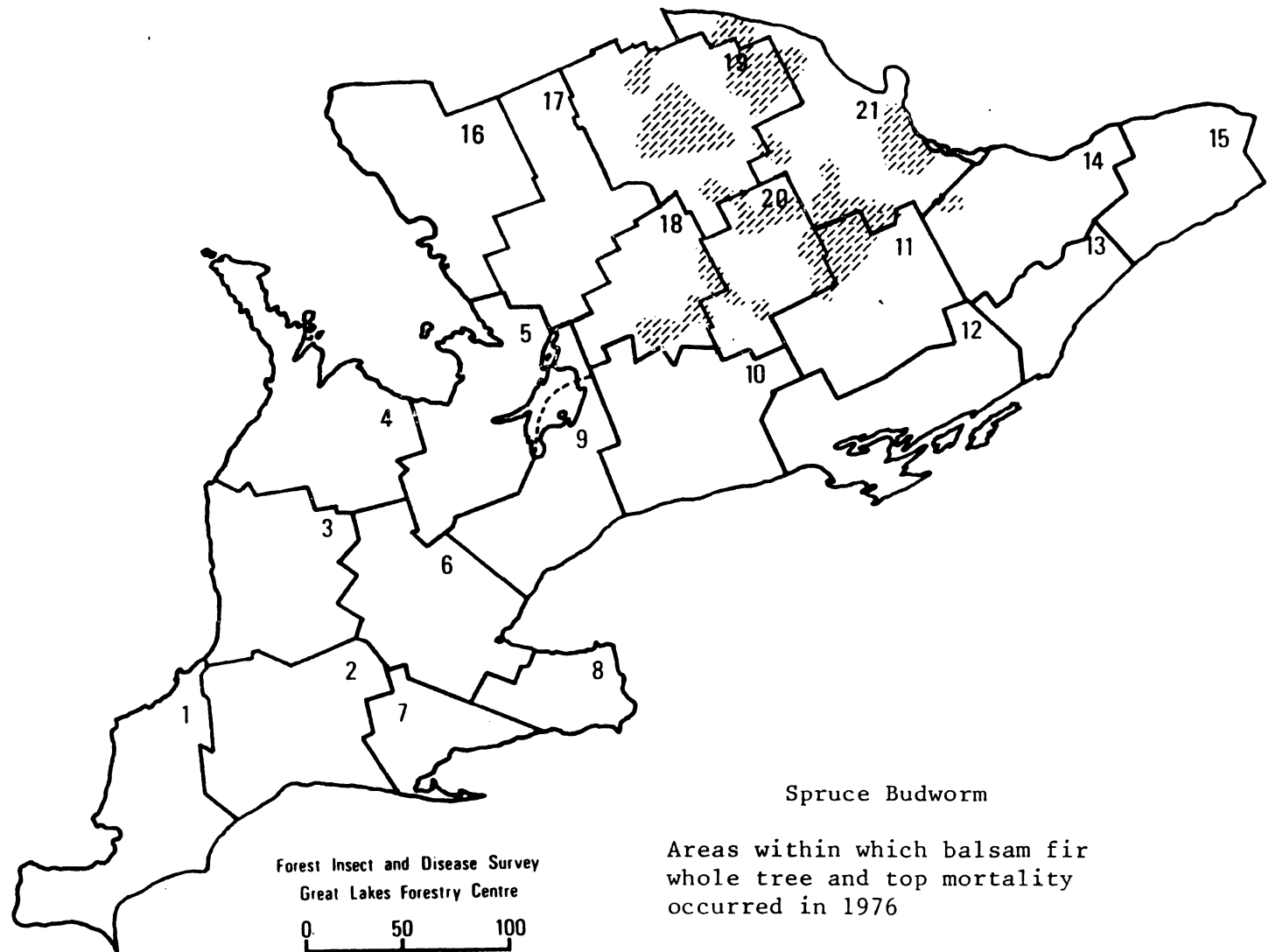
Mortality • or



# SOUTHERN ONTARIO

## DISTRICTS

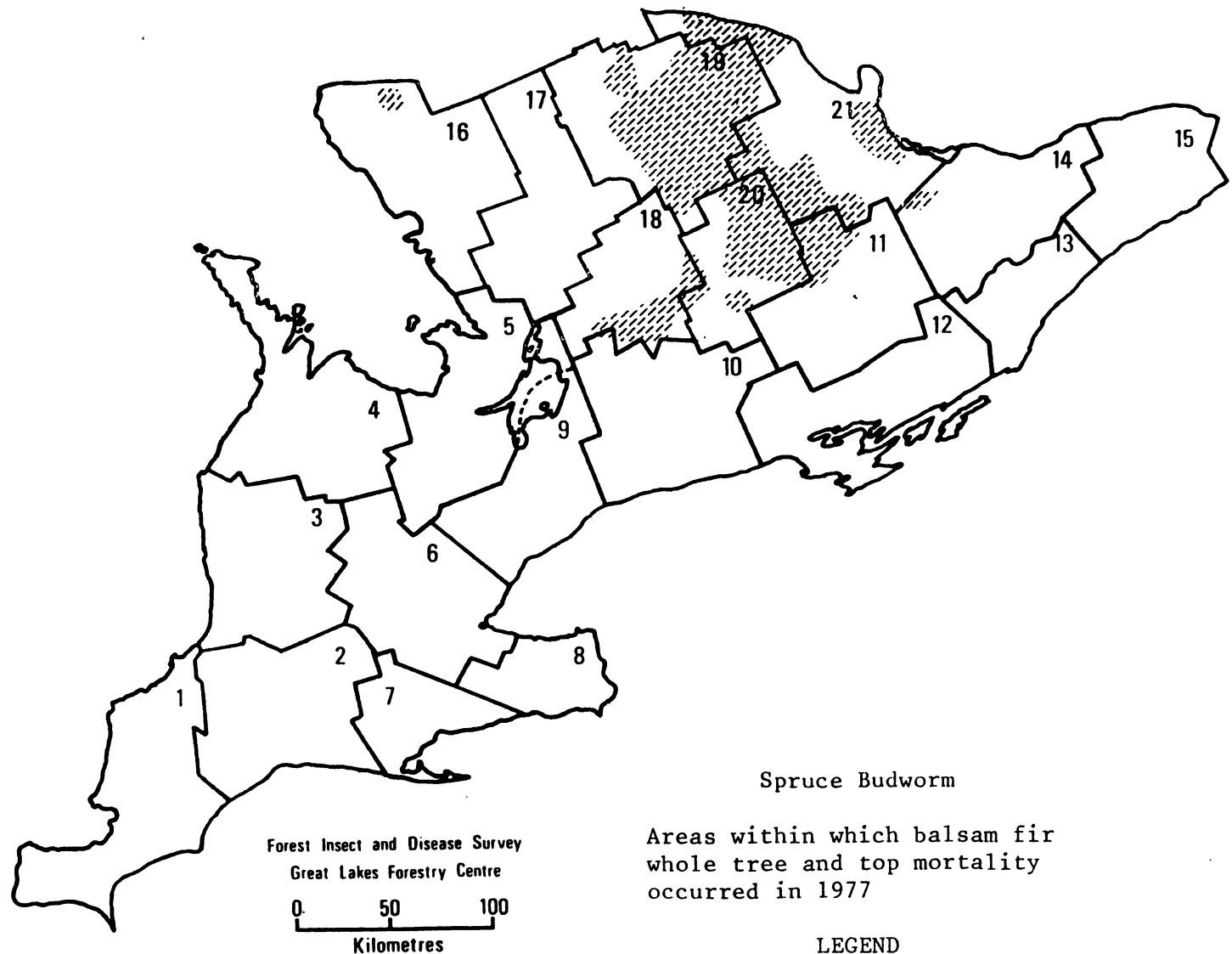
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# SOUTHERN ONTARIO

## DISTRICTS

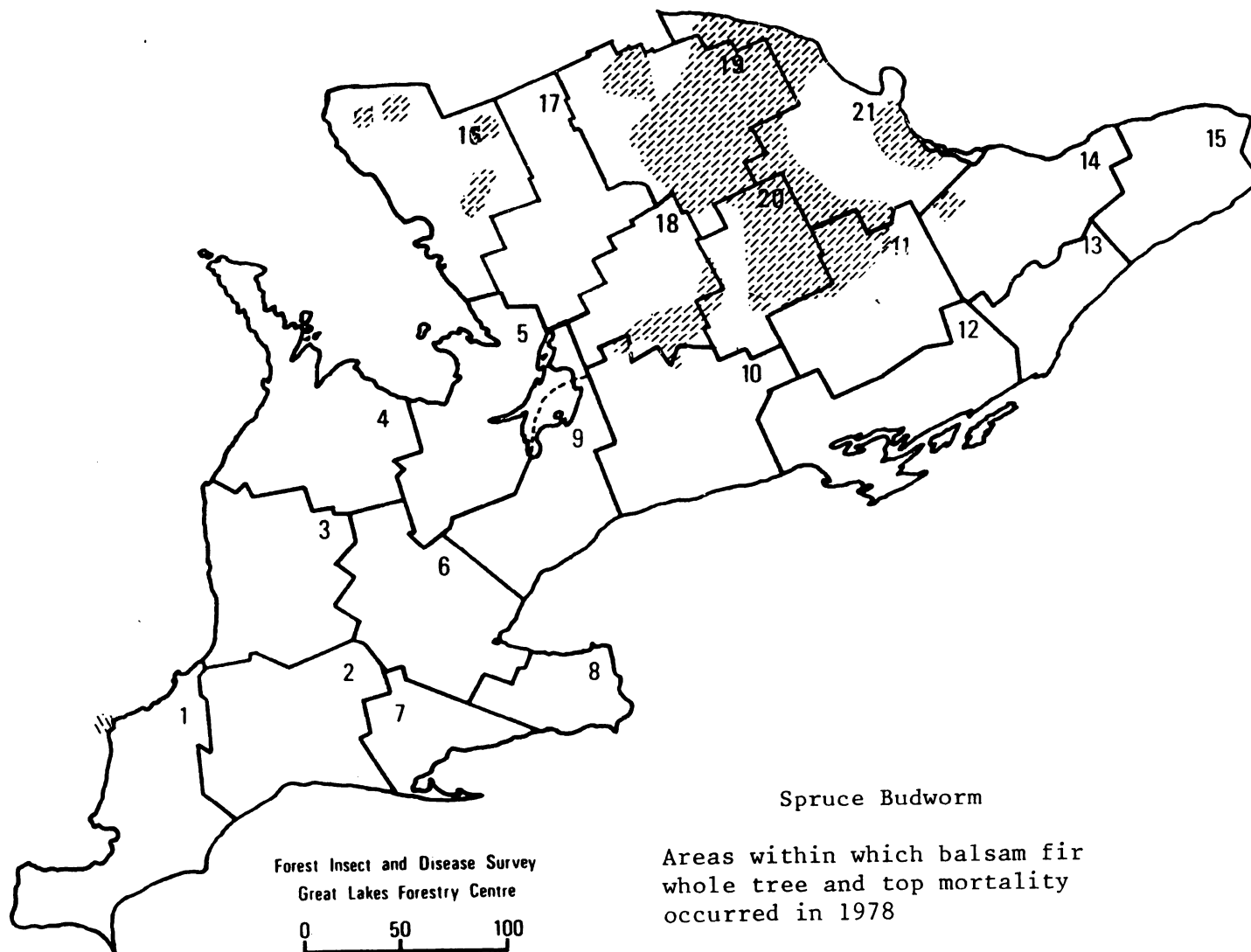
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Spruce Budworm

