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

Compiled by

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1952	J.E. MacDonald, L. Jago
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1967-1968	H.J. Weir
1969-1980	K.C. Hall

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FOREWORD

The first forest insect 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 Canadian Forestry Service 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 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.

Diebacks and Declines

Damage usually characterized by the death or deterioration of tree crowns and caused by either biotic or abiotic factors, frequently unknown.

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^2 = area (sq. mi.) x 2.59 = area km^2]. 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 northeastern 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.

INTRODUCTION

This is a review of significant forest insects and diseases in the area covered by the Blind River District from 1950 to 1980, with a brief summary of outbreaks prior to 1950. The present Blind River District was formed in 1973 from the eastern portion of the Sault Ste. Marie District. In the selection of pests for this report particular attention was paid to the major working groups of host species in the district, namely, jack pine, white spruce, black spruce, balsam fir and the tolerant hardwoods (sugar maple, yellow birch, white birch and poplar), as well as some ornamental and shade trees. The insects and diseases included are capable of causing, or have caused, tree mortality or a reduction in growth. Also included are abiotic problems that cause damage, i.e., salt, frost, wind and snow damage, etc.

SUMMARY

FOREST INSECTS

Birch Skeletonizer, *Bucculatrix canadensisella* Cham. [Major]
pages 11-16

This late-season insect defoliates both white birch and yellow birch and widespread outbreaks usually last 3-4 years, then virtually disappear. Defoliation seldom causes mortality, but weakened trees are hosts to secondary insects and diseases, and this may be a predisposing factor in the birch decline reported from 1963 to 1964 and again in 1968 (see page 153). Infestations were reported from 1961 to 1962, from 1970 to 1973 and again in 1980.

Large Aspen Tortrix, *Choristoneura conflictana* (Wlk.) [Major]
pages 17-24

There has been no record of tree mortality caused by this defoliator of aspen and poplar. Severe defoliation was reported from 1957 to 1959 and from 1970 to 1972.

Spruce Budworm, *Choristoneura fumiferana* (Clem.) [Major]
pages 25-44

This insect is considered the most destructive pest of numerous coniferous hosts, i.e., balsam fir, white spruce, black spruce, and larch. Top-killing of balsam fir usually occurs after 3 years of severe defoliation, and whole-tree mortality usually occurs after 5 years. Very low populations were reported from 1954 to 1968. During the period from 1969 to 1980 moderate-to-severe defoliation occurred at numerous locations in the district. Mortality of white spruce was reported in 1973 in Parkinson Township and since that time mortality of both white spruce and balsam fir has continued through most of the district. Infestations were reported as early as 1941.

Jack Pine Budworm, *Choristoneura pinus pinus* Free. [Major]
page 45

This is a destructive pest of pines that can cause tree mortality after about two years of severe defoliation. High populations were reported from 1966 to 1968 in the Kirkwood Management Unit and again in 1974. No infestations were reported in the district prior to 1958.

Oak Leaf Shredder, *Croesia semipurpurana* (Kft.) [Major]
pages 46-48

This defoliator has been a persistent and widespread pest of red oak in Ontario in recent years. Defoliation by this insect is probably a major predisposing factor in oak decline, dieback and mortality. Serious tree deterioration and mortality have occurred in many areas in Ontario that have a history of oak leaf shredder infestations. From 1961 to 1980 varying degrees of defoliation have occurred at numerous points in the district.

Greenstriped Mapleworm, *Dryocampa rubicunda rubicunda* (Fabr.) [Major]
pages 49-51

This insect defoliates both red maple and sugar maple but prefers red maple understory. Varying degrees of defoliation occurred from 1951 to 1980. Infestations were reported as early as 1939 in the district.

Linden Looper, *Erannis tiliaria* (Harr.) [Major]
pages 52-54

The linden looper defoliates many tree species including basswood, elm, maple, oak and birch. Although affected stands usually recover, repeated defoliation can contribute to tree mortality. In 1976 and 1977 severe defoliation was reported in the northwest corner of the district.

Eastern Pine Shoot Borer, *Eucosma gloriola* Heinr. [Major]
page 55

This borer is found throughout the natural range of pine. It has not been a problem in natural stands but is often abundant in poorly managed plantations. It feeds on all species of pine, with the heaviest attack usually occurring in shoots on the upper part of trees. Varying degrees of damage were reported during the period from 1952 to 1980.

European Spruce Sawfly, *Gilpinia hercyniae* (Htg.) [Minor]
pages 56-63

This insect was considered an extremely destructive pest of white spruce forests in the 1930s and early 1940s until an accidentally introduced polyhedral virus caused a near collapse of widespread infestations. Since 1950, populations have remained at a very low level.

Forest Tent Caterpillar, *Malacosoma disstria* Hbn. [Major]
pages 64-74

Trembling aspen, the preferred host, is seldom killed in the outbreak, but sugar maple and red oak are severely weakened and may suffer mortality if one infestation persists or as a result of secondary factors. Severe infestations were reported from 1949 to 1953 and from 1963 to 1969, and a small pocket occurred in Patton Township in 1976. Tree mortality was not reported in the district.

Balsam Fir Sawfly, *Neodiprion abietis* complex [Major]
pages 75-82

Severe defoliation can cause mortality of balsam fir and white spruce trees when an infestation persists over a period of years. Scattered pockets of severe defoliation were reported from 1950 to 1953 and from 1960 to 1963. Infestations were reported along the North Channel as early as 1939.

Redheaded Pine Sawfly, *Neodiprion lecontei* (Fitch) [Major]
pages 83-88

This sawfly attacks red pine, jack pine and Scots pine trees. Trees less than 4 m tall in plantations or windbreak stands are most frequently attacked. Mortality can occur after several years of severe defoliation and commonly occurs in pockets or along stand edges where trees are under additional stress. Widely scattered pockets of severe defoliation have been reported for most years since 1950.

Pine Sawflies, *Neodiprion nanulus nanulus* Schedl., *N. pratti banksianae* Roh., *N. swainei* Midd., and *N. virginianus* complex [Major]
pages 89-94

These insects can cause mortality after prolonged severe defoliation. Varying degrees of infestation have been recorded since 1950.

Aspen Leafblotch Miner, *Phyllonorycter ontario* (Free.) [Major]
pages 95-96

Although this insect is not known to cause tree mortality, severe leaf mining over a period of years can cause a reduction in growth. Varying degrees of infestation were noted for most years since the insect was first reported in 1952.

White Pine Weevil, *Pissodes strobi* (Peck) [Major]
pages 97-98

This pest of pines and spruces causes a reduction in height and eventually 'cabbaging' if the tree is subjected to repeated attacks. It is the most serious insect pest of white pine in North America. Varying degrees of leader mortality have occurred in most years since 1950.

Larch Sawfly, *Pristiphora erichsonii* (Htg.) [Major]
pages 99-108

Severe defoliation causes a loss of increment after 4 or 5 years and tree mortality can occur after 6 to 9 years. Severe defoliation was reported from 1954 to 1961, from 1967 to 1971 and in 1977. Infestations were reported as early as 1937.

Mountain-ash Sawfly, *Pristiphora geniculata* (Htg.) [Major]
pages 109-112

Although mountain-ash trees are not considered merchantable, a great many are utilized as shade and ornamental trees in urban and rural areas. The mountain-ash sawfly can weaken trees when repeated severe defoliation occurs. From 1957 to 1980 varying degrees of defoliation were reported.

Ambermarked Birch Leafminer, *Profenusa thomsoni* (Konow) [Major]
pages 113-116

Damage caused by this late-season feeder is not considered serious but weakened trees are subject to attack by secondary insects and diseases. High populations were observed from 1950 to 1953 and again in 1955. Since this time, populations have remained low.

Other Noteworthy Insects [Major and Minor]
pages 117-133

Insects with the potential for causing damage to stands, regeneration and plantations.

FOREST DISEASES

Armillaria Root Rot, *Armillaria mellea* (Vahl: Fr.) Kummer [Major]
page 137

This root rot is capable of killing both weakened and healthy trees. The fungus has been reported at low levels periodically from 1955 to 1980.

Dutch Elm Disease, *Ceratocystis ulmi* (Buism.) C. Moreau [Major]
page 138

Since this destructive disease of white elm was first recorded in Ontario in Prescott County in 1946, it has spread throughout the known range of elm in Ontario. In 1967, the disease was first detected in Galbraith Township and since then infections have occurred at numerous points, causing high mortality in many locations.

Spruce Needle Rusts, *Chrysomyxa ledi* (Alb. & Schwein.) de Bary var. *ledi*, and *C. ledicola* (Peck) Lagerh. [Major]
pages 138-139

Severe infections on spruce foliage can cause a loss of increment in trees when prolonged infection occurs. Varying degrees of infection have been recorded in the district since 1958.

Ink Spot of Aspen, *Ciborinia whetzelii* (Seaver) Seaver [Major]
pages 139-140

As a rule, severe defoliation by this disease results only in the loss of increment; no tree mortality has been reported. Pockets of moderate-to-severe damage have occurred periodically throughout the district between 1960 and 1980.

A Needle Rust of Pine, *Coleosporium asterum* (Dietel) Sydow [Major]
page 140

When the incidence is high, this rust can cause increment loss in immature trees planted near the alternative hosts, goldenrod and aster. The incidence has been low since 1959 except in 1972, when severe infection was recorded in Kirkwood Township.

White Pine Blister Rust, *Cronartium ribicola* J.C. Fischer ex Rabenh. [Major]
page 141

This destructive disease causes top killing and tree mortality of all ages of white pine, particularly small natural regeneration and plantation trees. Varying degrees of damage were reported from 1955 to 1980.

Scleroderris Canker, *Gremmeniella abietina* (Lagerb.) Morelet [Major]
page 142

This disease is particularly damaging to young pine trees in plantations. Over a number of years, intensive surveys have been carried out to determine the distribution of this disease. The first recorded infection was observed in 1965; however, this disease was probably present as early as 1954, as symptoms were similar to those confirmed in 1965. Since 1965, varying degrees of infection and mortality have been reported.

Hypoxylon Canker, *Hypoxylon mammatum* (Wahlenb.) J. Miller [Major]
pages 142-143

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 1953.

Shoot Blight, *Venturia macularis* (Fr.) E. Müller & v. Arx [Major]
page 143

This foliar disease is particularly damaging to leaders of reproduction aspen. Severe damage was reported from 1964 to 1967 and in 1973, 1979 and 1980.

Other Noteworthy Diseases [Major & Minor]
page 144

These are diseases with a potential for causing damage to stands, regeneration and plantations. Varying degrees of damage have occurred from 1952 to 1980.

ABIOTIC DAMAGE

pages 147-149

Damage caused by non-living factors such as frost, drought, winter drying, salt, scorch, etc.

DIEBACKS AND DECLINES

Birch Decline
page 153

This condition is caused by a variety of factors such as logging and climate. Severe damage occurred in 1964 in the Peshu Lake area and again in 1968 in Wells and Cassons townships.

INSECTS

Birch Skeletonizer, *Bucculatrix canadensisella* Cham.

Host(s): wB [Major]

Year	Remarks
1950-1953	not reported
1954	Moderate infestations occurred in the Rocky Island Lake area.
1955	Populations declined at Rocky Island Lake.
1956-1957	not reported
1958	very low populations
1959	increase in populations along the North Channel
1960	further population increases along the North Channel
1961	severe defoliation across the southern part of the district (see map, page 12)
1962	Severe defoliation persisted in the district.
1963	not reported
1964	Light defoliation occurred along the North Channel between Thessalon and Iron Bridge.
1965-1969	not reported
1970	Pockets of severe defoliation were observed in Lefroy Twp (see map, page 13).
1971	Populations increased along the North Channel between Thessalon and Cutler (see map, page 14).
1972	A further increase in area of infestation occurred in the southern part of the district (see map, page 15).
1973	Populations declined. There was an area of severe defoliation encompassing three townships on the eastern border of the district, and light defoliation occurred between these townships and along the North Channel (see map, page 16).
1974-1979	not reported
1980	Sharp increases in populations occurred in the Elliot Lake, Iron Bridge and Thessalon areas.

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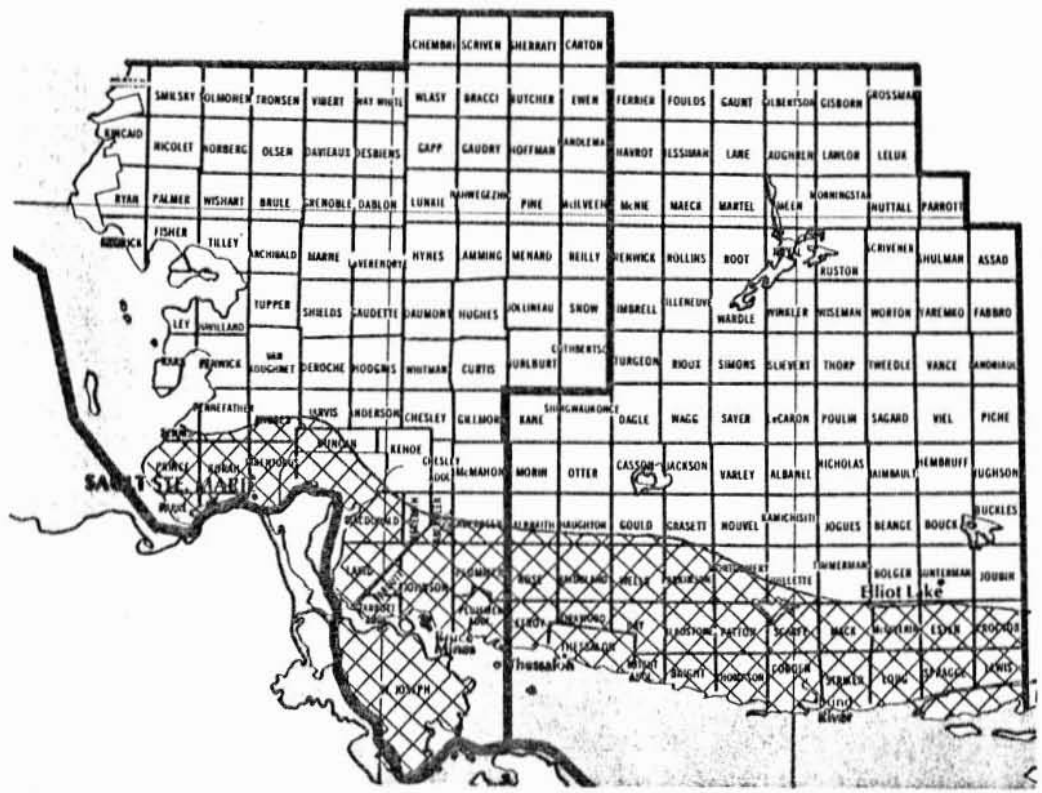

Birch Skeletonizer

Areas within which defoliation occurred in 1961

LEGEND

Moderate-to-severe defoliation

Scale

Kilometres 20 10 0 20

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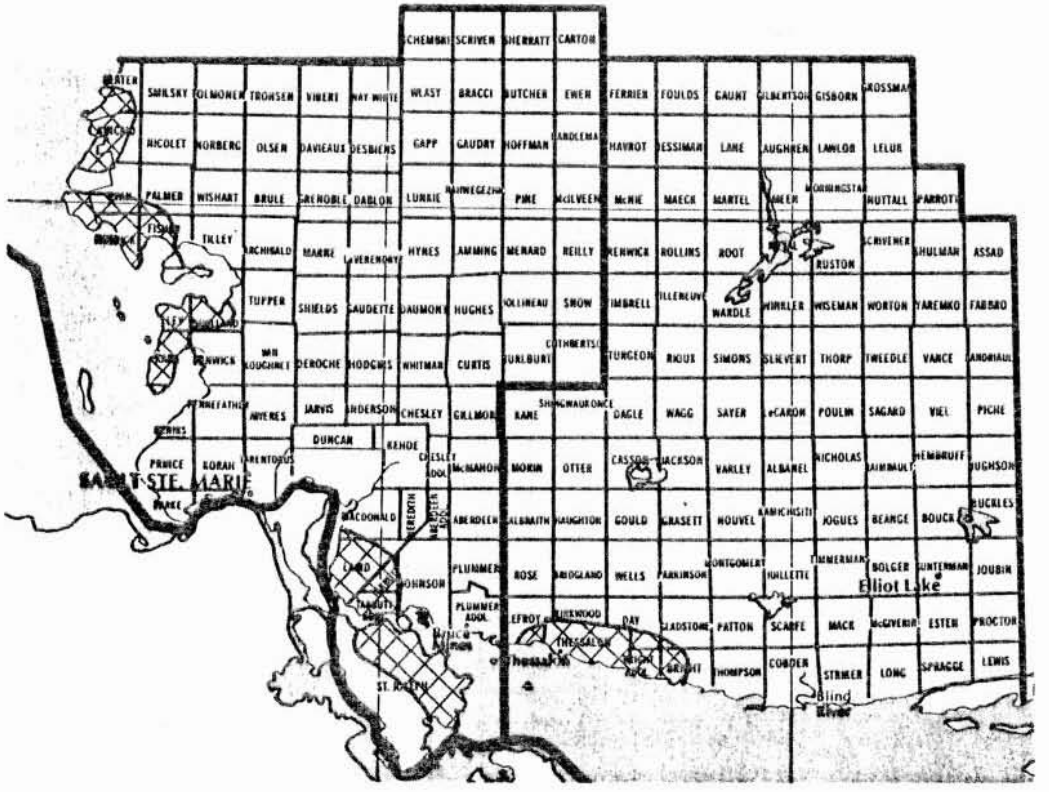

Birch Skeletonizer

Areas within which defoliation occurred in 1970

LEGEND

Moderate-to-severe defoliation

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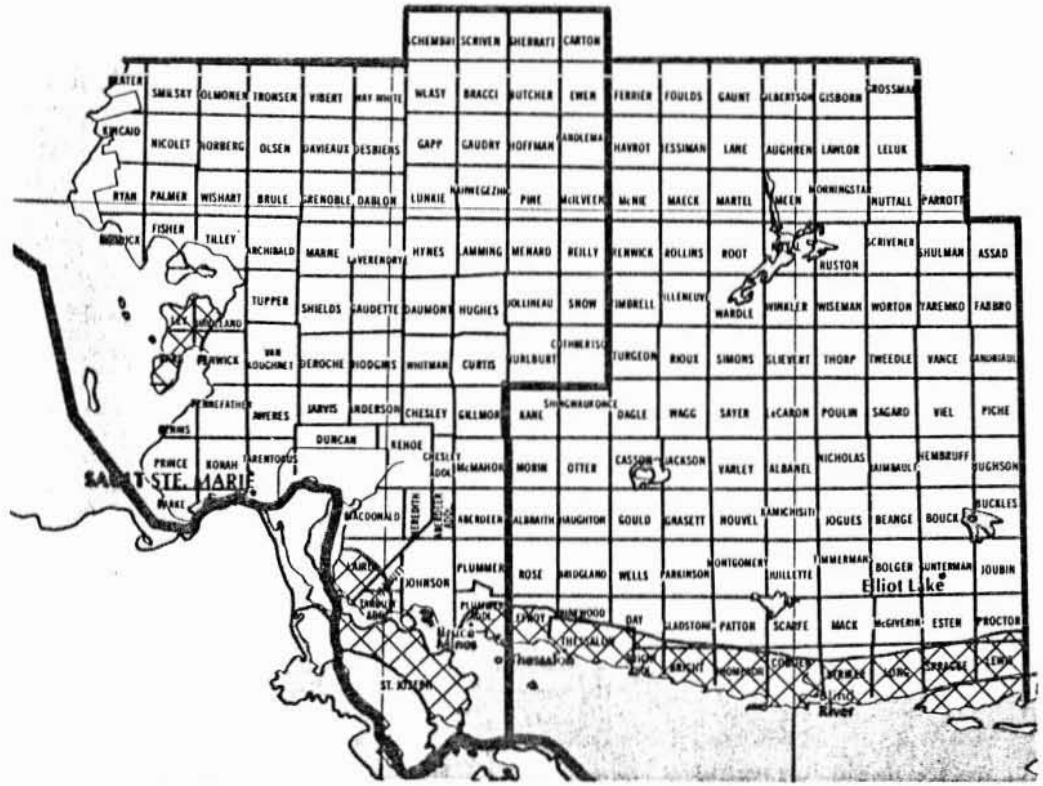

Birch Skeletonizer

Areas within which defoliation occurred in 1971

LEGEND

Moderate-to-severe defoliation

Scale

Kilometres 20 10 0 20

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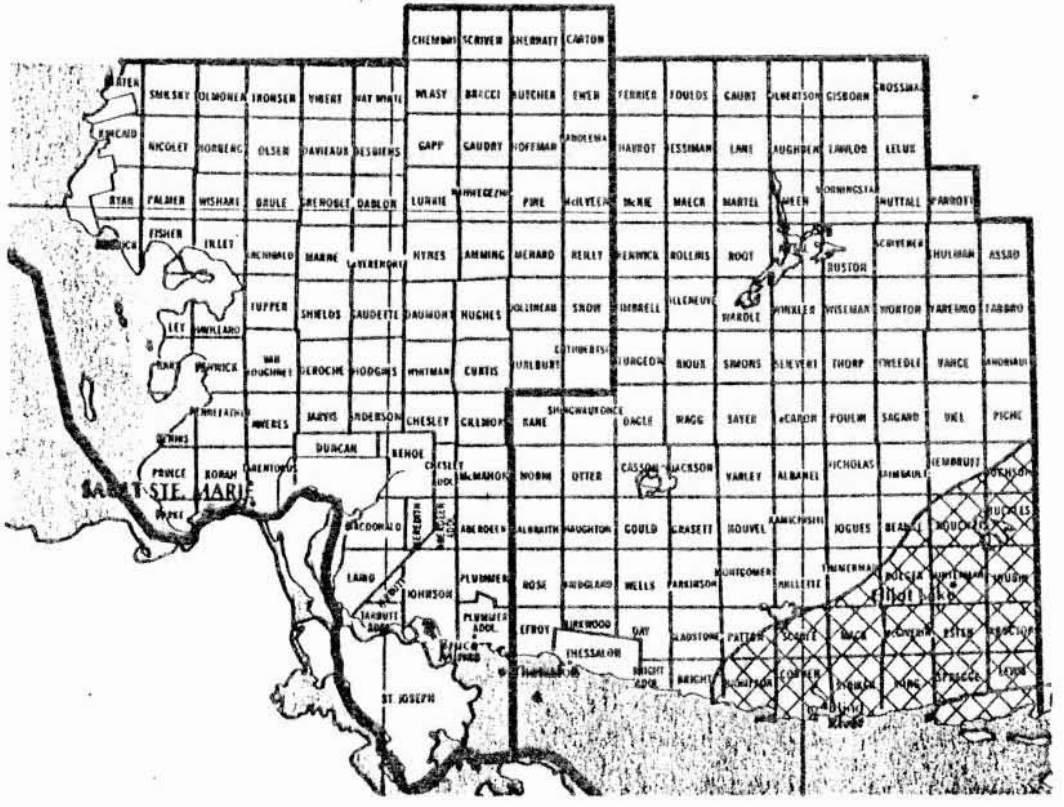

Birch Skeletonizer

Areas within which defoliation occurred in 1972

LEGEND

Moderate-to-severe defoliation

Scale

Kilometres 20 10 0 20

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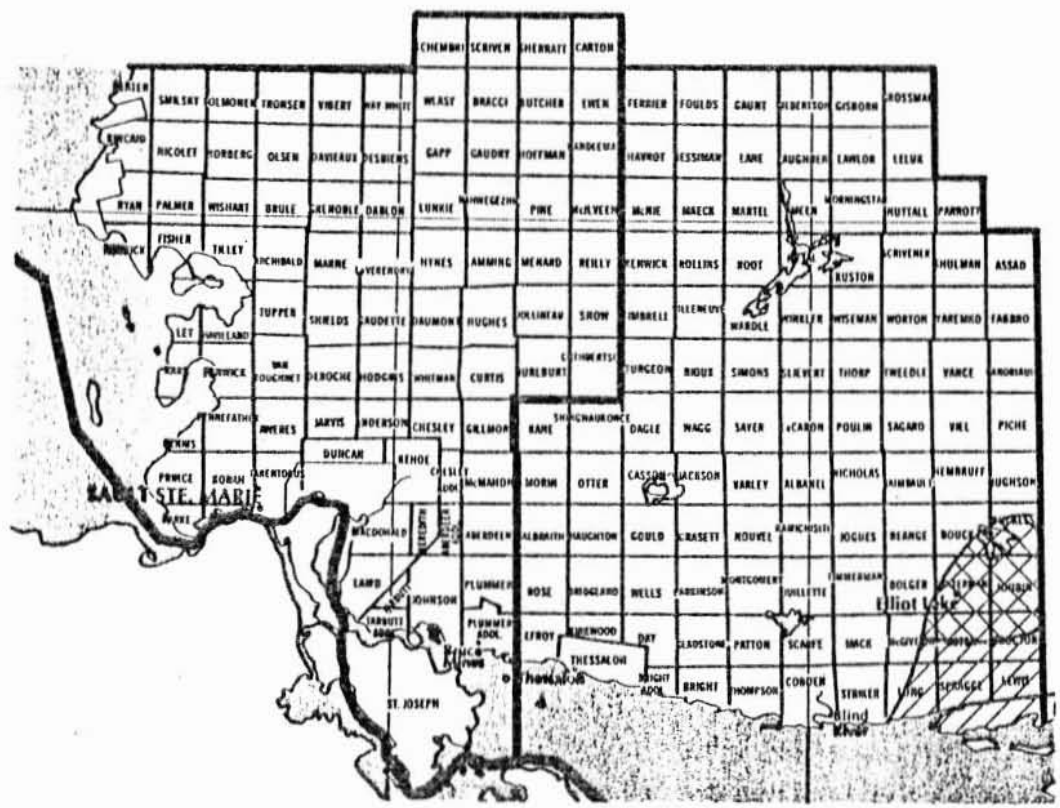

Birch Skeletonizer

Areas within which defoliation occurred in 1973

LEGEND

Light defoliation

Moderate-to-severe defoliation

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

Host(s): tA [Major]

Year	Remarks
1950-1956	not reported
1957	There was an increase in populations in the southern part of the district and pockets of severe defoliation occurred at numerous locations (see map, page 18).
1958	There was a decline in populations. Scattered pockets of moderate-to-severe defoliation were observed at several locations (see map, page 19).
1959	An increase in intensity was observed in the eastern part of the district (see map, page 20). Small pockets of severe defoliation were widespread in the district.
1960	Populations declined in the district.
1961-1969	not reported
1970	Severe defoliation occurred in the southwestern part of the district and ranged between 60 and 90% (see map, page 21).
1971	Small pockets of severe defoliation occurred in the Thessalon and Iron Bridge areas (see map, page 22).
1972	Severe defoliation occurred along the North Channel between Thessalon and Cutler and along the Espanola District boundary (see map, page 23).
1973	Populations declined, and only a small pocket of severe defoliation was observed in Hughson Twp (see map, page 24).
1975-1980	not reported

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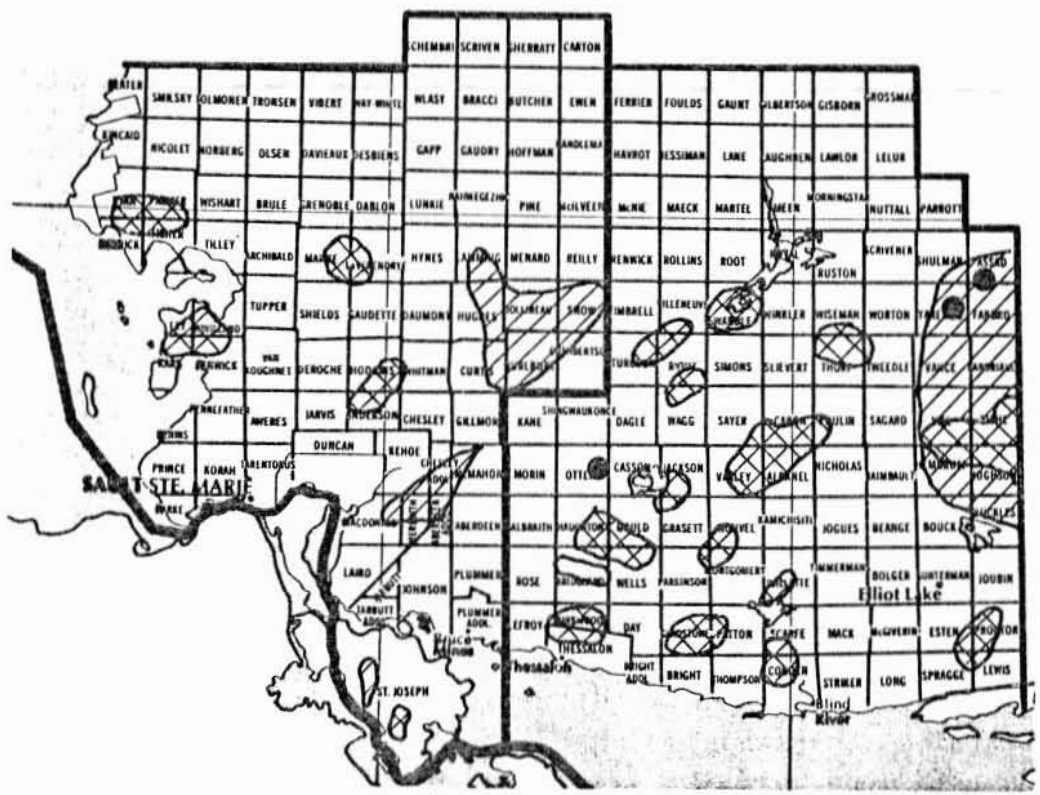

Large Aspen Tortrix

Areas within which defoliation occurred in 1957

Scale

Kilometres 20 10 0 20

LEGEND

Light defoliation

Moderate-to-severe defoliation ● or

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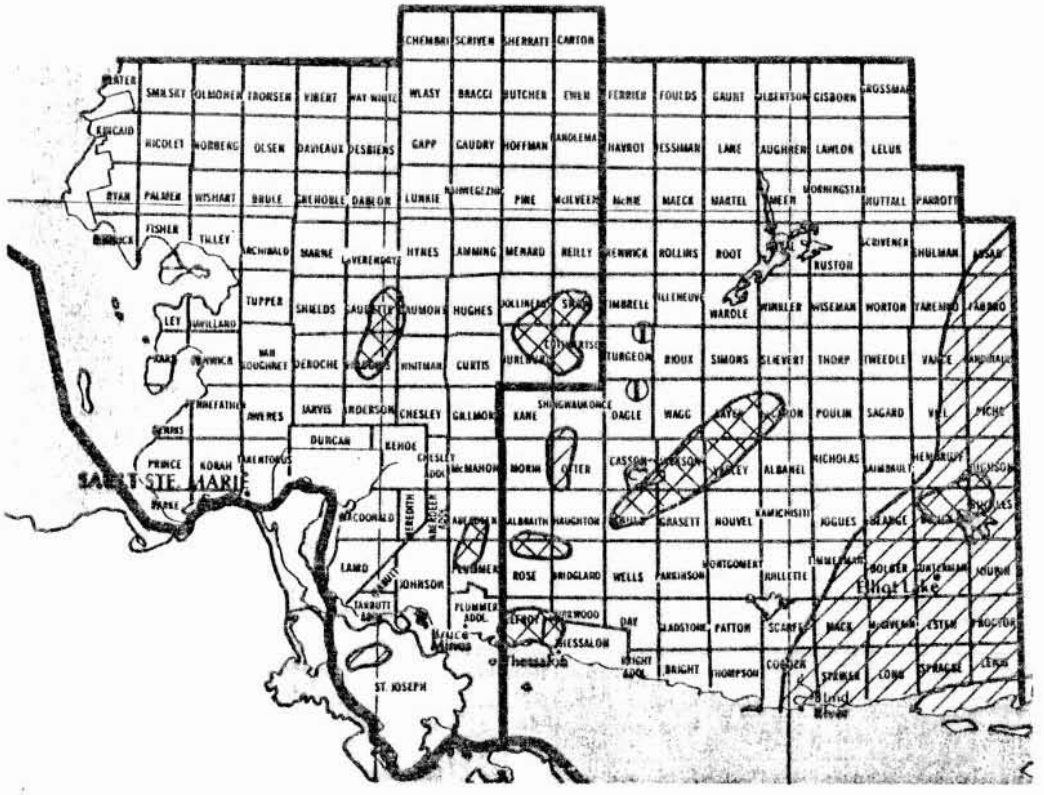

Large Aspen Tortrix

Areas within which defoliation occurred in 1958

LEGEND

Light defoliation ① or

Moderate-to-severe defoliation

Scale

Kilometres 20 10 0 20

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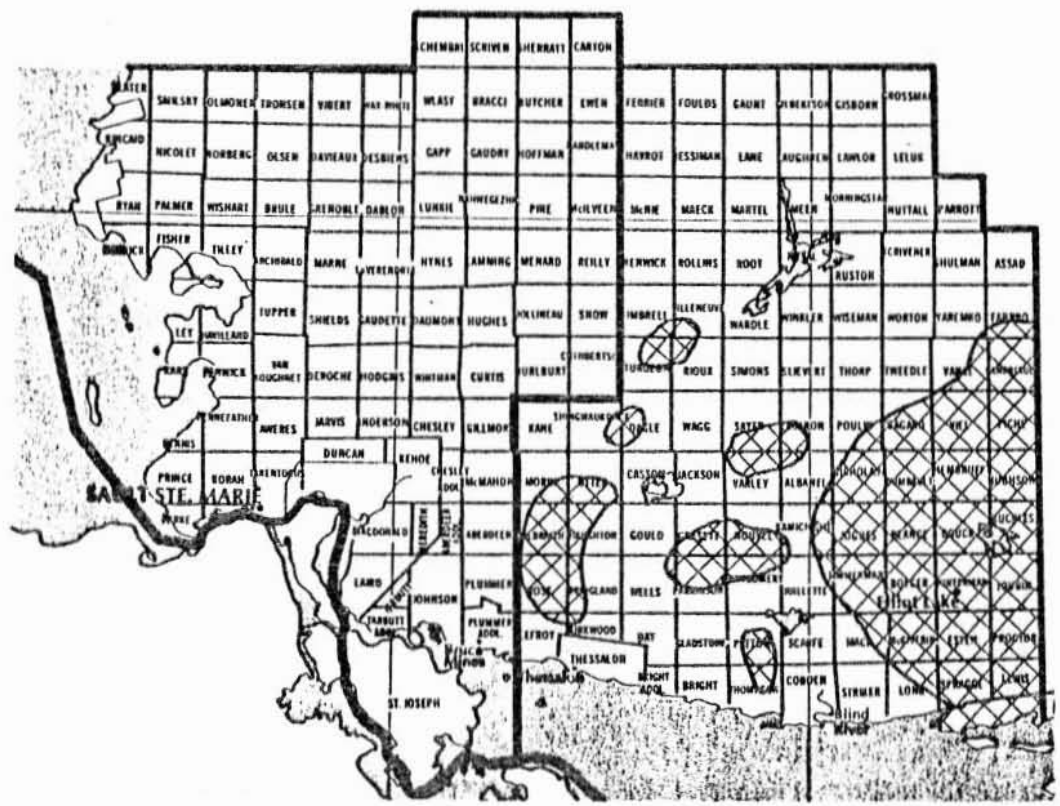

Large Aspen Tortrix

Areas within which defoliation occurred in 1959

LEGEND

Moderate-to-severe defoliation

Scale

Kilometres 20 10 0 20

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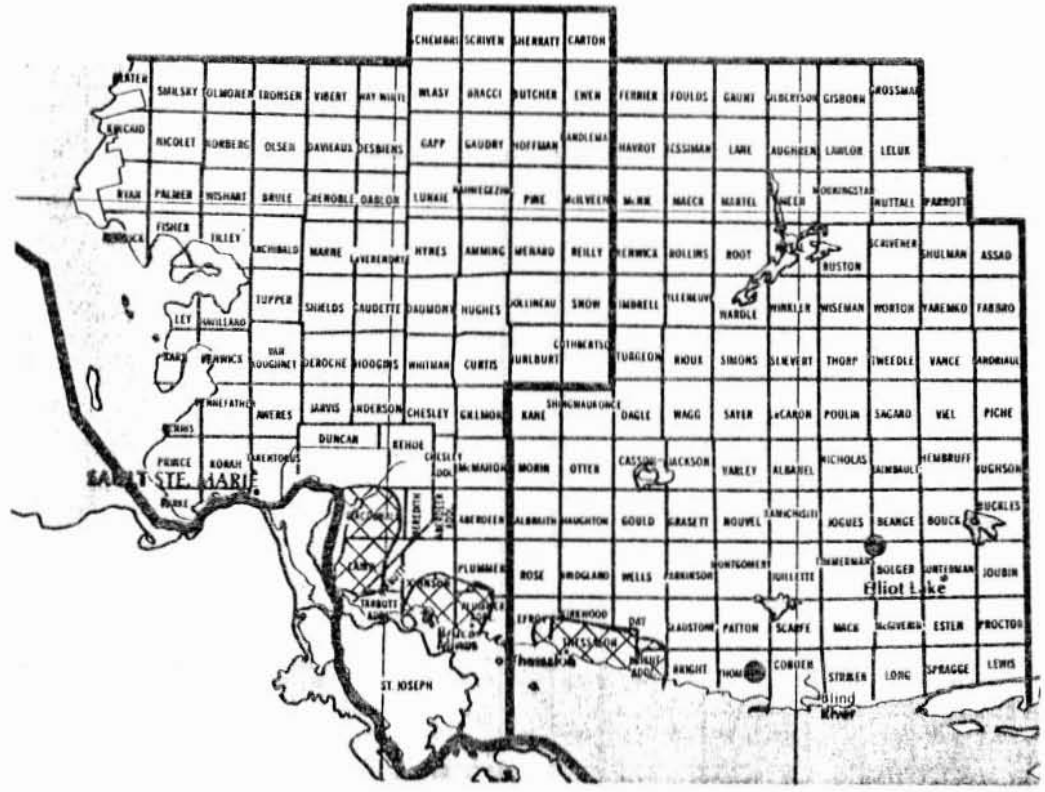

Large Aspen Tortrix

Areas within which defoliation occurred in 1970

LEGEND

Moderate-to-severe defoliation ● or ▨

Scale

Kilometres 20 10 0 20

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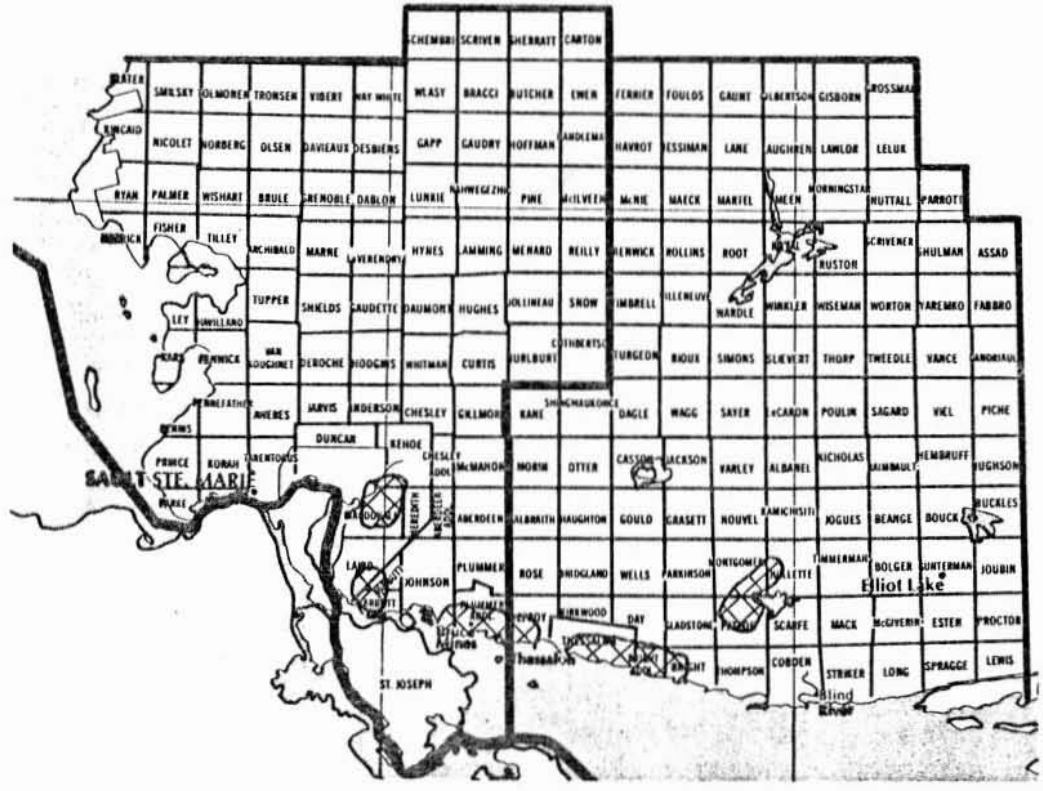