Areas within which balsam fir  
whole tree and top mortality  
occurred in 1978

LEGEND

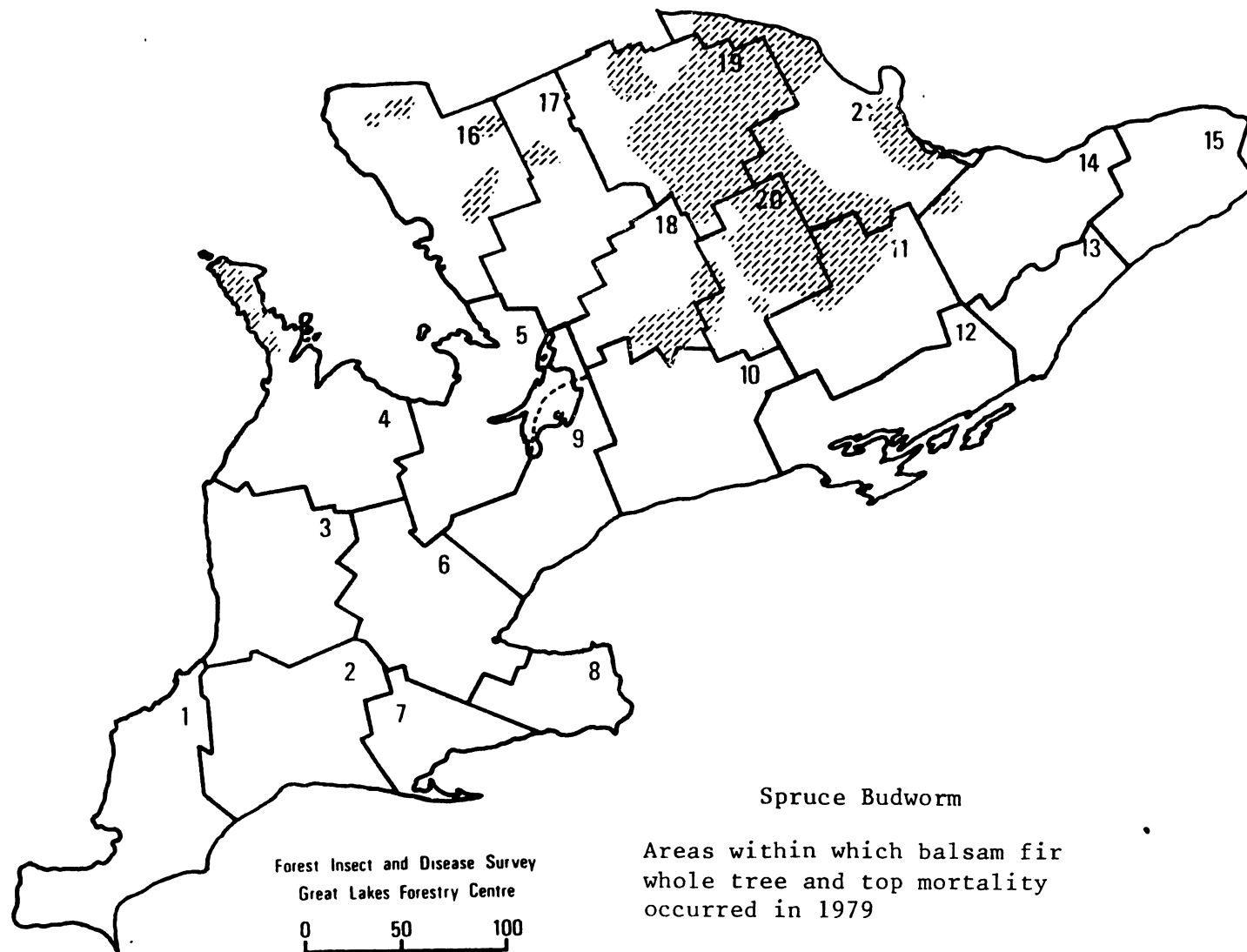
Mortality



# SOUTHERN ONTARIO

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Spruce Budworm

Areas within which balsam fir  
whole tree and top mortality  
occurred in 1979

LEGEND

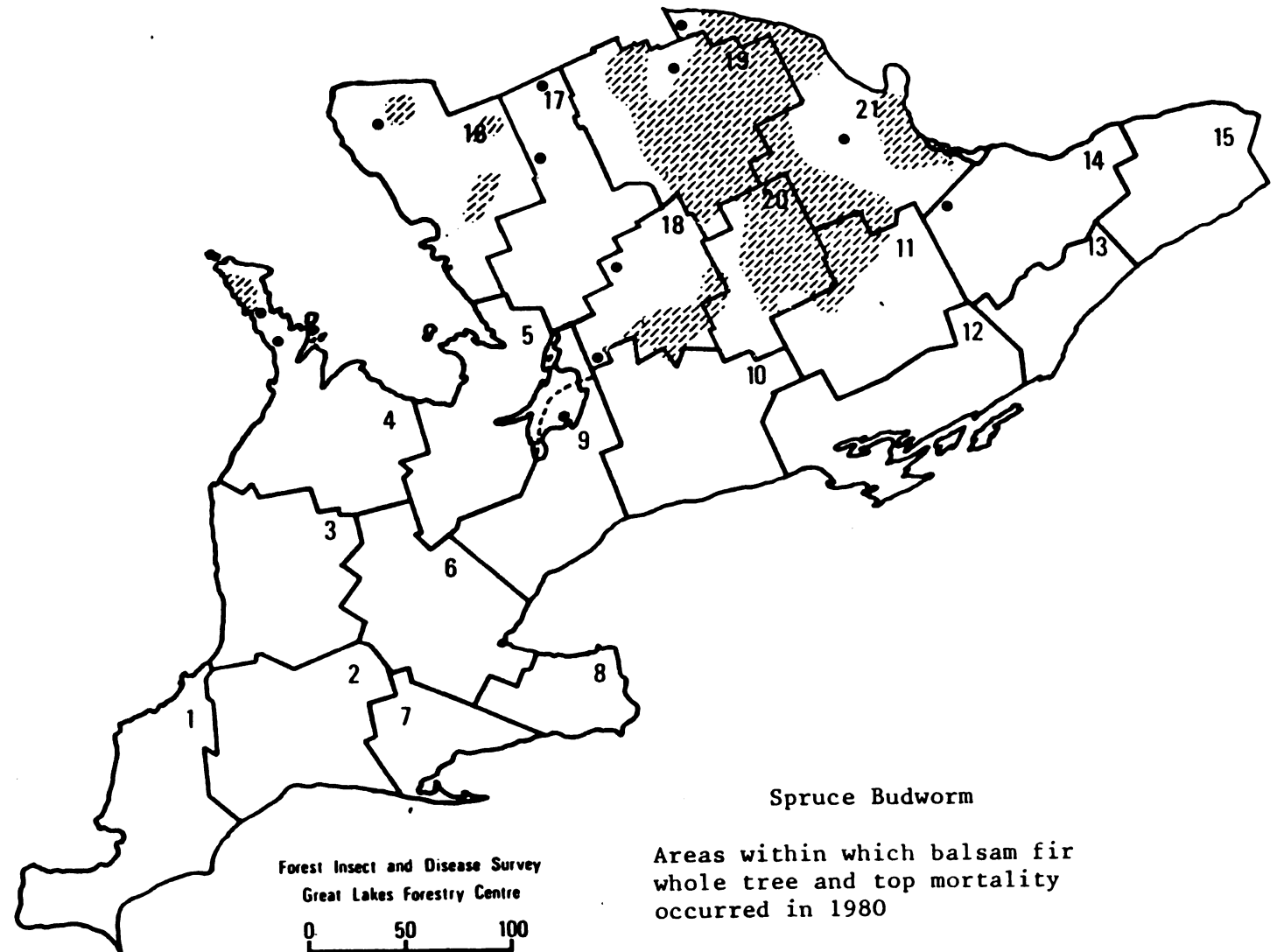
Mortality



# SOUTHERN ONTARIO

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Spruce Budworm

Areas within which balsam fir  
whole tree and top mortality  
occurred in 1980

## LEGEND

Mortality • or

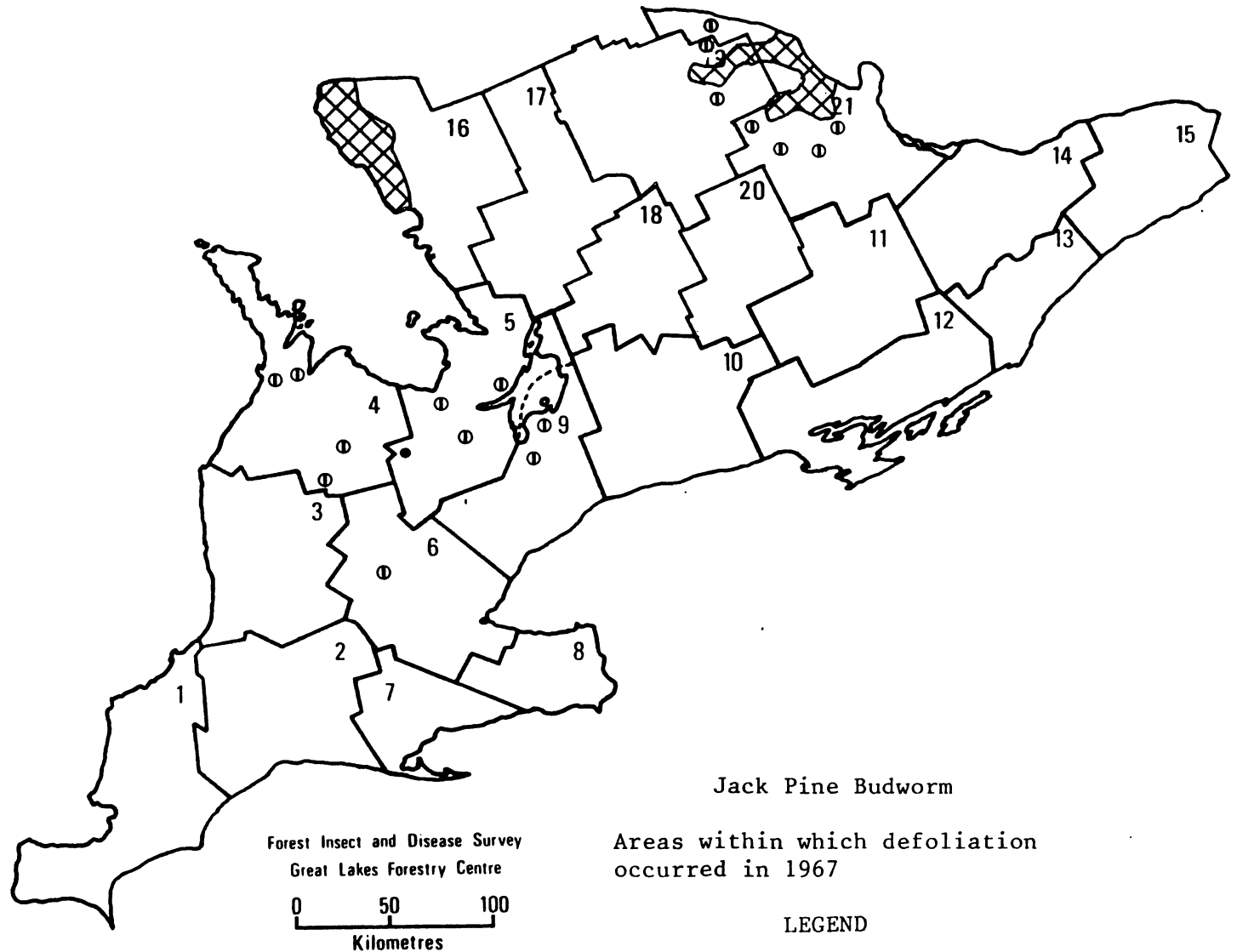




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## DISTRICTS

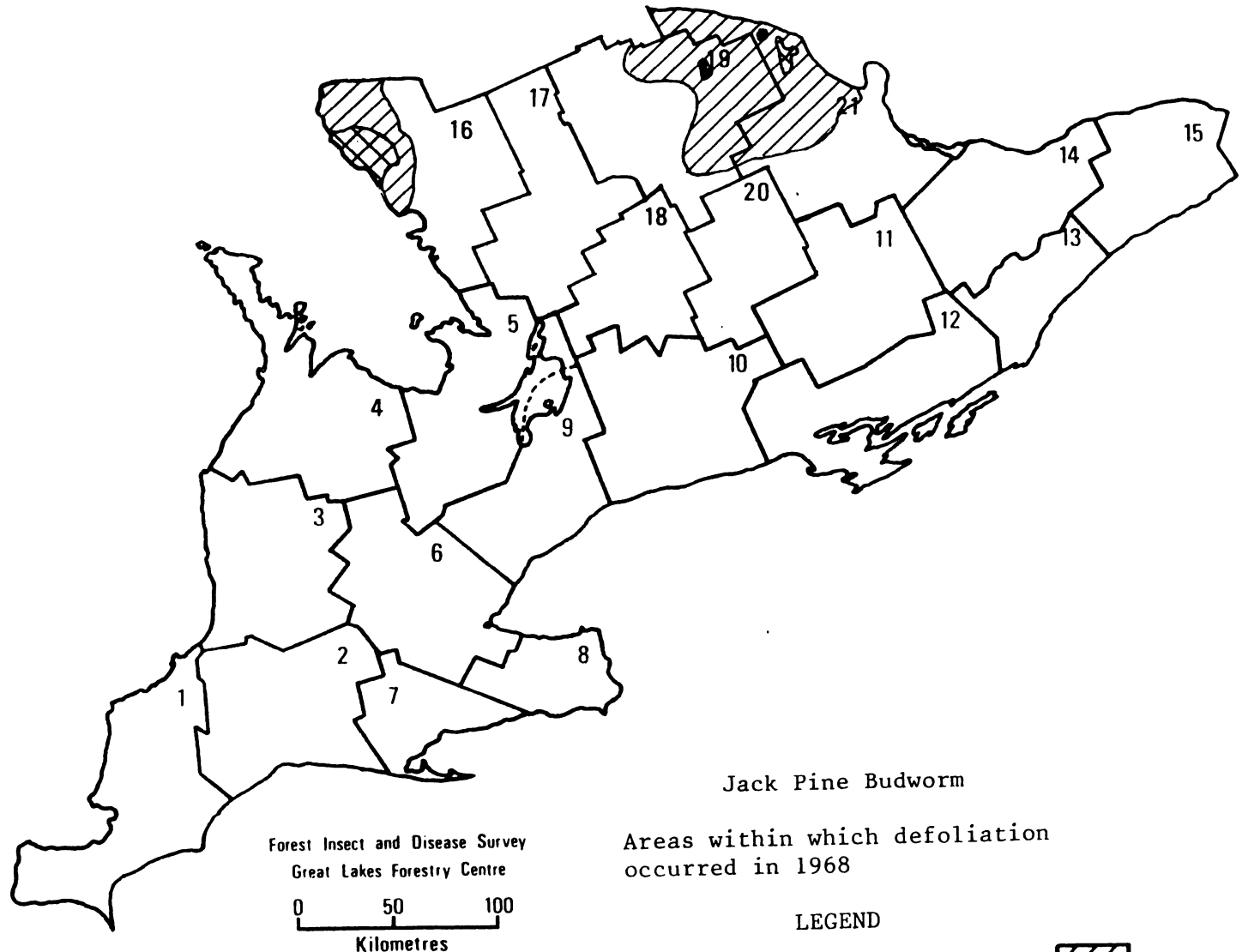
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## DISTRICTS

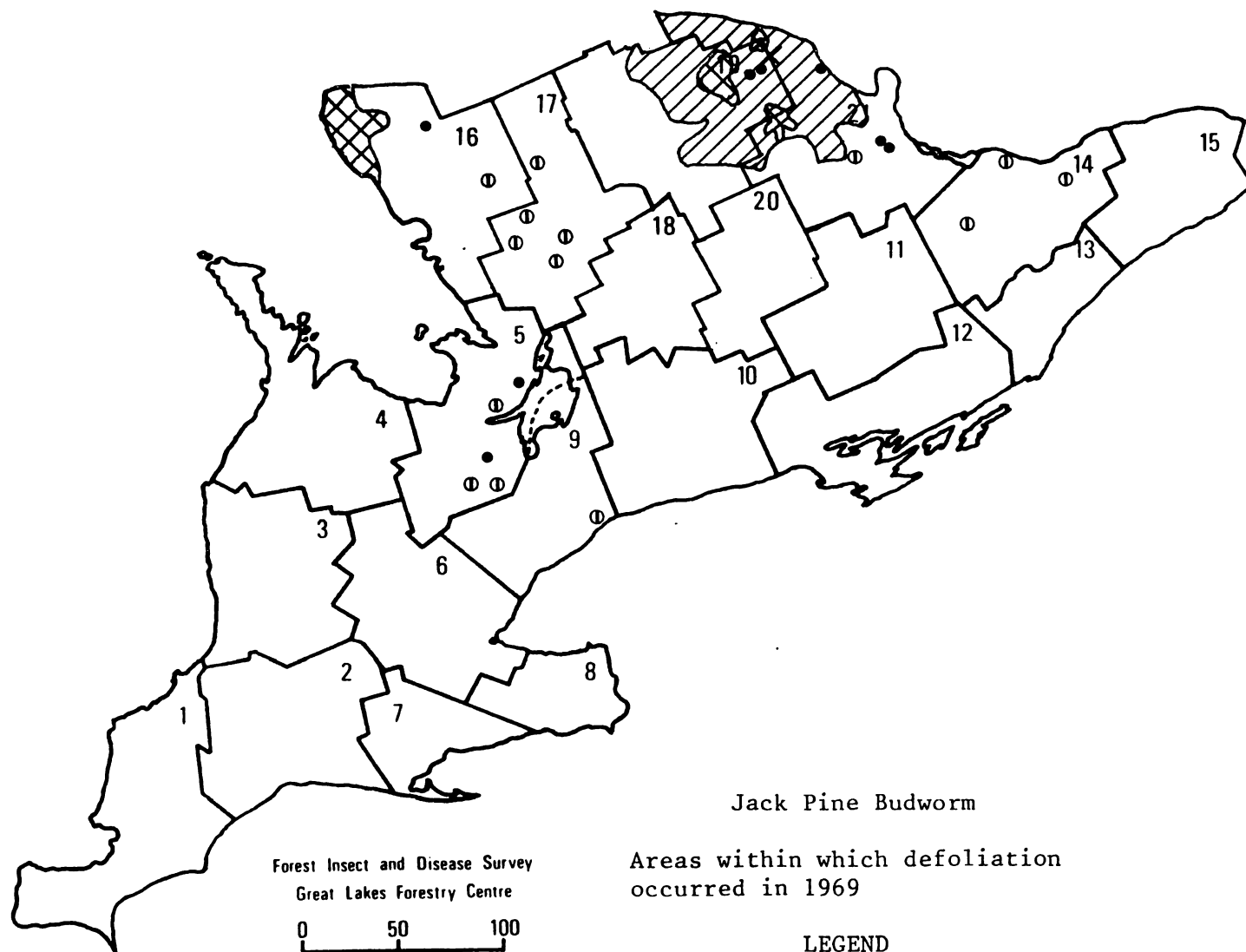
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## LEGEND

Light defoliation

Moderate-to-severe defoliation

○ or

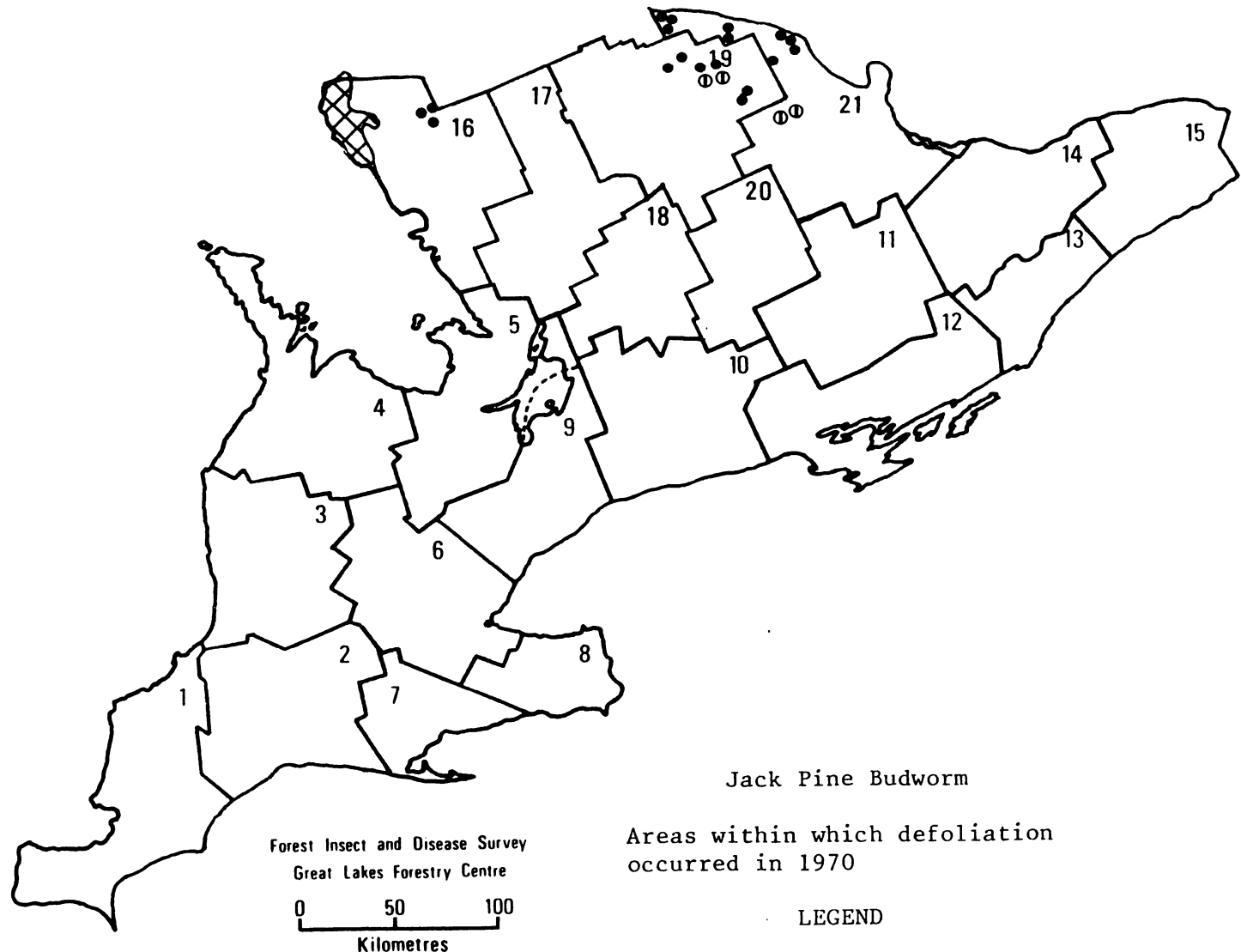
• or



# SOUTHERN ONTARIO

## DISTRICTS

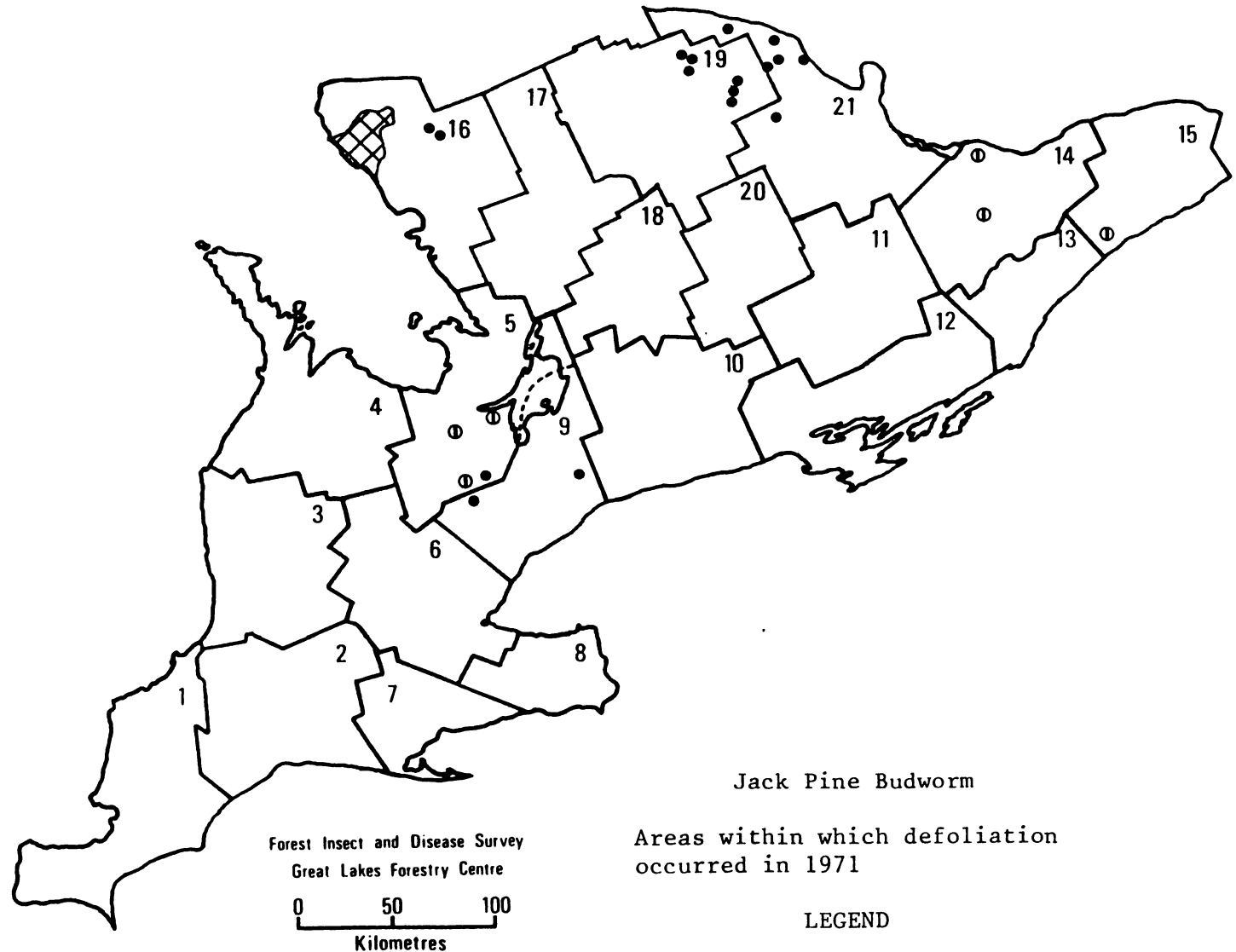
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2. AYLMER
3. WINGHAM
4. OWEN SOUND
5. HURONIA
6. CAMBRIDGE
7. SIMCOE
8. NIAGARA
9. MAPLE
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15. CORNWALL
16. PARRY SOUND
17. BRACEBRIDGE
18. MINDEN
19. ALGONQUIN PARK
20. BANCROFT
21. PEMBROKE