Large Aspen Tortrix

Areas within which defoliation occurred in 1971

LEGEND

Moderate-to-severe defoliation

Scale

Kilometres 20 10 0 20

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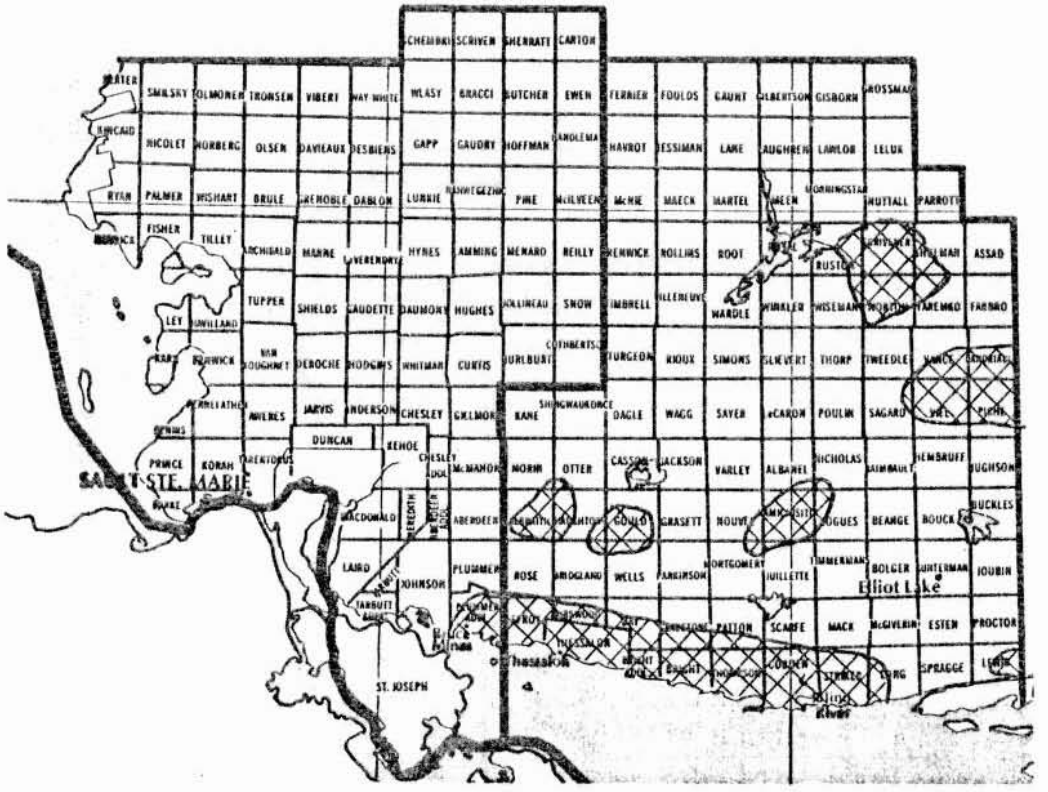

Large Aspen Tortrix

Areas within which defoliation occurred in 1972

LEGEND

Moderate-to-severe defoliation

Scale

Kilometres 20 10 0 20

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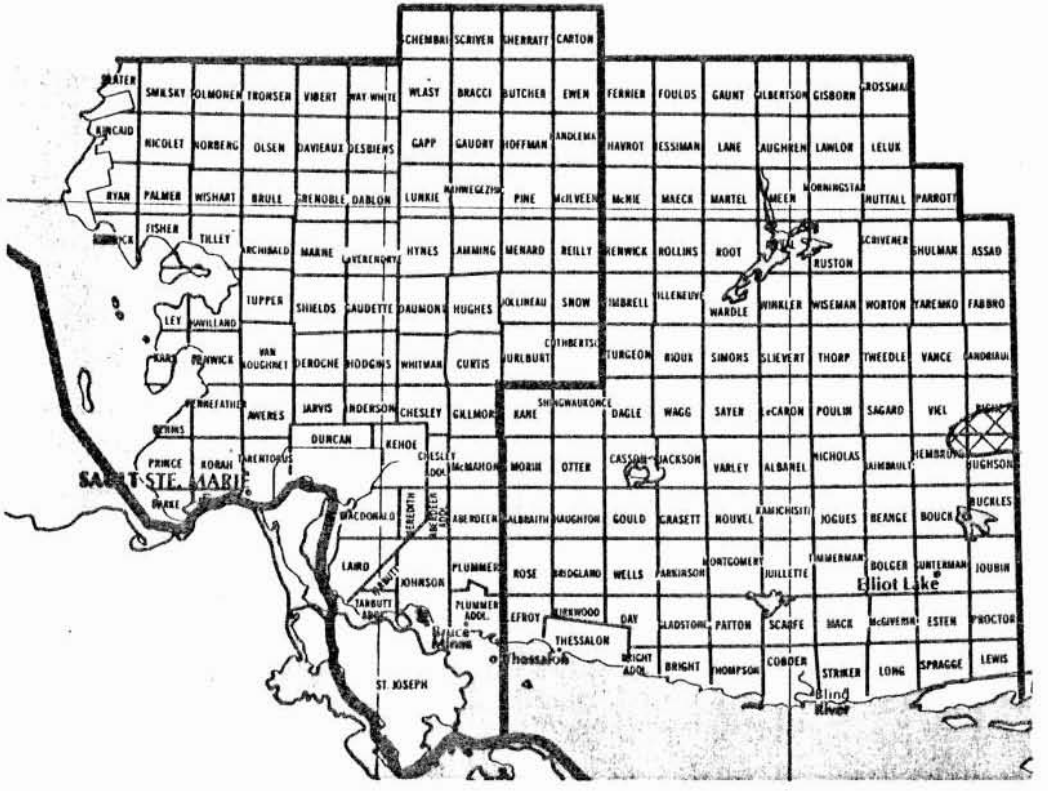

Large Aspen Tortrix

Areas within which defoliation occurred in 1973

LEGEND

Moderate-to-severe defoliation

Spruce Budworm, *Choristoneura fumiferana* (Clem.)

Host(s): spruce, bF [Major]

Year	Remarks
1950	low populations on white spruce in Rose, Lefroy and Thessalon twps
1951-1953	not reported
1954-1955	low populations in Parkinson Twp
1956-1957	a few larvae found in Parkinson Twp
1958	larvae common on white spruce in Thompson Twp
1959	light defoliation observed in Parkinson Twp
1960	a few larvae found in Parkinson Twp
1961-1962	a few larvae obtained on beating mat samples
1963	a few larvae obtained on beating mat samples in Wells Twp
1964	a few larvae obtained on beating mat samples in the district
1965-1966	not reported
1967	increased populations in Lefroy Twp
1968	A general increase occurred in populations in Lefroy and Thessalon twps. Severe defoliation occurred in a 20-km^2 stand of white spruce in Parkinson Twp.
1969	Severe defoliation recurred in the 20-km^2 stand in Parkinson Twp. Population increases were noted in Thessalon and Lefroy twps.
1970-1971	Severe defoliation persisted in Parkinson Twp (see maps, pages 27 and 28).
1972	Populations increased on the eastern and western boundaries and at widespread locations in the southern part of the district (see map, page 29).
1973	There were further population increases throughout the district (see map, page 30). Some white spruce mortality was reported in Parkinson Twp.

(cont'd)

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

Host(s): spruce, bF [Major]

Year	Remarks
1974	Populations continued to increase throughout the district (see map, page 31). Some balsam fir mortality occurred in Havrot, McNie, Renwick and Timbrell twps (see map, page 32).
1975	Moderate-to-severe defoliation was found in most spruce-fir stands in the district (see map, page 33). Balsam fir mortality increased in the northwestern part of the district (see map, page 34).
1976	There was no change in intensity of the infestation (see map, page 35). Increased balsam fir mortality occurred in the northwestern part of the district (see map, page 36).
1977	Populations declined in the north central part of the district. This area had only immature balsam fir trees as a result of the 1948 Chapleau fire (see map, page 37). Mortality of balsam fir persisted in the western part of the district, with new pockets occurring in Landriault and Piche twps (see map, page 38).
1978	Little change occurred in the infestation boundaries from 1977 (see map, page 39). Mortality continued, and new mortality was reported in Throp Twp (see map, page 40).
1979	Populations increased along the western boundary of the district (see map, page 41). High mortality persisted in the western part of the district (see map, page 42).
1980	There was little change in infestation status; defoliation was higher in the Rocky Island Lake area (see map, page 43). New pockets of mortality were found commonly in the district (see map, page 44).

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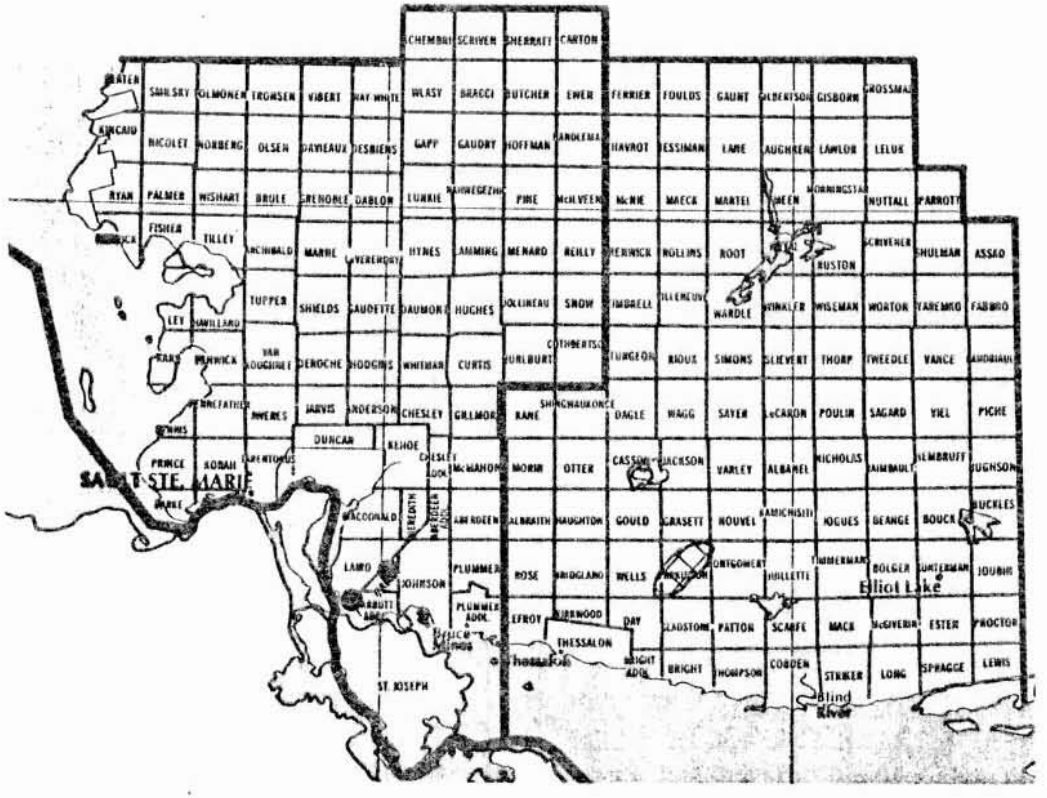

Spruce Budworm

Areas within which defoliation occurred in 1970

LEGEND

Moderate-to-severe defoliation ● or ▨

Scale

Kilometres 20 10 0 20

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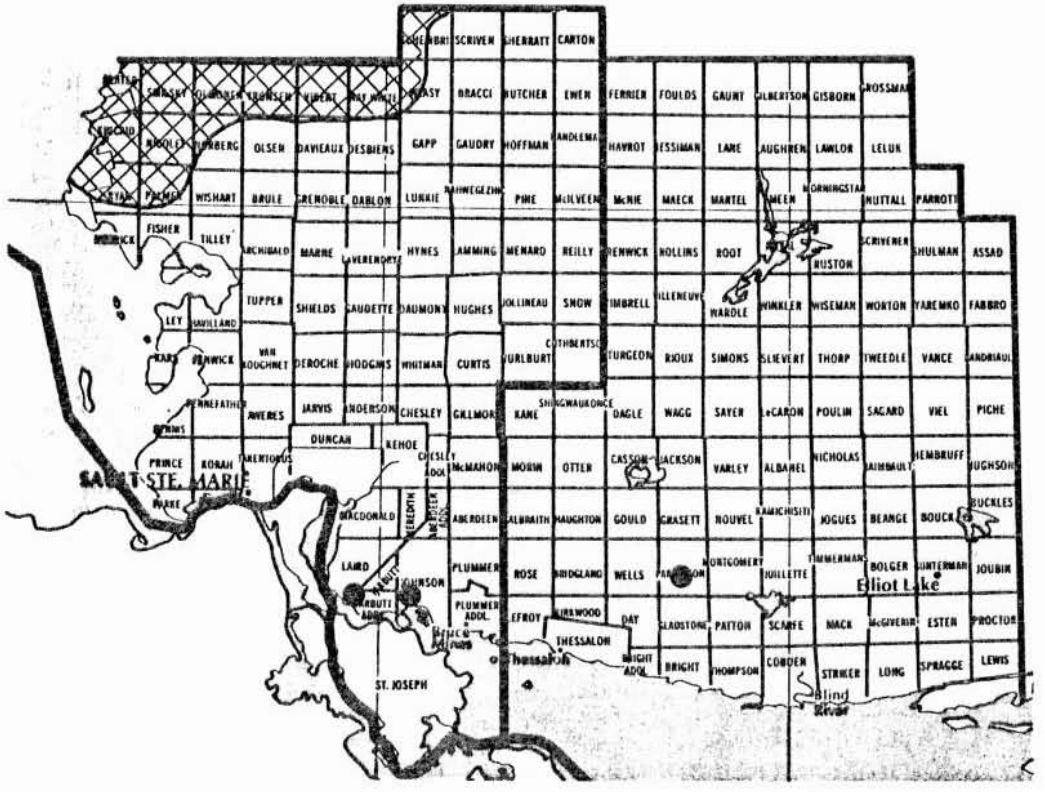

Spruce Budworm

Areas within which defoliation occurred in 1971

LEGEND

Moderate-to-severe defoliation ● or ▨

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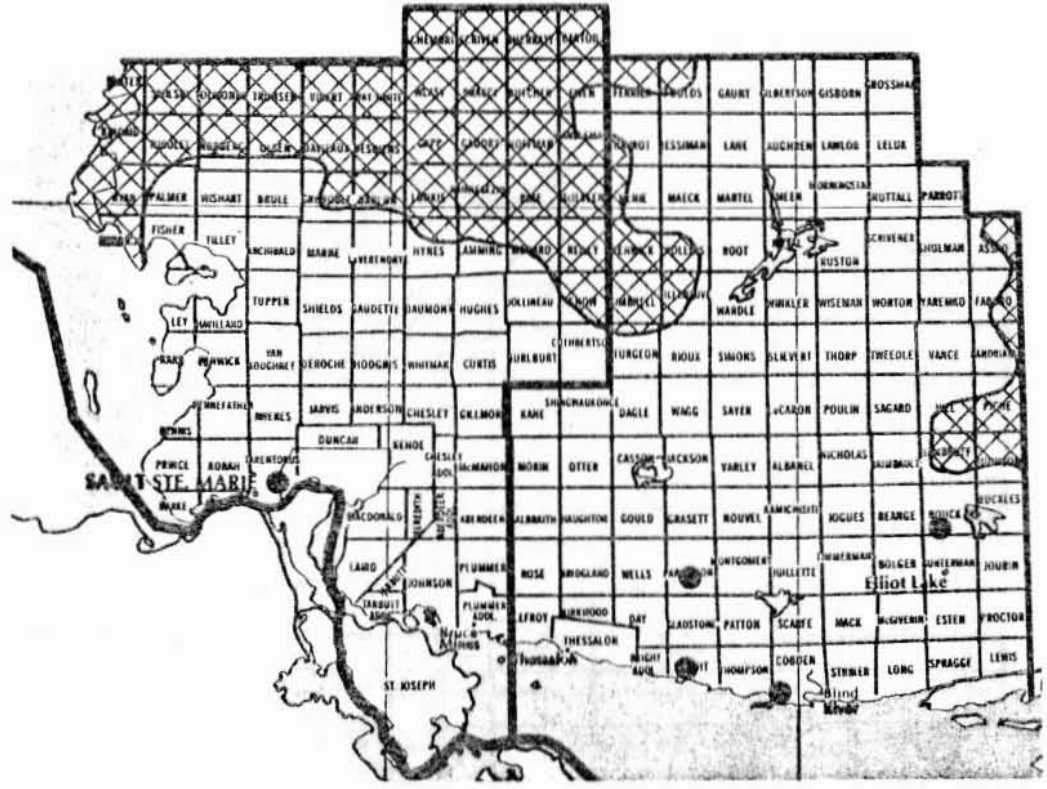


Spruce Budworm

Areas within which defoliation occurred in 1972

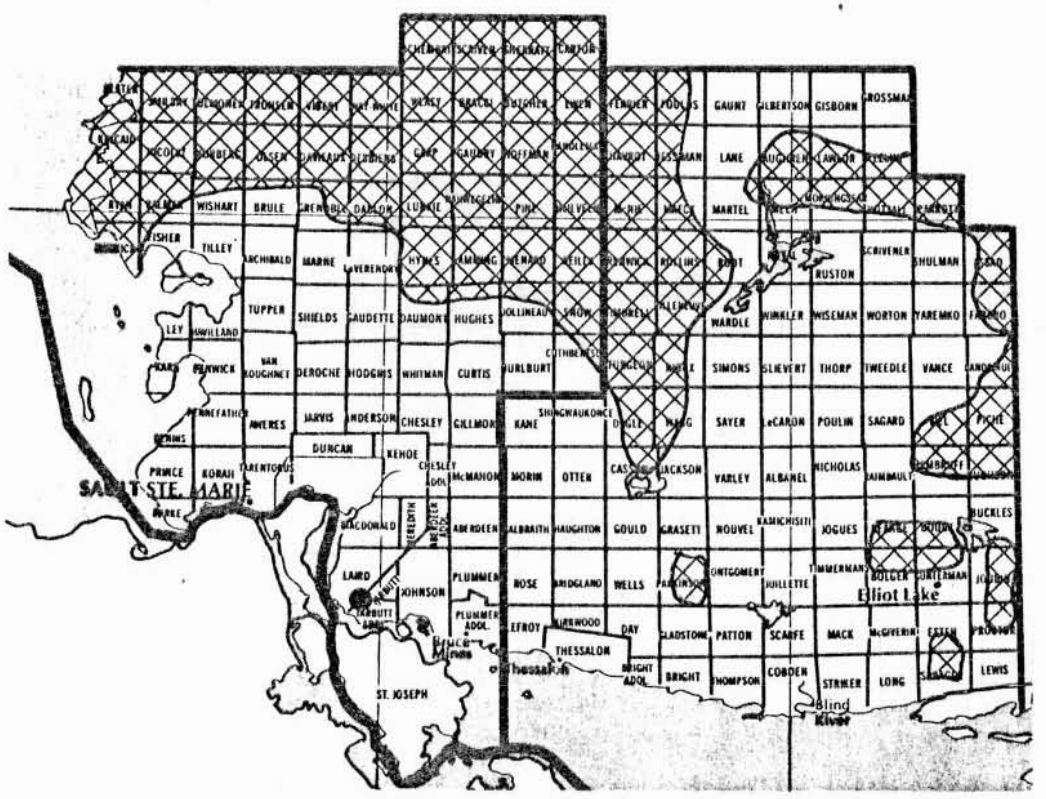
LEGEND

Moderate-to-severe defoliation ● or ▨

Scale

Kilometres 20 10 0 20

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



Spruce Budworm

Areas within which defoliation occurred in 1973

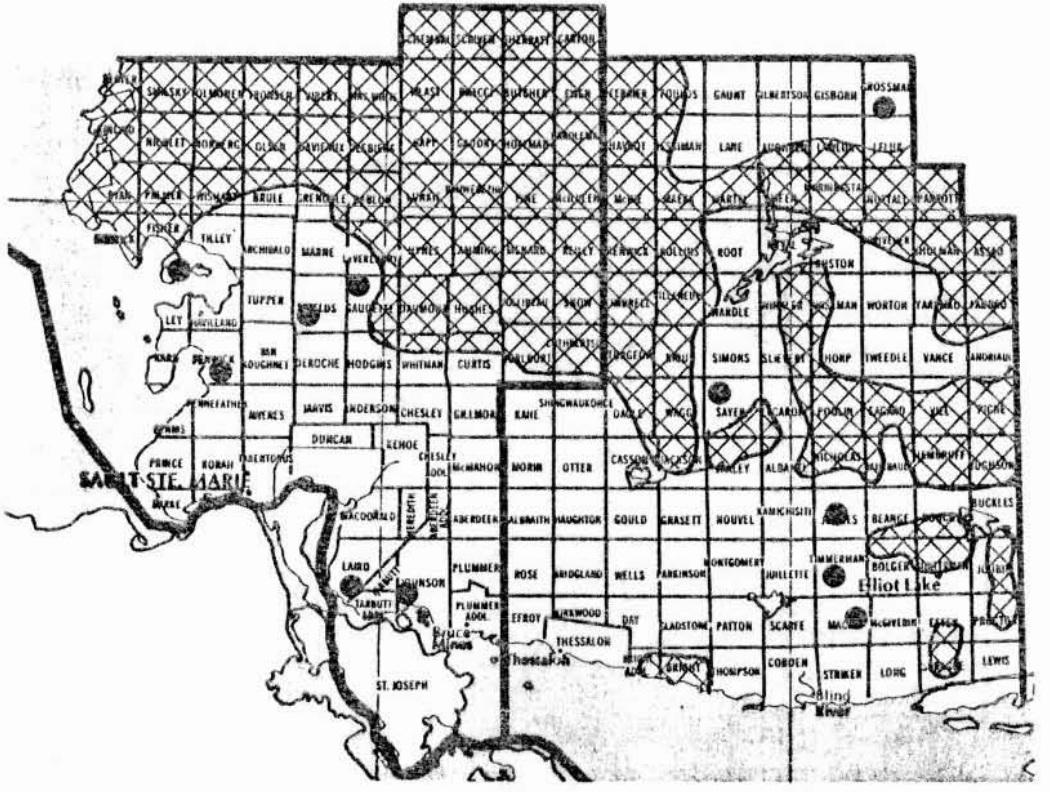
LEGEND

Moderate-to-severe defoliation ● or ▨

Scale

Kilometres 20 10 0 20

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



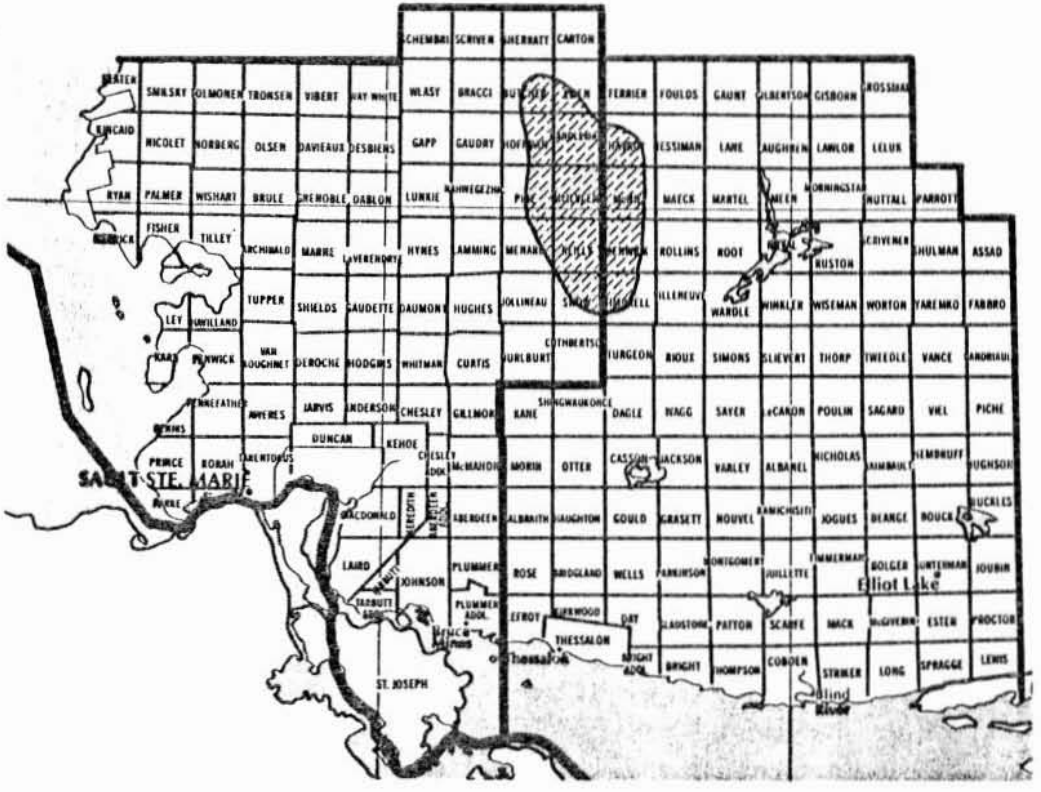
Spruce Budworm

Areas within which defoliation occurred in 1974

LEGEND

Moderate-to-severe defoliation ● or

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



Spruce Budworm

Areas within which balsam fir whole tree and top mortality occurred in 1974

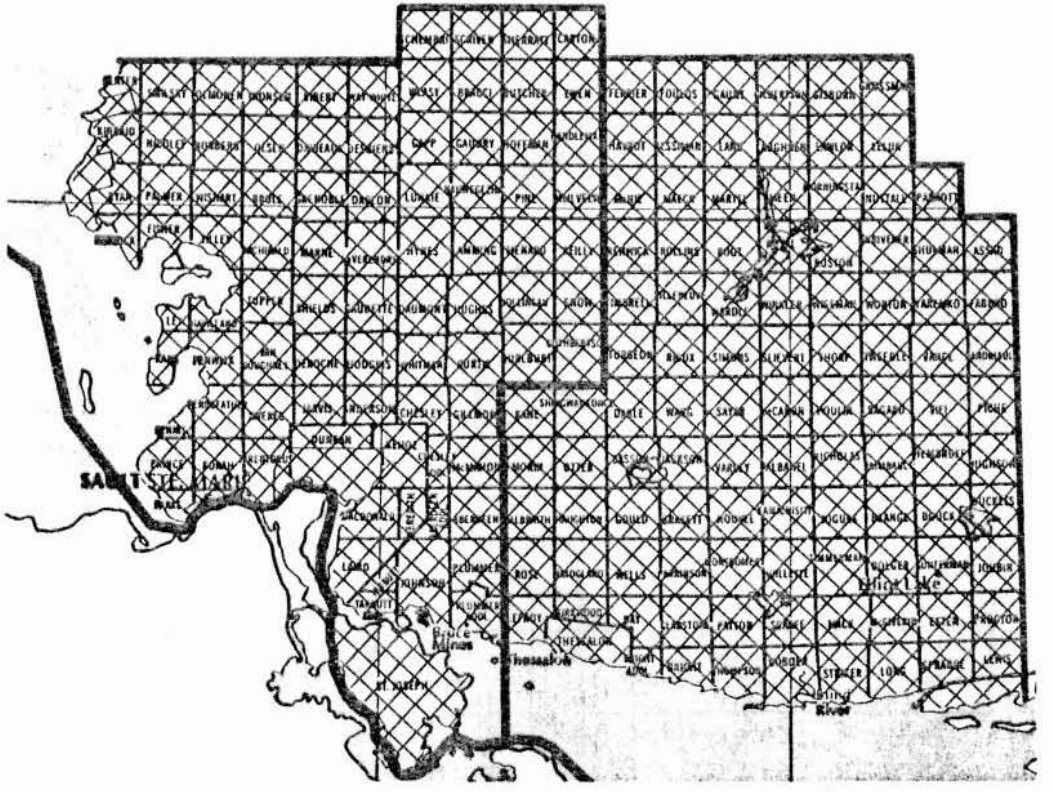
LEGEND

Mortality

Scale

Kilometres 20 10 0 20

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



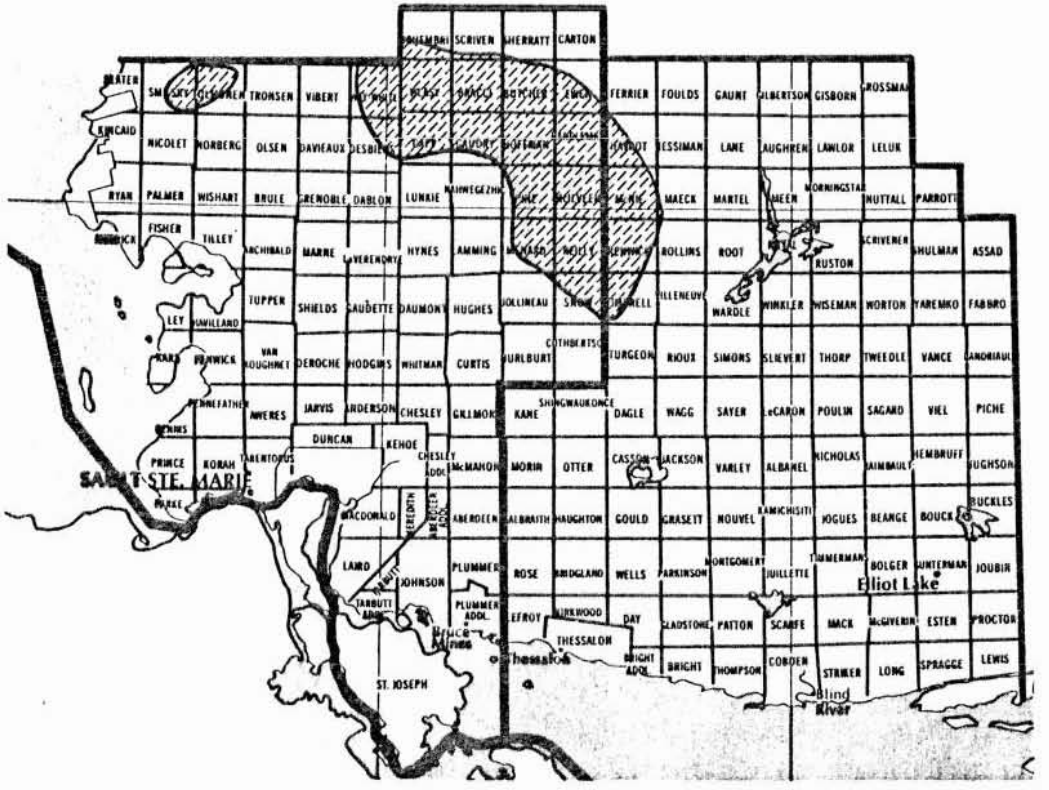
Spruce Budworm

Areas within which defoliation occurred in 1975

LEGEND

Moderate-to-severe defoliation

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



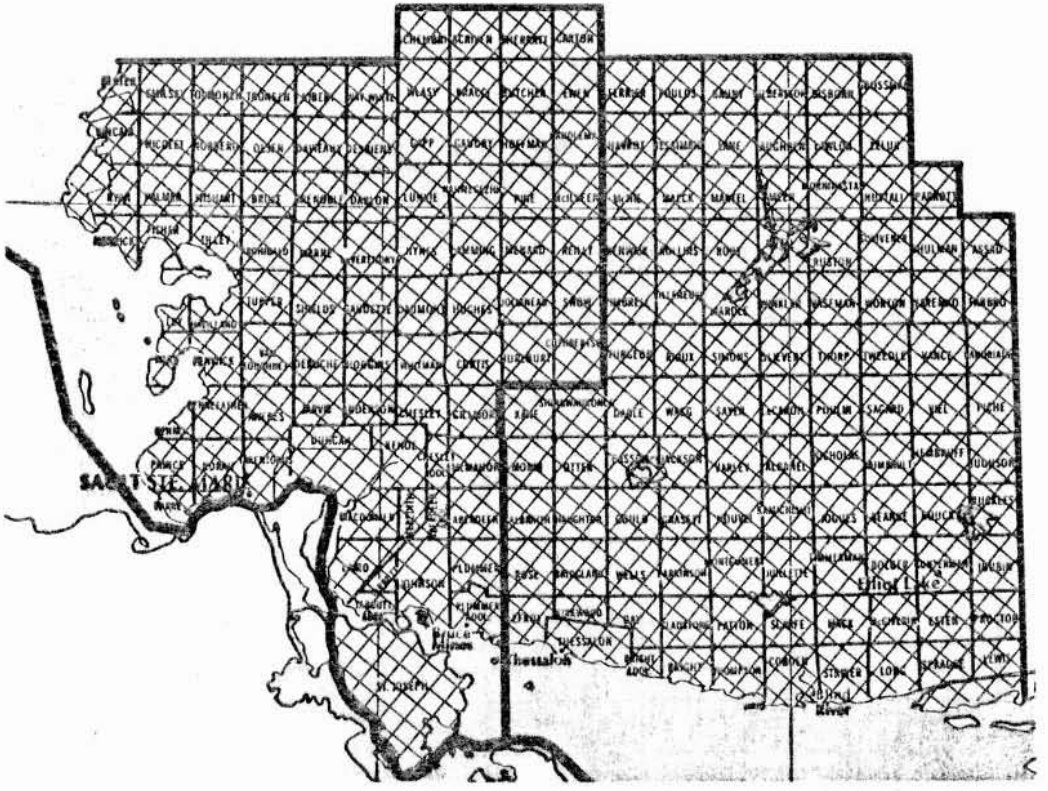
Spruce Budworm

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

LEGEND

Mortality

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



Spruce Budworm

Areas within which defoliation occurred in 1976

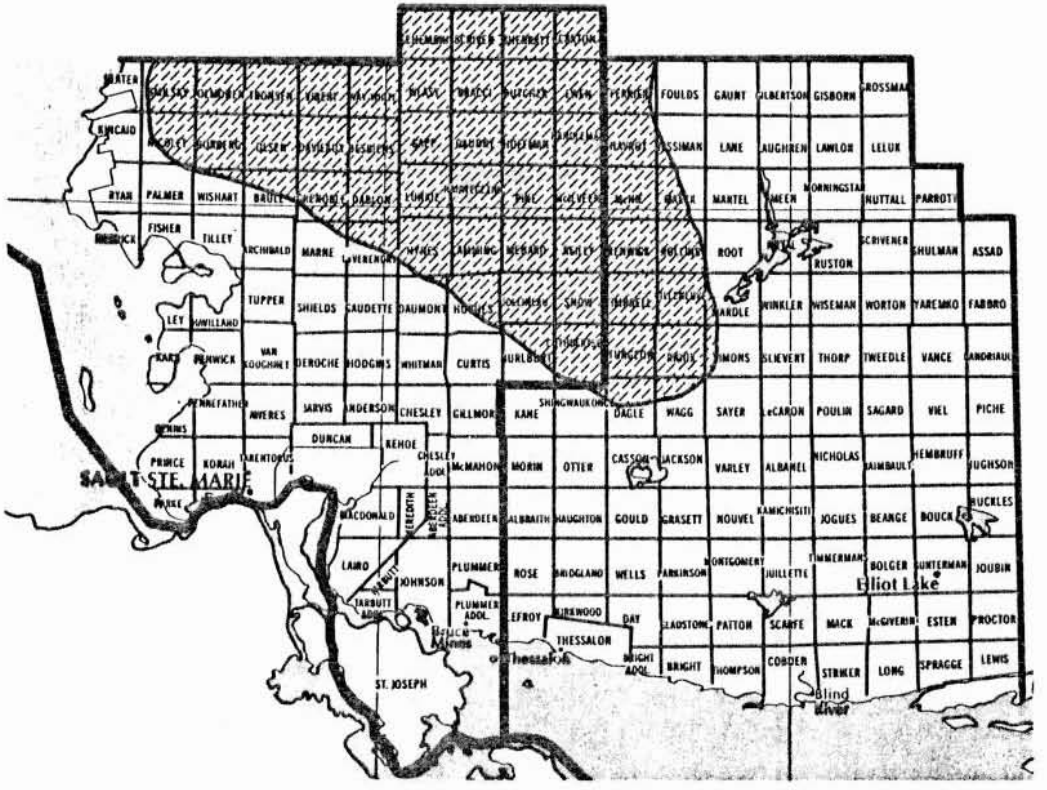
LEGEND

Moderate-to-severe defoliation

Scale

Kilometres 20 10 0 20

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



Spruce Budworm

Areas within which balsam fir whole tree and top mortality occurred in 1976

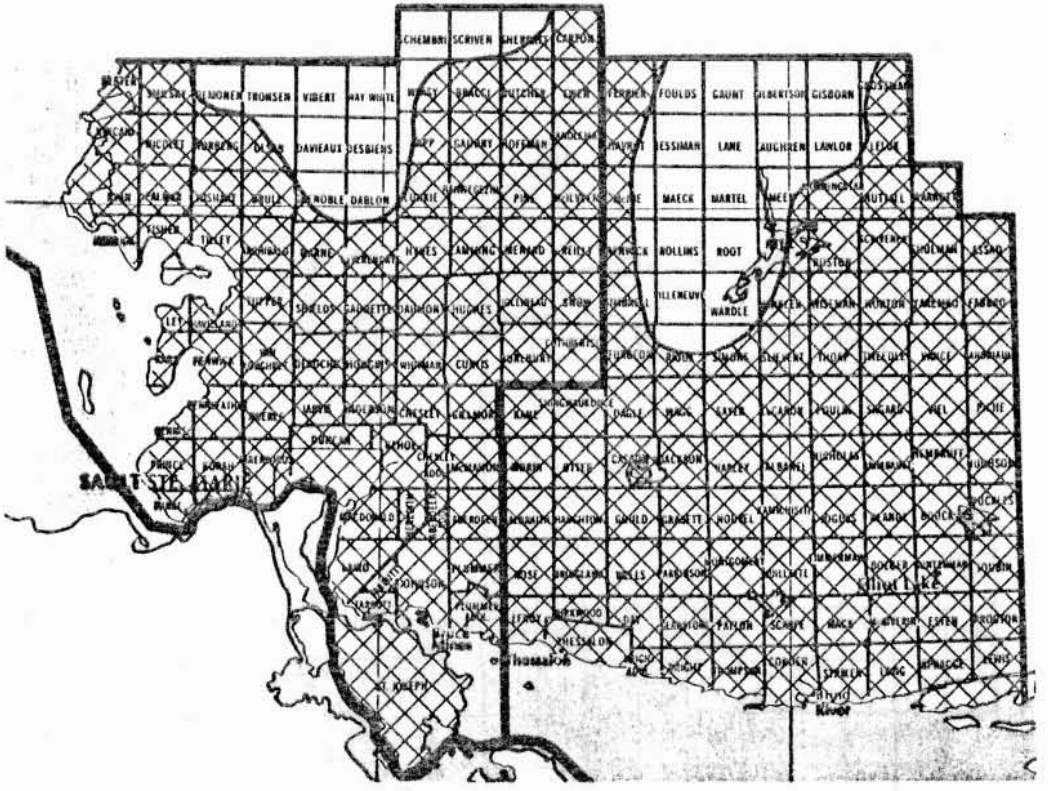
LEGEND

Mortality

Scale

Kilometres 20 10 0 20

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



Spruce Budworm

Areas within which defoliation occurred in 1977

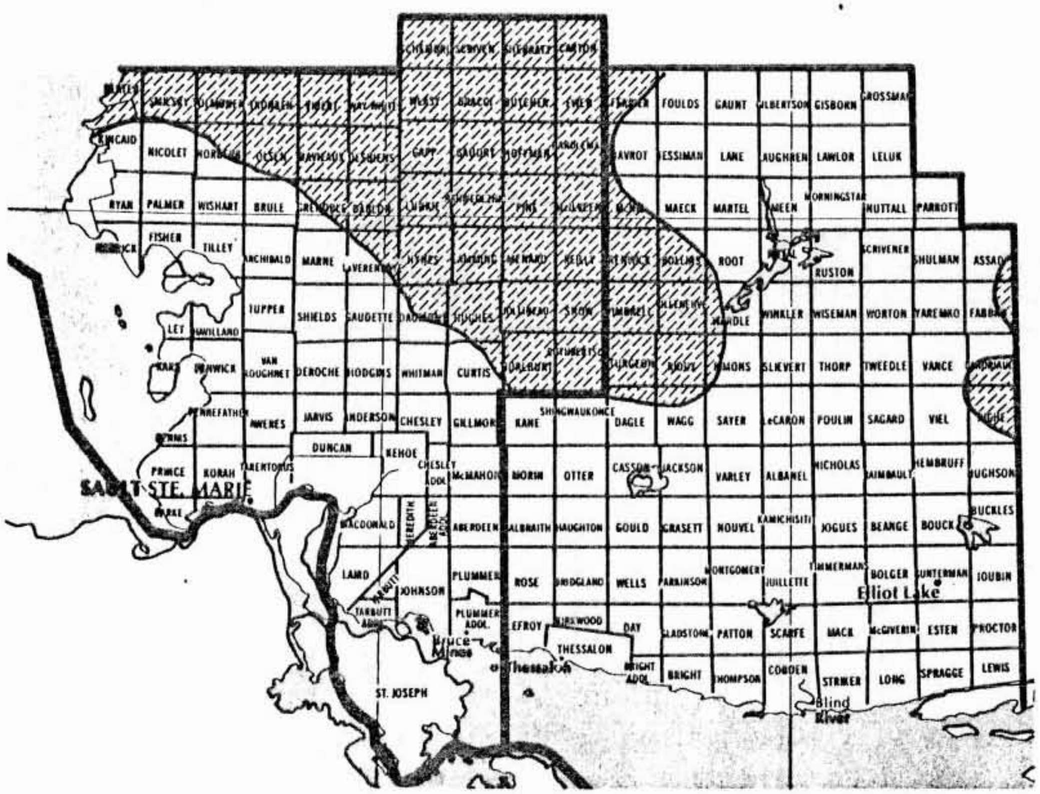
LEGEND

Moderate-to-severe defoliation

Scale

Kilometres 20 10 0 20

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



Spruce Budworm

Areas within which balsam fir whole tree and top mortality occurred in 1977

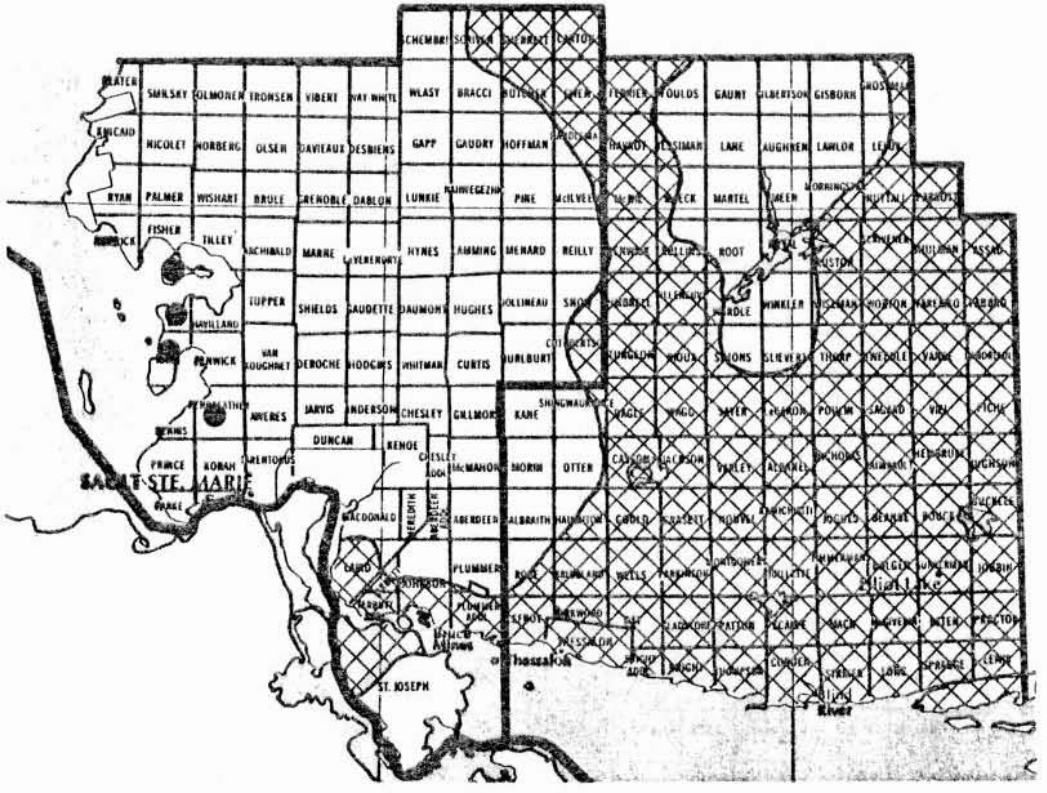
LEGEND

Mortality

Scale

Kilometres 20 10 0 20

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



Spruce Budworm

Areas within which defoliation occurred in 1978

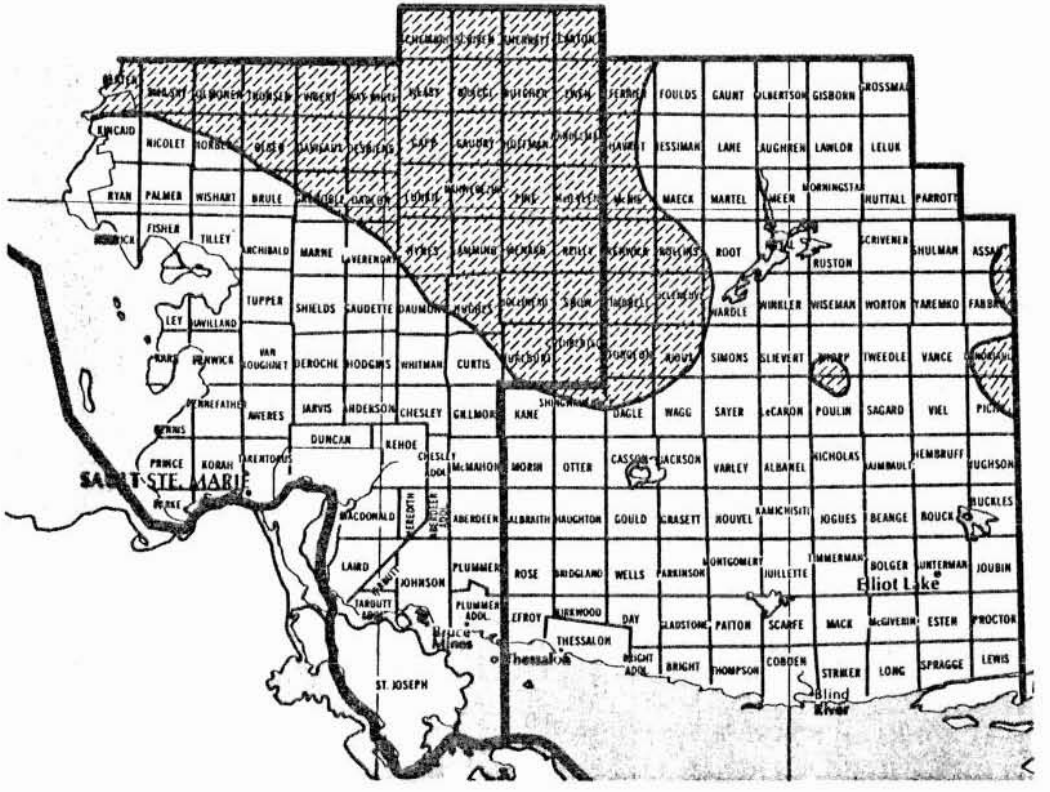
LEGEND

Moderate-to-severe defoliation ● or ▨

Scale

Kilometres 20 10 0 20

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



Spruce Budworm

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

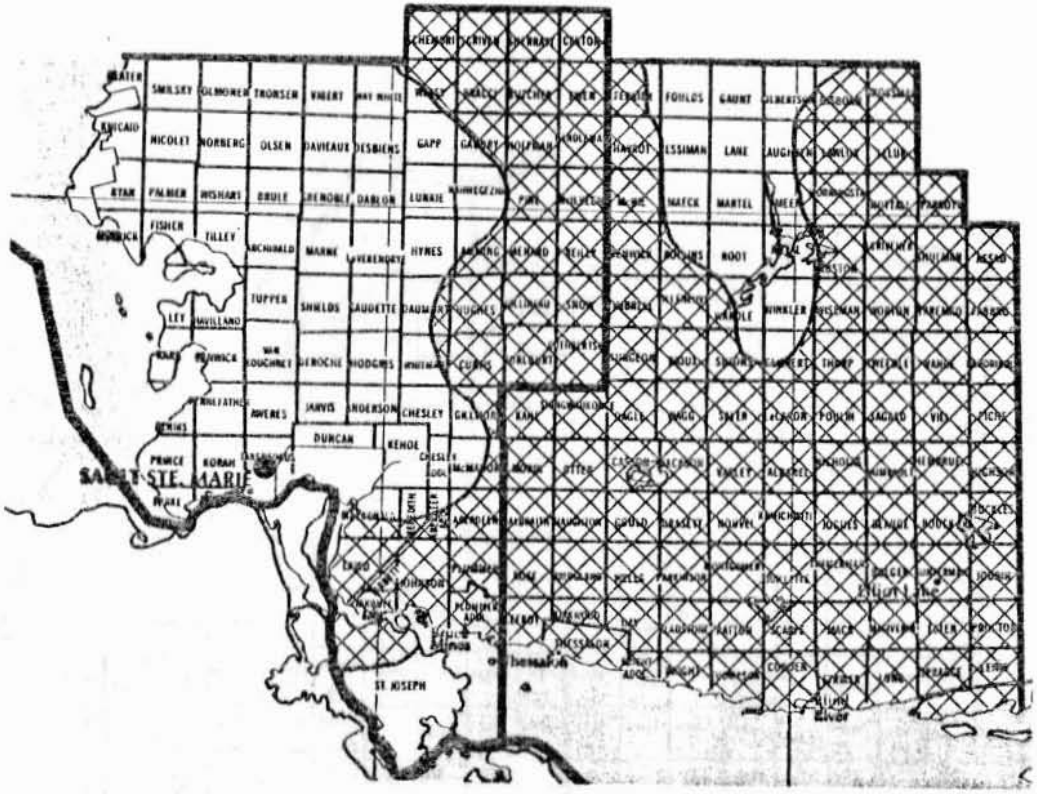
LEGEND

Mortality

Scale

Kilometres 20 10 0 20

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



Spruce Budworm

Areas within which defoliation occurred in 1979

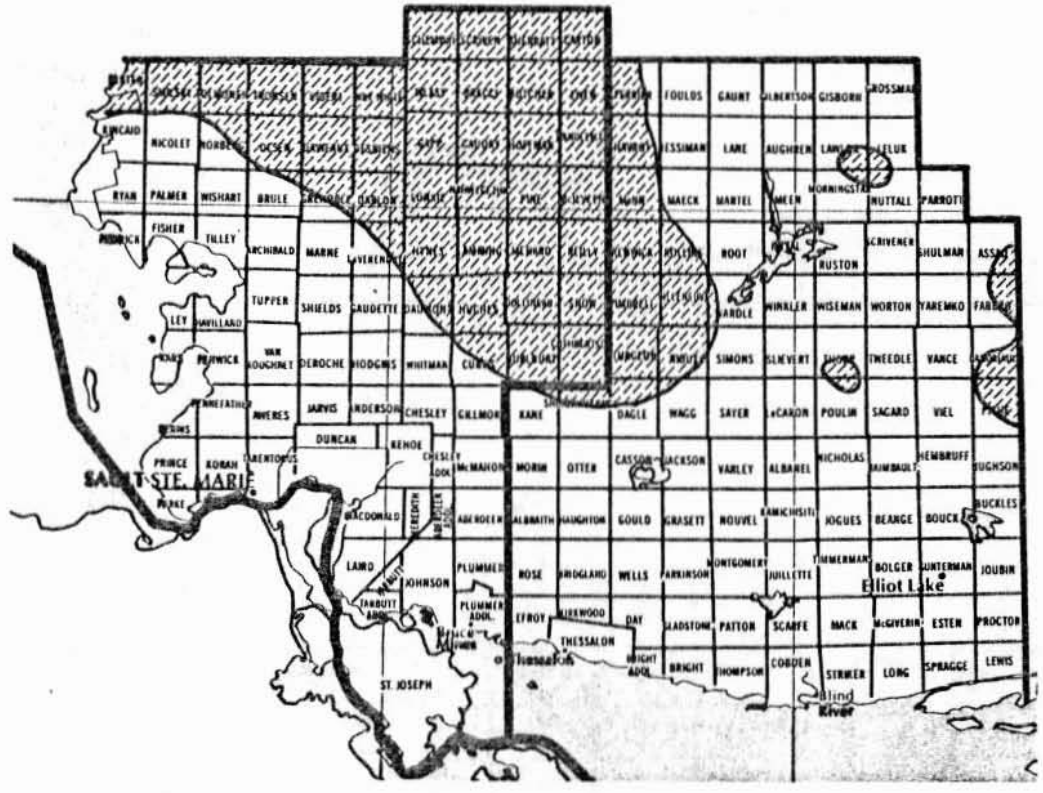
Scale

Kilometres 20 10 0 20

LEGEND

Moderate-to-severe defoliation ● or ▨

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



Spruce Budworm

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

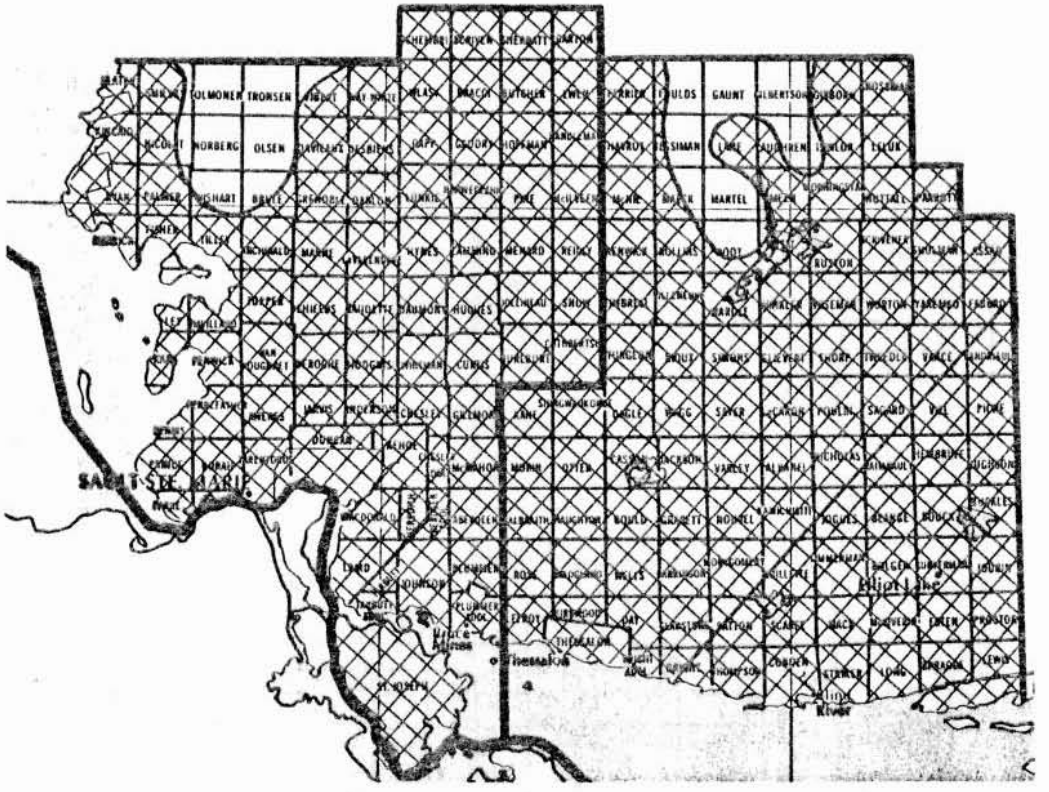
LEGEND

Mortality

Scale

Kilometres 20 10 0 20

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



Spruce Budworm

Areas within which defoliation occurred in 1980

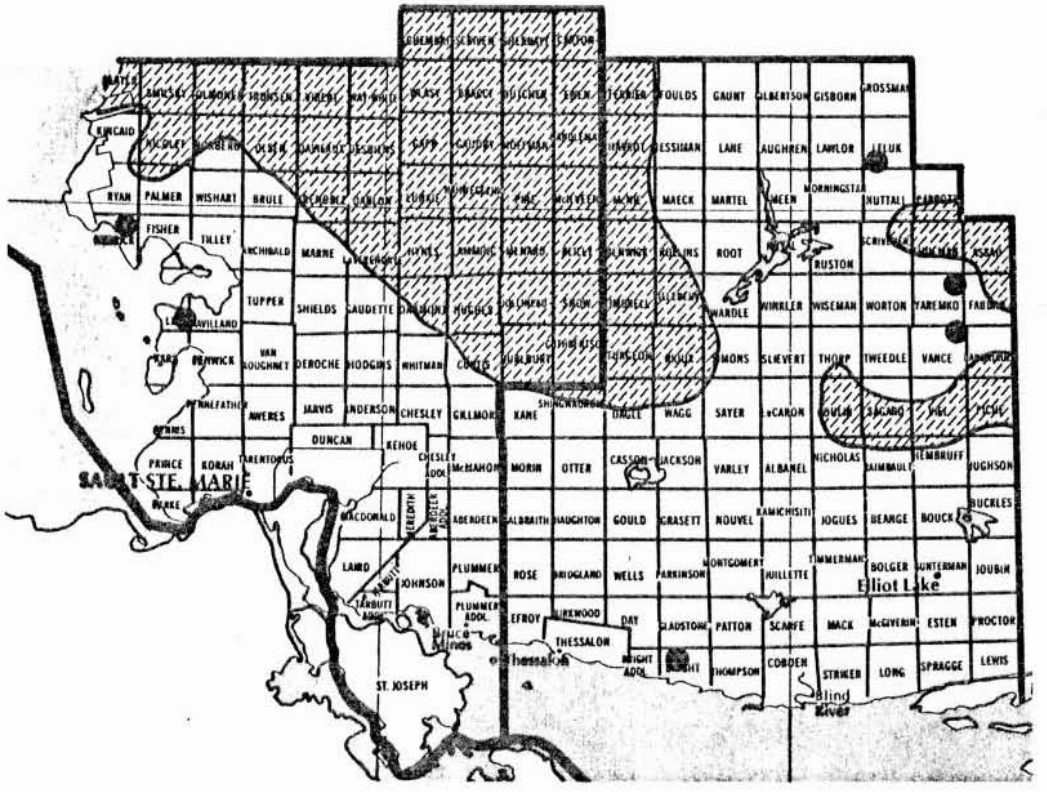
LEGEND

Moderate-to-severe defoliation

Scale

Kilometres 20 10 0 20

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



Spruce Budworm

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

LEGEND

Mortality ● or ▨

Scale

Kilometres 20 10 0 20

Jack Pine Budworm, *Choristoneura pinus pinus* Free.

Host(s): jack pine [Major]

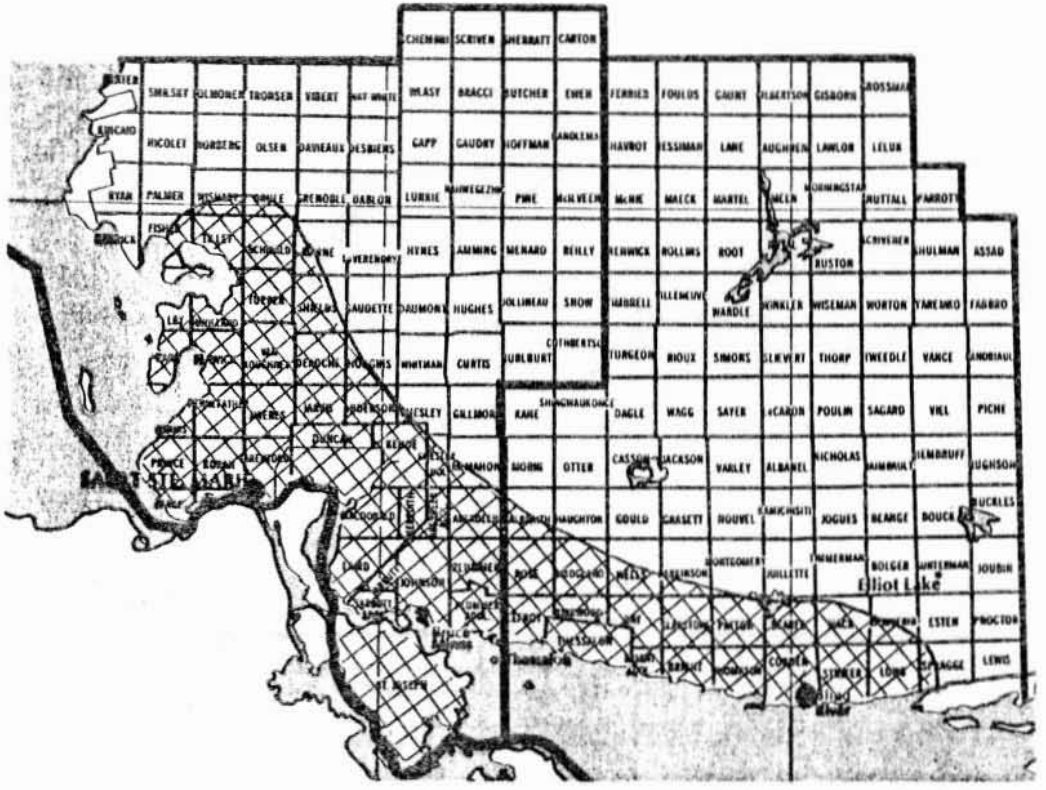
Year	Remarks
1950-1957	not reported
1958	light infestation in Bouck Twp
1959-1960	very low populations in Bouck Twp
1961-1965	not reported
1966	Severe defoliation occurred on red pine, jack pine and white pine trees in Kirkwood Twp.
1967	High populations persisted in Kirkwood Twp.
1968	Populations increased in the district. Severe defoliation occurred in a 1,300-ha area in Kirkwood Twp and in a small area in Sagard Twp.
1969	Populations continued in the Kirkwood area and at Mount Lake.
1970	A drastic decline in populations occurred in the Kirkwood area, with trace populations observed in the Mount Lake area.
1971	trace populations observed in the Mount Lake area.
1972-1973	not reported
1974	Population increases were reported in the Kirkwood area. Approximately 80 ha of red pine and jack pine trees were moderately defoliated in Kirkwood Twp and 28 ha of jack pine were lightly defoliated in Rose Twp.
1975	low populations reported in Kirkwood and Mount Lake areas
1976-1980	not reported

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

Host(s): oak [Major]

Year	Remarks
1950-1960	not reported
1961	small area of severe defoliation reported near Thessalon
1962	high populations observed in Kirkwood and Rose twps
1963	Severe defoliation occurred on red oak in Rose and Thessalon twps.
1964	not reported
1965	moderate defoliation reported on red oak near Thessalon
1966	Moderate defoliation persisted on red oak near Thessalon.
1967-1971	not reported
1972	increased populations reported from Sault Ste. Marie District border to Blind River
1973	a decline in populations, with only a small pocket of moderate defoliation, reported in Cobden Twp
1974	Severe defoliation occurred near Blind River and along the Mississagi River.
1975	Severe defoliation occurred in a band from the Sault Ste. Marie District boundary on the west to the Espanola District on the east (see map, page 47).
1976	Severe defoliation persisted in the district (see map, page 48).
1977	scattered pockets of severe defoliation reported in the district
1978	Low populations persisted at numerous locations. Some tree mortality occurred north of Blind River and near Algoma Mills.
1979	not reported
1980	Populations increased at numerous locations in the southern part of the district.

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



Oak Leaf Shredder

Areas within which defoliation occurred in 1975

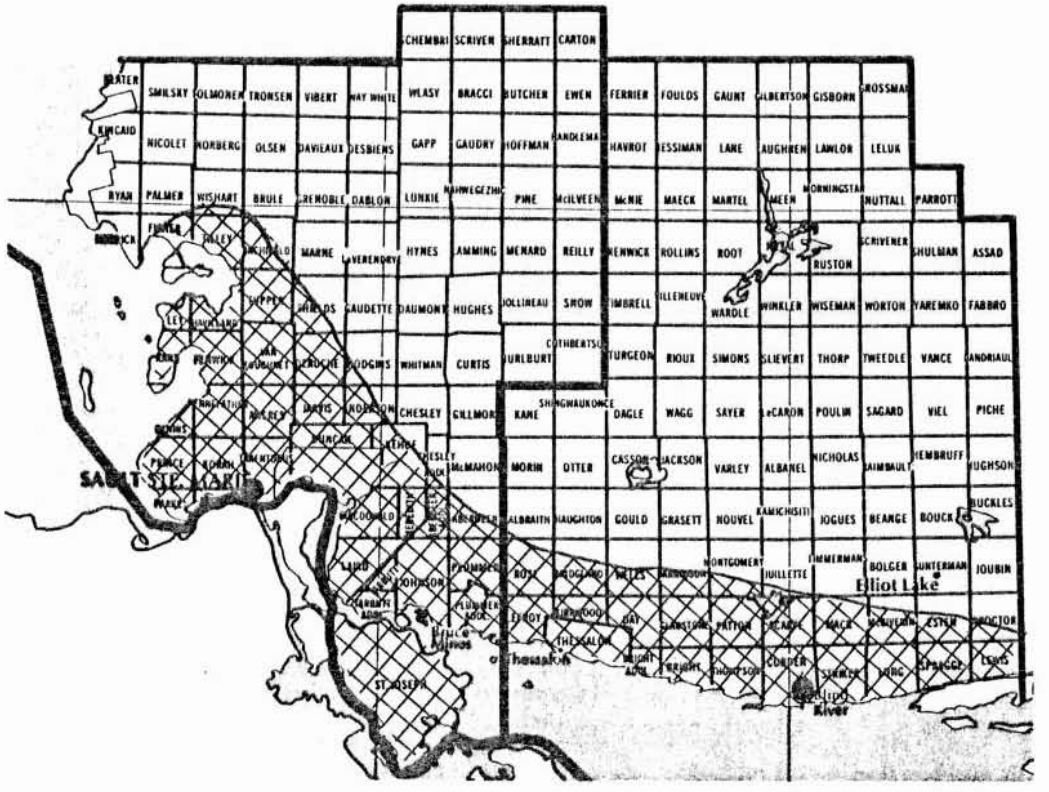
LEGEND

Moderate-to-severe defoliation

Scale

Kilometres 20 10 0 20

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



Oak Leaf Shredder

Areas within which defoliation occurred in 1976

LEGEND

Moderate-to-severe defoliation

Scale

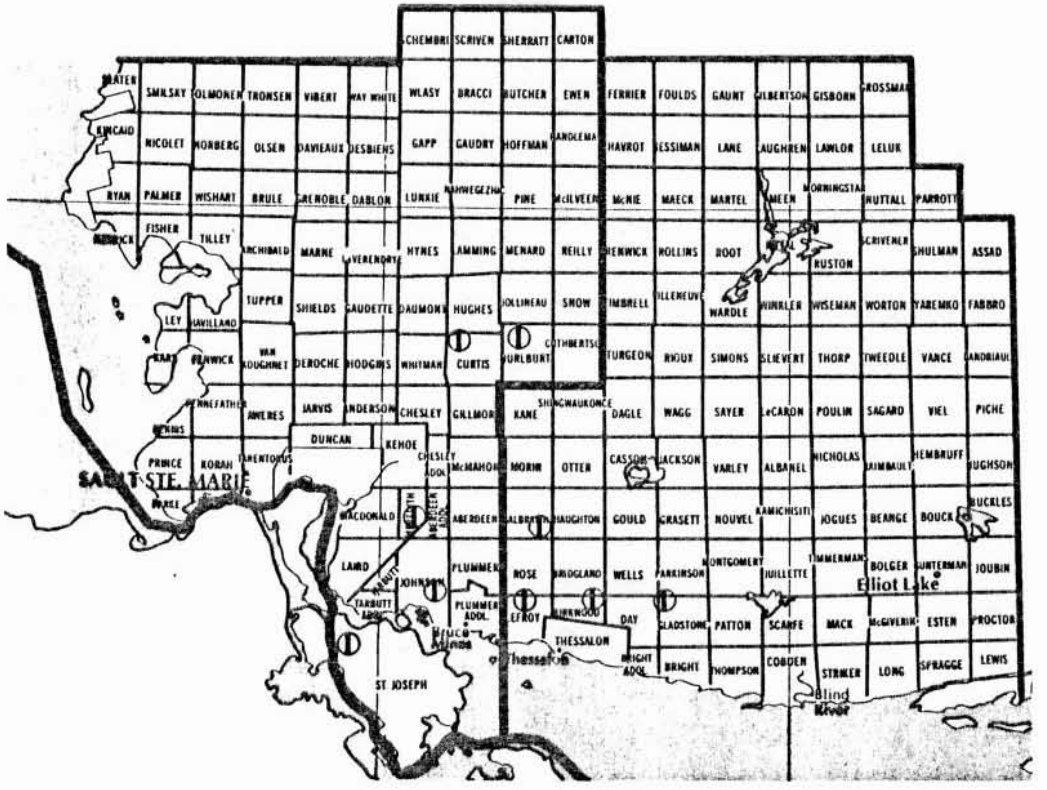
Kilometres 20 10 0 20

Greenstriped Mapleworm, *Dryocampa rubicunda rubicunda* (Fabr.)

Host(s): maple [Major]

Year	Remarks
1950	not reported
1951	moderate infestations reported in Bridgland, Lefroy and Kirkwood twps
1952	Moderate infestations persisted in Bridgland Twp
1953	light defoliation in Bridgland and Rioux twps
1954	light infestations in Bridgland, Rose and Galbraith twps
1955	very low populations
1956	a few larvae observed in Kirkwood area (see map, page 50)
1957	Light infestations reported at two locations (see map, page 51)
1958	Infestations declined to very low levels.
1959	low populations in the district
1960-1967	not reported
1968	moderate defoliation in Lefroy Twp
1969	not reported
1970-1971	low populations reported in Lefroy Twp
1972	low populations reported in Bridgland and Haughton twps
1973-1975	light-to-moderate defoliation observed in Bridgland Twp
1976	Low numbers were observed in Rose and Bridgland twps
1977	Low numbers were observed in Rose Twp.
1978	Low numbers were observed in Rose and Kirkwood twps.
1979	severe defoliation of red maple in Kirkwood Twp
1980	a marked increase in populations in Gladstone and Bouck twps

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



Greenstriped Mapleworm

Areas within which defoliation occurred in 1956

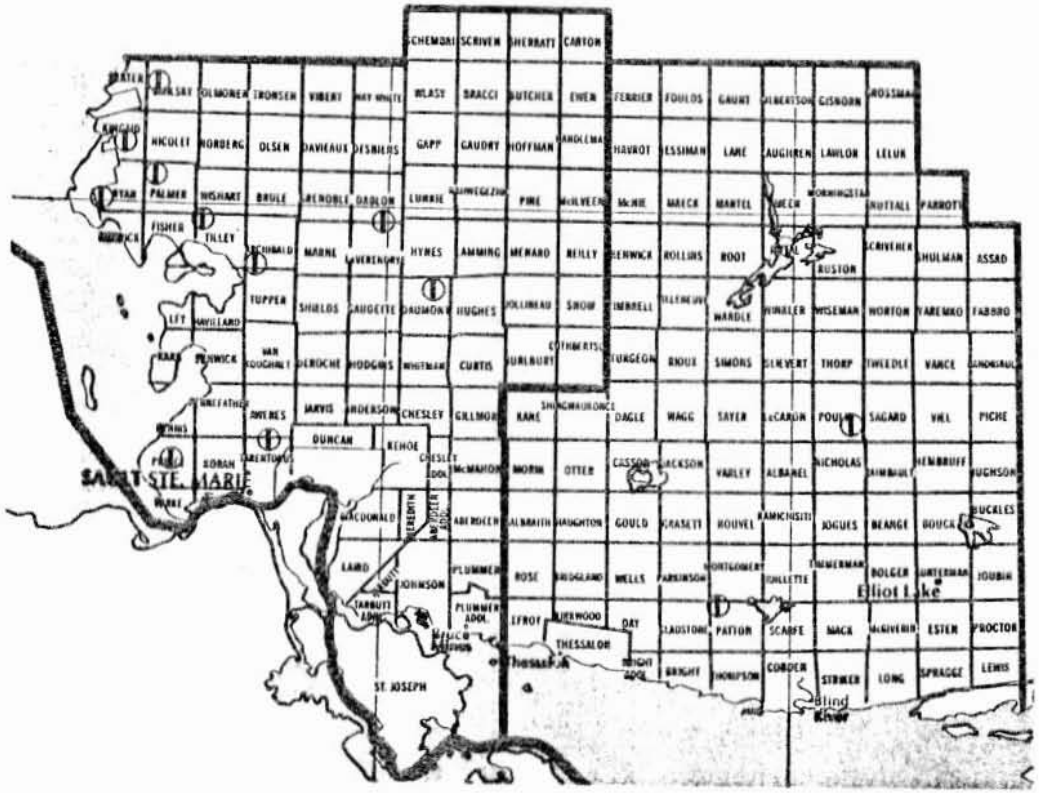
LEGEND

Light defoliation ◐

Scale

Kilometres 20 10 0 20

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



Greenstriped Mapleworm

Areas within which defoliation occurred in 1957

LEGEND

Light defoliation ◑

Scale

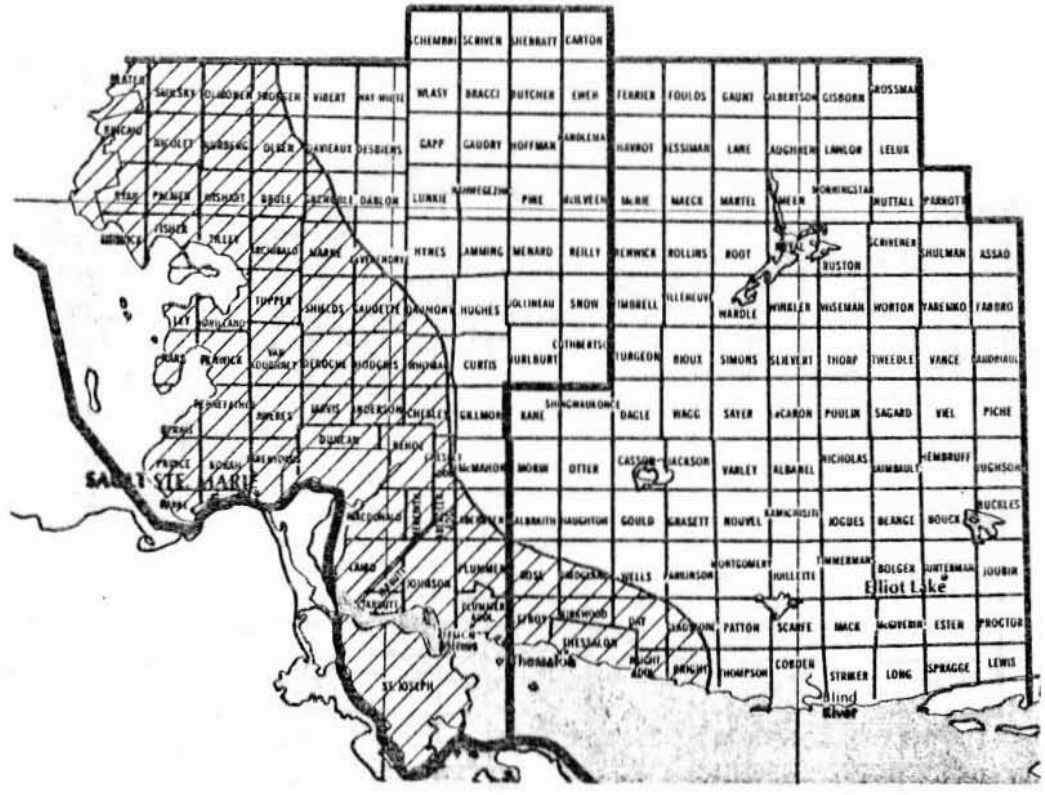
Kilometres 20 10 0 20

Linden Looper, *Erannis tiliaria* (Harr.)

Host(s): deciduous [Major]

Year	Remarks
1950	a slight increase in populations reported in Walls and Lefroy twps
1951	not reported
1952	low populations reported in Thessalon, Gladstone and Day twps
1953	low populations continued in the district
1954-1957	not reported
1958	trace populations reported
1959	light infestations reported in Gladstone and Day twps
1960	Light infestations persisted in Gladstone and Day twps.
1961-1967	not reported
1968	low populations reported in Parkinson Twp
1969-1974	not reported
1975	Light defoliation occurred in the southwestern part of the district (see map, page 53).
1976	Severe defoliation occurred in the northwest corner of the district and scattered pockets were observed along the North Channel (see map, page 54).
1977	Severe defoliation occurred in Striker, Scarfe, Kirkwood, Dagle and Sturgeon twps.
1978-1980	not reported

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



Linden Looper

Areas within which defoliation occurred in 1975

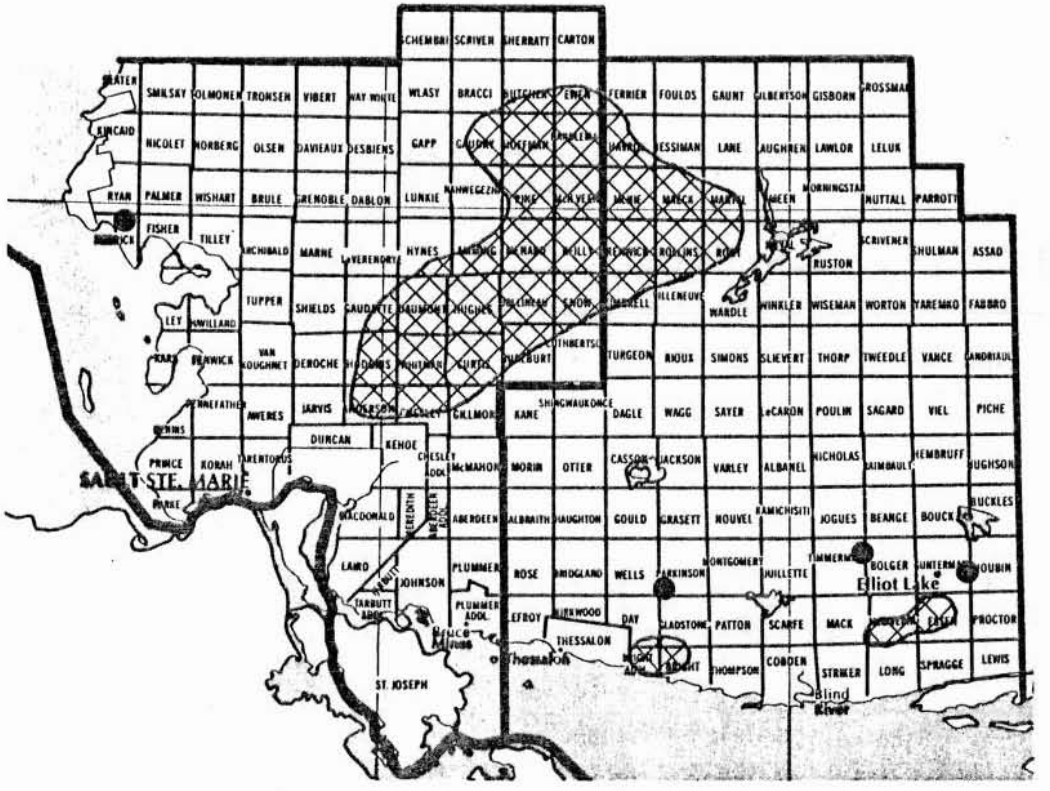
LEGEND

Light defoliation

Scale

Kilometres 20 10 0 20

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



Linden Looper

Areas within which defoliation occurred in 1976

LEGEND

Moderate-to-severe defoliation ● or ▨

Scale

Kilometres 20 10 0 20

Eastern Pine Shoot Borer, *Eucosma gloriola* Heinr.