# SOUTHERN ONTARIO

## DISTRICTS

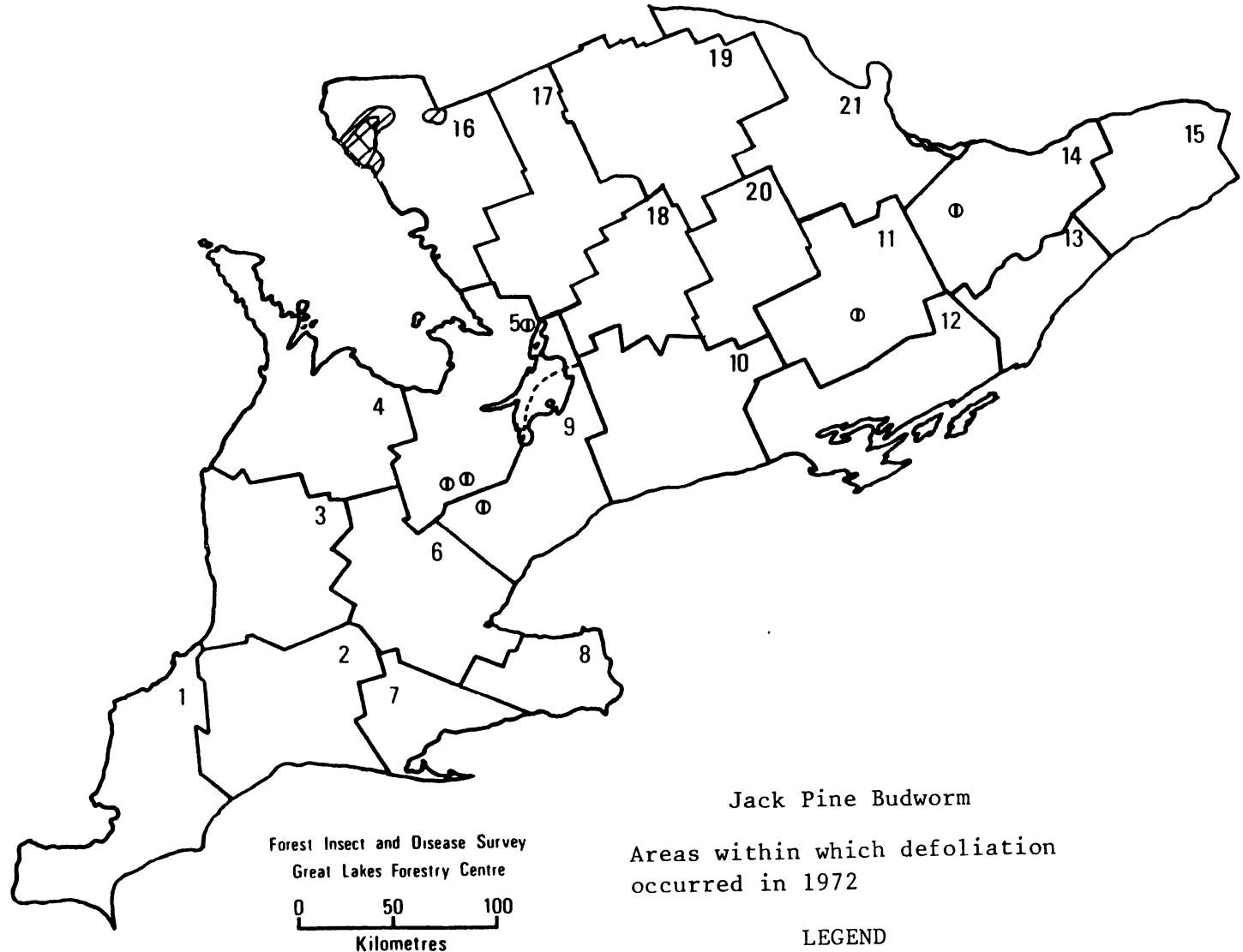
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# SOUTHERN ONTARIO

## DISTRICTS

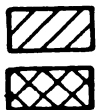
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20. BANCROFT
21. PEMBROKE



Jack Pine Budworm  
Areas within which defoliation  
occurred in 1972

## LEGEND

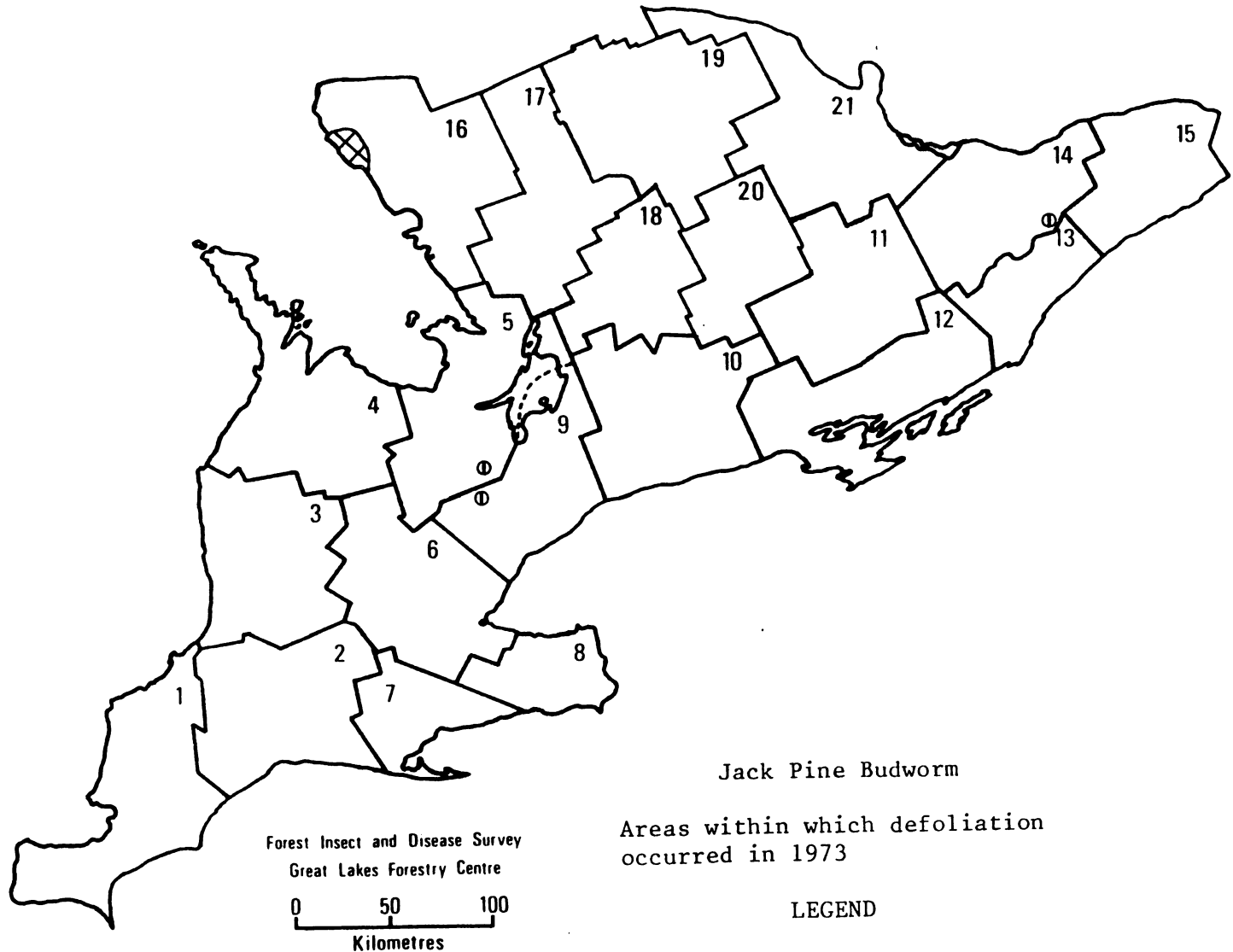
Light defoliation      ○      or  
Moderate-to-severe defoliation