Host(s): pine [Major]

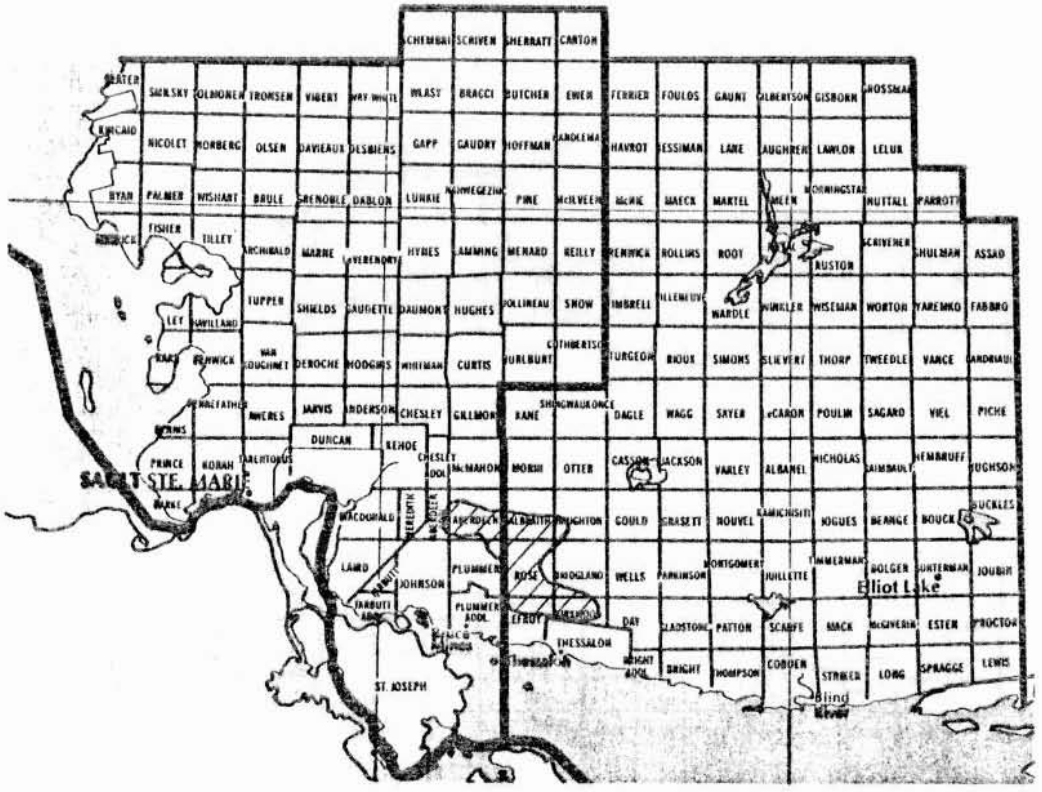
Year	Remarks
1950-1951	not reported
1952	High populations were observed in Rose and Kirkwood twps.
1953	Populations increased in Rose and Kirkwood twps.
1954	Light infestations persisted in Rose Twp, with no change in intensity.
1955	not reported
1956	very light damage reported in Kirkwood and Rose twps
1957	light damage observed in Kirkwood and Rose twps
1958-1959	Light damage persisted in Kirkwood and Rose twps.
1960	Populations increased in Kirkwood Twp.
1961	further increases in populations reported in Kirkwood Twp
1962	Populations increased in Rose, Parkinson and Thessalon twps.
1963	notable increases in plantations throughout Casson, Parkinson, Haughton and Bridgland twps
1964	High populations persisted in Haughton, Parkinson and Bridgland twps.
1965	A general decline in populations was observed in the Kirkwood area.
1966	A further decline in populations occurred in the Kirkwood area.
1967	Trace populations occurred in the district.
1968-1977	not reported
1978-1980	low populations reported in Patton Twp

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

Host(s): spruce [Major]

Year	Remarks
1950	Light defoliation persisted in parts of Galbraith, Lefroy, Kirkwood, Bridgland and most of Rose twps (see map, page 57).
1951	increases in larval populations in Rose, Lefroy, Kirkwood, Thessalon and Day twps (see map, page 58)
1952	Infestations increased in the district (see map, page 59).
1953	Populations declined in Rose, Lefroy, Wells and Gladstone twps.
1954	Light infestations persisted in the Thessalon-Iron Bridge area (see map, page 60).
1955	very low populations observed in the Thessalon area
1956	very low populations observed in the Thessalon area (see map, page 61)
1957	comparable to 1956 populations
1958-1959	Low populations persisted in the district (see maps, pages 62 and 63).
1960-1967	Low populations were general in the district.
1968-1980	not reported

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



European Spruce Sawfly

Areas within which defoliation occurred in 1950

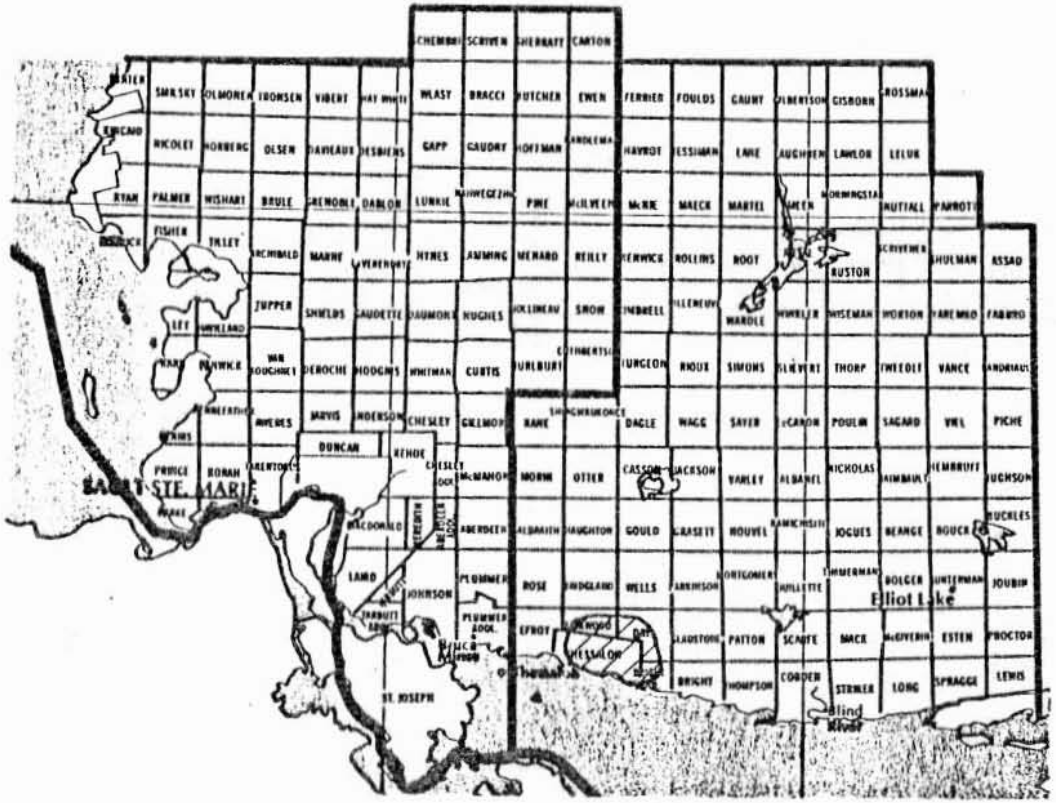
LEGEND

Light defoliation

Scale

Kilometres 20 10 0 20

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



European Spruce Sawfly

Areas within which defoliation occurred in 1951

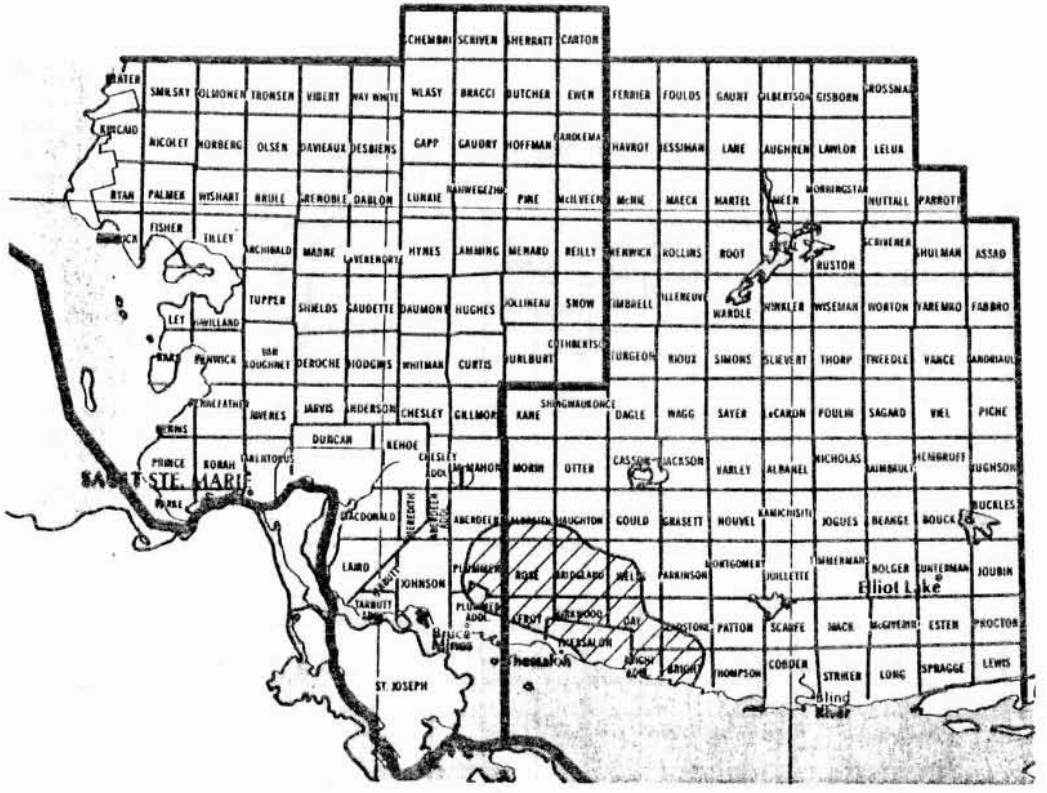
LEGEND

Light defoliation

Scale

Kilometres 20 10 0 20

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



European Spruce Sawfly

Areas within which defoliation occurred in 1952

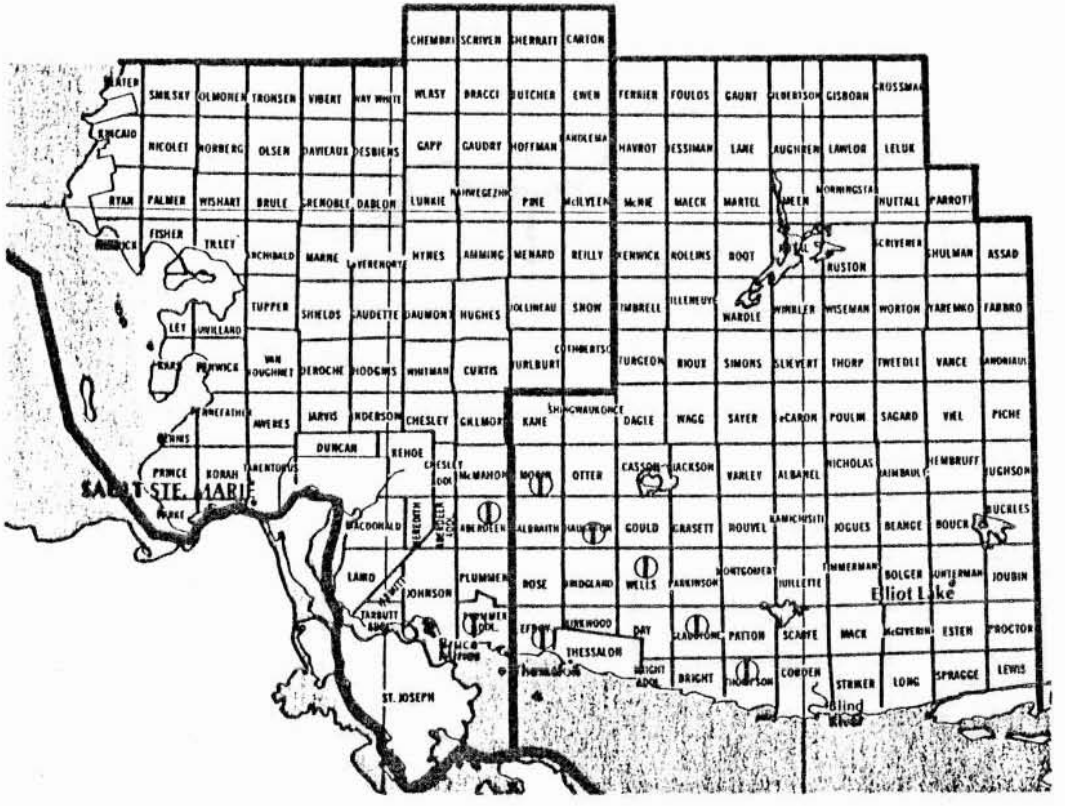
LEGEND

Light defoliation ◐ or ▨

Scale

Kilometres 20 10 0 20

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



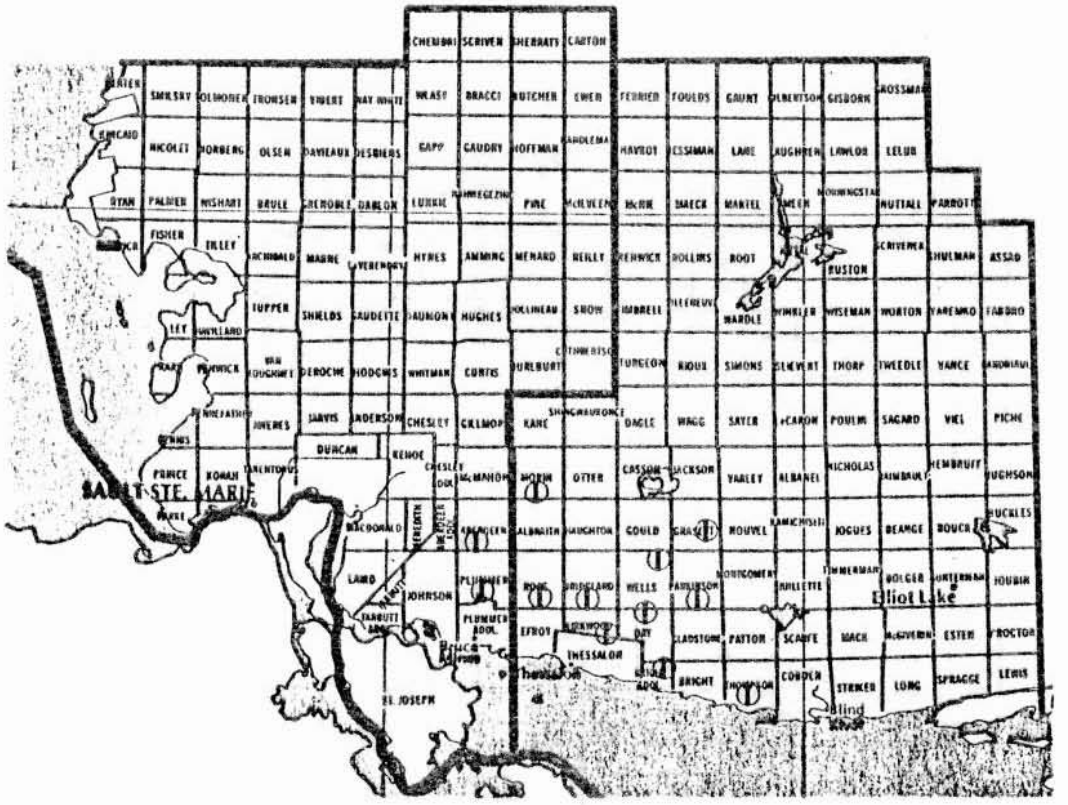
European Spruce Sawfly

Areas within which defoliation occurred in 1954

LEGEND

Light defoliation ◐

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



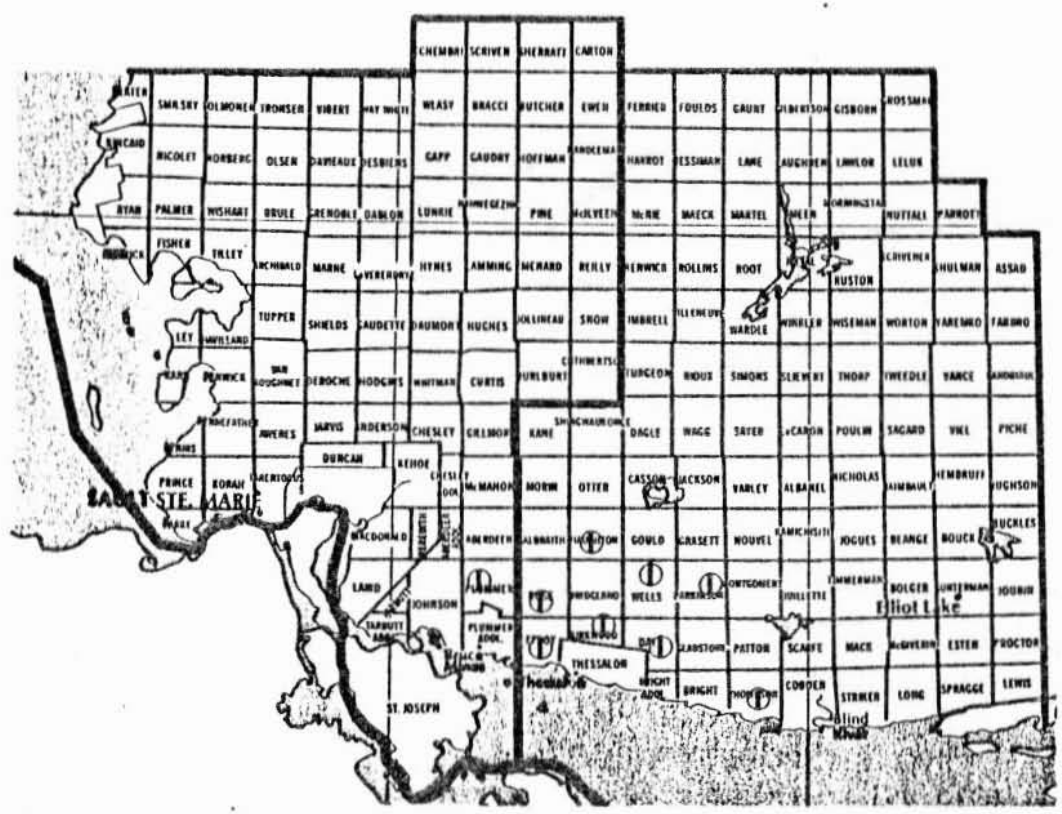
European Spruce Sawfly

Areas within which defoliation occurred in 1956

LEGEND

Light defoliation ◐

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



European Spruce Sawfly

Areas within which defoliation occurred in 1958

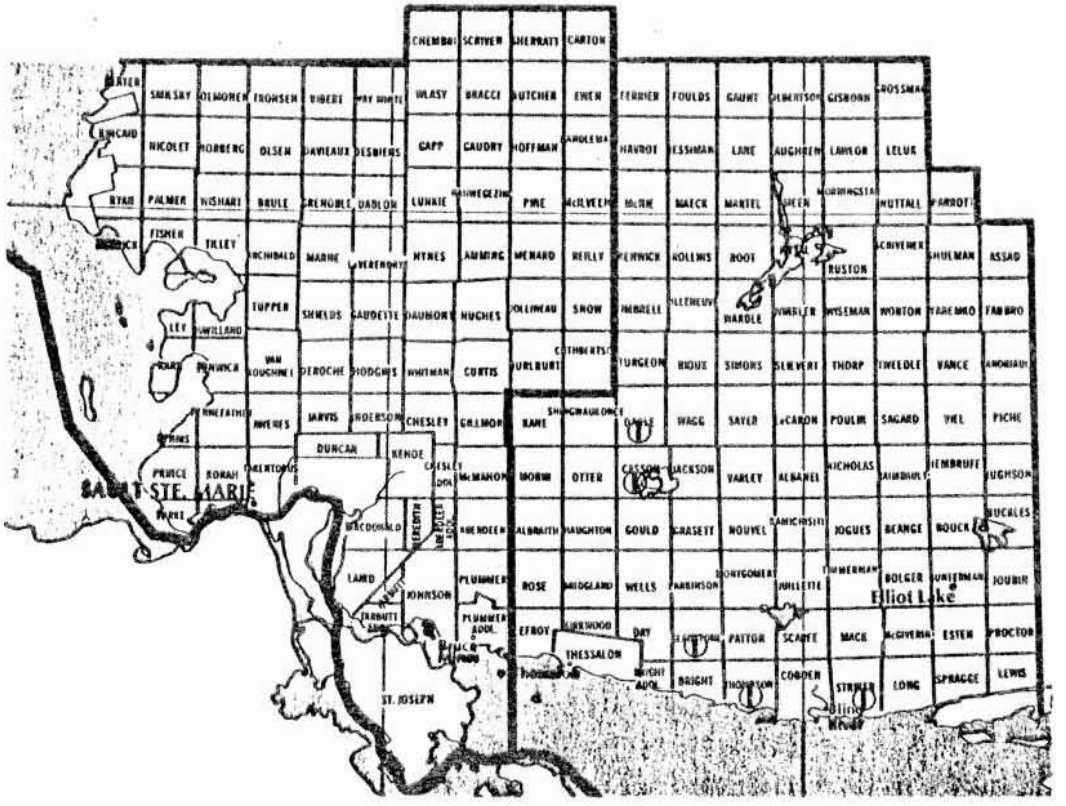
LEGEND

Light defoliation ①

Scale

Kilometres 20 10 0 20

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



European Spruce Sawfly

Areas within which defoliation occurred in 1959

LEGEND

Light defoliation ◐

Scale

Kilometres 20 10 0 20

Forest Tent Caterpillar, *Malacosoma disstria* Hbn.

Host(s): aspen, deciduous [Major]

Year	Remarks
1950	A band of severe defoliation occurred across the southern half of the district (see map, page 66).
1951	An increase in moderate-to-severe defoliation occurred to the north (see map, page 67).
1952	moderate-to-severe defoliation in the northern part of the district and a decline in populations in the southwestern part (see map, page 68)
1953	Moderate-to-severe defoliation occurred in five small pockets in the central and northern parts of the district (see map, page 69).
1954-1958	not reported
1959-1960	low populations
1961	not reported
1962	Populations increased in the southwestern corner of the district.
1963	Adverse weather conditions in the spring resulted in the death of numerous immature larvae in the above areas.
1964	An area of severe defoliation occurred near Blind River in Patton, Thompson, Cobden and Scarfe twps. Light defoliation occurred in Day and Gladstone twps (see map, page 70).
1965	Infestations increased from 200 km^2 to 1100 km^2 in the Blind River area (see map, page 71).
1966	little change in infestations in the Blind River area (see map, page 72).
1967	Infestations increased in the Blind River and Thessalon areas (see map, page 73).
1968	A decline in infestation intensity occurred in the Blind River area (see map, page 74).

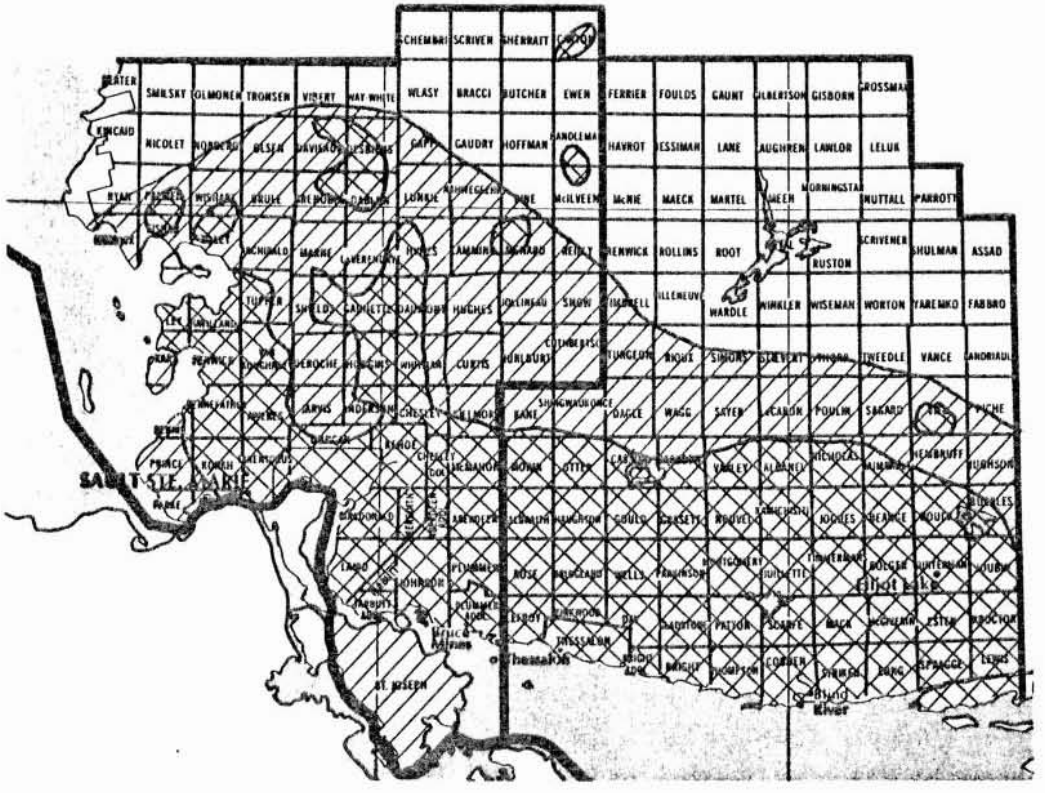
(cont'd)

Forest Tent Caterpillar, *Malacosoma disstria* Hbn. (concl.)

Host(s): aspen, deciduous [Major]

Year	Remarks
1969	Populations declined. The largest pocket of severe defoliation was 390 km^2 in the Elliot Lake area, with smaller pockets ranging from 3 to 50 km^2 in the Blind River area.
1970	Populations declined to light intensity in the Blind River and Elliot Lake areas.
1971-1975	not reported
1976	severe defoliation reported in Patton Twp
1977-1980	not reported

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



Forest Tent Caterpillar

Areas within which defoliation occurred in 1950

LEGEND

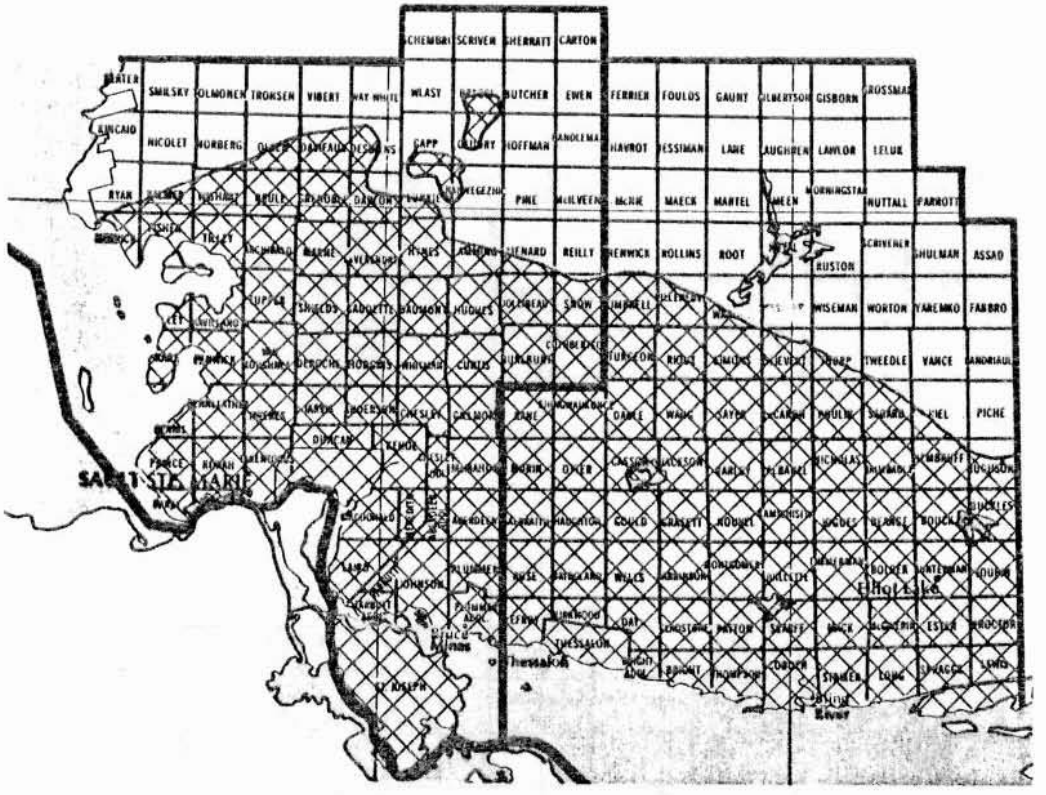
Light defoliation

Moderate-to-severe defoliation

Scale

Kilometres 20 10 0 20

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



Forest Tent Caterpillar

Areas within which defoliation occurred in 1951

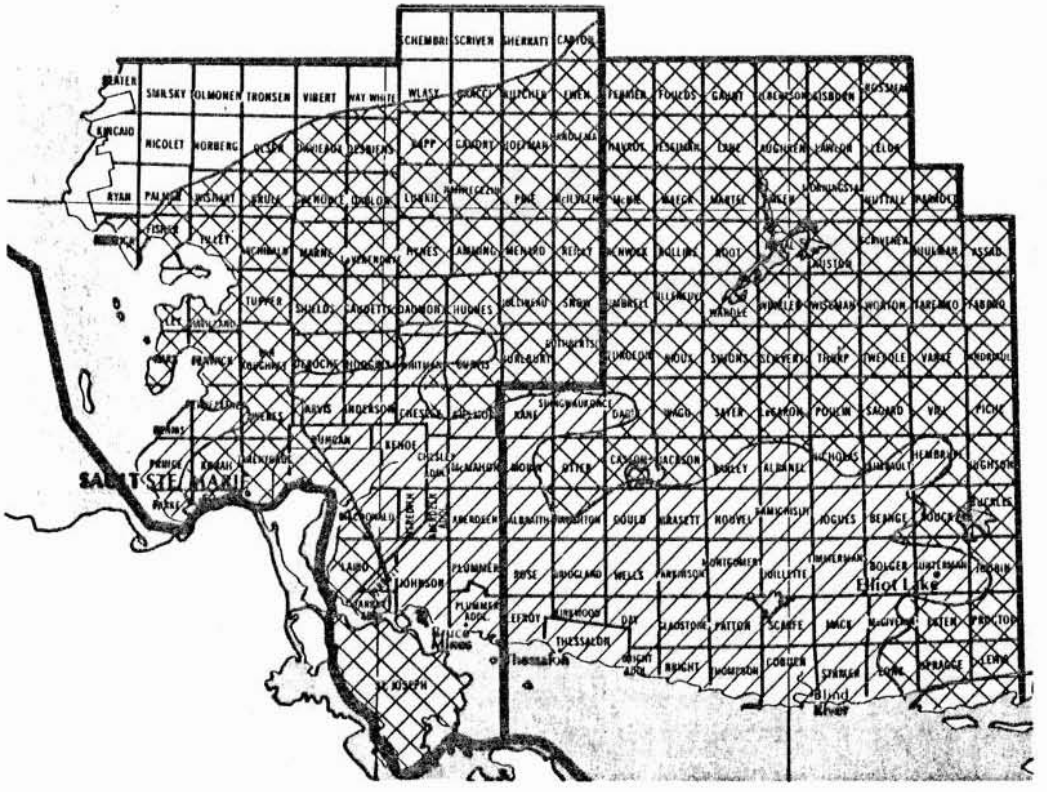
LEGEND

Moderate-to-severe defoliation

Scale

Kilometres 20 10 0 20

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



Forest Tent Caterpillar

Areas within which defoliation occurred in 1952

LEGEND

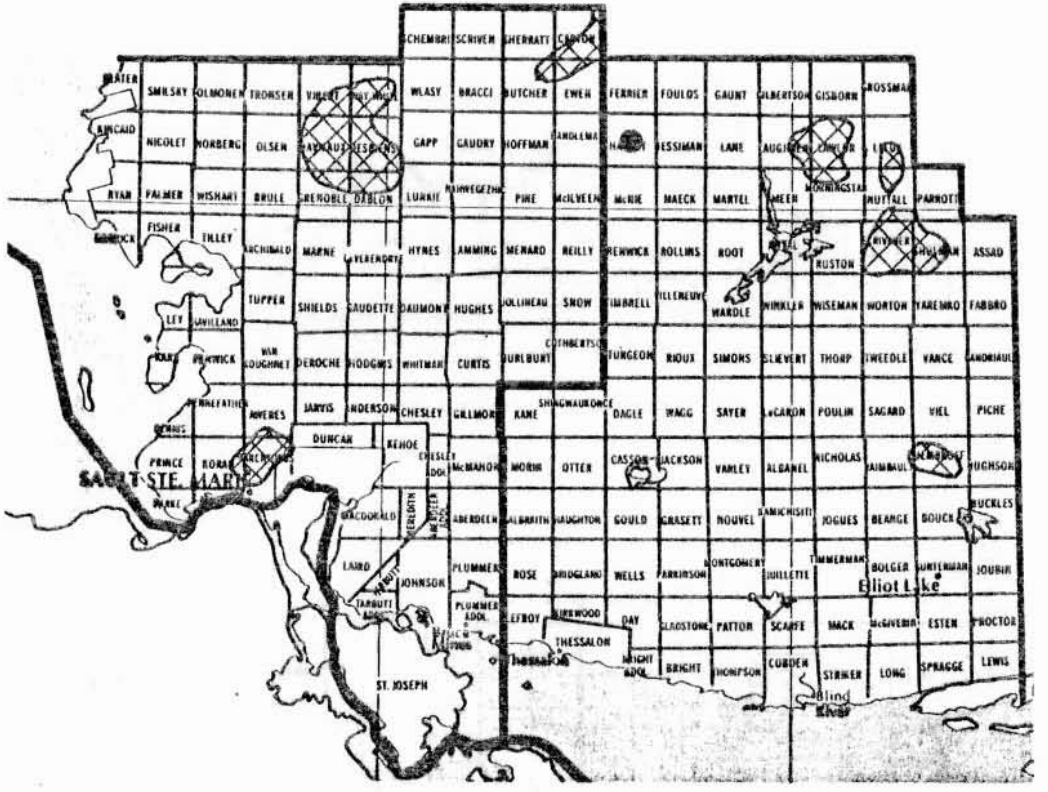
Light defoliation

Moderate-to-severe defoliation

Scale

Kilometres 20 10 0 20

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



Forest Tent Caterpillar

Areas within which defoliation occurred in 1953

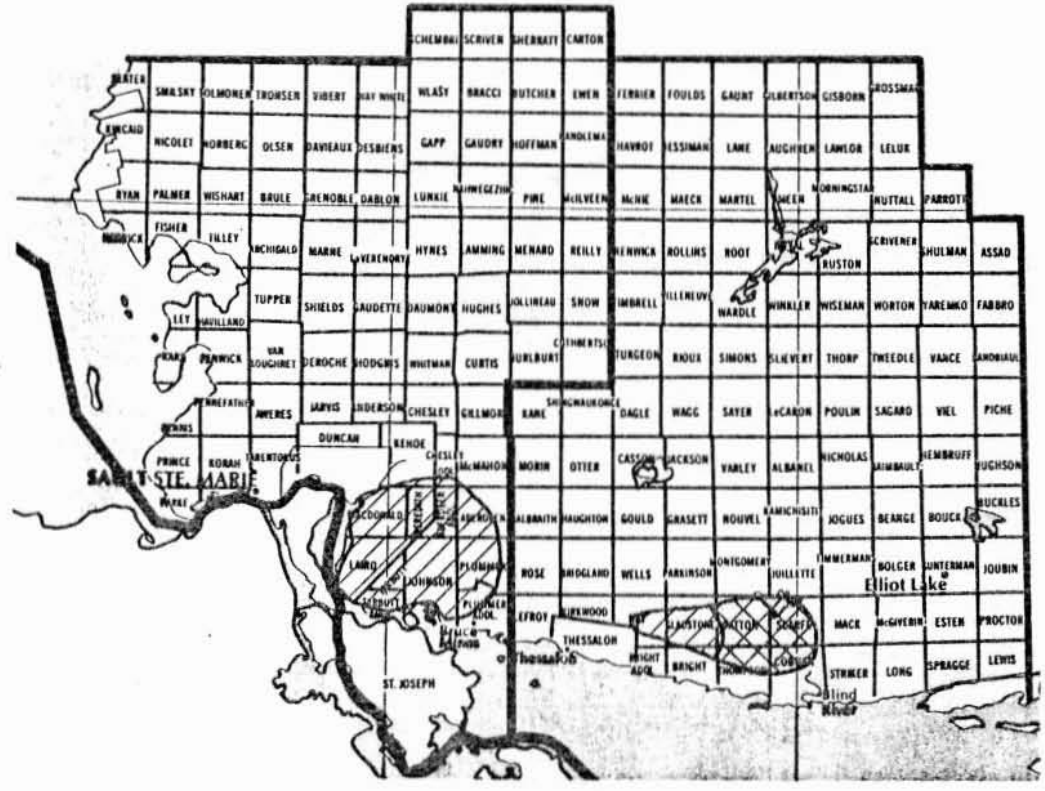
LEGEND

Moderate-to-severe defoliation ● or ▨

Scale

Kilometres 20 10 0 20

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



Forest Tent Caterpillar

Areas within which defoliation occurred in 1964

LEGEND

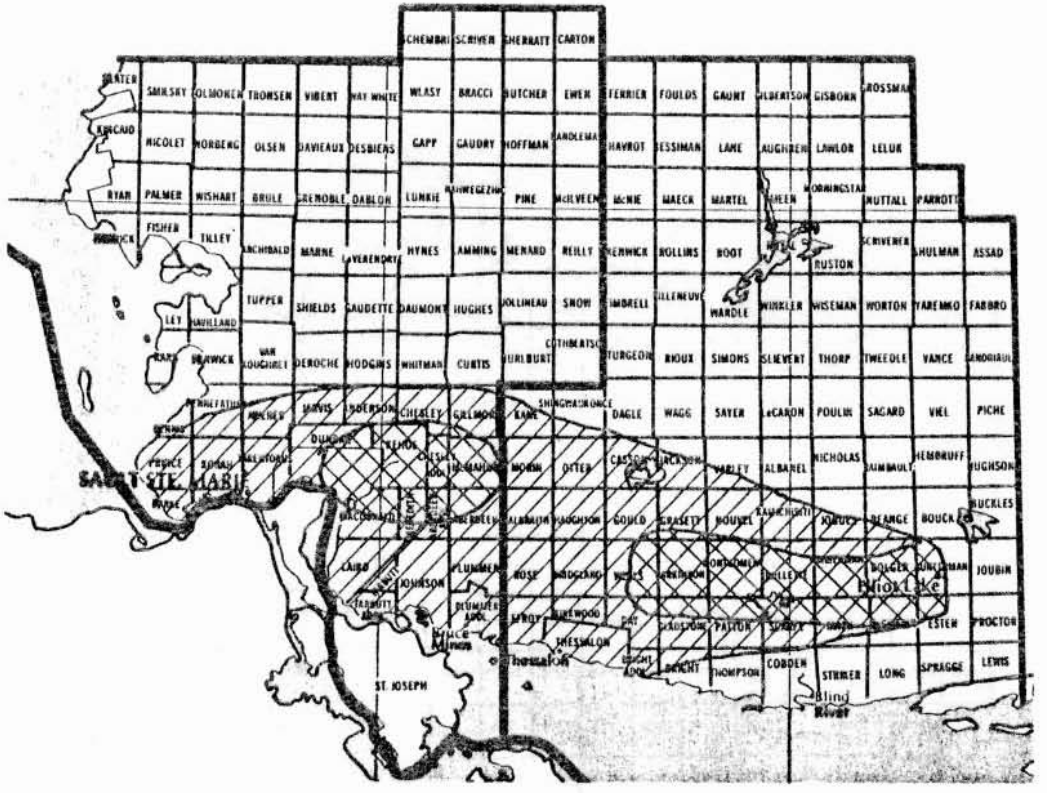
Light defoliation

Moderate-to-severe defoliation

Scale

Kilometres 20 10 0 20

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



Forest Tent Caterpillar

Areas within which defoliation occurred in 1965

LEGEND

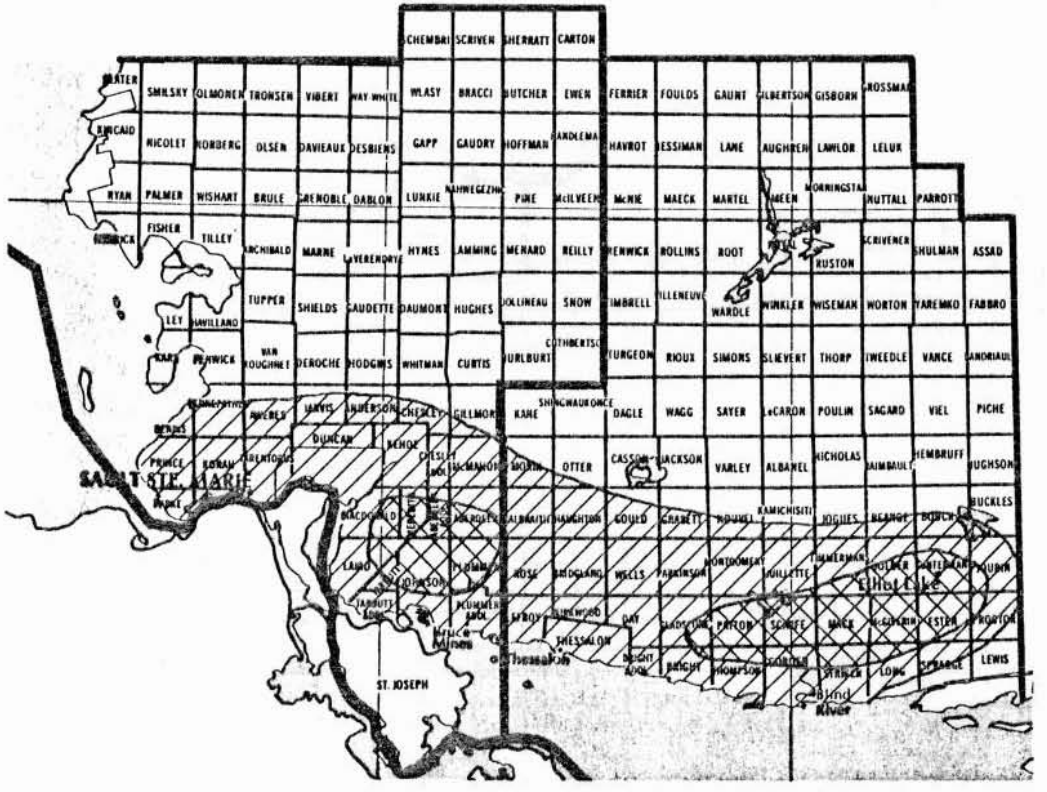
Light defoliation

Moderate-to-severe defoliation

Scale

Kilometres 20 10 0 20

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



Forest Tent Caterpillar

Areas within which defoliation occurred in 1966

LEGEND

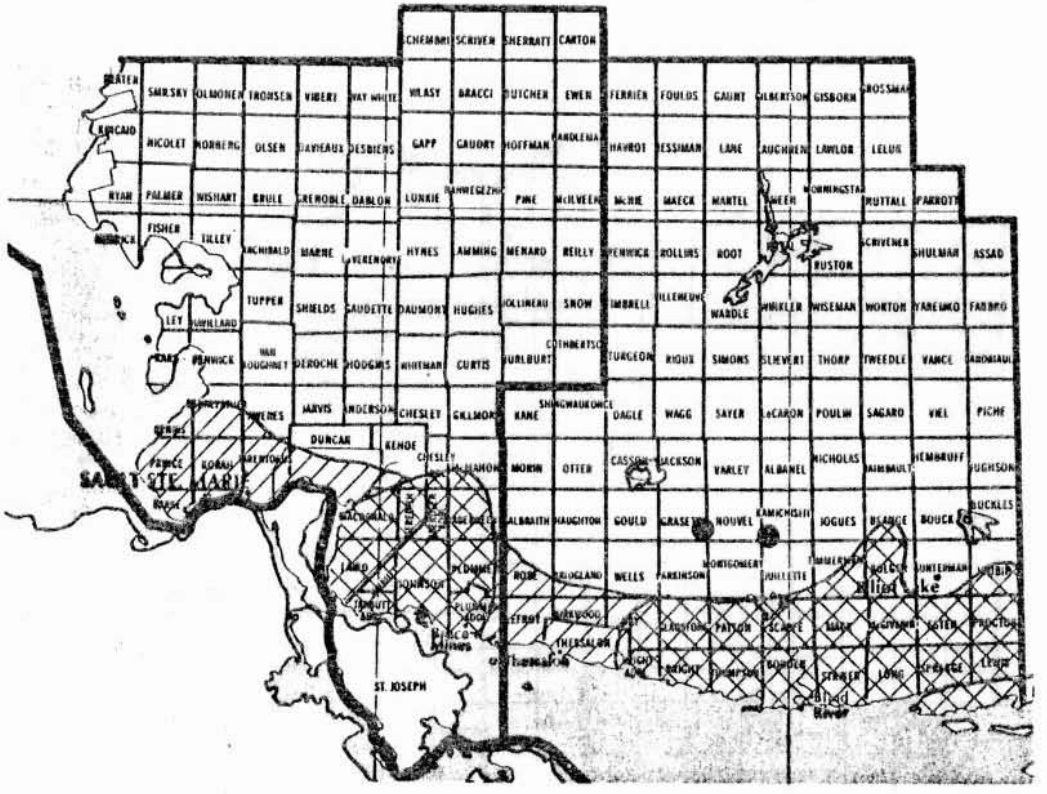
Light defoliation

Moderate-to-severe defoliation

Scale

Kilometres 20 10 0 20

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



Forest Tent Caterpillar

Areas within which defoliation occurred in 1967

LEGEND

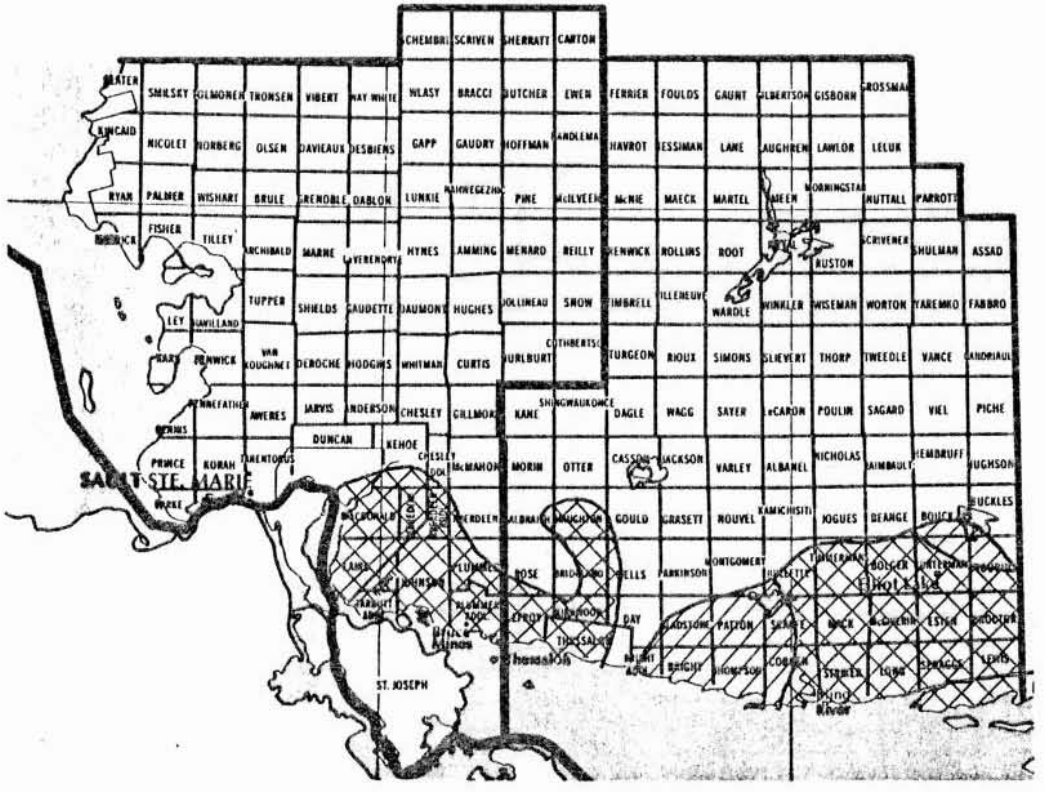
Light defoliation

Moderate-to-severe defoliation ● or

Scale

Kilometres 20 10 0 20

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



Forest Tent Caterpillar

Areas within which defoliation occurred in 1968

LEGEND

Light defoliation

Moderate-to-severe defoliation

Scale

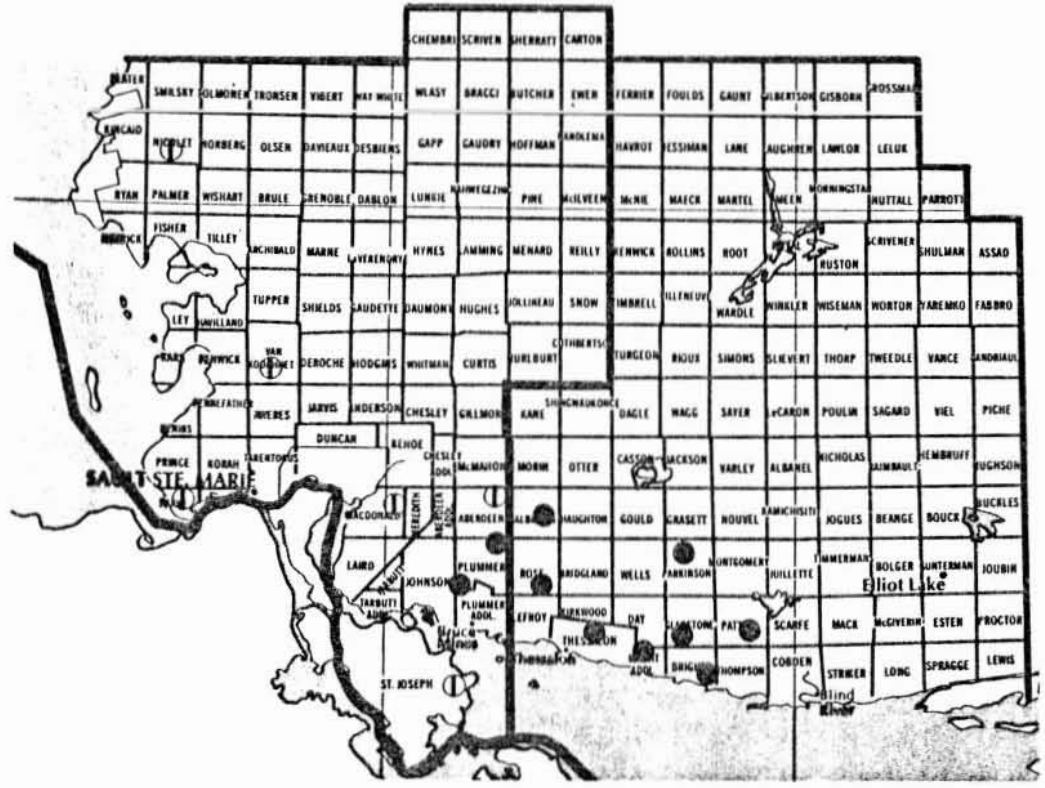
Kilometres 20 10 0 20

Balsam Fir Sawfly, *Neodiprion abietis* complex

Host(s): bF [Major]

Year	Remarks
1950	individual trees severely defoliated in the southwestern part of the district (see map, page 76)
1951	Moderate-to-severe defoliation of balsam fir occurred in Bright and Thompson twps (see map, page 77).
1952	Little change in infestations occurred. Moderate-to-severe defoliation was reported at seven locations and light defoliation at four locations (see map, page 78).
1953	Moderate-to-severe defoliation was reported at five locations and light defoliation occurred at eight locations (see map, page 79).
1954	Populations declined in Thessalon, Bright and Thompson twps and were light elsewhere in the district (see map, page 80).
1955	low populations observed throughout the district
1956-1958	not reported
1959	Light defoliation occurred in Thompson, Cobden and Proctor twps (see map, page 81).
1960	Sharp increases in populations were reported in Bright Twp; elsewhere low populations were reported (see map, page 82).
1961	Populations increased sharply in Johnson and Parkinson twps.
1962	Further increases in populations occurred in Johnson and Parkinson twps.
1963	Severe defoliation persisted in Parkinson and Johnson twps.
1964	decline in defoliation in Parkinson and Johnson twps
1965	few larvae found in the district
1966-1980	not reported

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



Balsam Fir Sawfly

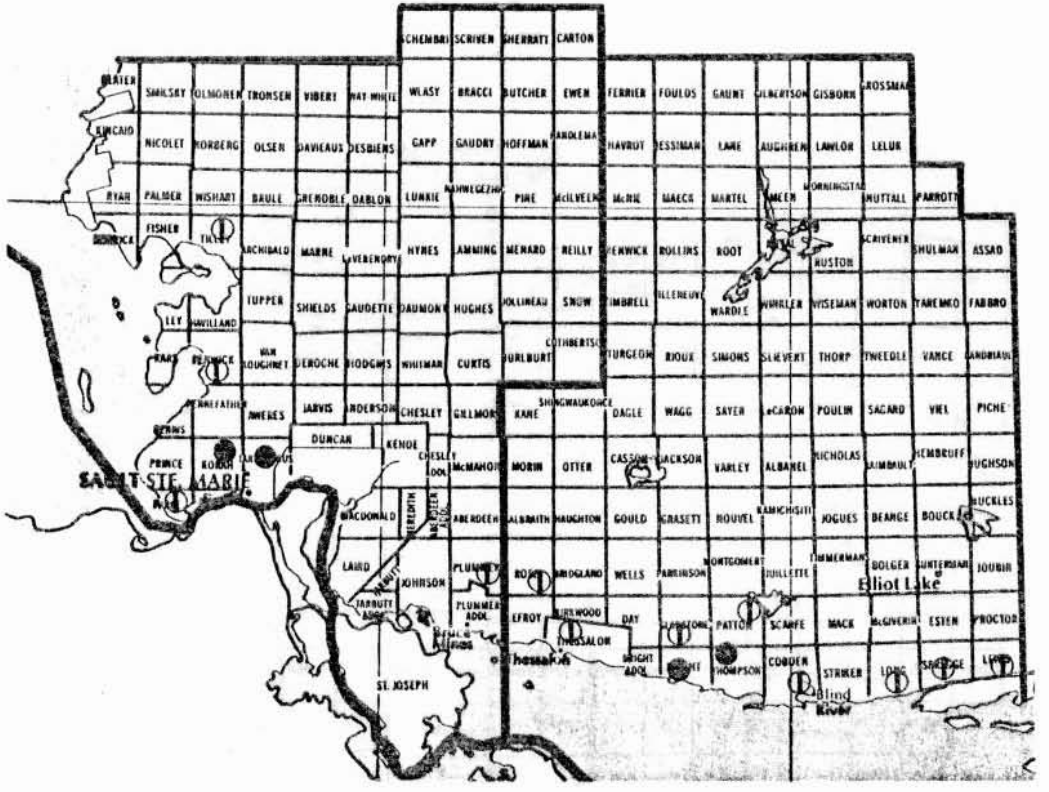
Areas within which defoliation occurred in 1950

LEGEND

Light defoliation ◐

Moderate-to-severe defoliation ●

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



Balsam Fir Sawfly

Areas within which defoliation occurred in 1951

LEGEND

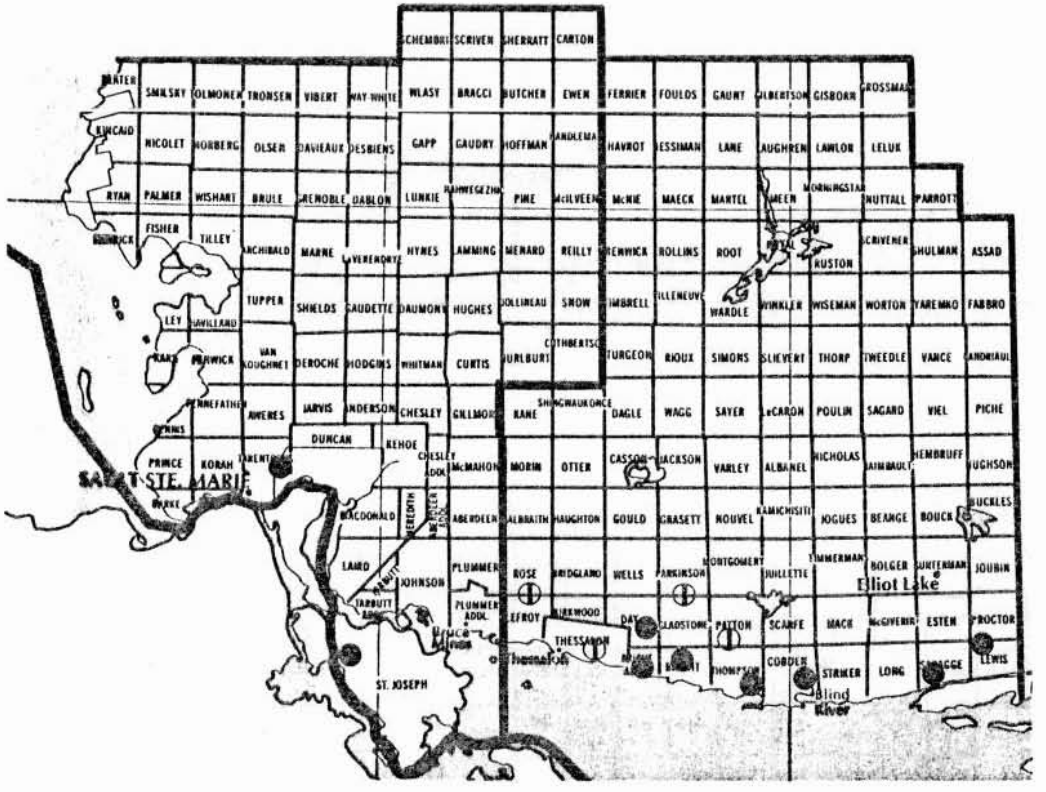
Light defoliation ◐

Moderate-to-severe defoliation ●

Scale

Kilometres 20 10 0 20

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



Balsam Fir Sawfly

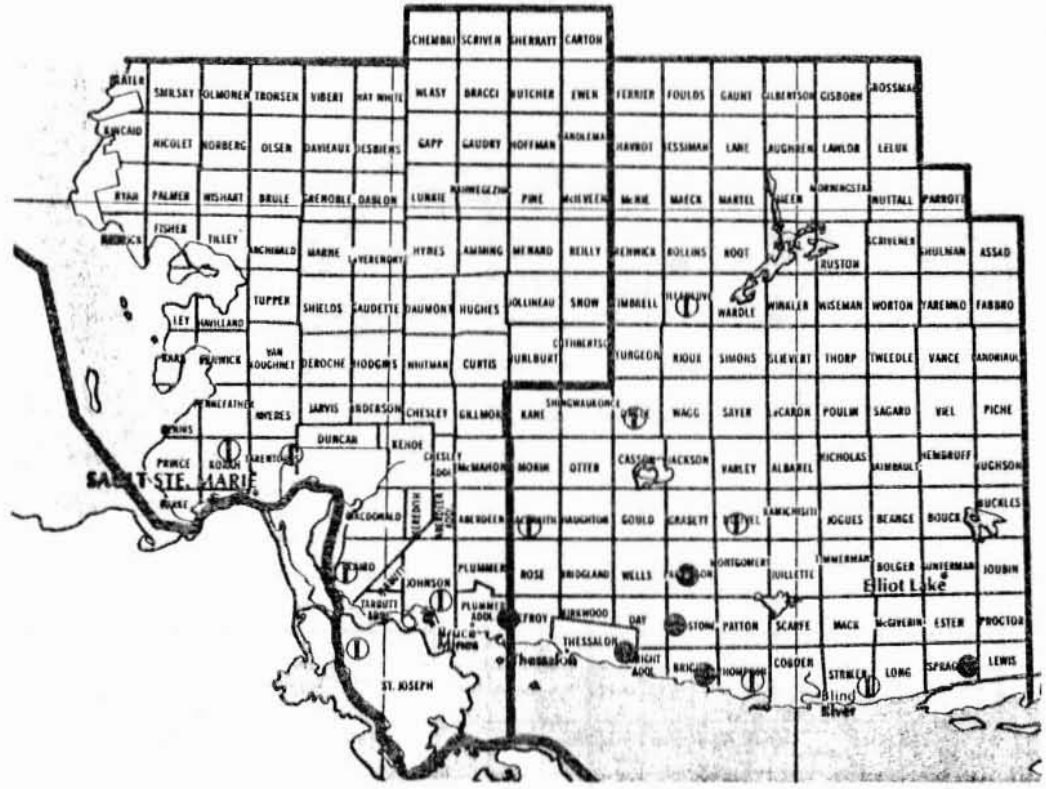
Areas within which defoliation occurred in 1952

LEGEND

Light defoliation ◐

Moderate-to-severe defoliation ●

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



Balsam Fir Sawfly

Areas within which defoliation occurred in 1953

LEGEND

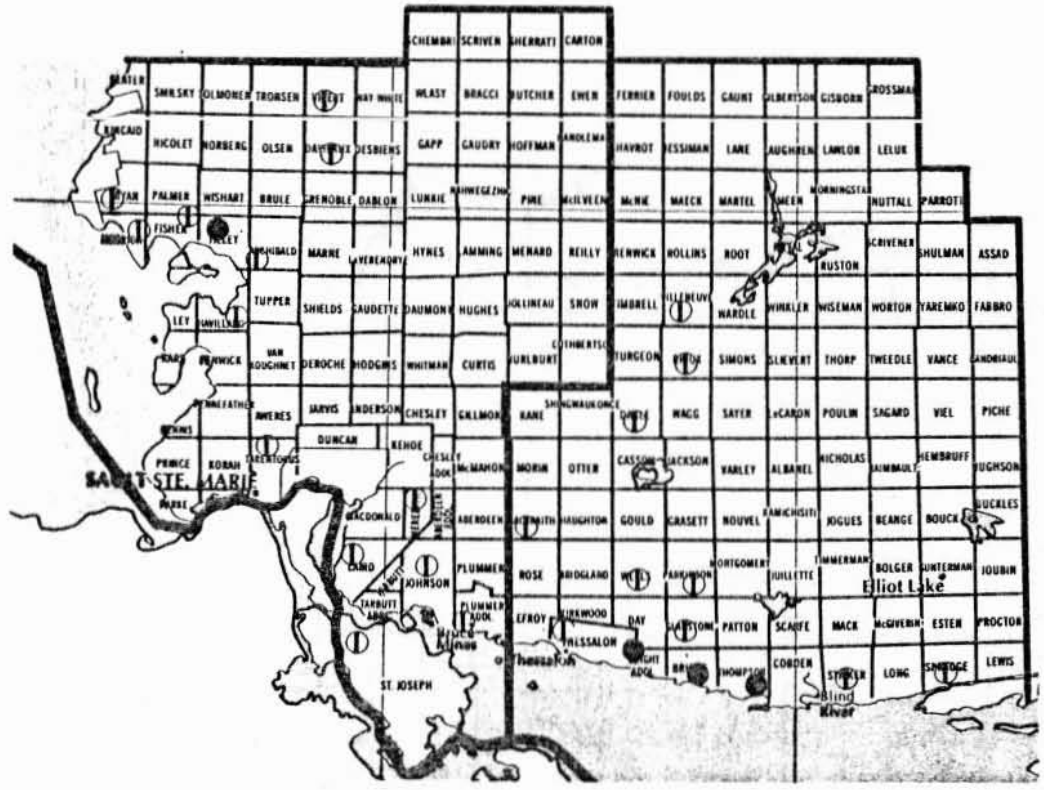
Light defoliation ◑

Moderate-to-severe defoliation ●

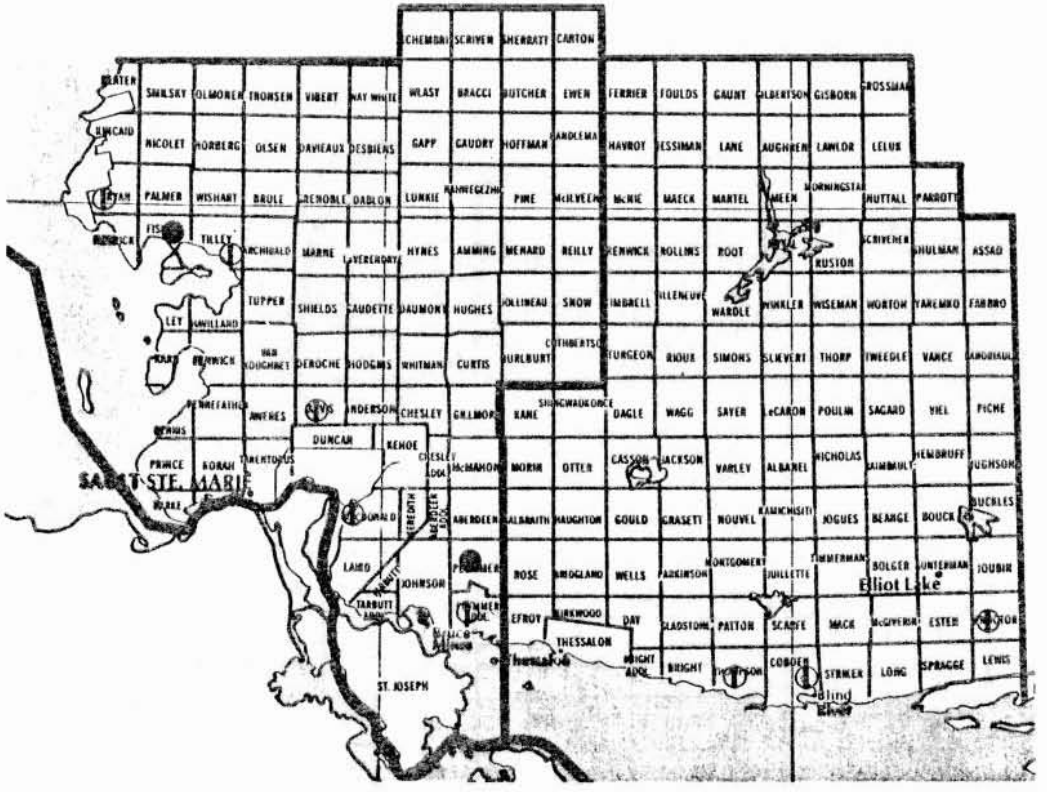
Scale

Kilometres 20 10 0 20

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



SAULT STE. MARIE AND BLIND RIVER DISTRICTS



Balsam Fir Sawfly

Areas within which defoliation occurred in 1959

LEGEND

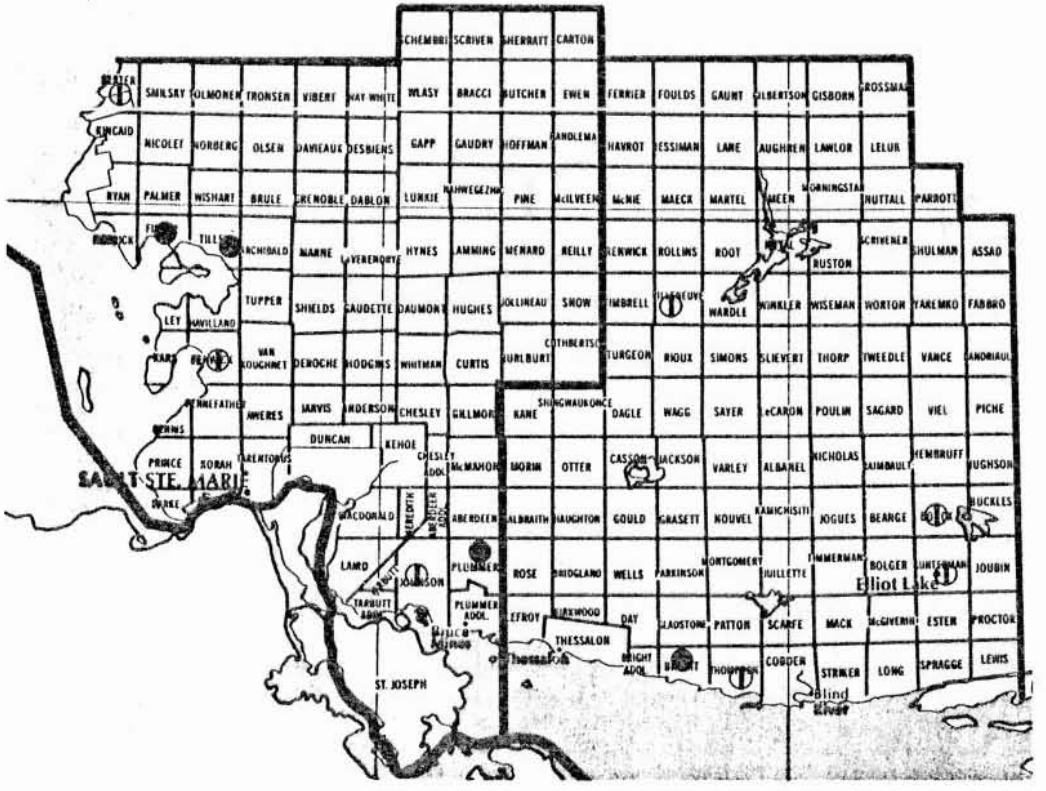
Light defoliation ①

Moderate-to-severe defoliation ●

Scale

Kilometres 20 10 0 20

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



Balsam Fir Sawfly

Areas within which defoliation occurred in 1960

LEGEND

Light defoliation ◐

Moderate-to-severe defoliation ●

Redheaded Pine Sawfly, *Neodiprion lecontei* (Fitch)

Host(s): pine [Major]

Year	Remarks
1950	Severe defoliation occurred in Lewis, Striker, Cobden and Day twps.
1951	Moderate infestations occurred in Striker and Day twps. Low populations occurred in Kirkwood and Rose twps.
1952	Moderate infestations occurred in Rose, Kirkwood and Day twps while severe defoliation of single trees was observed in Gladstone, Thessalon and Parkinson twps.
1953	Moderate-to-severe infestations persisted in Kirkwood, Day and Wells twps and near Algoma Mills.
1954	Moderate-to-severe infestations persisted in Kirkwood, Rose, Haughton and Bridgland twps and at widely scattered locations in the remainder of the district (see map, page 85).
1955	Moderate infestations occurred in Kirkwood Twp and there were scattered pockets of light defoliation elsewhere in the district (see map, page 86).
1956	Populations declined in Kirkwood Twp.
1957	Moderate defoliation occurred along the North Channel (see map, page 87).
1958	Pockets of severe defoliation occurred along the North Channel (see map, page 88). Some mortality of young red pine trees was observed.
1959	Small pockets of moderate infestation occurred in Thessalon and Thompson twps.
1960	A pocket of severe defoliation occurred in Timmermans Twp, but populations declined elsehwere. Tree mortality was reported in Thompson Twp.
1961	low numbers of larvae observed in the district
1962	low populations observed along the North Channel

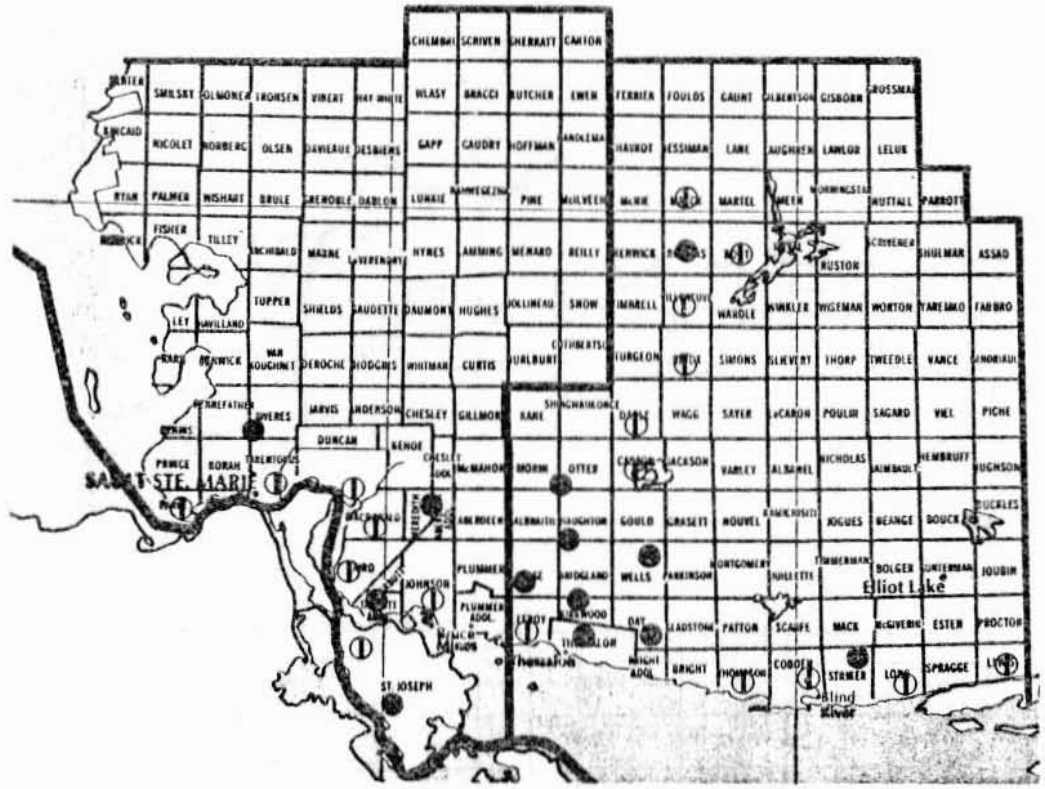
(cont'd)

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

Host(s): pine [Major]

Year	Remarks
1963	single colonies found in Thessalon Twp
1964	Populations increased in plantations between Iron Bridge and the Serpent River.
1965	Severe defoliation occurred between Thessalon and Serpent River.
1966	Complete defoliation of roadside trees occurred between Iron Bridge and the Elliot Lake area.
1967	High populations persisted in Haughton and Thompson twps and between Spragge and Cutler.
1968	Severe defoliation occurred on red pine shelterbelts along Highway 17 between Thessalon and Cutler and light defoliation was observed north of Elliot Lake.
1969	a general decline in populations observed in the district
1970-1971	not reported
1972	low populations in the district
1973-1974	not reported
1975	High populations occurred in an 80-ha red pine plantation in Patton Twp.
1976	Severe defoliation occurred in Patton Twp and along Highway 17 in Thompson Twp.
1977	not reported
1978	A polyhedrosis virus was applied to control high populations.
1979	trace populations recorded in Cobden Twp
1980	Populations increased in Rose, Proctor, Cobden and Parkinson twps.