# SOUTHERN ONTARIO

## DISTRICTS

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21. PEMBROKE



Jack Pine Budworm

Areas within which defoliation  
occurred in 1973

## LEGEND

Light defoliation

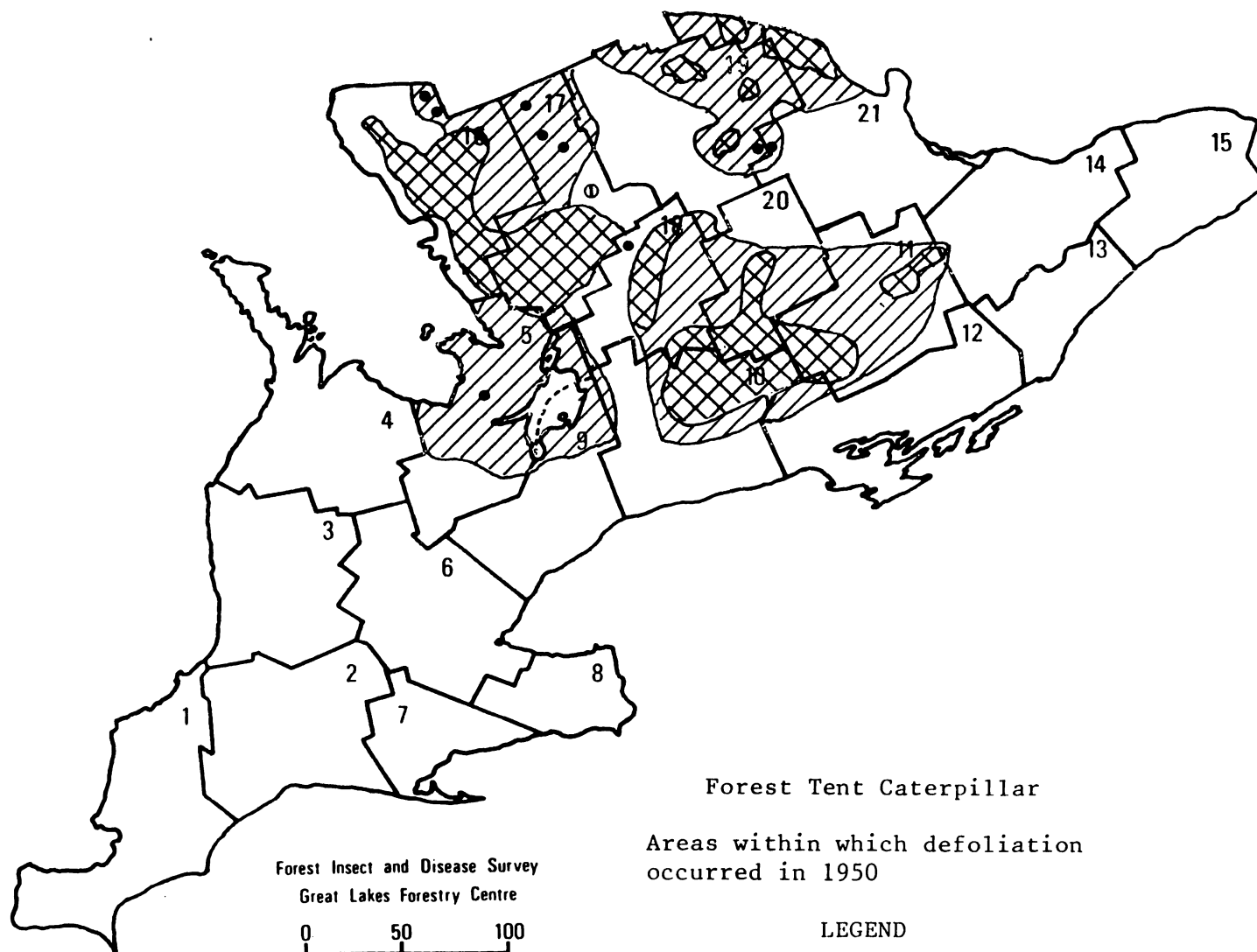
Moderate-to-severe defoliation



# SOUTHERN ONTARIO

## DISTRICTS

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Forest Tent Caterpillar

Areas within which defoliation  
occurred in 1950

## LEGEND

Light defoliation

⊙ or



Moderate-to-severe defoliation

• or

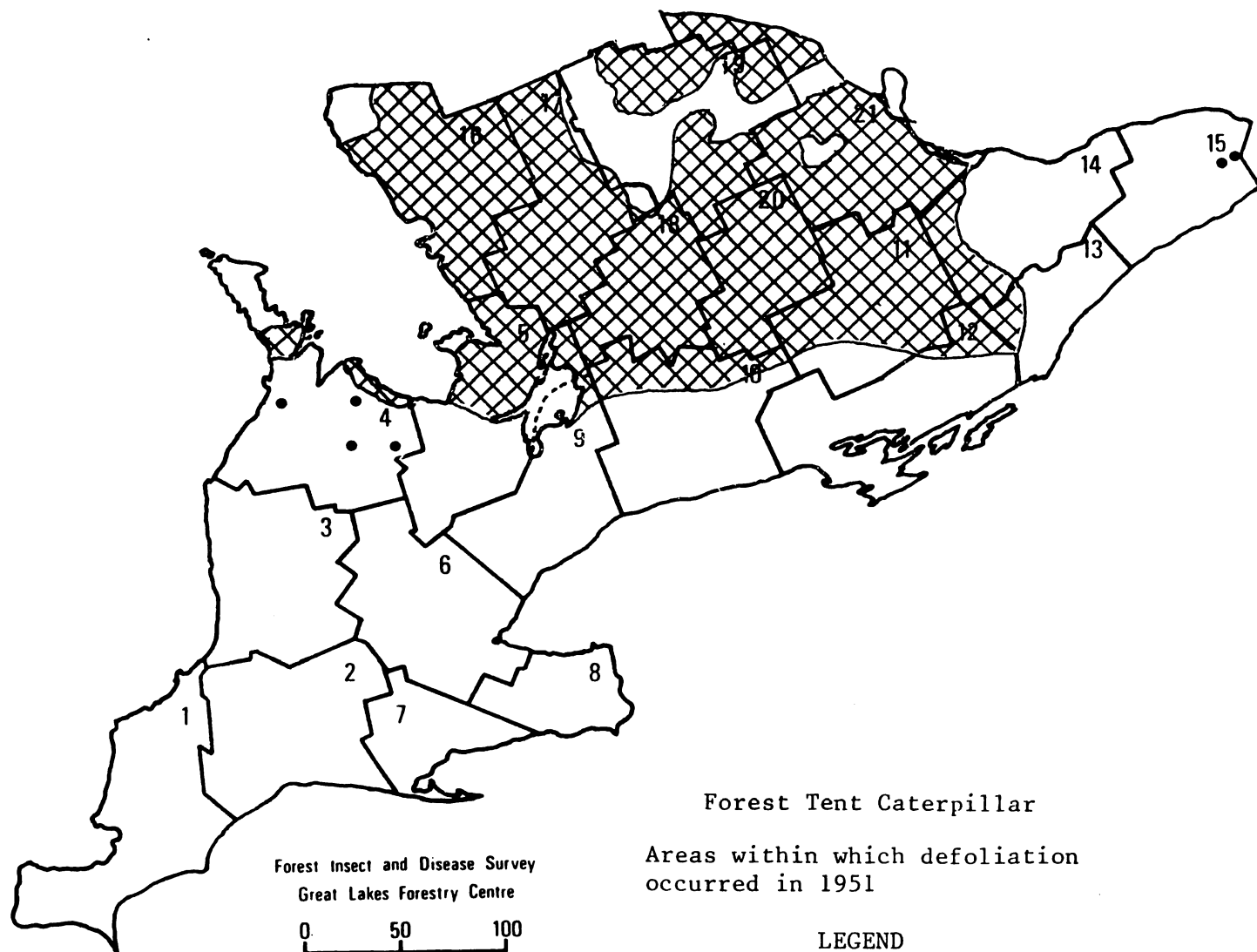




# SOUTHERN ONTARIO

## DISTRICTS

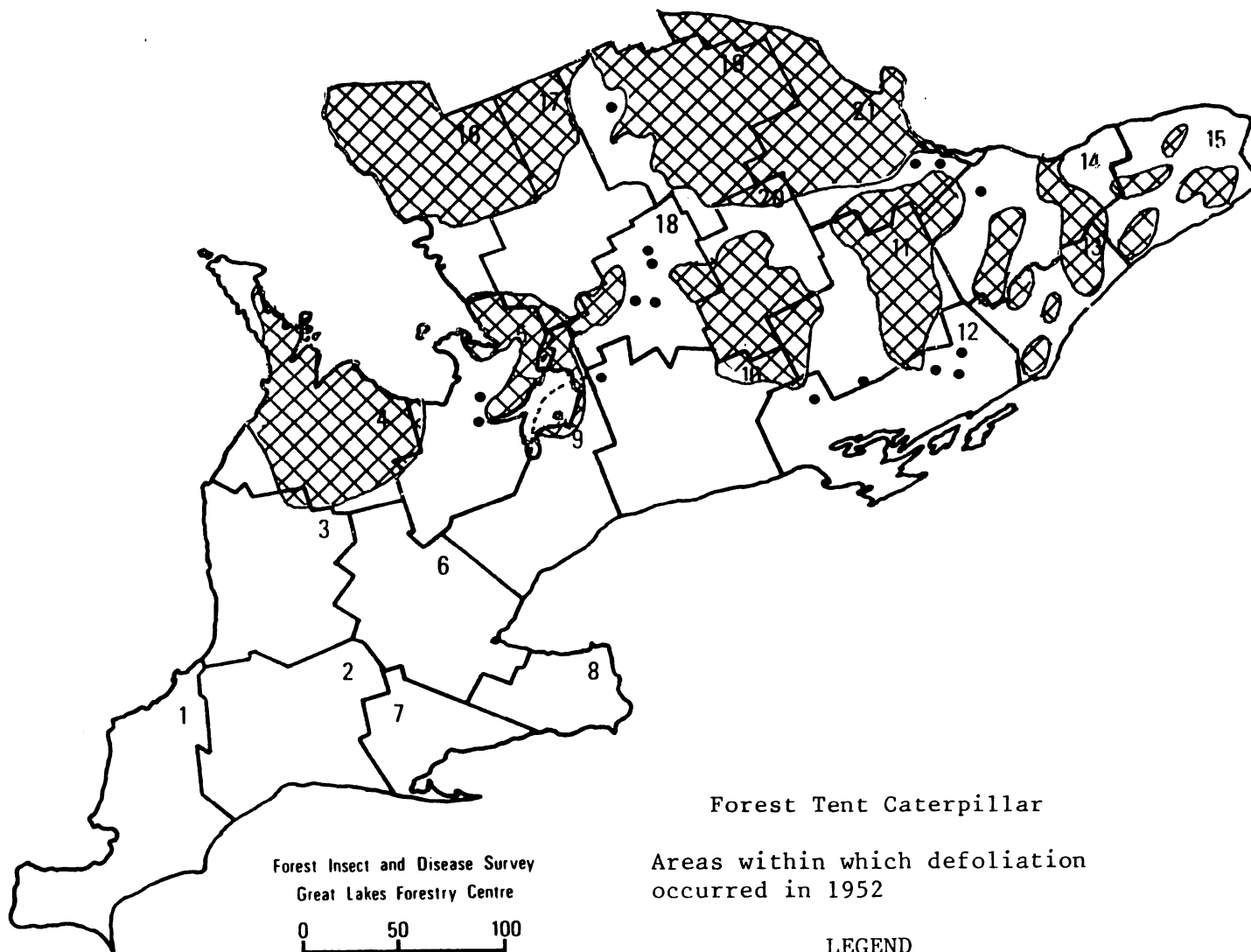
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# SOUTHERN ONTARIO

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Forest Tent Caterpillar

Areas within which defoliation  
occurred in 1952

## LEGEND

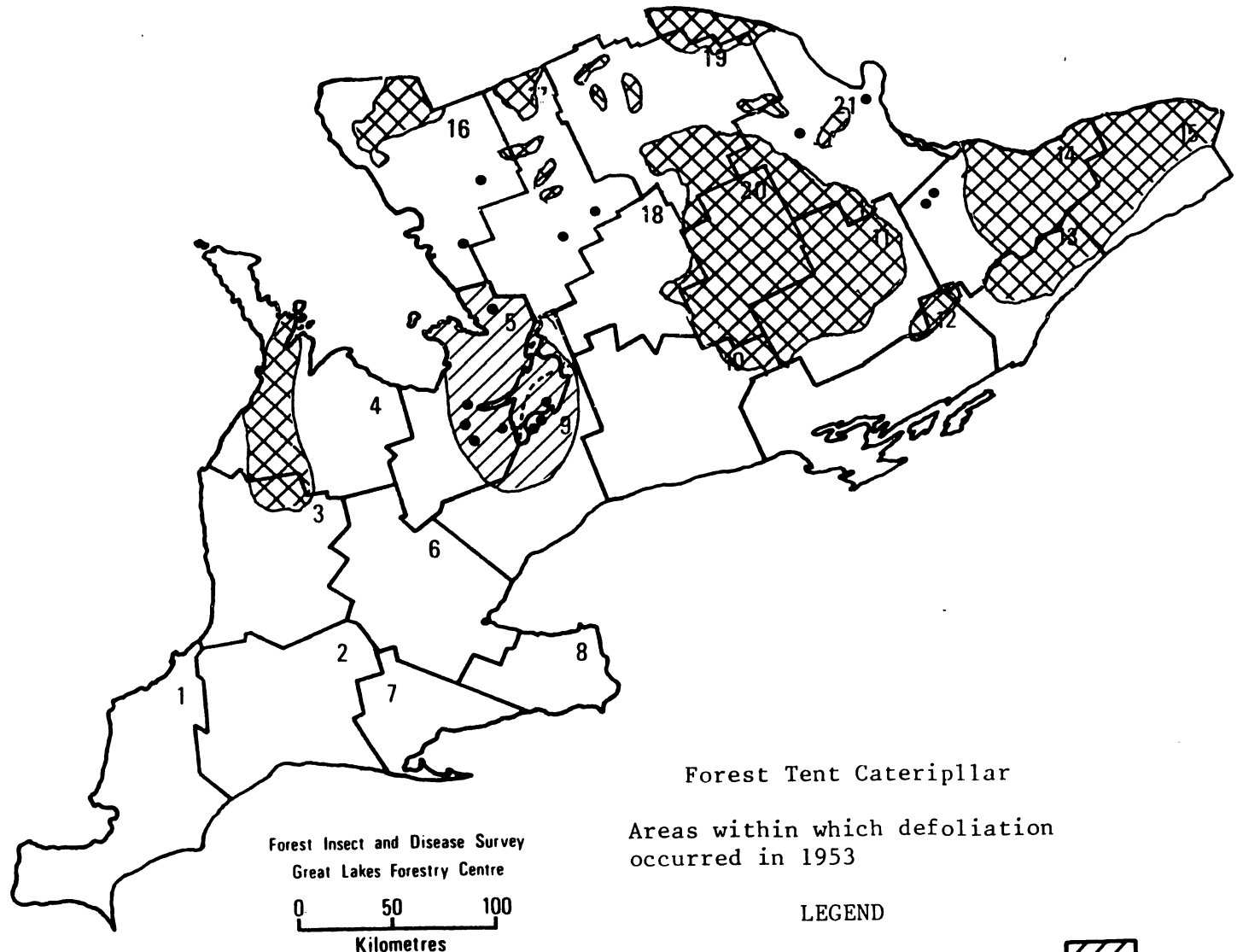
Moderate-to-severe defoliation • or



# SOUTHERN ONTARIO

## DISTRICTS

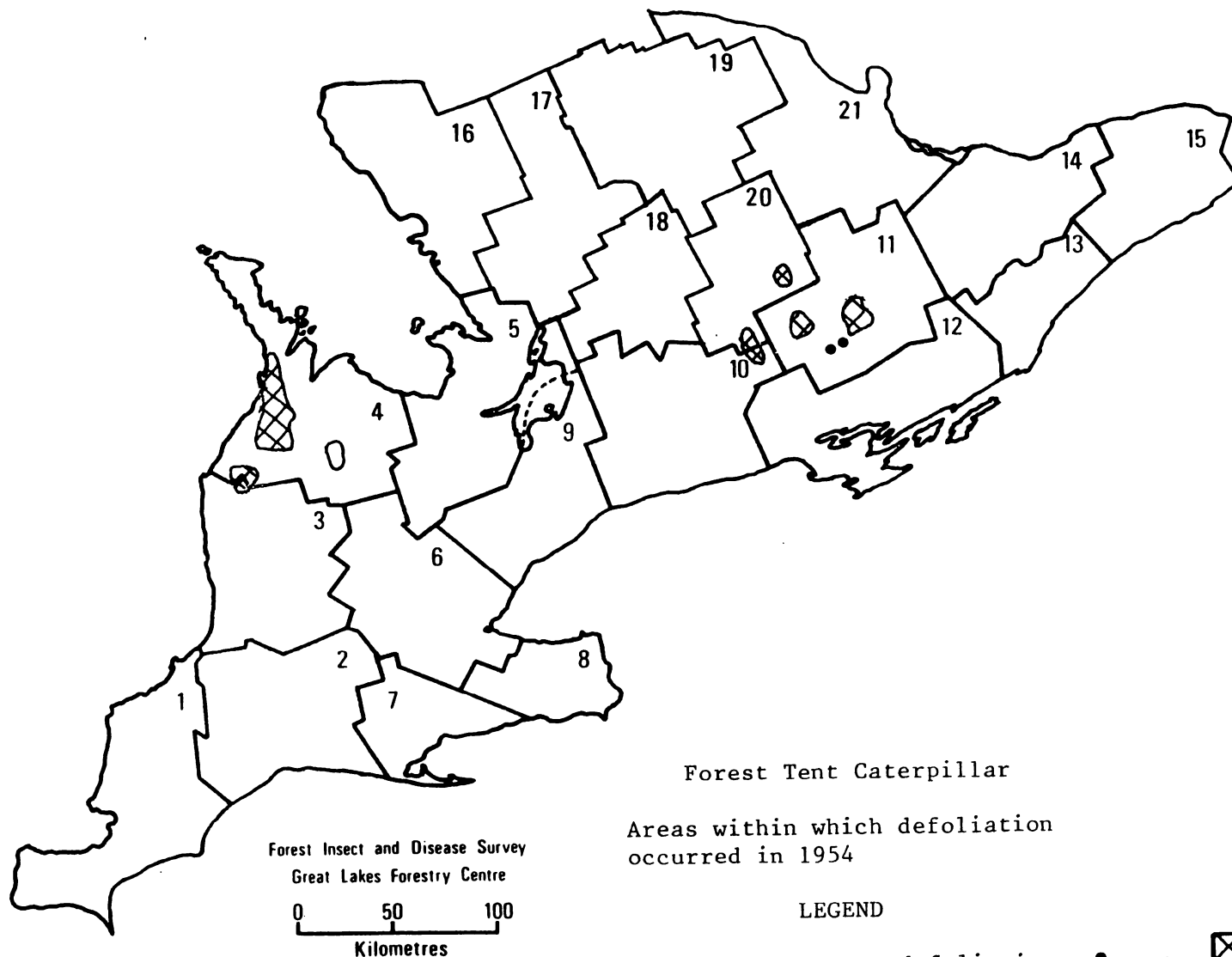
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# SOUTHERN ONTARIO