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



Redheaded Pine Sawfly

Areas within which defoliation occurred in 1954

LEGEND

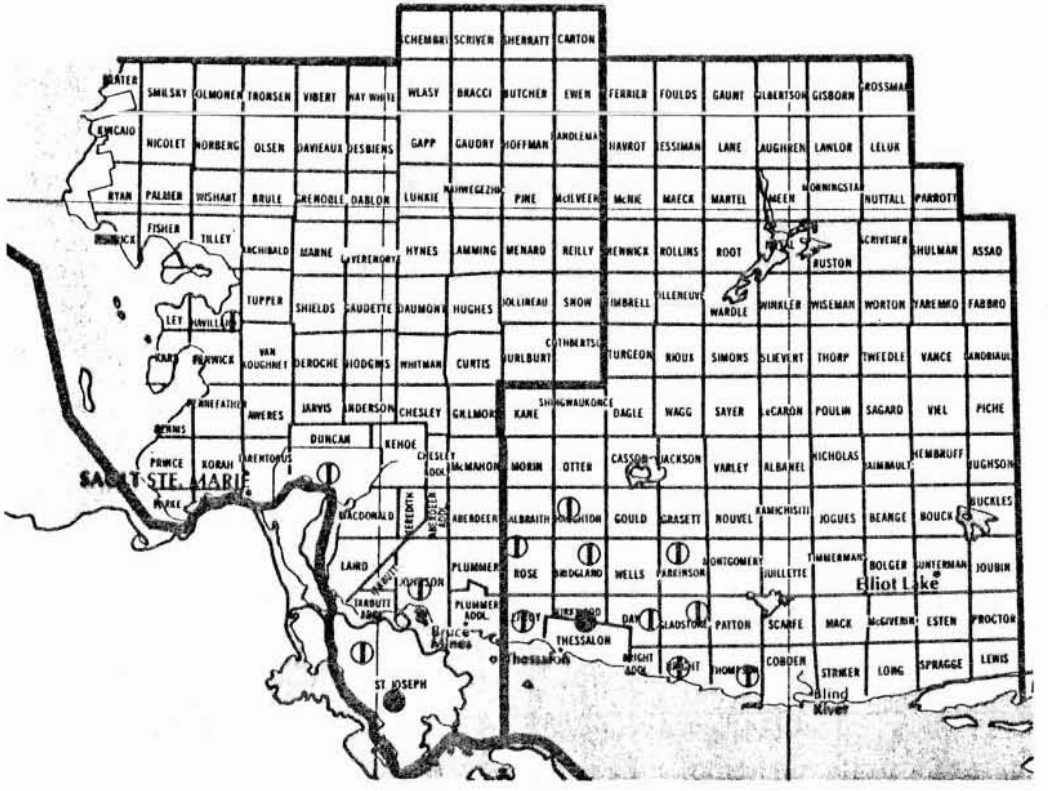
Light defoliation ◐

Moderate-to-severe defoliation ●

Scale

Kilometres 20 10 0 20

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



Redheaded Pine Sawfly

Areas within which defoliation occurred in 1955

LEGEND

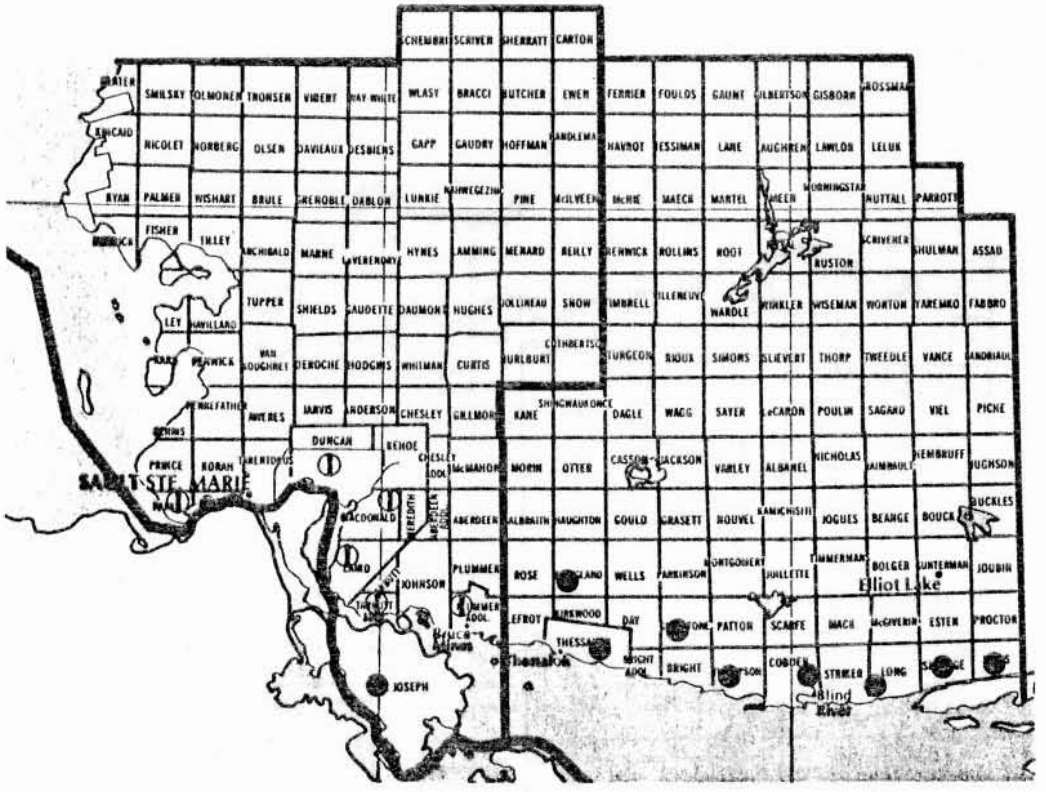
Light defoliation ◐

Moderate-to-severe defoliation ●

Scale

Kilometres 20 10 0 20

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



Redheaded Pine Sawfly

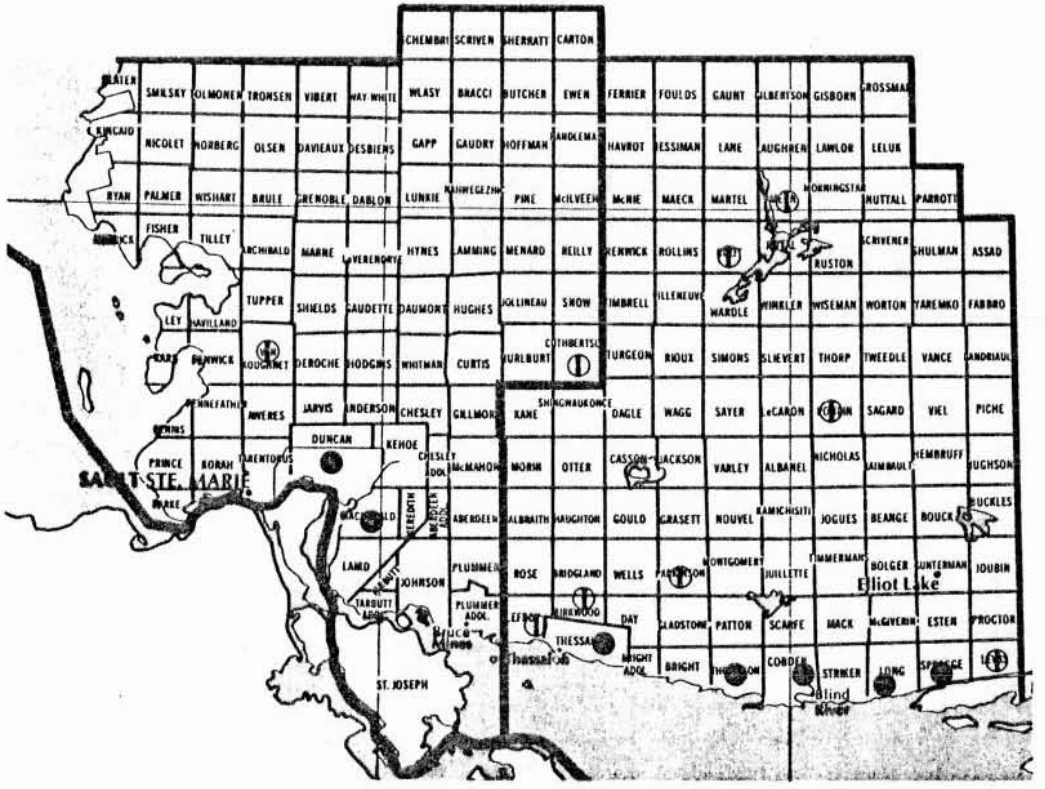
Areas within which defoliation occurred in 1957

LEGEND

Light defoliation ◑

Moderate-to-severe defoliation ●

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



Redheaded Pine Sawfly

Areas within which defoliation occurred in 1958

LEGEND

Light defoliation ◐

Moderate-to-severe defoliation ●

Scale

Kilometres 20 10 0 20

Pine Sawflies, *Neodiprion nanulus nanulus* Schedl., *N. pratti banksianae* Roh., *N. swainei* Midd., and *N. virginianus* complex

Host(s): jP [Major]

Years		Remarks
1950	*N. nanulus nanulus*	scattered colonies observed in Poulin and Winkler twps
	N. pratti banksianae	single colonies observed in Wells and Wiseman twps
	N. virginianus complex	low populations in Wiseman and Rioux twps
1951-1952		not reported
1953	*N. pratti banksianae*	Moderate-to-severe defoliation occurred in Thompson Twp.
	N. swainei	moderate-to-severe infestations reported in Wiseman, Rioux and Timbrell twps
	N. virginianus complex	numerous colonies observed in Wardle Twp
1954	*N. pratti bankisanae*	light infestations reported in Villeneuve Twp
	N. swainei	Severe defoliation of mature jack pine trees occurred in the central and northern parts of the district.
	N. virginianus complex	Medium infestations were reported in Parkinson Twp and light infestations occurred in Sagard and Villeneuve twps.
1955	*N. pratti banksianae*	a few colonies observed near Iron Bridge
	N. swainei	Populations declined to light infestations.
	N. virginianus complex	very low populations found in Parkinson Twp

(cont'd)

Pine Sawflies, *Neodiprion nanulus nanulus* Schedl., *N. pratti banksianae* Roh., *N. swainei* Midd., and *N. virginianus* complex (cont'd)

Host(s): jP [Major]

Years		Remarks
1956	*N. swainei*	Light infestations occurred over 8 ha in Tweedle Twp.
	N. virginianus complex	Defoliation was moderate in Tweedle Twp and light at eight other locations.
1957	*N. swainei*	Low populations occurred on regeneration in 15 townships surrounding Rocky Island Lake.
	N. virginianus complex	low numbers reported in 15 townships in the Rocky Island Lakes area
1958	*N. swainei*	Populations increased in the Rocky Island Lake area (see map, page 93).
	N. virginianus complex	A marked increase in populations occurred in the Rocky Island Lake area.
1959	*N. nanulus nanulus*	trace populations observed
	N. swainei	Populations increased in the district (see map, page 94).
	N. virginianus complex	Pockets of medium infestation persisted in the northern part of the district.
1960	*N. swainei*	major decline in populations in the Rocky Island Lake area
	N. virginianus complex	low populations reported in the Rocky Island Lake area
1961		not reported

(cont'd)

Pine Sawflies, *Neodiprion nanulus nanulus* Schedl., *N. pratti banksianae* Roh., *N. swainei* Midd., and *N. virginianus* complex (cont'd)

Host(s): jP [Major]

Years		Remarks
1962	*N. nanulus nanulus*	low populations reported in Rose Twp
	N. swainei	low populations reported in Rioux Twp
	N. virginianus complex	low populations reported in Rioux Twp
1963	*N. pratti banksianae*	a few colonies observed in Bridgland Twp
	N. nanulus nanulus	light infestations on red pine trees in Kirkwood Twp
1964	*N. pratti banksianae*	scattered colonies observed in Haughton, Bridgland, Kirkwood and Rose twps
	N. nanulus nanulus	light infestations on red pine trees in Kirkwood Twp
	N. virginianus complex	Moderate defoliation of jack pine trees occurred in McNie and Renwick twps.
1965	*N. pratti banksianae*	Populations declined in Haughton Twp.
	N. nanulus nanulus	increased larval populations reported in Kirkwood Twp
	N. virginianus complex	Populations declined in McNie and Renwick twps and increased in Bridgland Twp.
1966	*N. nanulus nanulus*	A general decline in larval populations was noted in the Kirkwood area.

(cont'd)

Pine Sawflies, *Neodiprion nanulus nanulus* Schedl., *N. pratti banksianae* Roh., *N. swainei* Midd., and *N. virginianus* complex (concl.)

Host(s): jP [Major]

Years		Remarks
1967	*N. nanulus nanulus*	Light defoliation occurred in the Kirkwood area.
	N. virginianus complex	Light defoliation occurred in the Kirkwood area.
1968	*N. nanulus nanulus*	Populations declined in the Kirkwood area.
1969	*N. virginianus* complex	low populations reported in Martel and Wardle twps
1970-1980		not reported

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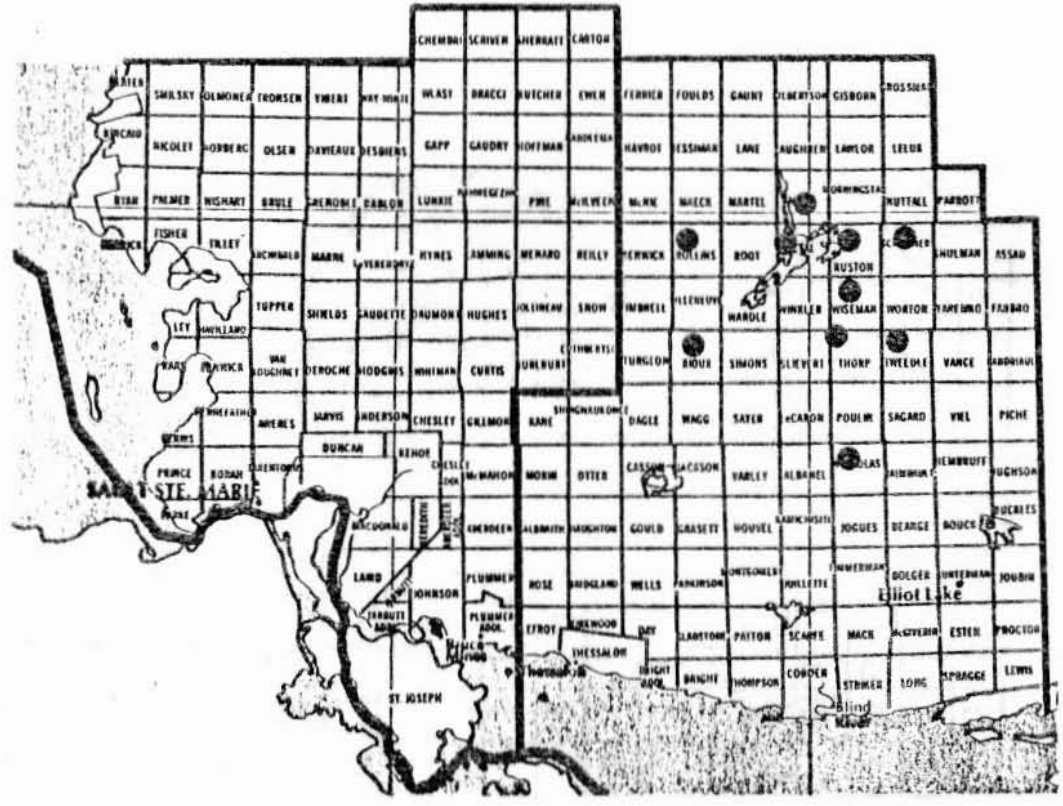


Swaine Jack Pine Sawfly

Areas within which defoliation occurred in 1958

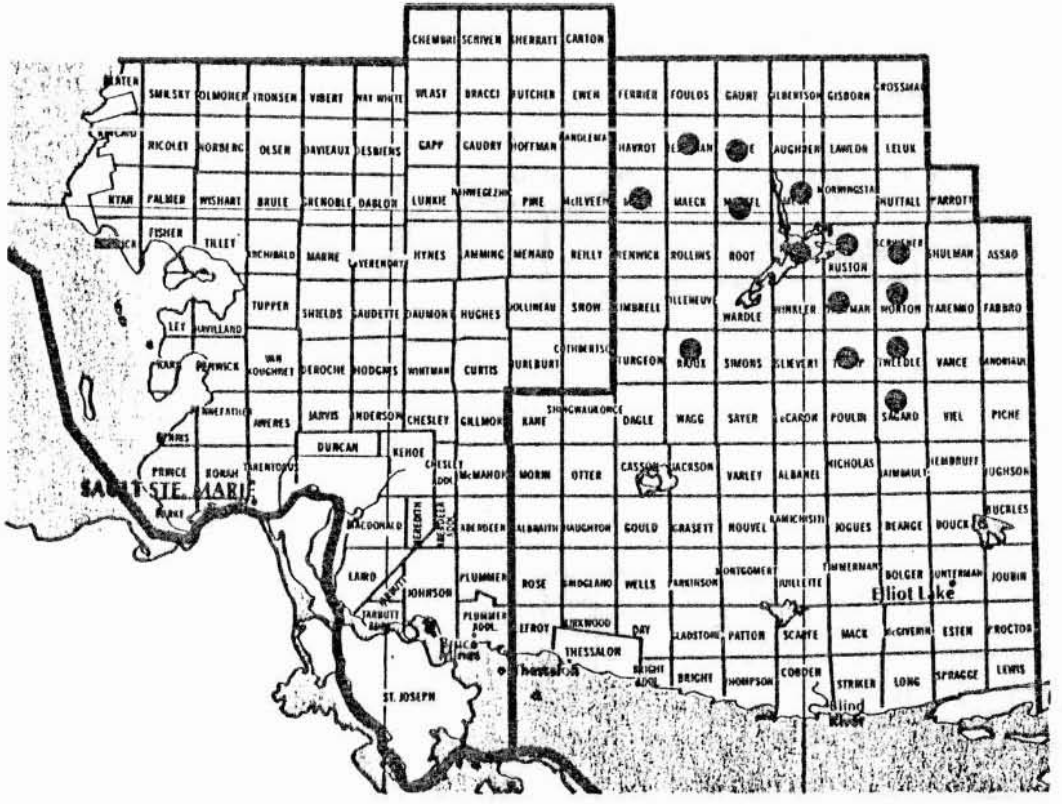
LEGEND

Moderate-to-severe defoliation ●

Scale

Kilometres 20 10 0 20

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



Swaine Jack Pine Sawfly

Areas within which defoliation occurred in 1959

LEGEND

Moderate-to-severe defoliation ●

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

Host(s): aspen [Major]

Year	Remarks
1950-1951	not reported
1952	Extensive leafmining occurred at eight locations in the district (see map, page 96).
1953	not reported
1954	Pockets of severe infestations occurred in Thessalon, Iron Bridge and Mount Lake areas.
1955-1970	not reported
1971	A pocket of heavy infestation occurred in Viel Twp.
1972	High populations occurred on small-diameter trees in Rose and Kirkwood twps.
1973-1974	High populations persisted in Rose and Kirkwood twps.
1975-1979	High populations continued in the Kirkwood area.
1980	not reported

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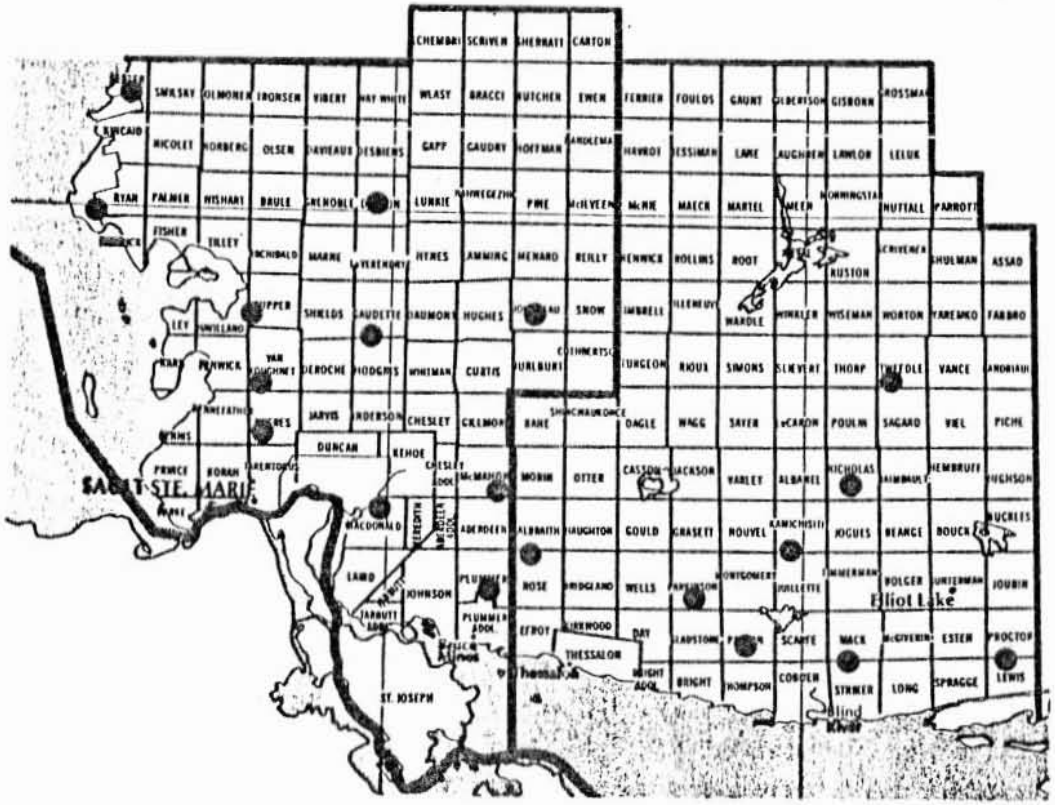

Aspen Leafblotch Miner

Areas within which defoliation occurred in 1952

LEGEND

Moderate-to-severe defoliation ●

White Pine Weevil, *Pissodes strobi* (Peck)

Host(s): pine, spruce [Major]

Year	Remarks
1950	low damage reported in Gladstone and Villeneuve twps
1951-1953	not reported
1954	Populations increased in Rose, Kirkwood, Sayer and Poulin twps.
1955-1957	not reported
1958	Severe leader damage occurred on Scots pine and jack pine in Thompson and Spragge twps.
1959	Severe damage occurred on Scots pine, red pine and jack pine trees in Lewis, Kirkwood, Martel and Thompson twps.
1960	decline in shoot damage noted in Kirkwood and Rose twps
1961	shoot damage common in Kirkwood, Lefroy and Rose twps
1962	decline in damage reported in Kirkwood and Rose twps
1963	no major changes in populations reported
1964	light damage reported on white pine in Kirkwood and Rose twps and moderate damage on red pine in Rioux Twp
1965	Light damage continued on white pine in Kirkwood and Rose twps.
1966	leader damage commonly observed throughout the district
1967	Populations increased in Rose, Wells and Yaremko twps.
1968	High populations persisted in Wells and Kirkwood twps.
1969-1970	High populations continued in Wells, Cobden, Rose and Haughton twps.
1971	high populations observed in Wells, Parkinson and Thessalon twps

(cont'd)

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

Host(s): pine, spruce [Major]

Year	Remarks
1972	High populations persisted in the Kirkwood area and leader damage ranged from a low of 7% in Rose Twp to 49% in Wells Twp.
1974	Continued high populations were reported in Kirkwood Twp. Infested shoots ranged from 6 to 51% in areas sampled.
1975	High populations continued in Kirkwood Twp. Damaged shoots ranged from 5 to 24% in eight areas examined.
1976	Little change in populations was reported. An average of 22% infested leaders was recorded at four locations.
1977	High populations continued in the Kirkwood Management Unit and leader damage ranged from 7 to 61% at three locations.
1978	Severe leader damage, ranging from 60 to 90%, occurred in the Kirkwood Management Unit.
1979	A slight decline in leader damage was reported, with shoot mortality ranging between 31 and 78% in the Kirkwood Management Unit.
1980	Severe leader damage persisted in the Kirkwood Management Unit.

Larch Sawfly, *Pristiphora erichsonii* (Htg.)

Host(s): larch [Major]

Year	Remarks
1950-1952	not reported
1953	Light defoliation occurred along Highway 129 in Dagle Twp.
1954	numerous pockets of light infestation and a few pockets of moderate-to-severe defoliation reported (see map, page 101)
1955	Numerous pockets of light infestation and smaller pockets of moderate-to-severe defoliation persisted in the district (see map, page 102).
1956	A general increase in populations occurred in the district (see map, page 103).
1957	Populations remained high at numerous locations in the district (see map, page 104).
1958	High populations persisted in the district (see map, page 105).
1959	High populations continued in the district (see map, page 106).
1960-1961	Pockets of severe defoliation persisted (see maps, pages 107 and 108).
1962	Populations declined in Thessalon and Lefroy twps.
1963	further population declines reported in infestation areas
1964	no change reported in infestations
1965	Populations increased in Bright and Thessalon twps.
1966	Further population increases occurred in Thessalon Twp.
1967	Moderate-to-severe defoliation occurred between Thessalon and Cutler.
1968	severe defoliation reported in Parkinson, Lewis and Esten twps
1969	severe defoliation reported in Spragge, Thessalon, Lewis and Parkinson twps

(cont'd)

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

Host(s): larch [Major]

Year	Remarks
1970-1971	severe defoliation persisted in Thessalon and Lewis twps
1972-1974	not reported
1975	Populations increased in Rose, Day and Sagard twps.
1976	Populations increased on Bridgland and Haughton twps.
1977	Moderate-to-severe defoliation occurred in Thessalon Twp.
1978	low populations reported in the Kirkwood Management Unit
1979-1980	not reported

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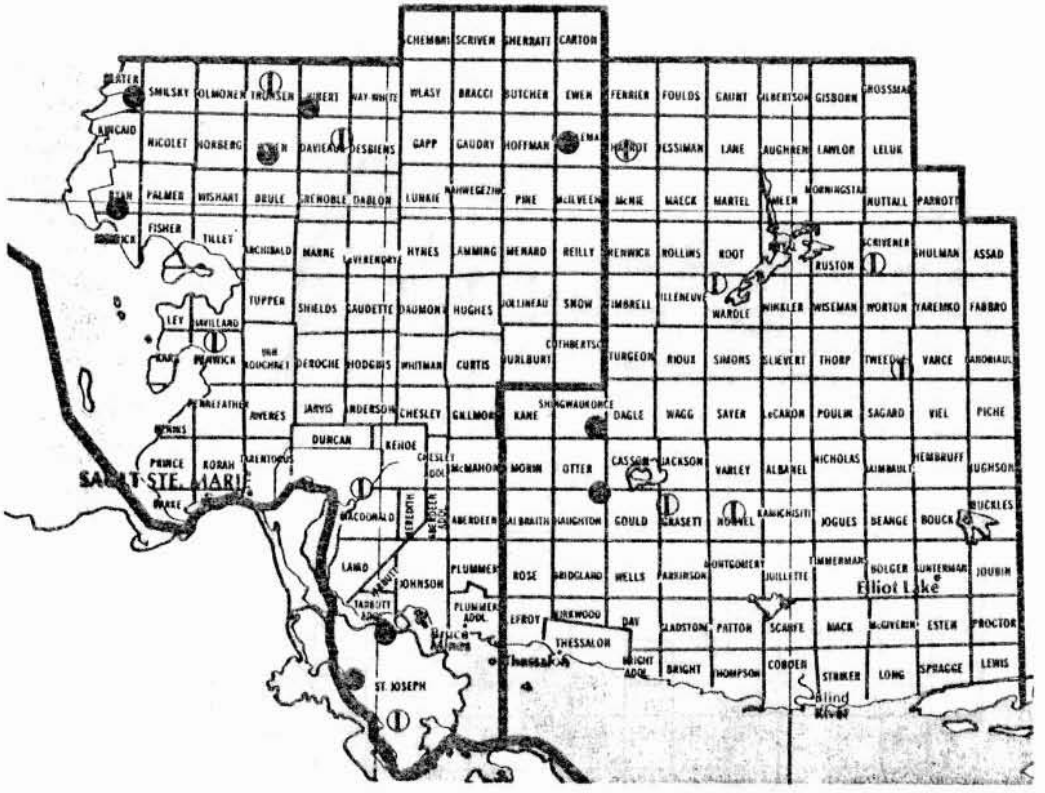

Larch Sawfly

Areas within which defoliation occurred in 1954

LEGEND

Light defoliation ◑

Moderate-to-severe defoliation ●

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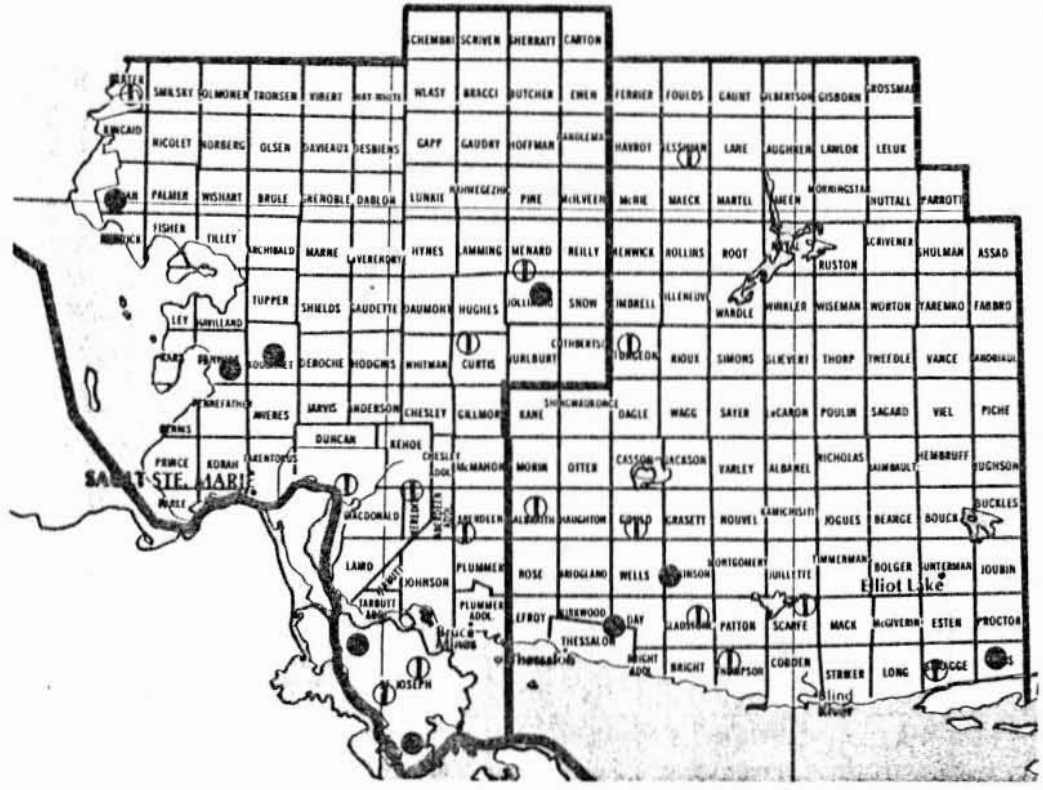


Larch Sawfly

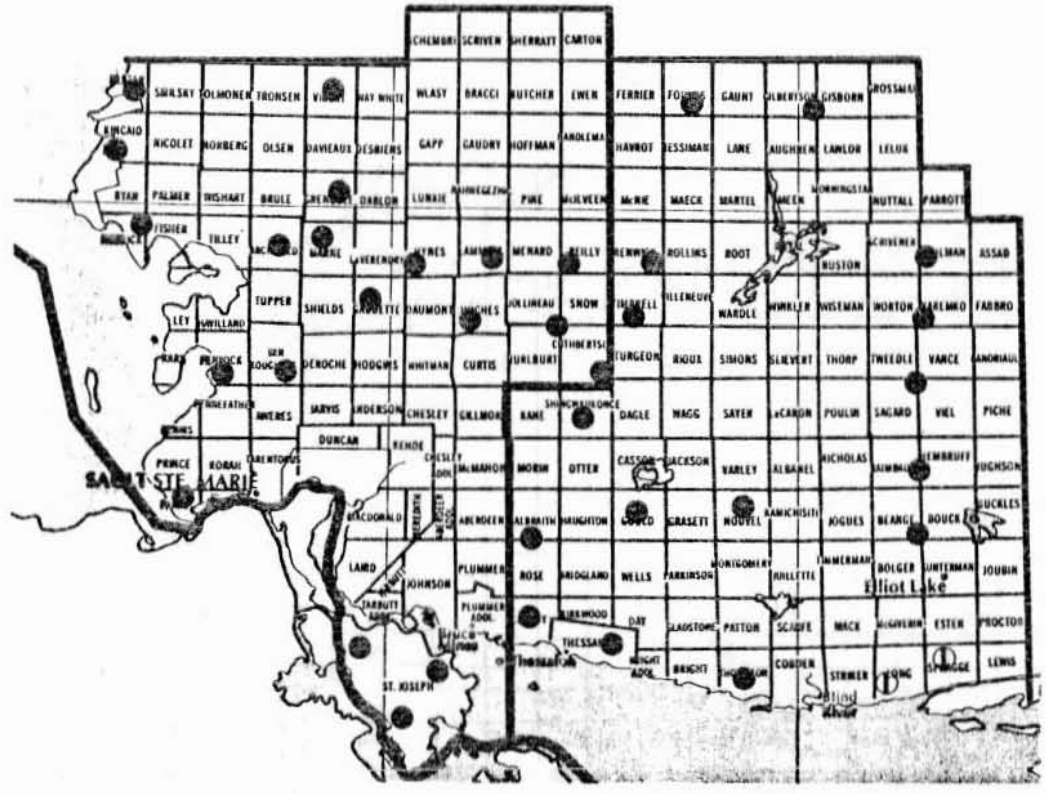
Areas within which defoliation occurred in 1955

LEGEND

Light defoliation ◐

Moderate-to-severe defoliation ●

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



Larch Sawfly

Areas within which defoliation occurred in 1956

Scale

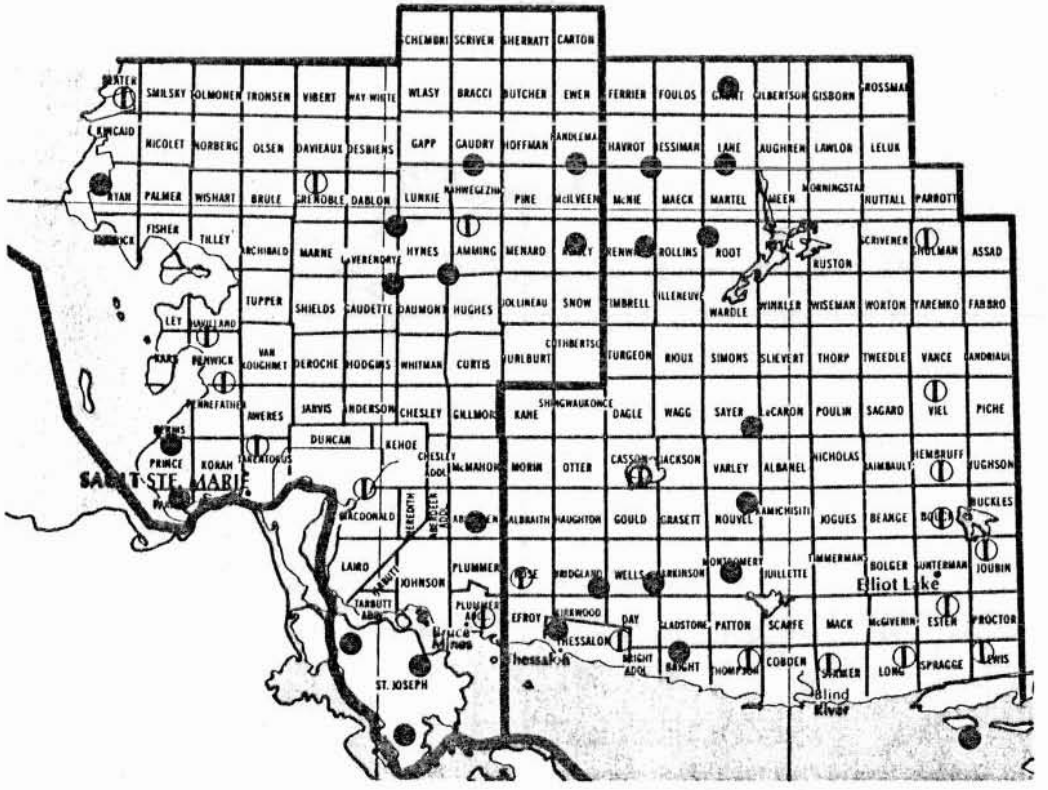
Kilometres 20 10 0 20

LEGEND

Light defoliation ◐

Moderate-to-severe defoliation ●

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



Larch Sawfly

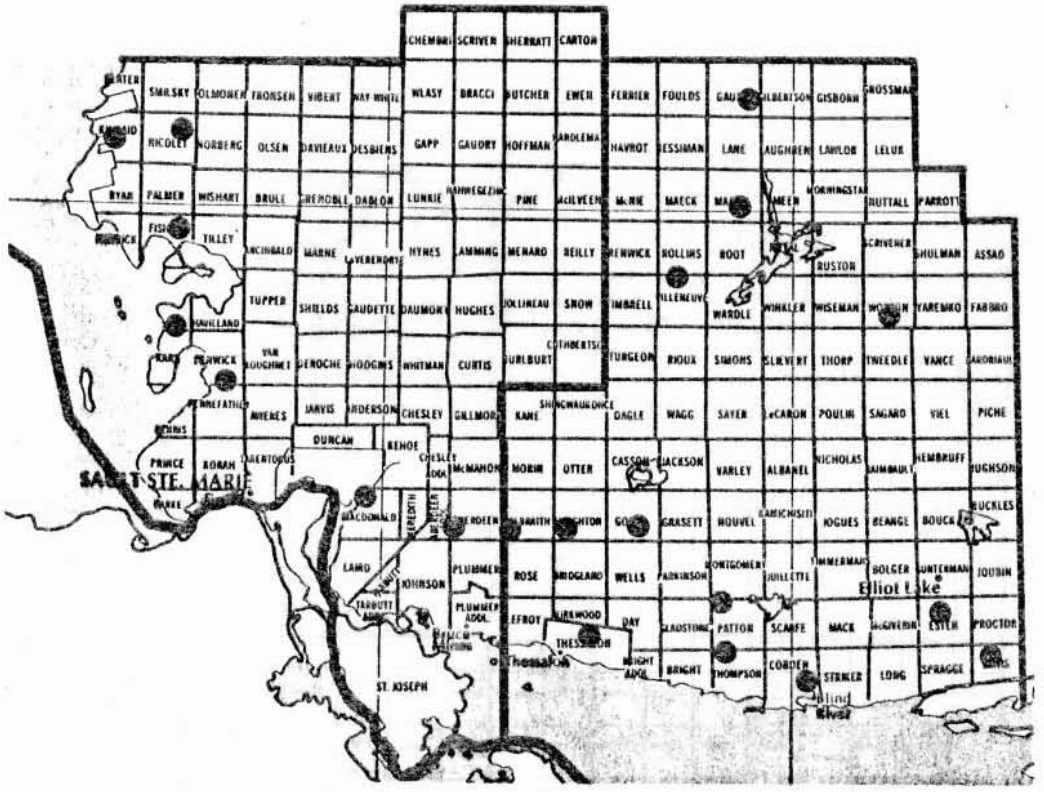
Areas within which defoliation occurred in 1957

LEGEND

Light defoliation ◐

Moderate-to-severe defoliation ●

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



Larch Sawfly

Areas within which defoliation occurred in 1958

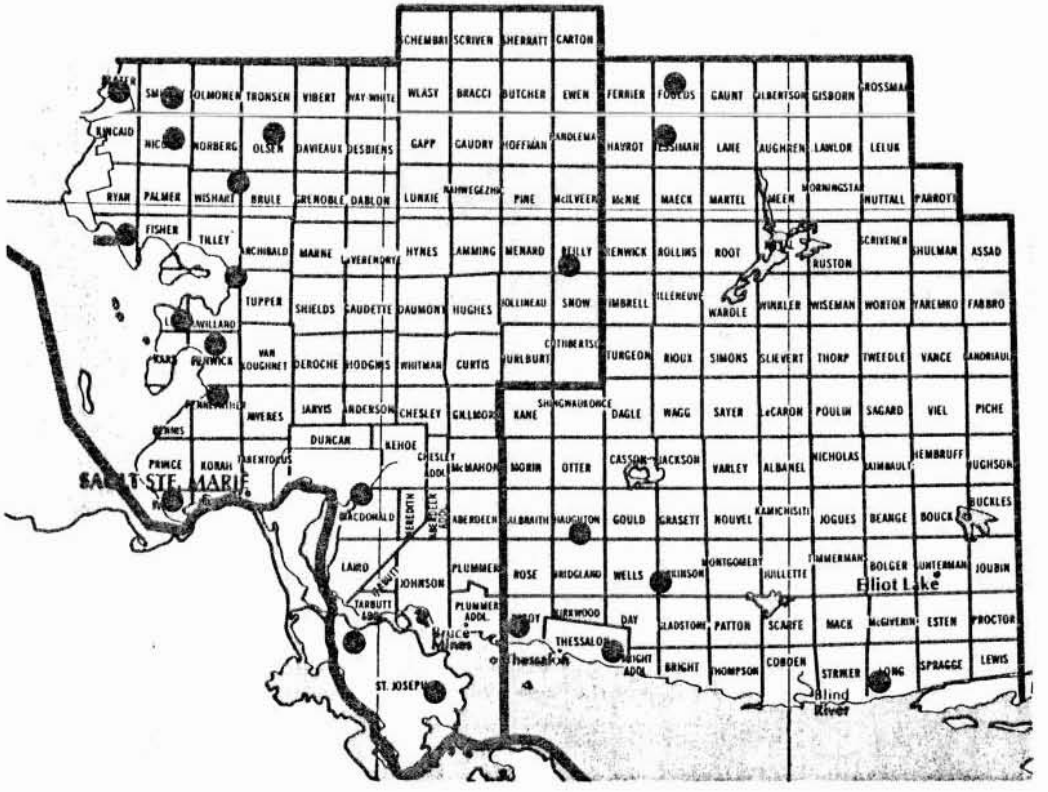
LEGEND

Moderate-to-severe defoliation ●

Scale

Kilometres 20 10 0 20

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



Larch Sawfly

Areas within which defoliation occurred in 1959

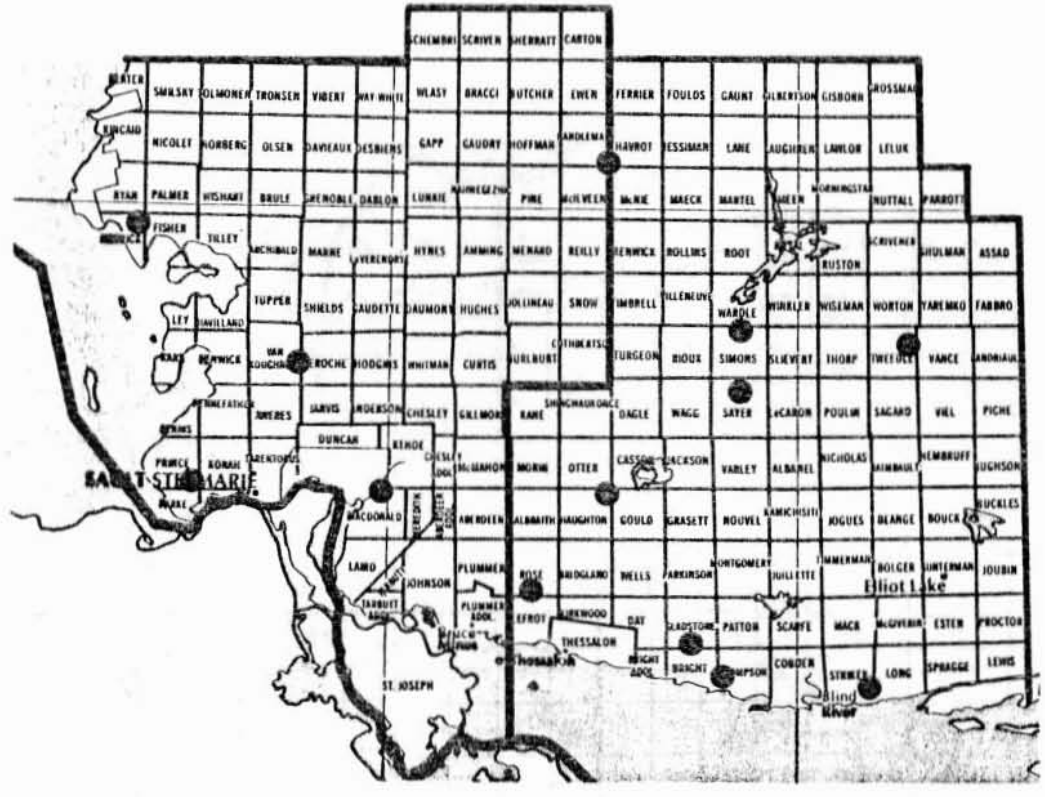
LEGEND

Moderate-to-severe defoliation ●

Scale

Kilometres 20 10 0 20

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



Larch Sawfly

Areas within which defoliation occurred in 1960

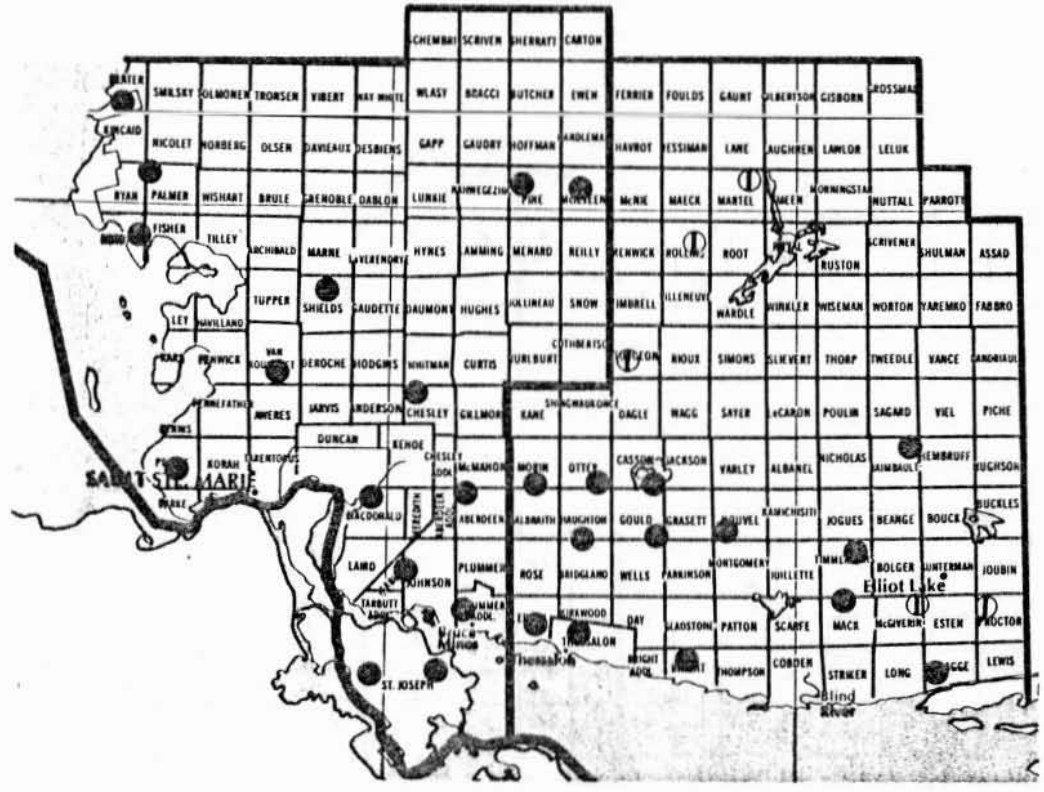
LEGEND

Moderate-to-severe defoliation ●

Scale

Kilometres 20 10 0 20

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



Larch Sawfly

Areas within which defoliation occurred in 1961

LEGEND

Light defoliation ◐

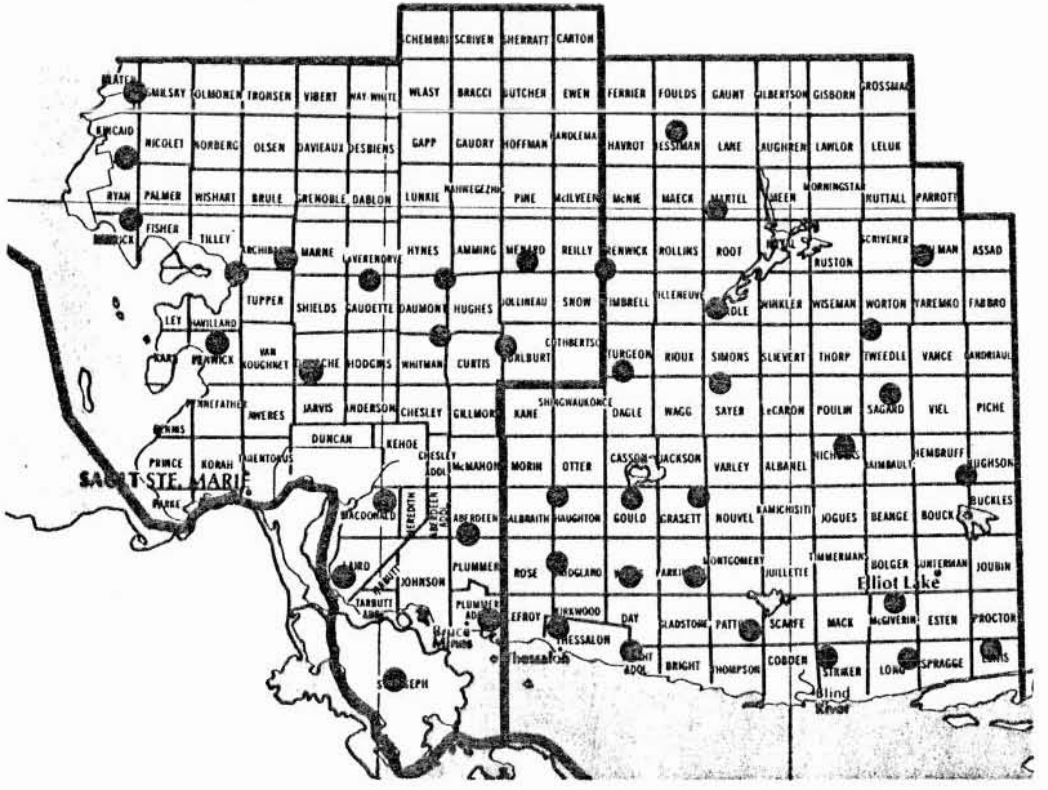
Moderate-to-severe defoliation ●

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

Host(s): mountain-ash [Major]