## DISTRICTS

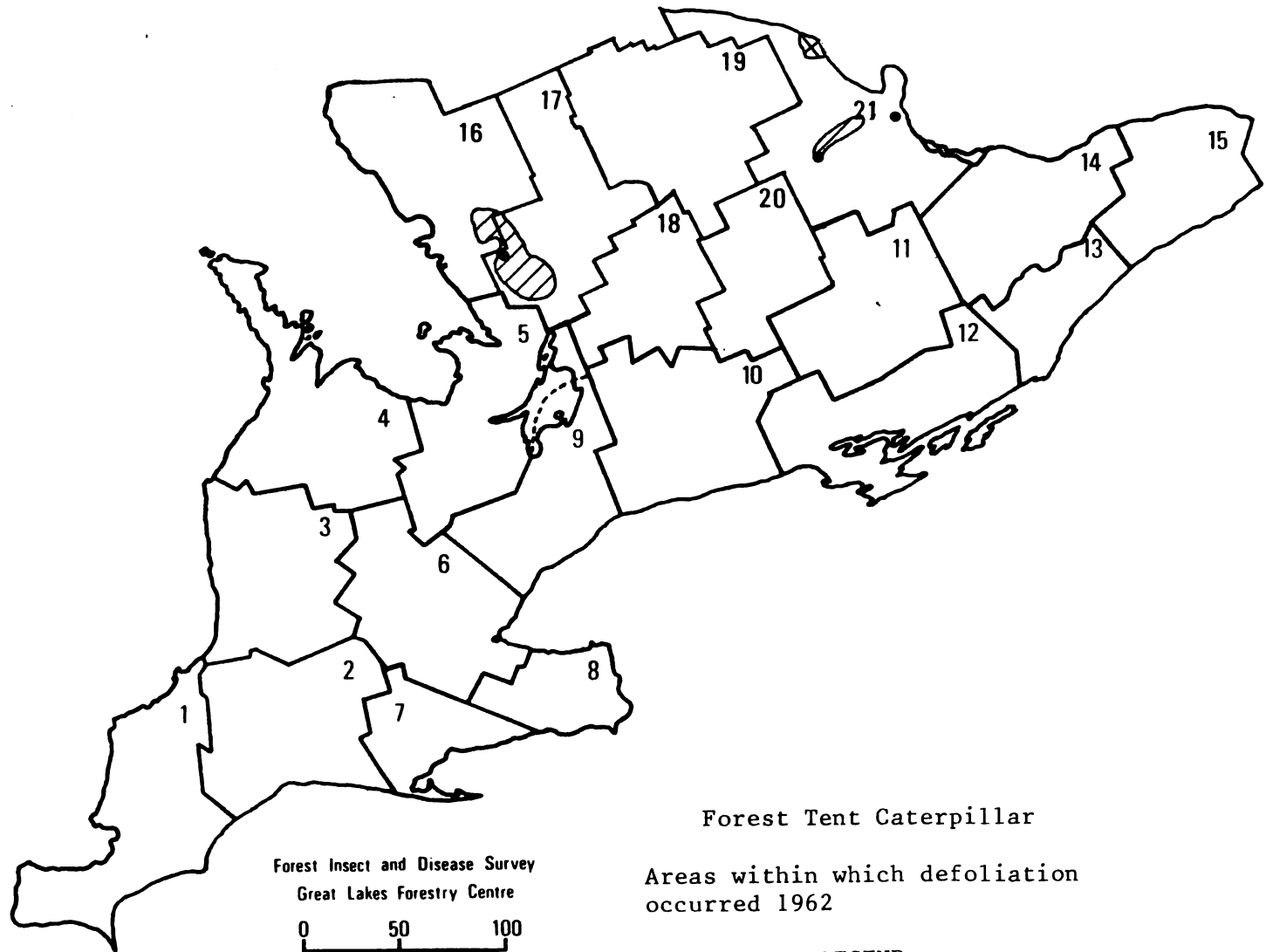
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# SOUTHERN ONTARIO

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## LEGEND

Light defoliation

Moderate-to-severe defoliation



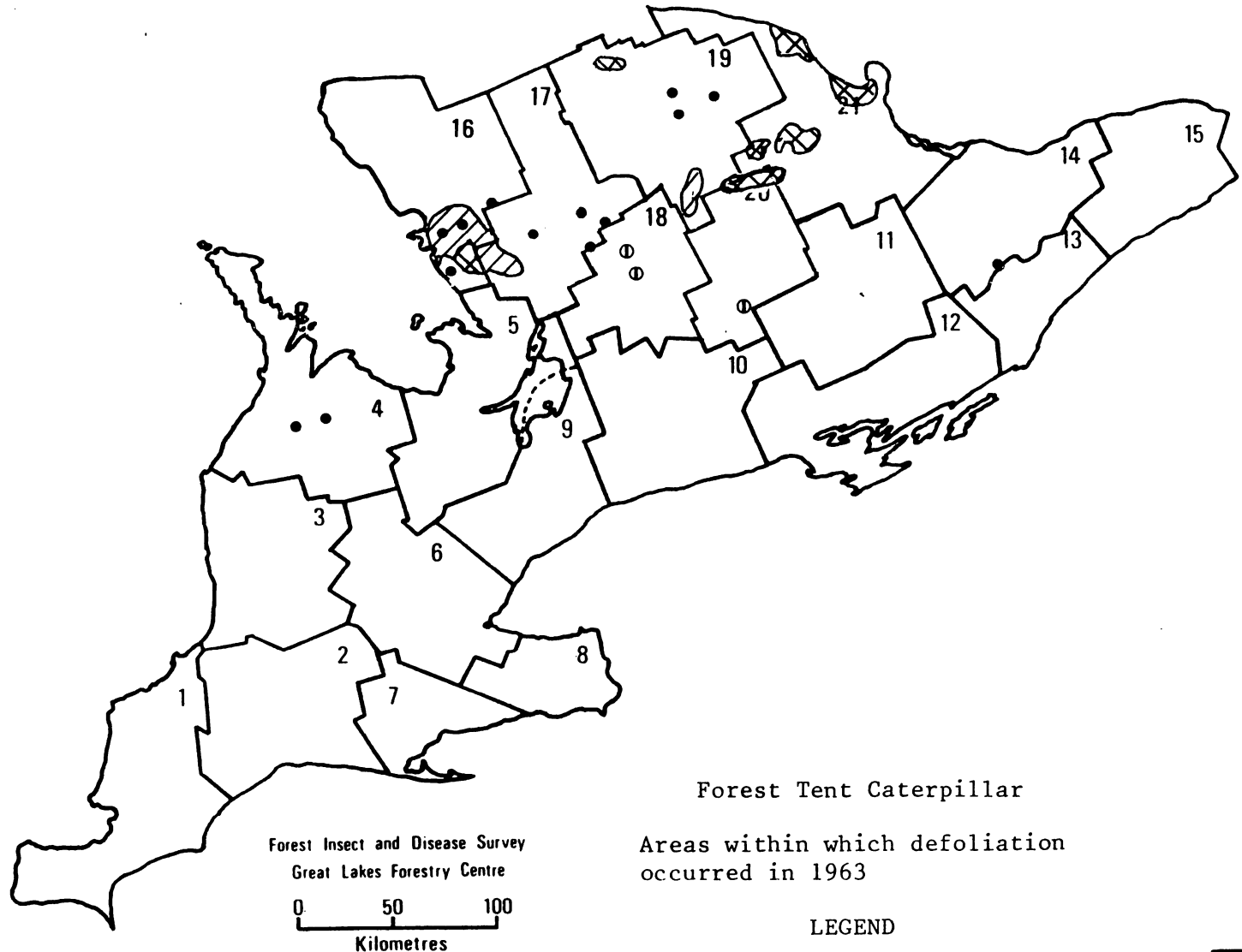
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# SOUTHERN ONTARIO

## DISTRICTS

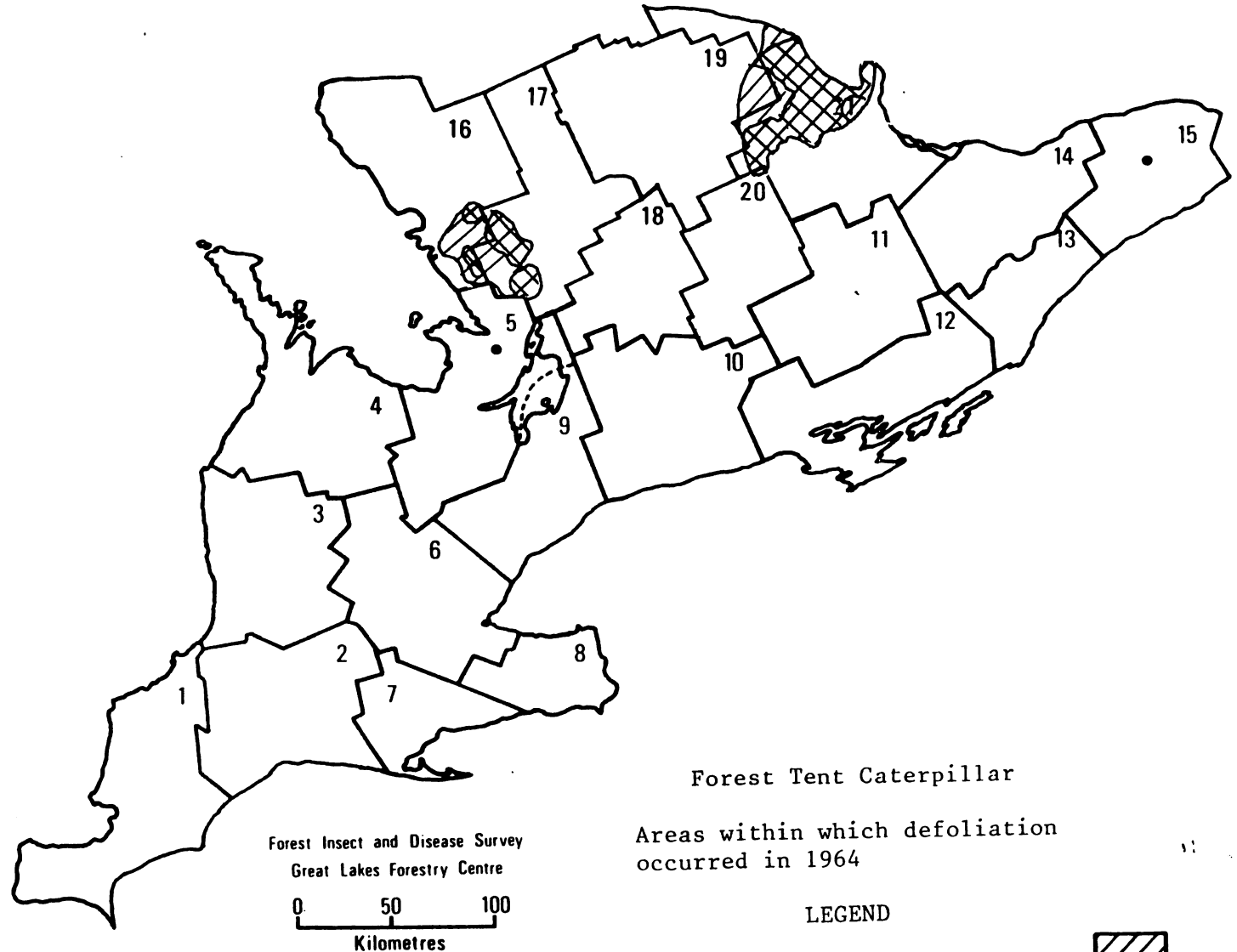
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# SOUTHERN ONTARIO