Year	Remarks
1950-1956	not reported
1957	light infestations reported in Kirkwood, Lefroy and Thessalon twps
1958	Severe defoliation occurred in Kirkwood, Lefroy and Thessalon twps.
1959	Severe defoliation occurred on roadside trees between Thessalon and Blind River.
1960	Populations increased in the Blind River District.
1961	Pockets of severe defoliation occurred throughout the southern part of the district.
1962-1963	pockets of severe defoliation common throughout the district (see maps, pages 110 and 111)
1964	Moderate-to-severe defoliation occurred in the southern part of the district (see map, page 112).
1965-1966	No major change in infestations was reported.
1967	high populations reported in Kirkwood and Haughton twps
1968	high populations reported in Sturgeon and Poulin twps
1969-1971	not reported
1972	pockets of severe defoliation common throughout the district
1973-1979	not reported
1980	pockets of severe defoliation common throughout the district

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



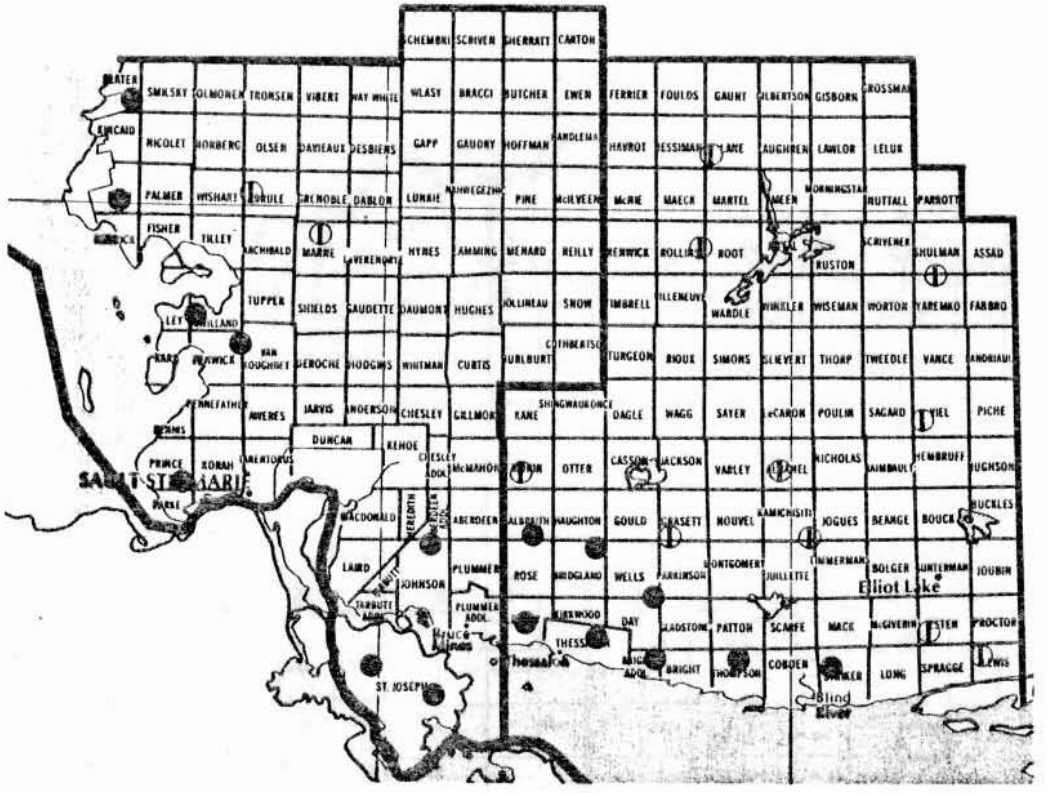
Mountain-ash Sawfly

Areas within which defoliation occurred in 1962

LEGEND

Moderate-to-severe defoliation ●

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



Mountain-ash Sawfly

Areas within which defoliation occurred in 1963

LEGEND

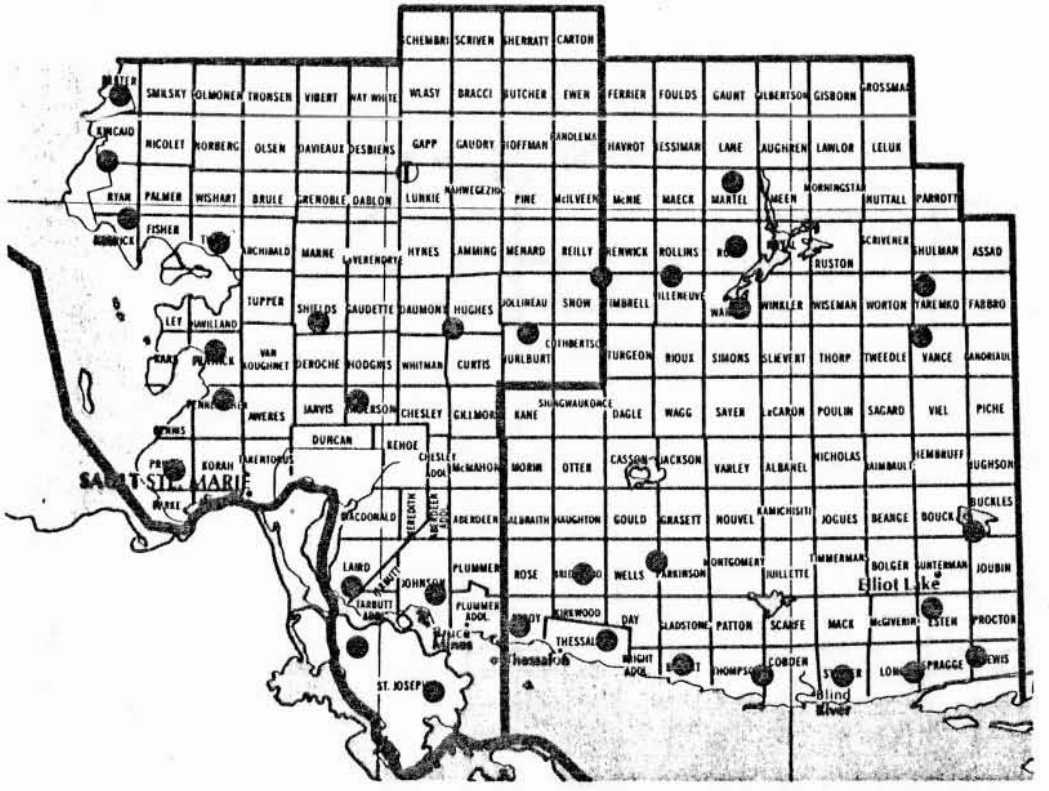
Light defoliation ◐

Moderate-to-severe defoliation ●

Scale

Kilometres 20 10 0 20

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



Mountain-ash Sawfly

Areas within which defoliation occurred in 1964

LEGEND

Light defoliation ◐

Moderate-to-severe defoliation ●

Scale

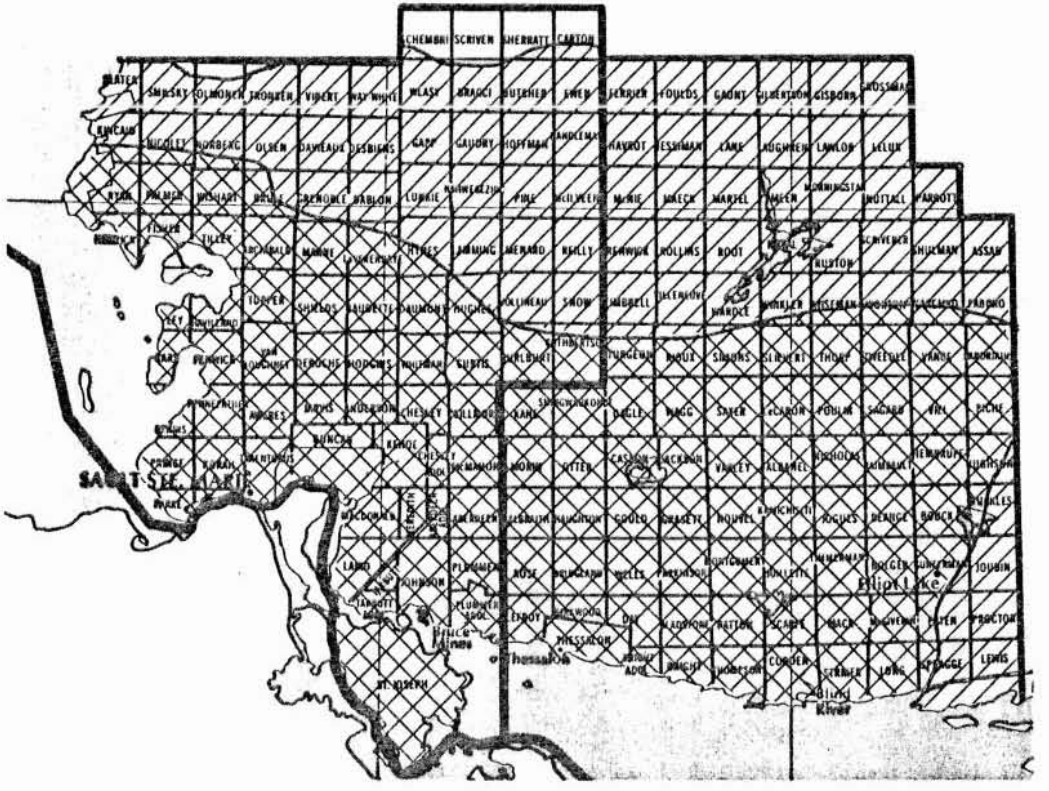
Kilometres 20 10 0 20

Ambermarked Birch Leafminer, *Profenusa thomsoni* (Konow)

Host(s): birch [Major]

Year	Remarks
1950	Moderate-to-severe defoliation occurred throughout most of the southern part of the district (see map, page 114).
1951	Moderate-to-severe defoliation was reported in seven townships and light defoliation occurred at scattered locations (see map, page 115)
1952	Moderate-to-severe defoliation was reported at six locations and light defoliation occurred in three areas (see map, page 116).
1953	moderate-to-severe defoliation observed in Rose, Cobden, Spragge and Lewis twps
1954	not reported
1955	severe browning of foliage in Rollins Twp and light damage at widely scattered locations in the district
1956	commonly found at numerous locations in the district
1957-1958	not reported
1959	Populations increased in Spragge and Parkinson twps.
1960-1966	not reported
1967	low populations reported in Lefroy Twp
1968-1972	not reported
1973	light infestation reported in Rioux Twp
1974-1980	not reported

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



Ambermarked Birch Leafminer

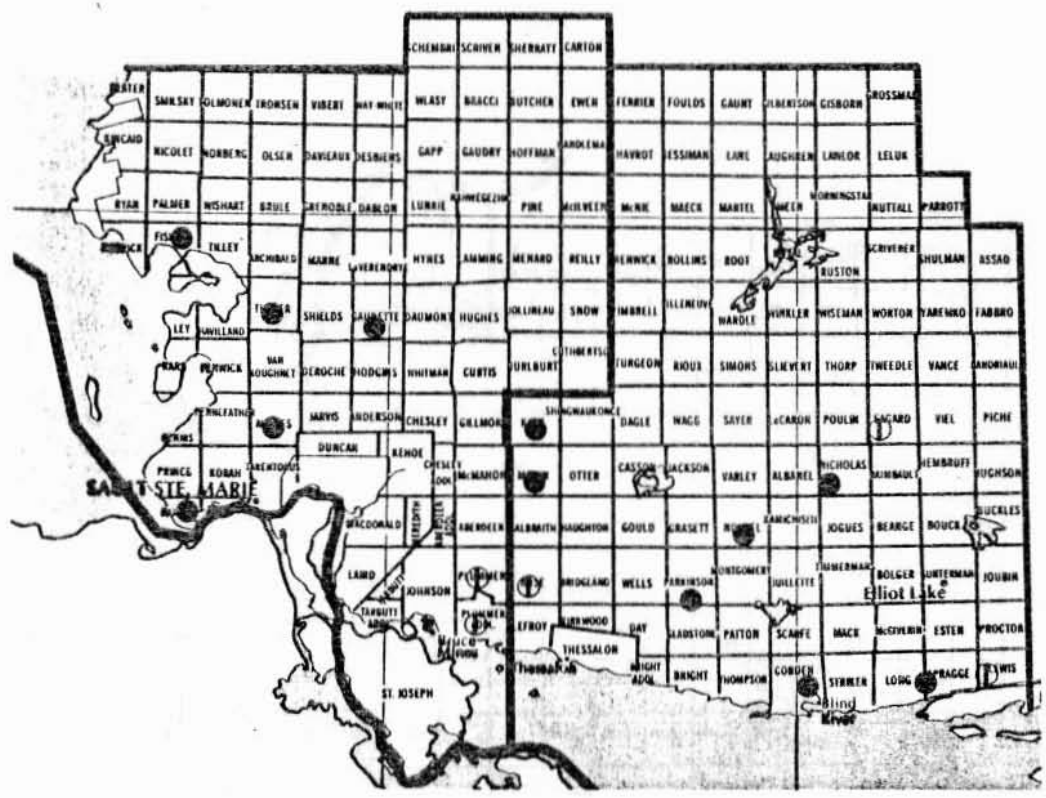
Areas within which defoliation occurred in 1950

LEGEND

Light defoliation

Moderate-to-severe defoliation

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



Ambermarked Birch Leafminer

Areas within which defoliation occurred in 1951

LEGEND

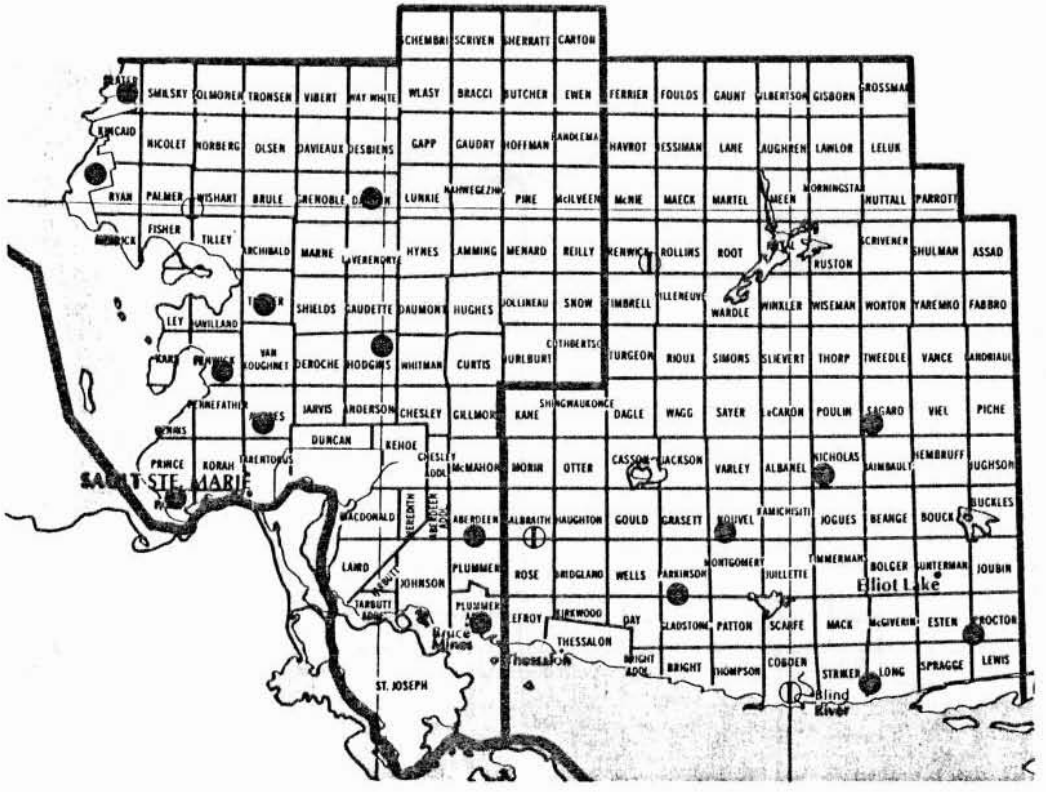
Light defoliation ◐

Moderate-to-severe defoliation ●

Scale

Kilometres 20 10 0 20

SAULT STE. MARIE AND BLIND RIVER DISTRICTS



Ambermarked Birch Leafminer

Areas within which defoliation occurred in 1952

LEGEND

Light defoliation ◐

Moderate-to-severe defoliation ●

Scale

Kilometres 20 10 0 20

Other Noteworthy Insects

Eastern Blackheaded Budworm, *Acleris variana* (Fern.)

Host(s): spruce, bF [Major]

Year	Remarks
1950-1951	not reported
1952	light infestations observed in Kirkwood Twp
1953-1954	not reported
1955	low numbers observed in the district
1956-1959	not reported
1960	low populations commonly found in the district
1961-1980	not reported

Black Army Cutworm, *Actebia fennica* (Tausch.) [Major]

Host(s): general feeder

Year	Remarks
1950-1956	not reported
1957	heavy infestation recorded in Sagard Twp
1958-1980	not reported

Luna moth, *Actias luna* (Linn.)

Host(s): deciduous [Minor]

Year	Remarks
1950-1974	not reported
1975-1977	Severe defoliation occurred in Rose Twp.
1978-1980	not reported

Pine Spittlebug, *Aphrophora cribrata* (Wlk.)

Host(s): conifers [Major]

Year	Remarks
1950-1966	not reported
1967	low populations observed in Wells and Bridgland twps
1968-1980	not reported

Spittlebug, *Aphrophora parallela* (Say)

Host(s): conifer [Minor]

Year	Remarks
1950-1967	not reported
1968	severe damage observed in Kirkwood Twp
1969	high populations recorded in Sagard Twp and moderate damage observed in Kirkwood and Haughton twps
1970-1975	not reported
1976	high numbers reported in the Kirkwood Management Unit
1977	not reported
1978	low populations recorded in Thessalon Twp
1979-1980	not reported

Saratoga Spittlebug, *Aphrophora saratogensis* (Fitch)

Host(s): pine [Major]

Year	Remarks
1950-1957	not reported
1958	first record in the district in Kirkwood Twp in Scots pine
1959	low populations reported in Kirkwood Twp
1960-1980	not reported

Birch Sawfly, *Arge pectoralis* (Leach)

Host(s): birch [Major]

Year	Remarks
1950	moderate populations recorded in Lewis Twp
1951-1980	not recorded

Cedar Leafminer, *Argyresthia aureoargentella* Brower

Host(s): cedar [Major]

Year	Remarks
1950-1956	not reported
1957	low populations reported at two locations
1958-1961	low populations observed in the district
1962-1963	not reported
1964	commonly found in the Thessalon area
1965-1980	not reported

Larch Casebearer, *Coleophora laricella* (Hbn.)

Host(s): larch [Major]

Year	Remarks
1950	severe mining noted in the northwestern portion of Lewis Twp
1951	light infestations reported in Wells and Kirkwood twp
1952-1953	not reported
1954	light infestation reported in Kirkwood Twp
1955	not reported
1956	trace populations recorded in Kirkwood Twp
1957	low population observed in Kirkwood and Wells twps
1958	low populations reported
1959	not reported
1960	low populations reported
1961	not reported
1962-1966	low populations reported
1967	population increases noted in Kirkwood, Thessalon and Wells twps
1968-1975	not reported
1976	low populations observed in Proctor and Thessalon twps
1977-1978	low populations recorded in Proctor Twp
1979	low numbers found in Parkinson and Gladstone twps
1980	not reported

Red Pine Cone Beetle, *Conophthorus resinosae* Hopk.

Host(s): rP [Minor]

Year	Remarks
1950-1970	not reported
1971	moderate damage recorded in Wells and Long twps
1972	population decline noted in Wells and Long twps
1973	not reported
1974	extensive damage reported in Long Twp
1975-1980	not reported

Yellownecked Caterpillar, *Datana ministra* (Dru.)

Host(s): deciduous [Minor]

Year	Remarks
1950-1953	not reported
1954	low populations noted in the Aubrey Falls area
1955	low numbers observed in Kirkwood Twp
1956-1980	not reported

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

Host(s): poplar [Major]

Year	Remarks
1950-1959	not reported
1960	high populations reported in Lewis, Proctor and Spragge twps
1961	Populations declined in Lewis, Proctor and Spragge twps

(cont'd)

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

Host(s): poplar [Major]

Year	Remarks
1962-1969	not reported
1970	trace populations observed in the district
1971-1980	not observed

Birch Leafminer, *Fenusa pusilla* (Lep.)

Host(s): birch [Major]

Year	Remarks
1950-1960	not reported
1961	increased populations noted along the North Channel
1962	low populations recorded near Thessalon
1963	small pockets of severe mining observed along the North Shore
1964	small pockets of light infesation observed along the North Channel
1965-1966	not reported
1967	population increases noted in the district
1968	not reported
1969	moderate defoliation observed along the Elliot Lake Road
1970-1977	not reported
1978	severe foliage discoloration recorded in Nouvel Twp
1979	not reported
1980	severe foliage discoloration present at scattered locations in the district

Striped Alder Sawfly, *Hemichroa crocea* (Geoff.)

Host(s): wB, Al [Minor]

Year	Remarks
1950-1953	not reported
1954	severe defoliation of mature birch noted in Rose Twp
1955-1980	not reported

Pine Root Collar Weevil, *Hylobius radicis* Buch.

Host(s): pine [Major]

Year	Remarks
1950-1955	not reported
1956	Severe infestations occurred in Kirkwood Twp.
1957-1980	not reported

Fall Webworm, *Hyphantria cunea* (Dru.)

Host(s): deciduous [Major]

Year	Remarks
1950	not reported
1951-1952	light infestations observed at several locations in the district
1953	not reported
1954	low populations observed in Wiseman and Martel twps
1955	population increases noted in Martel Twp

(cont'd)

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

Host(s): deciduous [Major]

Year	Remarks
1956	increased populations observed along Hwy 129 in the Mississaugi River area
1957	moderate damage reported along Hwy 129
1958	moderate populations recorded between Aubrey Falls and Peshu Lake
1959	low numbers of tents observed in the district
1960	Populations continued to decline.
1961	not reported
1962	Light infestations occurred along the North Channel.
1963-1965	not reported
1966	low numbers of tents observed in the district
1967	population increases noted in Wells Twp
1968-1980	not reported

Pine Engraver, *Ips pini* (Say)

Host(s): pine [Major]

Year	Remarks
1950-1956	not reported
1957	Light infestations occurred in slash in Kirkwood Twp
1958-1980	not reported

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

Host(s): general feeder [Major]

Year	Remarks
1950	low numbers found in southern part of the district
1951	not reported
1952	small numbers recorded in three areas
1953-1957	not reported
1958	low populations noted in the district
1959-1980	not reported

Eastern Tent Caterpillar, *Malacosoma americanum* F.

Host(s): cherry [Major]

Year	Remarks
1950-1951	numerous tents observed throughout the district
1952	low numbers observed in Thessalon and Bridgeland twps
1953	low populations reported in Rose Twp
1954	trace populations scattered throughout the district
1955-1956	not reported
1957	low numbers of tents observed along Hwy 129 near Aubrey Falls
1958	increased poulations noted in Jessiman and Root twps
1959	not reported
1960-1962	light damage scattered throughout the district
1963	population increases noted along the North Shore

(cont'd)

Eastern Tent Caterpillar, *Malacosoma americanum* F. (concl.)

Host(s): cherry [Major]

Year	Remarks
1964	no change in populations
1965	numerous tents observed between the towns of Thessalon and Serpent River
1966	population increases noted in the aforementioned area
1967	numerous tents observed in Sagard Twp
1968-1975	not mentioned
1976	trace populations observed in Long Twp
1977	low numbers of tents common in the district
1978	high populations found in Long Twp
1979-1980	not reported

Northern Tent Caterpillar, *Malacosoma californicum pluviale* Dyar

Host(s): cherry [Major]

Year	Remarks
1950-1954	not reported
1955	low numbers reported in the district
1956-1958	not reported
1959	low numbers reported in the district
1960	not reported
1961-1962	an increased number of tents noted in the district
1963	a decline in populations observed

(cont'd)

Northern Tent Caterpillar, *Malacosoma californicum pluviale* Dyar (concl.)

Host(s): cherry [Major]

Year	Remarks
1964	an increase in numbers occurred near Rocky Island Lake.
1965	numerous tents reported in the Aubrey Falls area
1966-1967	population increases recorded in the district
1968-1980	not reported

Whitespotted Sawyer Beetle, *Monochamus scutellatus* (Say)

Host(s): coniferous [Major]

Year	Remarks
1950	severe damage caused by adult feeding on young red pine and jack pine trees in Rioux and Rollins twps
1951-1980	not reported

Arborvitae Sawfly, *Monoctenus juniperinus* MacG.

Host(s): eC, juniper [Minor]

Year	Remarks
1950	low populations noted in the district
1951-1980	not recorded

European Pine Sawfly, *Neodiprion sertifer* (Geoff.)

Host(s): pine [Major]

Year	Remarks
1950-1973	not reported
1974	first record in Kirkwood Twp
1975	not reported
1976	low numbers found in Thessalon Twp
1977-1979	not reported
1980	low populations observed in the Kirkwood Management Unit

Spider Mite, *Oligonychus* sp.

Host(s): pine, spruce [Minor]

Year	Remarks
1950-1956	not reported
1957	heavy infestations recorded in Lefroy, Day and Bright twps
1958-1980	not reported

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

Host(s): spruce [Major]

Year	Remarks
1950-1953	not reported
1954	severe defoliation of trees in Thompson Twp
1955-1956	not reported

(cont'd)

Yellowheaded Pine Sawfly, *Pikonema alaskensis* (Roh.) (concl.)

Host(s): spruce [Major]

Year	Remarks
1957	small pockets of severe defoliation noted between Iron Bridge and Blind River
1958	severe defoliation reported in a plantation in Thompson Twp
1959	Populations declined to low numbers in Thompson Twp.
1960	Low populations recurred in Thompson Twp.
1961	population decline evident in district
1962	not reported
1963	severe defoliation observed in young plantation in Thompson Twp
1964	small pockets of heavy defoliation recorded in Lefroy Twp
1965-1966	not reported
1967	increased defoliation noted on roadside regeneration between Thessalon and Blind River
1968	Severe defoliation occurred along Hwy 17 between Thessalon and Cutler.
1969-1980	not reported

Pine Bark Adelgid, *Pineus strobi* (Htg.)

Host(s): pine [Major]

Year	Remarks
1950-1963	not reported
1964	high populations recorded in Kirkwood, Rose and Haughton twps
1965	Populations declined in the Kirkwood area.
1966-1980	not reported

Northern Pine Weevil, *Pissodes approximatus* Hopk.

Host(s): pine [Major]

Year	Remarks
1950-1953	not reported
1954	damage observed in plantations in Kirkwood Twp
1955-1956	not reported
1957	light damage to shoots reported in Kirkwood Twp
1958	not reported
1959	high numbers observed on dead or dying trees in four townships
1960	High populations persisted in Rose and Kirkwood twps.
1961-1966	high numbers reported in Kirkwood Twp
1967-1980	not reported

Larch Sawfly, *Pristiphora erichsonii* (Hartig)

Host(s): larch [Major]

Year	Remarks
1950-1958	not reported
1959	low populations noted in the district
1960	not reported
1961	low populations recorded in the district
1962-1980	not reported

Aspen Leafroller, *Pseudexentera oregonana* Wlshm.

Host(s): poplar [Major]

Year	Remarks
1950-1974	not reported
1975	commonly found in the district
1976-1980	not reported

Spruce Bud Midge, *Rhabdophaga swainei* Felt

Host(s): spruce [Minor]

Year	Remarks
1950-1962	not reported
1963	low populations reported in Bridgland, Kirkwood and Thessalon twps
1964-1980	not reported

European Pine Shoot Moth, *Rhyacionia buoliana* (Schiff.)

Host(s): pine [Major]

Year	Remarks
1950-1957	not reported
1958	trace populations observed in Thompson Twp
1959	not reported
1960	light infestations noted in Galbraith and Striker twps
1961-1980	not reported

Red Pine Needle Midge, *Thecodiplosis piniresinosae* Kearby

Host(s): rP [Minor]

Year	Remarks
1950-1976	not reported
1977-1978	high populations reported in Kirkwood Twp
1979-1980	not reported

Pine Tortoise Scale, *Toumeyella parvicornis* (Ckll.)

Host(s): jP, scP

Year	Remarks
1950-1953	not reported
1954	high populations recorded in Nicholas Twp; light damage noted in Vance, Root, Simons and Sturgeon twps
1955	Population collapsed in Nicholas Twp.
1956-1957	not reported
1958	high populations reported in Sturgeon Twp
1959-1960	not reported
1961	high populations reported in Lefroy Twp
1962	small pockets of heavy infestation noted in Lefroy Twp and near Aubrey Falls
1963-1980	not reported

Spruce Bud Moth, *Zeiraphera canadensis* Mut. & Free.

Host(s): spruce [Major]

Year	Remarks
1950-1956	not reported
1957-1958	moderate-to-severe defoliation noted between Iron Bridge and Blind River
1959	severe bud damage recorded in Thompson Twp
1960	population increases observed in Thompson Twp
1961	Heavy infestations persisted in Thompson Twp
1962	high populations reported between Thessalon and Blind River
1963-1980	not reported

DISEASES

Armillaria Root Rot, *Armillaria mellea* (Vahl: Fr.) Kummer

Host(s): coniferous, deciduous [Major]

Year	Remarks
1950-1954	not reported
1955	some mortality in red pine plantations in Kirkwood Management Unit
1956-1957	not reported
1958	damage common on jack pine regeneration in the Peshu Lake area
1959	found commonly on red pine in Kirkwood Management Unit and on jack pine in the Peshu Lake area
1960-1961	not reported
1962-1965	found commonly in natural jack pine regeneration in the Peshu Lake area
1966-1969	not reported
1970	5% tree mortality in planted red pine in Kirkwood Twp
1971	not reported
1972	common on a variety of hosts in the district
1973-1975	not reported
1976	low level of infection at several locations
1977	light infection in Villeneuve and Kirkland twps
1978-1980	not reported

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

Host(s): wE [Major]

Year	Remarks
1950-1966	not reported
1967	A few infected trees were observed in Galbraith Twp. This is the first record of the disease in the district.
1968	an increase in infection in Galbraith Twp
1969	continued high infection in Galbraith Twp; a new distribution record observed in Albanel Twp
1970	Tree mortality occurred along Highway 17 between Cutler and Bruce Mines.
1971	Highest incidence of new infections occurred along the Little White River Road.
1972-1974	continued high mortality of host along the North Channel in the southern part of the district
1975	high mortality and higher incidence of disease in the southern part of the district
1976-1980	continued decimation of host along the North Channel

Spruce Needle Rusts, *Chrysomyxa ledi* (Alb. & Schwein.) de Bary var. *ledi* and *C. ledicola* (Peck) Lagerh.

Host(s): wS, bS [Major]

Year	Remarks
1950-1957	not reported
1958	low incidence in the district
1959	not reported
1960-1961	common at low incidence in the district

(cont'd)

Spruce Needle Rusts, *Chrysomyxa ledi* (Alb. & Schwein.) de Bary var. *ledi* and *C. ledicola* (Peck) Lagerh. (concl.)

Host(s): wS, bS [Major]

Year	Remarks
1962-1974	not reported
1975	increase in incidence in Gaunt and Rioux twps
1976-1977	low incidence in Haughton Twp
1978	not reported
1979	low incidence in Patton Twp
1980	not reported

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

Host(s): tA [Major]

Year	Remarks
1950-1958	not reported
1959	common but light in the district
1960-1963	small pockets of severe defoliation general in the district
1964	large area of heavy infection in Patton, Scarfe, Cobden and Thompson twps
1965	Pockets of severe infection persisted in the same areas as in 1964.
1966	little change in infection area
1967-1968	not reported
1969	pockets of severe infection general in the district
1970	decline to low infection in the district

(cont'd)

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

Host(s): tA [Major]

Year	Remarks
1971-1974	low incidence in the district
1975	low incidence of infection in Nouvel and Rioux twps
1976	moderate incidence in Rioux, Rollins, Cobden and Bouck twps
1977	low incidence in Rollins, Villeneuve and Wardle twps
1978	increase to moderate incidence in Rollins, Villeneuve and Wardle twps
1979	moderate damage in Spragge Twp
1980	decline in infection in Spragge Twp; high incidence in Cobden Twp

A Needle Rust of Pine, *Coleosporium asterum* (Dietel) Sydow

Host(s): rP, jP [Major]

Year	Remarks
1950-1958	not reported
1959	low incidence in Rose and Kirkwood twps
1960	low incidence in Rose Twp
1961-1963	low incidence in Rose and Kirkwood twps
1964	small pockets of high infection in the North Channel area
1965	small pockets of low incidence in the North Channel area
1966-1971	not reported
1972	severe infection in the Kirkwood Management Unit
1973-1975	not reported
1976	low incidence in Maeck Twp
1977-1978	not reported
1979-1980	low incidence in the Rocky Island Lake area

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

Host(s): wP [Major]

Year	Remarks
1950-1954	not reported
1955-1959	common on regeneration at numerous locations
1960	Eight percent of the trees examined in Kirkwood Management Unit were infected.
1961	Ten percent of the trees examined in the Kirkwood Management Unit were infected.
1962	an increase in incidence on young trees along the North Channel
1963	high incidence (26%) on planted trees in Rose Twp
1964-1967	high incidence in the Kirkwood Management Unit and in Vance Twp
1968-1971	High incidence persisted in Kirkwood Management Unit and in Vance Twp.
1972	not reported
1973	High incidence was observed in Parkinson Twp.
1974	low infections in the Kirkwood Management Unit
1975	low incidence in Thessalon and Wells twps
1976	low incidence in Thessalon Twp
1977	moderate incidence in Parkinson Twp; light incidence in Thessalon and Wells twps
1978	moderate incidence in Thessalon, Gladstone and Wells twps
1979-1980	not reported

Scleroderris Canker, *Gremmeniella abietina* (Lagerb.) Morelet

Host(s): pine [Major]

Year	Remarks
1950-1953	not reported
1954-1964	In this period severe branch and whole-tree mortality occurred on planted red pine and jack pine trees, 1-2 m in height, in the Kirkwood Management Unit. The damage by unknown causes had symptoms similar to those found in 1965 and the disease was identified as *G. abietina.*
1965-1969	Current mortality caused by the disease was high in the Kirkwood Management Unit.
1970	high level of infection in Parkinson Twp and continued high incidence in Kirkwood Twp
1971	high level of infection in Parkinson and Vance twps
1972-1978	high incidence in the Kirkwood Management Unit
1979	low incidence in Rose Twp
1980	low incidence in the Kirkwood Management Unit

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

Host(s): tA, lA [Major]

Year	Remarks
1950-1952	not reported
1953-1954	Low incidence was observed at 15 locations.
1955-1956	Low incidence observed commonly in the district
1967	common on regeneration in the Kirkwood Management Unit
1968	common in young aspen stands in Galbraith and Casson twps
1969	Moderate infection was observed in Gladstone and Vance twps.

(cont'd)

Hypoxylon Canker, *Hypoxylon mammatum* (Wahlenb.) J. Miller (concl.)