## DISTRICTS

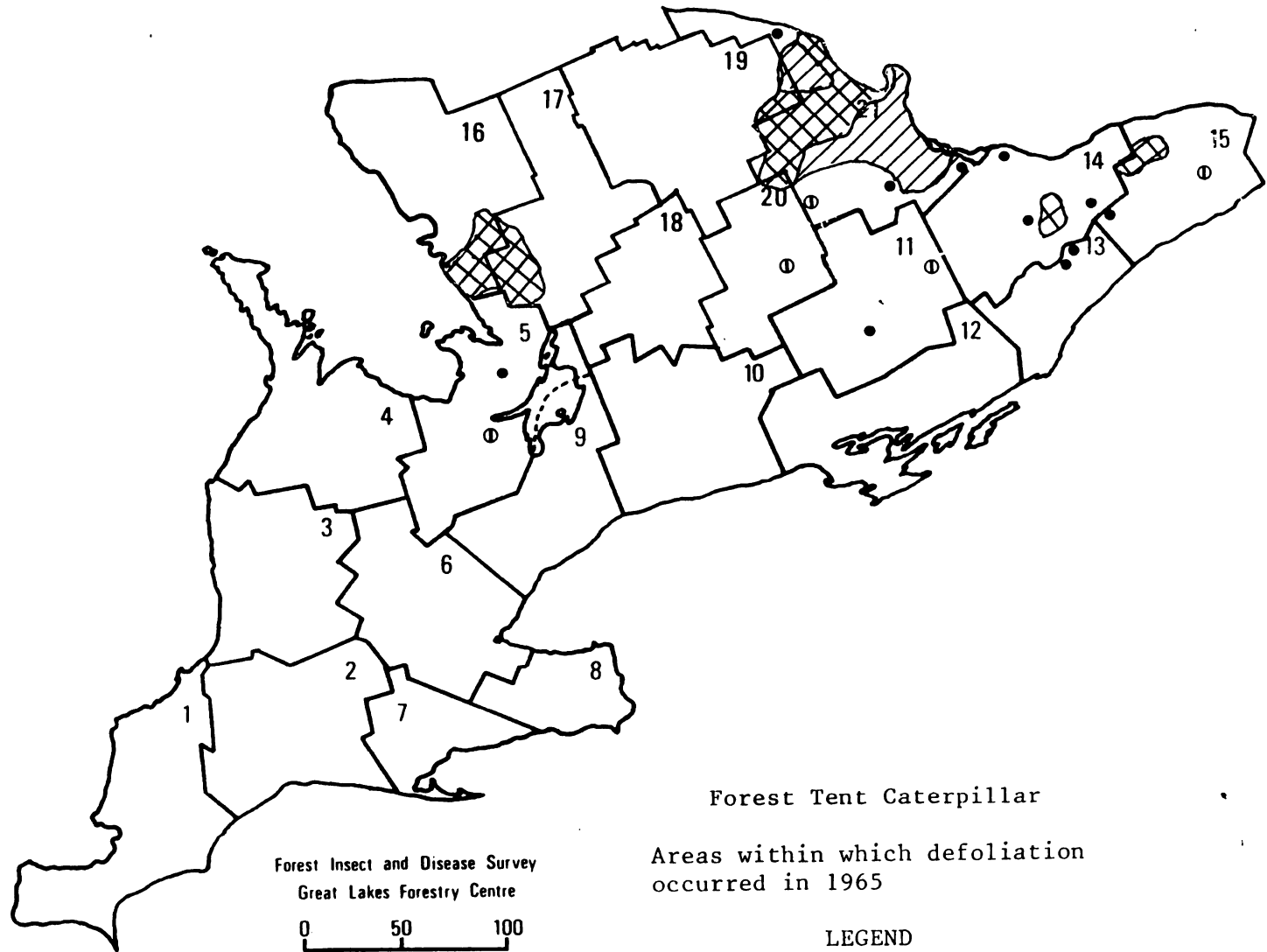
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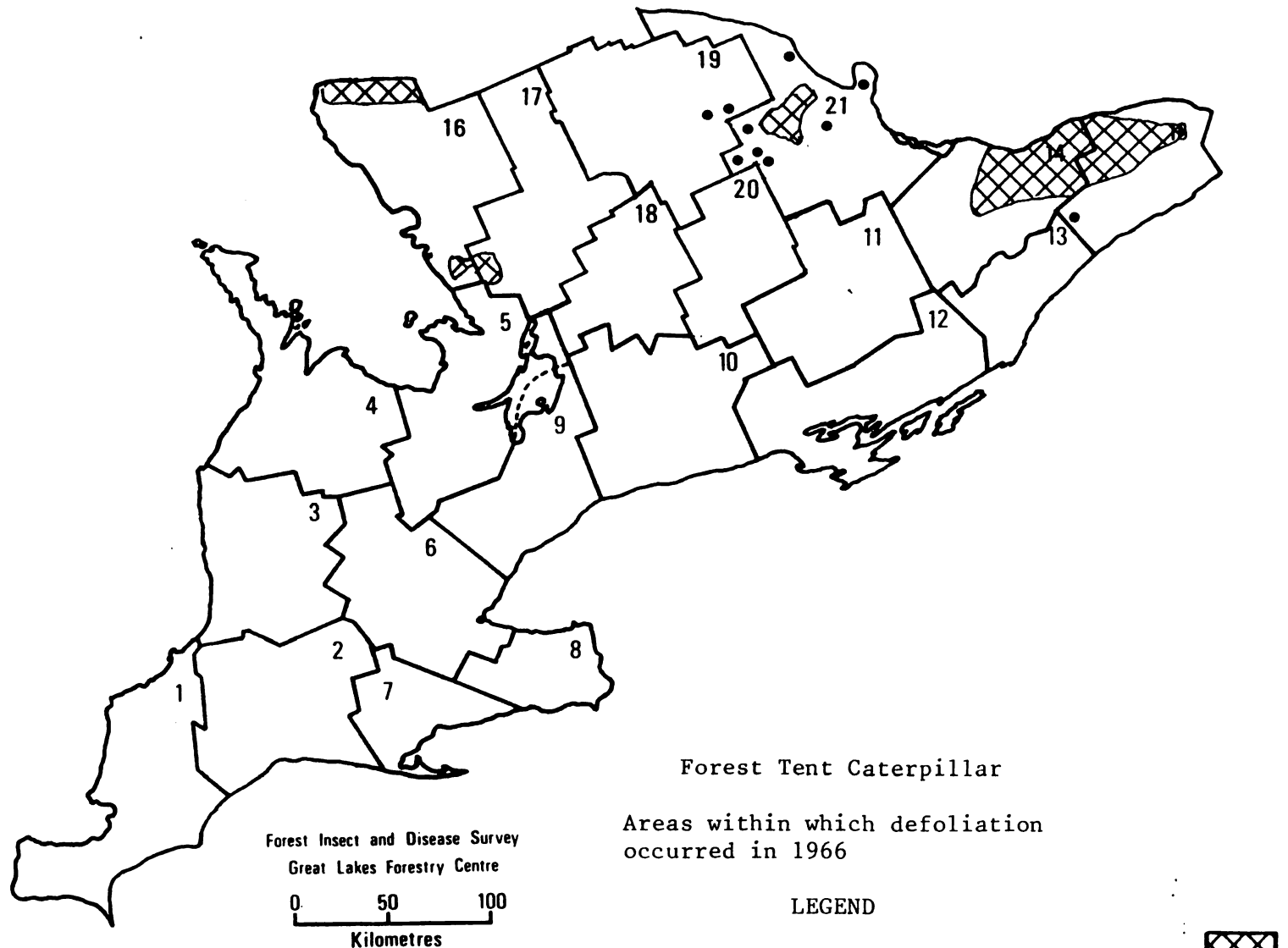




# SOUTHERN ONTARIO

## DISTRICTS

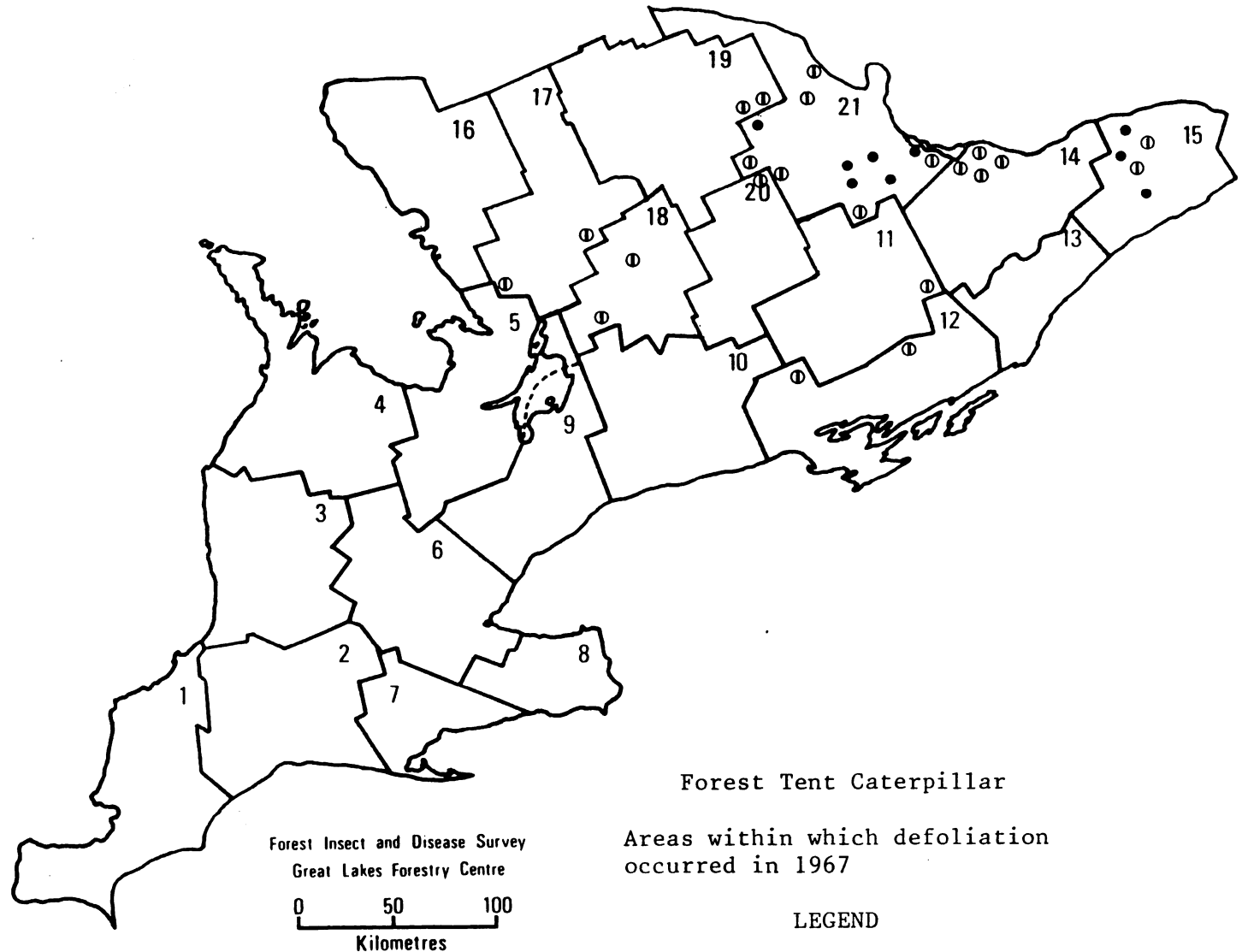
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# SOUTHERN ONTARIO

## DISTRICTS

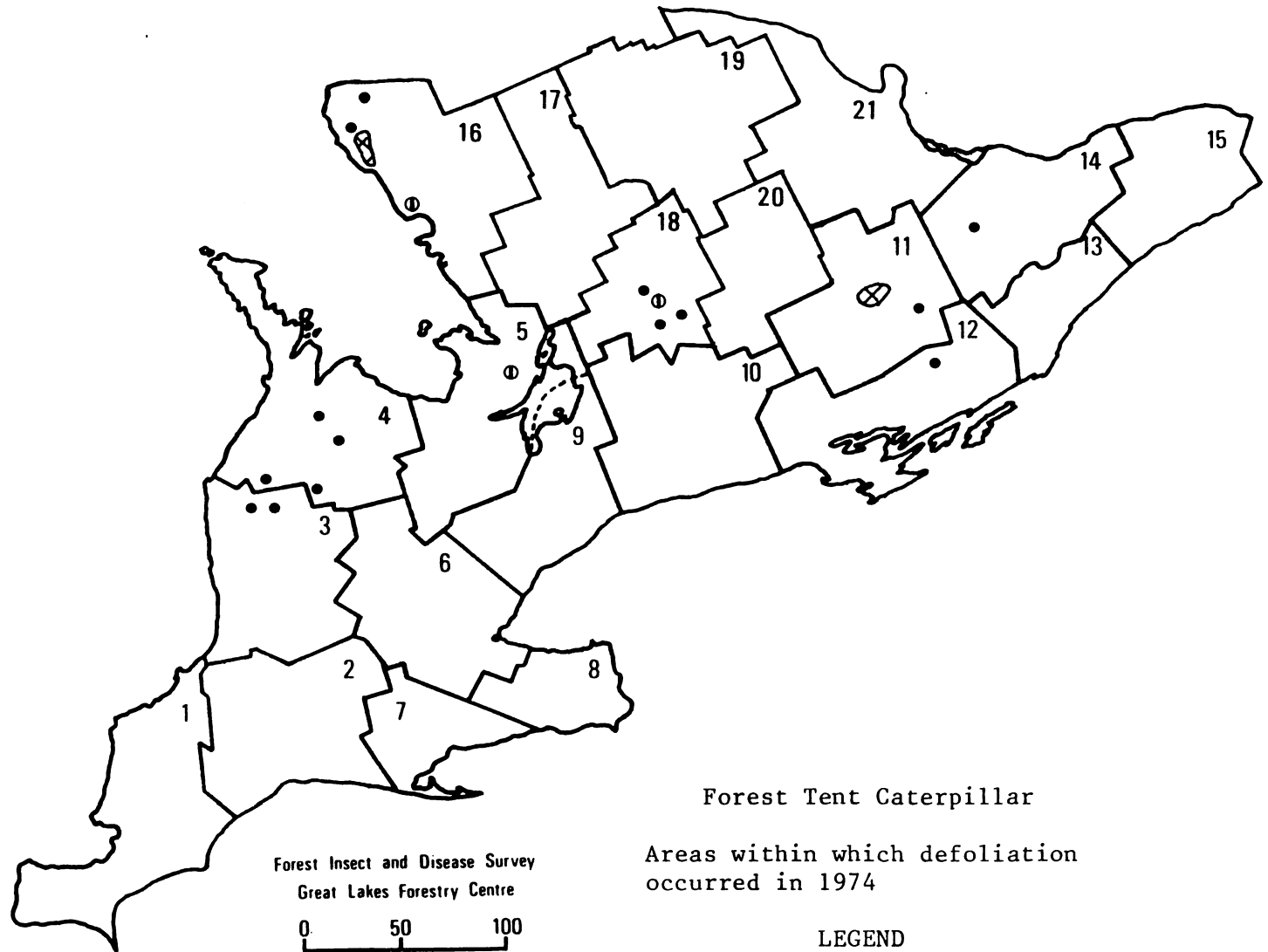
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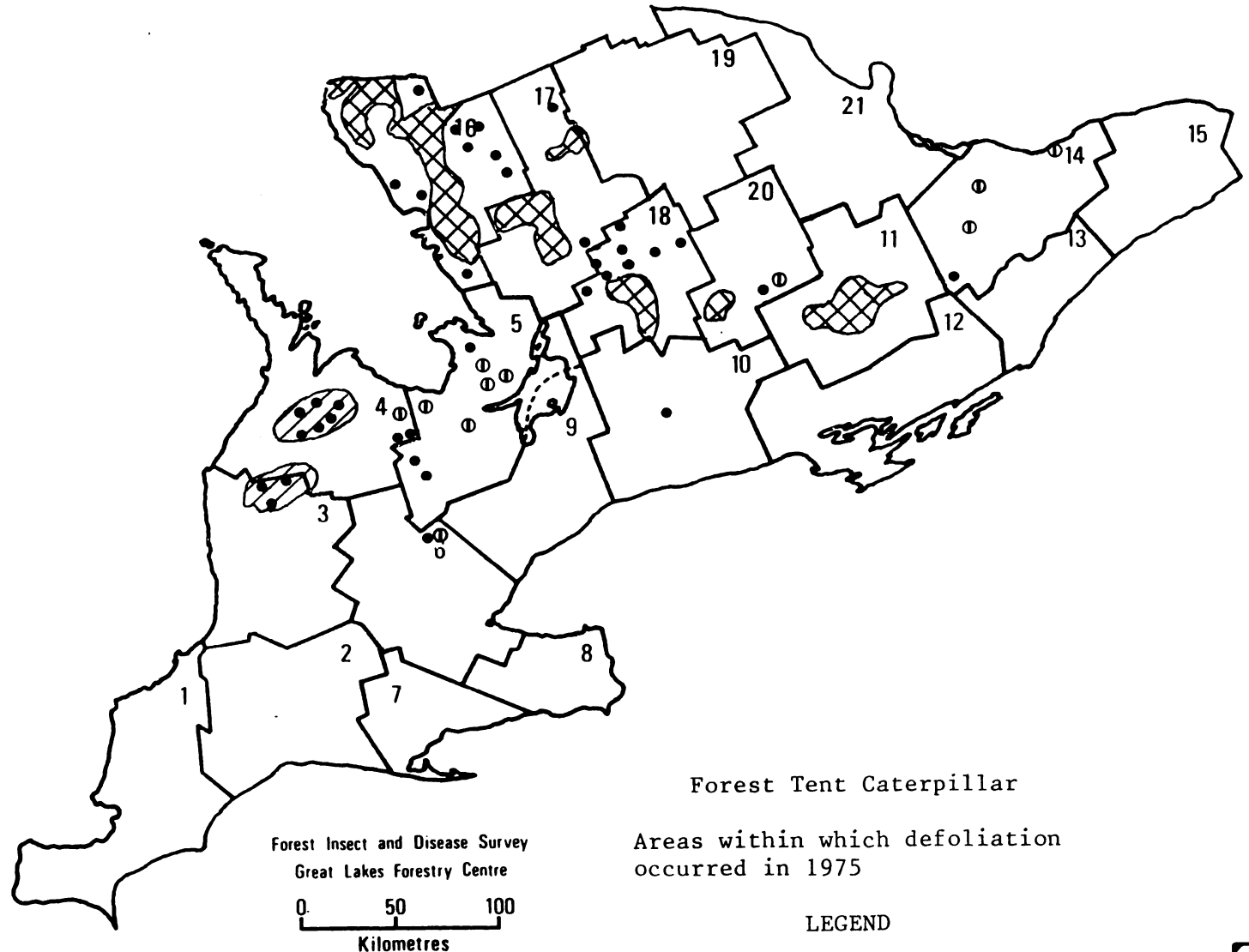
Light defoliation ○

Moderate-to-severe defoliation • or [X]

# SOUTHERN ONTARIO

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Forest Tent Caterpillar

Areas within which defoliation  
occurred in 1975

## LEGEND

Light defoliation

○ or

Moderate-to-severe defoliation

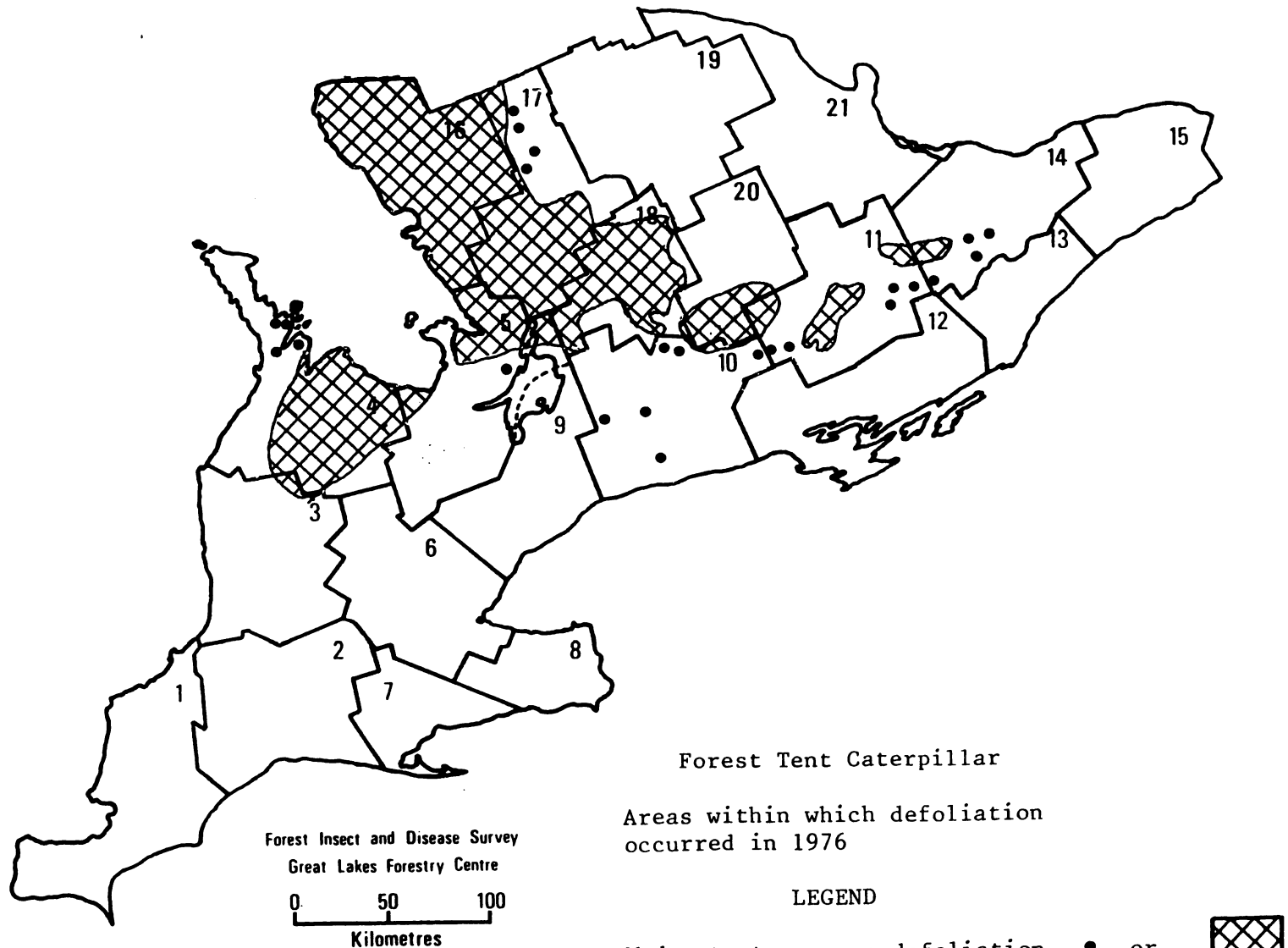
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# SOUTHERN ONTARIO

## DISTRICTS

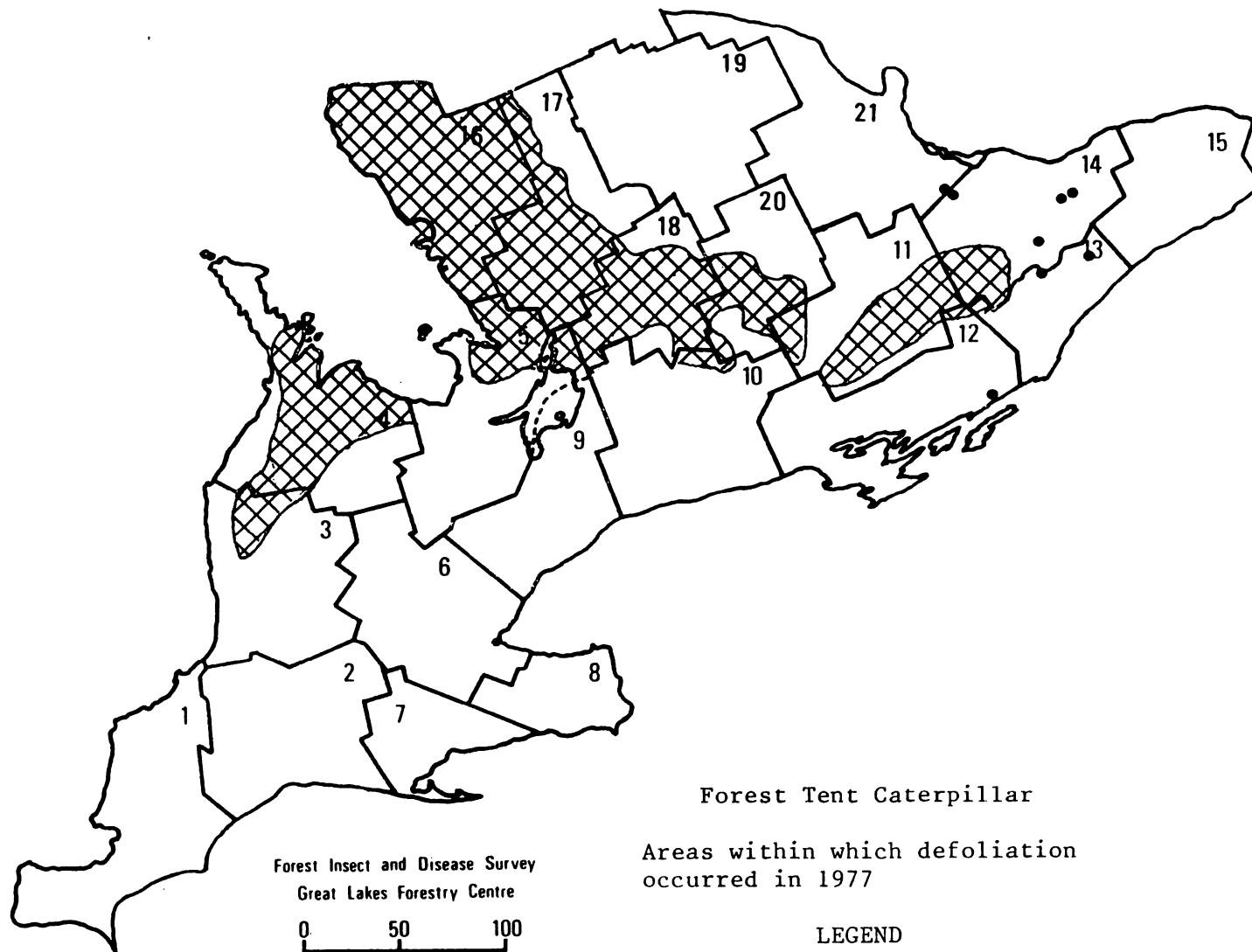
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Forest Tent Caterpillar

Areas within which defoliation  
occurred in 1977

## LEGEND

Moderate-to-severe defoliation • or



# SOUTHERN ONTARIO

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