Host(s): tA, lA [Major]

Year	Remarks
1970-1972	not reported
1973	High infections were common throughout the district.
1974-1976	not reported
1977	Low incidence was common in the district.
1978-1980	not reported

Shoot Blight, *Venturia macularis* (Fr.) E. Müller & v. Arx

Host(s): tA [Major]

Year	Remarks
1950-1954	not reported
1955-1963	light infection common on regeneration in the district
1964-1966	Severe infection occurred in Rose, Wells and Duncan twps.
1967	severe infection observed in Sagard Twp
1968-1972	not reported
1973	Severe infection occurred in Poulin Twp.
1974	not reported
1975-1976	light infection common on regeneration in the district
1977-1978	increase in incidence in the district
1979	High infection occurred at numerous locations.
1980	high infection observed in Parkinson Twp

Other Noteworthy Diseases

Comandra Blister Rust, *Cronartium comandra* Peck

Host(s): pines [Major]

Year	Remarks
1950-1962	not reported
1963	small scattered pockets of infection observed in Cobden Twp
1964-1980	not reported

Sweet Fern Blister Rust, *Cronartium comptoniae* Arthur

Host(s): jP [Major]

Year	Remarks
1950-1965	not reported
1966	trace infections observed in the Little White River area
1967	not reported
1968	trace infections noted in the Blind River area
1969	not reported
1970	trace infections noted in the Blind River area
1971-1972	not reported
1973	trace infections noted in the Blind River area
1974	not reported
1975-1976	light infections reported in Renwick Twp
1977-1980	not reported

ABIOTIC DAMAGE

Drought

Year	Remarks
1950-1954	not reported
1955	considerable damage done to all species in the Elliot Lake area
1956-1980	not reported

Frost

Year	Remarks
1950-1954	not reported
1955	moderate damage noted on bF in the Thessalon area
1956-1962	not reported
1963	severe damage to various hosts recorded in Haughton Twp
1964	severe damage noted throughout the district
1965-1966	widespread damage found in the district on various hosts
1967-1968	sevre discoloration of wS reported in Vance Twp
1969-1976	not reported
1977	severe damage to bF recorded in the Blind River-Thessalon area
1978	severe damage to wS recorded in the Blind River-Thessalon area
1979	light damage found on wS in Parkinson Twp
1980	severe damage to all tree species in the northern part of the district

Grosbeak Damage

Year	Remarks
1950-1959	not reported
1950-1961	extreme damage to new buds of scP trees noted in the Thessalon area
1962-1980	not reported

Ozone

Year	Remarks
1950-1952	not reported
1953	numerous wP trees affected near Mount Lake
1954	light damage to wP trees observed in Lewis and Kirkwood twps
1955	commonly found on wP plantations in the Kirkwood Management Unit
1956-1958	not reported
1959-1964	not reported
1965	severe browning on a few trees in Kirkwood Twp
1966-1980	not reported

Salt

Year	Remarks
1950-1965	severe damage to roadside coniferous trees noted along Hwy 17, east of Thessalon
1966-1975	not reported
1976	severe browning of roadside rP trees noted along Hwy 17, east of Thessalon
1977-1980	not reported

Scorch

Year	Remarks
1950-1971	not reported
1972	sugar maple trees severely affected in the Elliot Lake-Blind River area
1973-1980	not reported

Winter Drying

Year	Remarks
1950-1958	not reported
1959	considerable damage to rP evident in the district
1960-1962	not reported
1963	severe damage to rP found on trees on southern exposures in the district
1964	severe damage found at two locations
1965-1966	not reported
1967-1968	severe damage to rP noted near Iron Bridge
1969-1971	not reported
1972	severe damage found in Vance Twp
1973-1977	not reported
1978	severe damage recorded in the Portelance Lake area
1979-1980	not reported

DIEBACKS AND DECLINES

Birch Decline

Host(s): wB, yB [Major]

Year	Remarks
1950-1962	not reported
1963	damage prevalent in the Mississaugi River area
1964	severe damage noted in the Peshu Lake area
1965-1967	not reported
1968	severe damage observed in Wells and Casson twps
1969-1980	not reported

APPENDICES

APPENDIX A

DECIDUOUS HOST

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

APPENDIX B

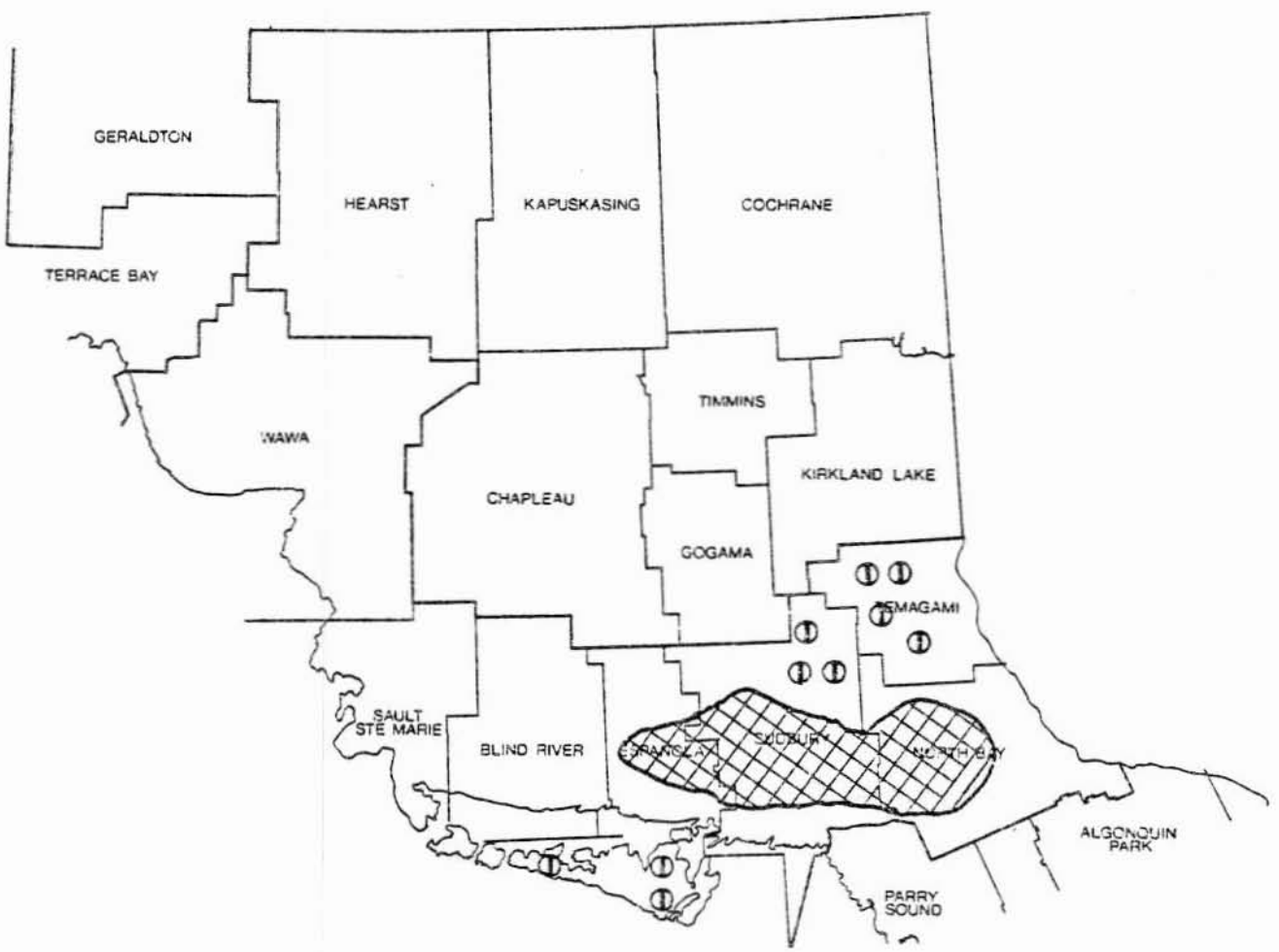
CONIFEROUS HOST

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

APPENDIX C

MAPS - NORTHEASTERN ONTARIO

NORTHEASTERN ONTARIO



0 Miles 60

0 Kilometres 96

Birch Skeletonizer

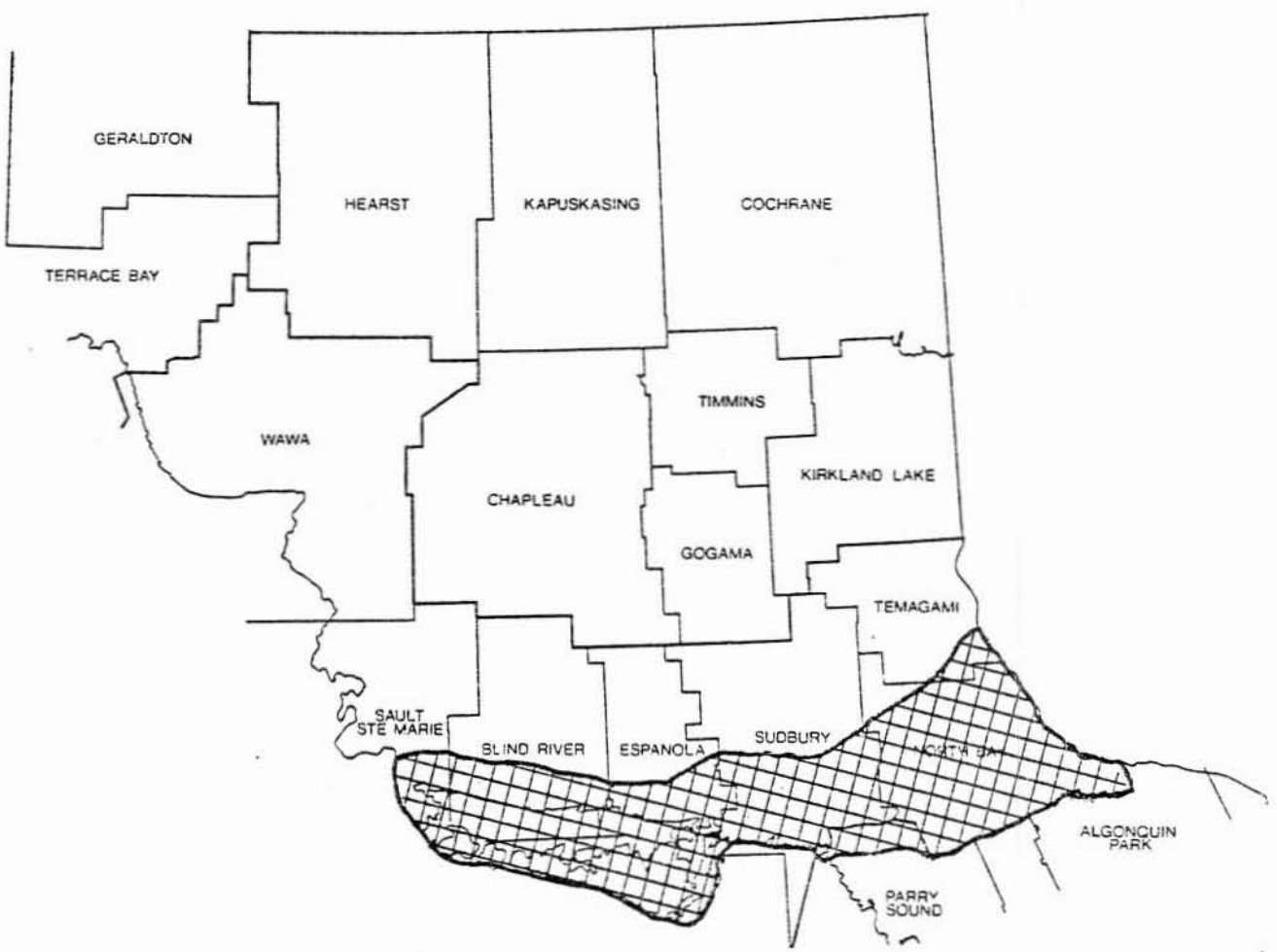
Areas within which defoliation occurred in 1950

LEGEND

Light defoliation ①

Moderate-to-severe defoliation ▨

NORTHEASTERN ONTARIO



Birch Skeletonizer

Areas within which defoliation occurred in 1961

LEGEND

Moderate-to-severe defoliation

0 Miles 60

0 Kilometres 96

NORTHEASTERN ONTARIO

0 Miles 60

0 Kilometres 96

Birch Skeletonizer

Areas within which defoliation occurred in 1963

LEGEND

Light defoliation

Moderate-to-severe defoliation or

NORTHEASTERN ONTARIO

Birch Skeletonizer

0 Miles 60

0 Kilometres 96

Areas within which defoliation occurred in 1970

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO

Birch Skeletonizer

Areas within which defoliation occurred in 1971

0 Miles 60

0 Kilometres 96

LEGEND

Moderate-to-severe defoliation

NORTHEASTERN ONTARIO

Birch Skeletonizer

Areas within which defoliation occurred in 1972

0 Miles 60

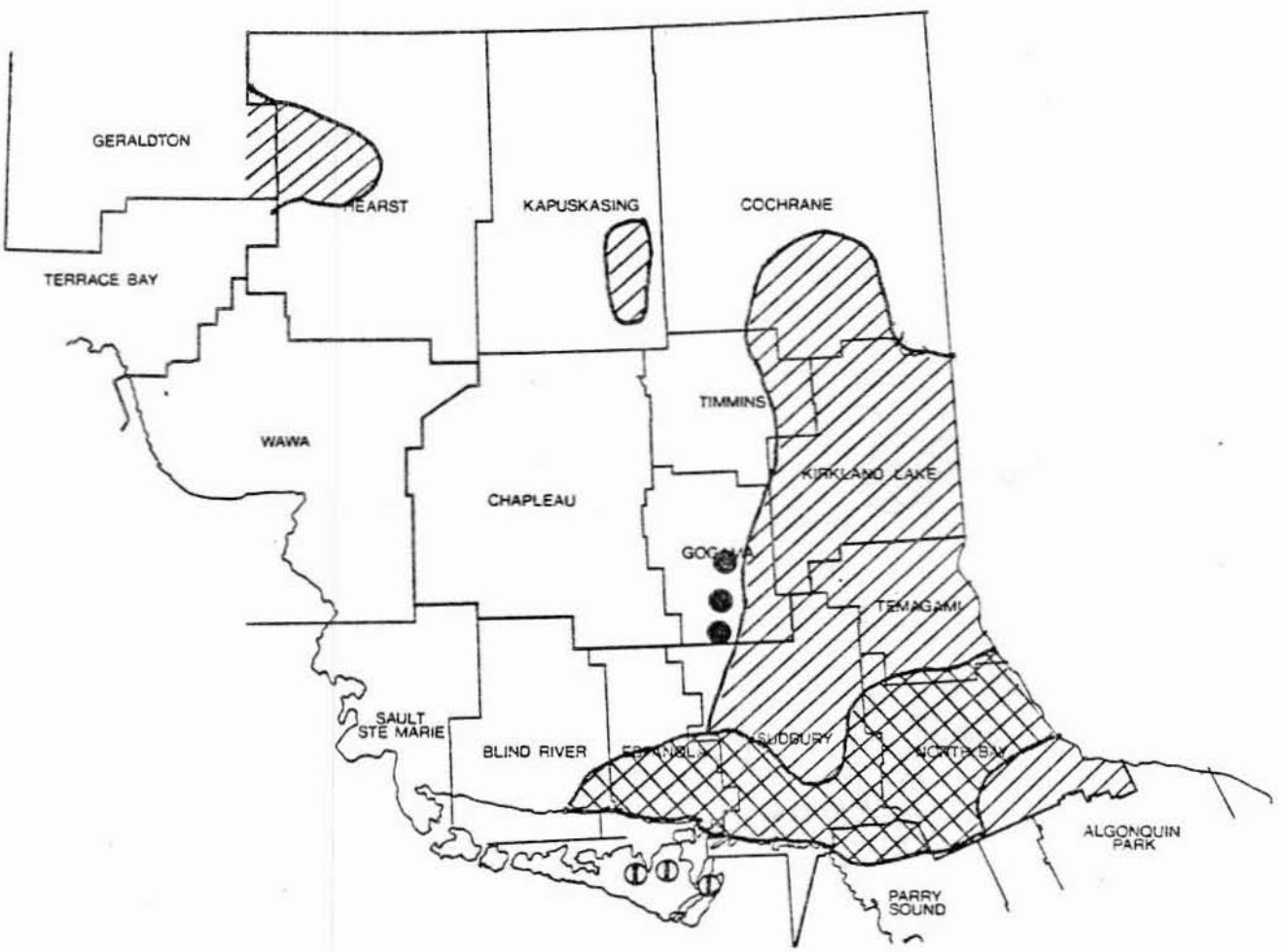
0 Kilometres 96

LEGEND

Light defoliation ① or

Moderate-to-severe defoliation

NORTHEASTERN ONTARIO



Birch Skeletonizer

Areas within which defoliation occurred in 1973

0 Miles 60

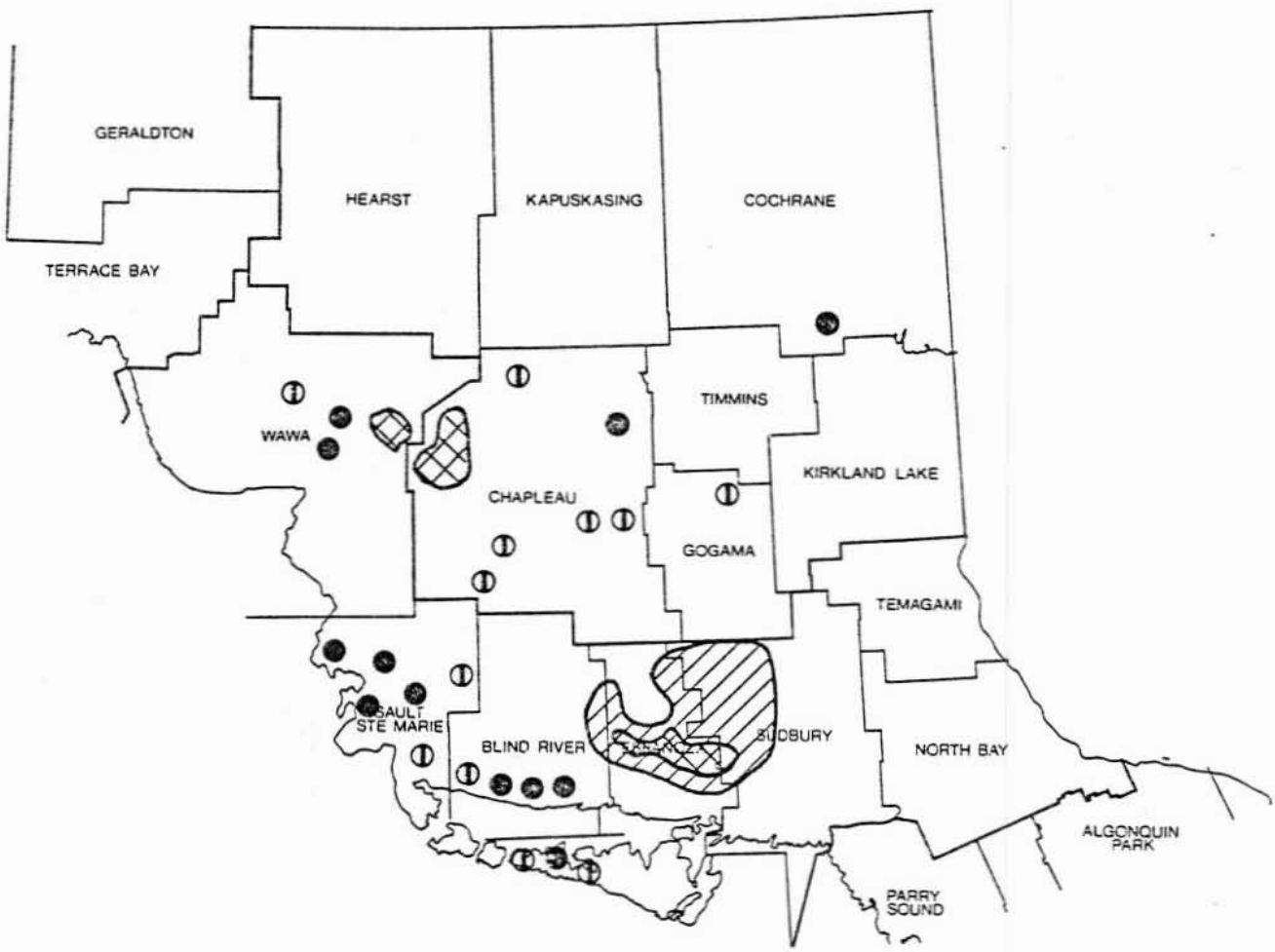
0 Kilometres 96

LEGEND

Light defoliation ◐ or

Moderate-to-severe defoliation ● or

NORTHEASTERN ONTARIO



Large Aspen Tortrix

Areas within which defoliation occurred in 1957

0 Miles 60

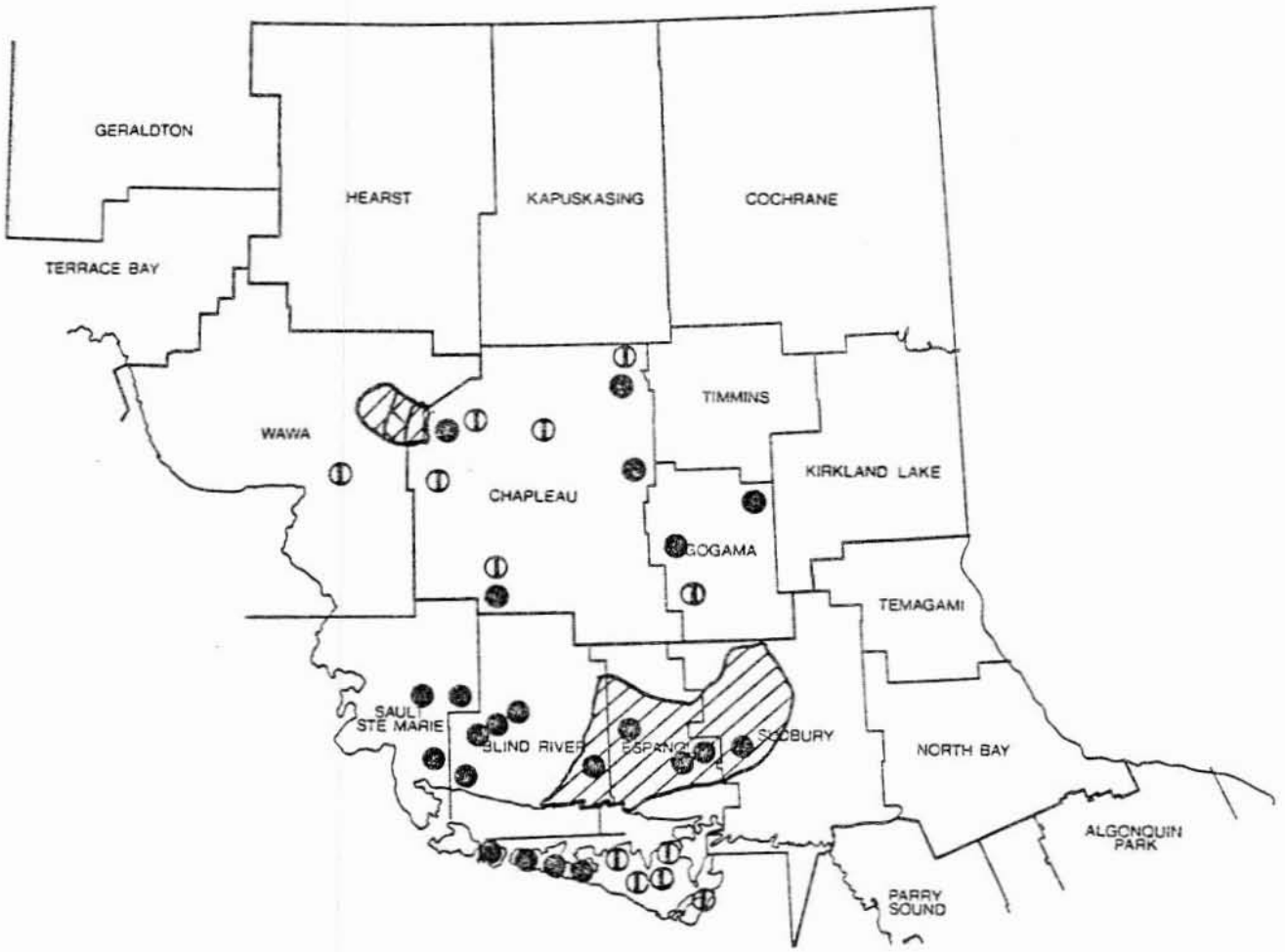
0 Kilometres 96

LEGEND

Light defoliation ◐ or ▨

Moderate-to-severe defoliation ● or ▩

NORTHEASTERN ONTARIO



Large Aspen Tortrix

Areas within which defoliation occurred in 1958

0 Miles 60

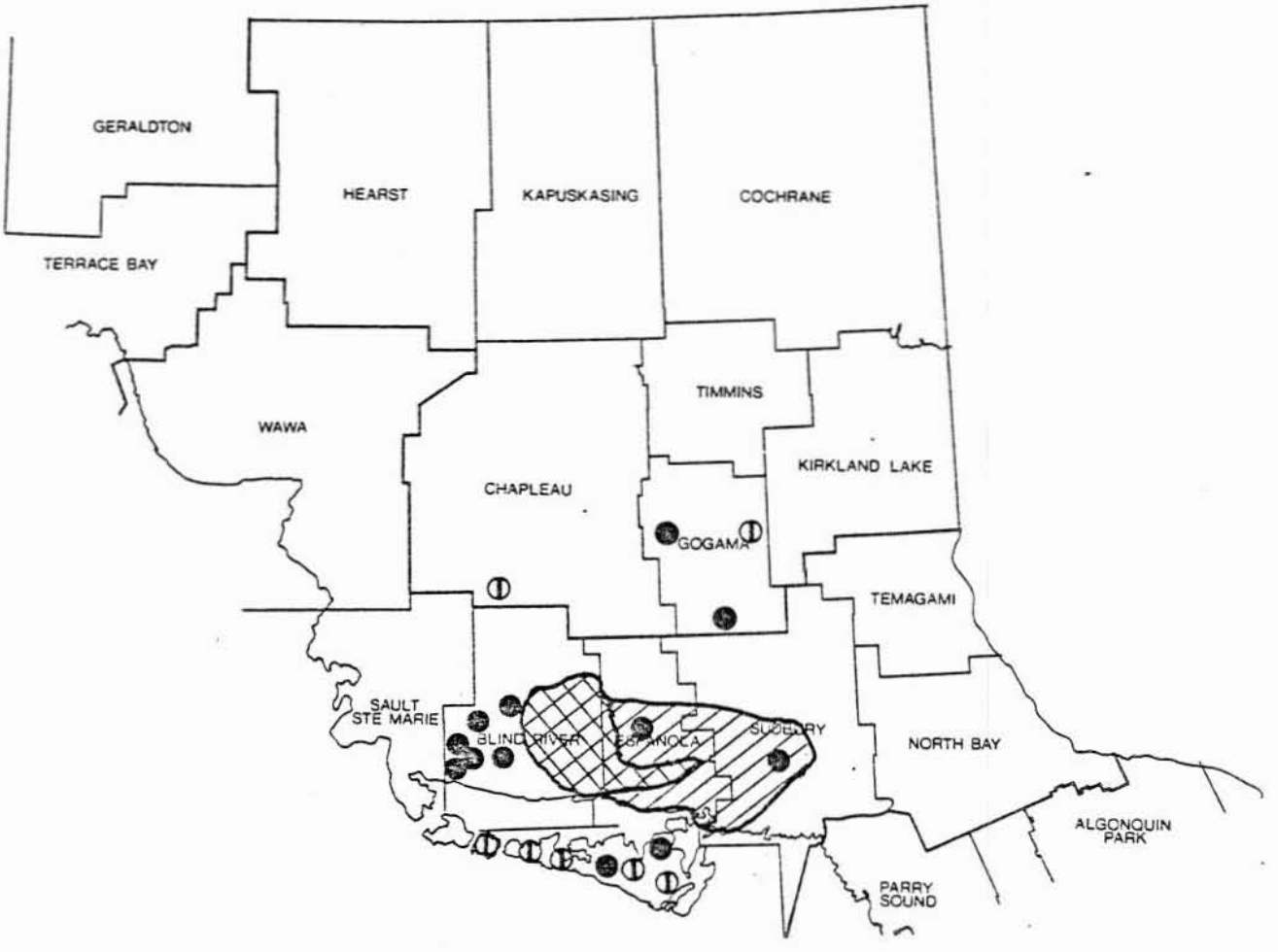
0 Kilometres 96

LEGEND

Light defoliation ◐ or ▨

Moderate-to-severe defoliation ● or ▩

NORTHEASTERN ONTARIO



Large Aspen Tortrix

Areas within which defoliation occurred in 1959

0 Miles 60

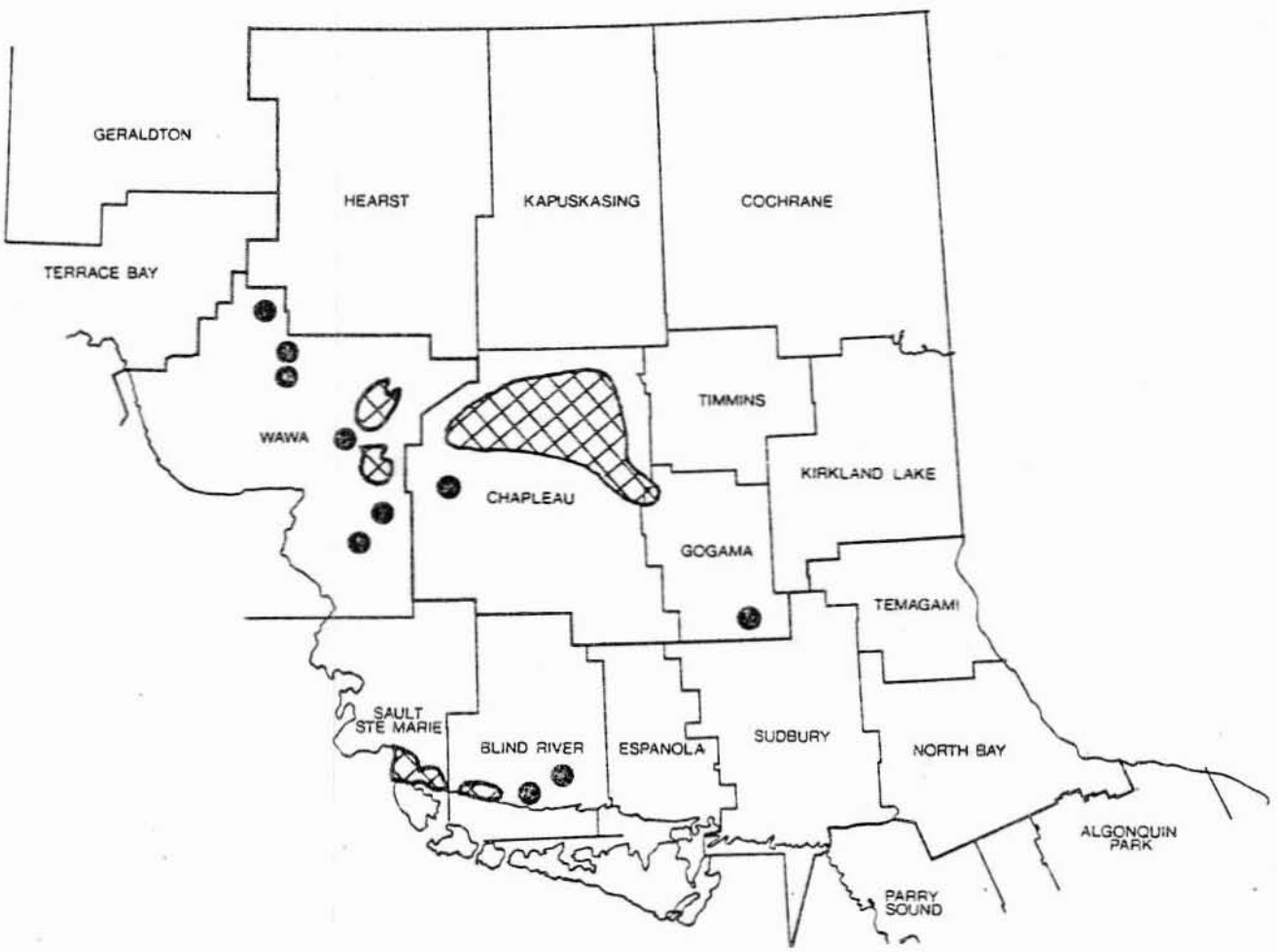
0 Kilometres 96

LEGEND

Light defoliation ◐ or ▨

Moderate-to-severe defoliation ● or ▩

NORTHEASTERN ONTARIO



0 Miles 60

0 Kilometres 96

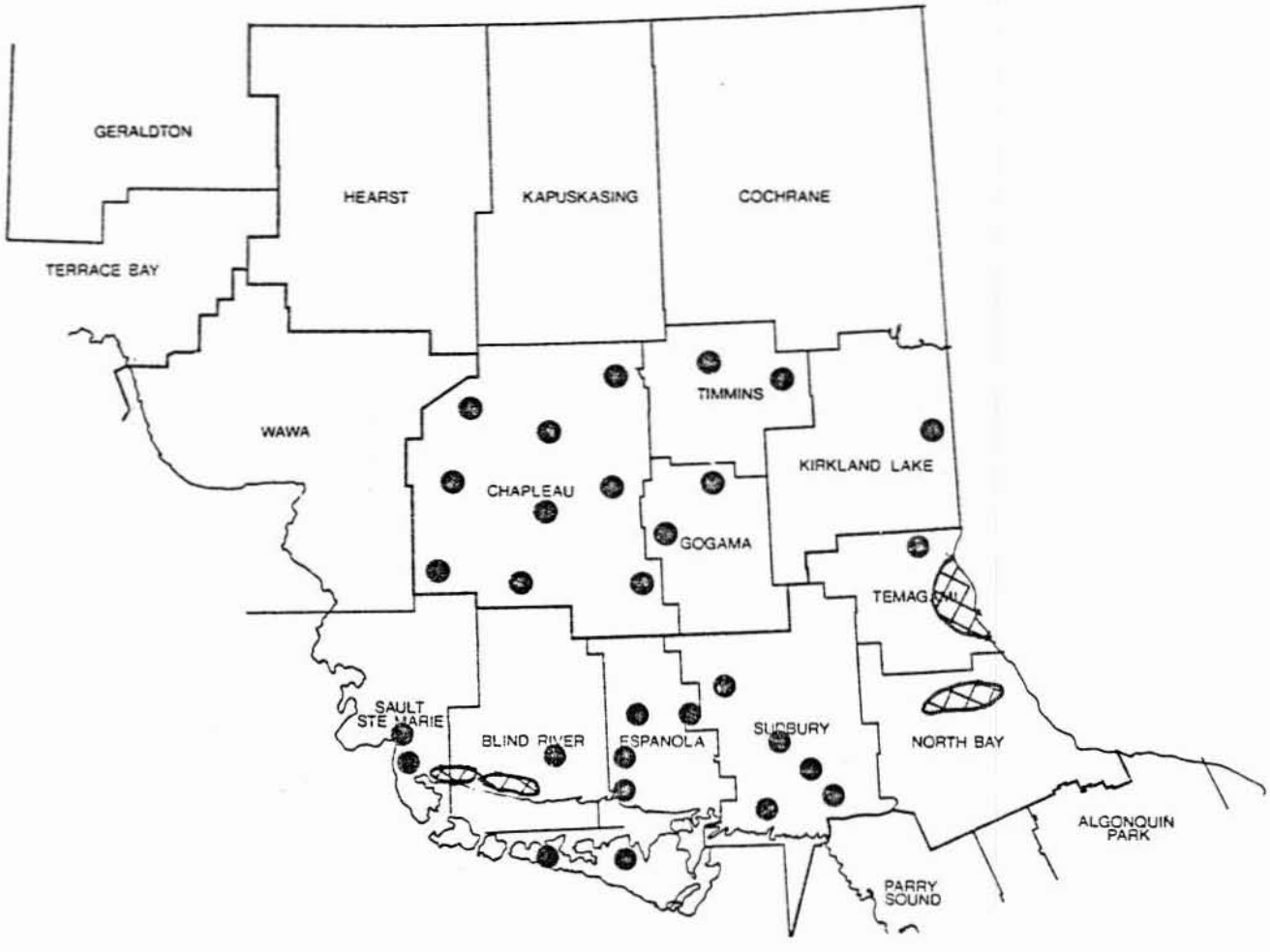
Large Aspen Tortrix

Areas within which defoliation occurred in 1970

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO



Large Aspen Tortrix

Areas within which defoliation occurred in 1971

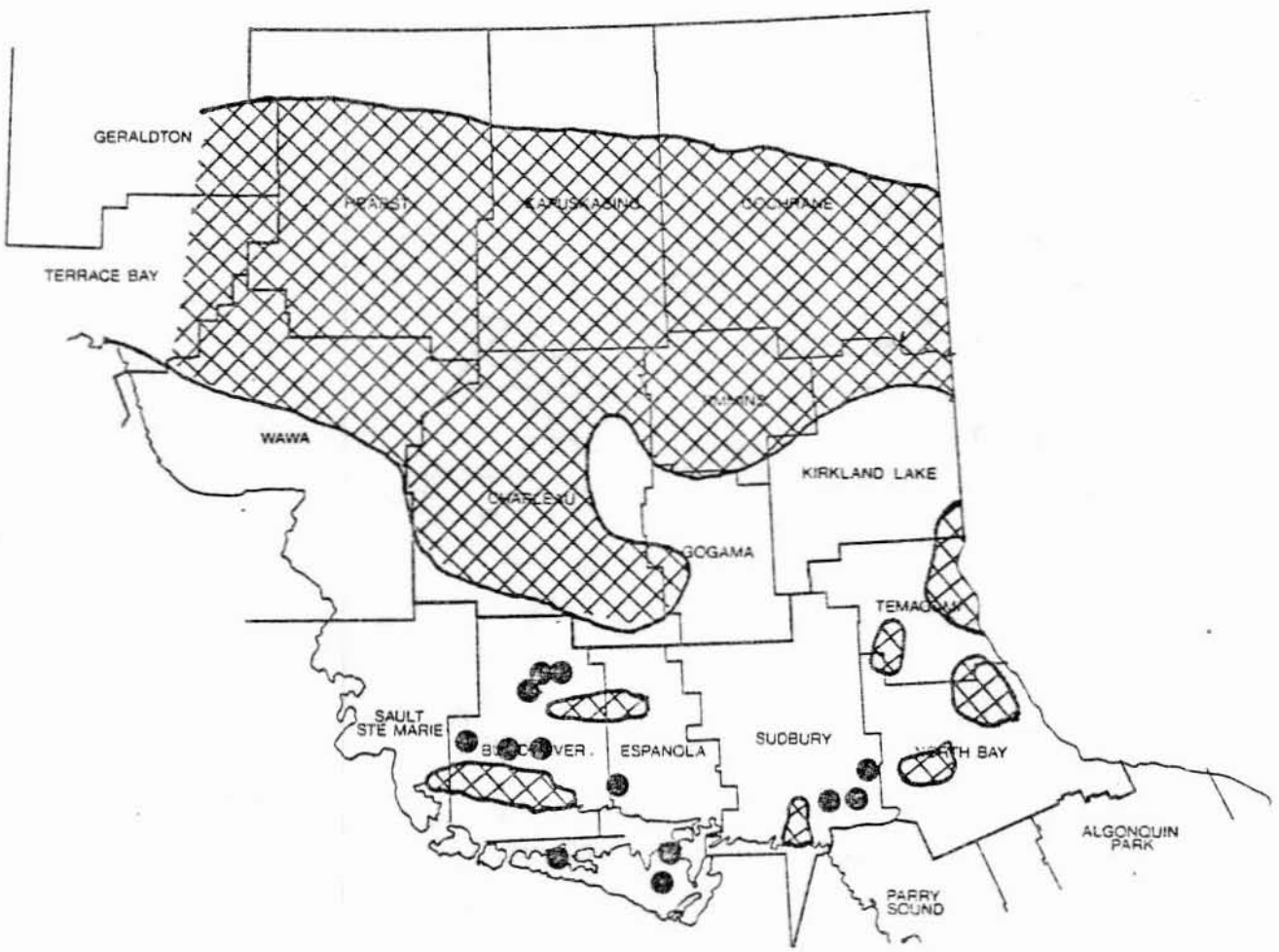
0 Miles 60

0 Kilometres 96

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO



0 Miles 60

0 Kilometres 96

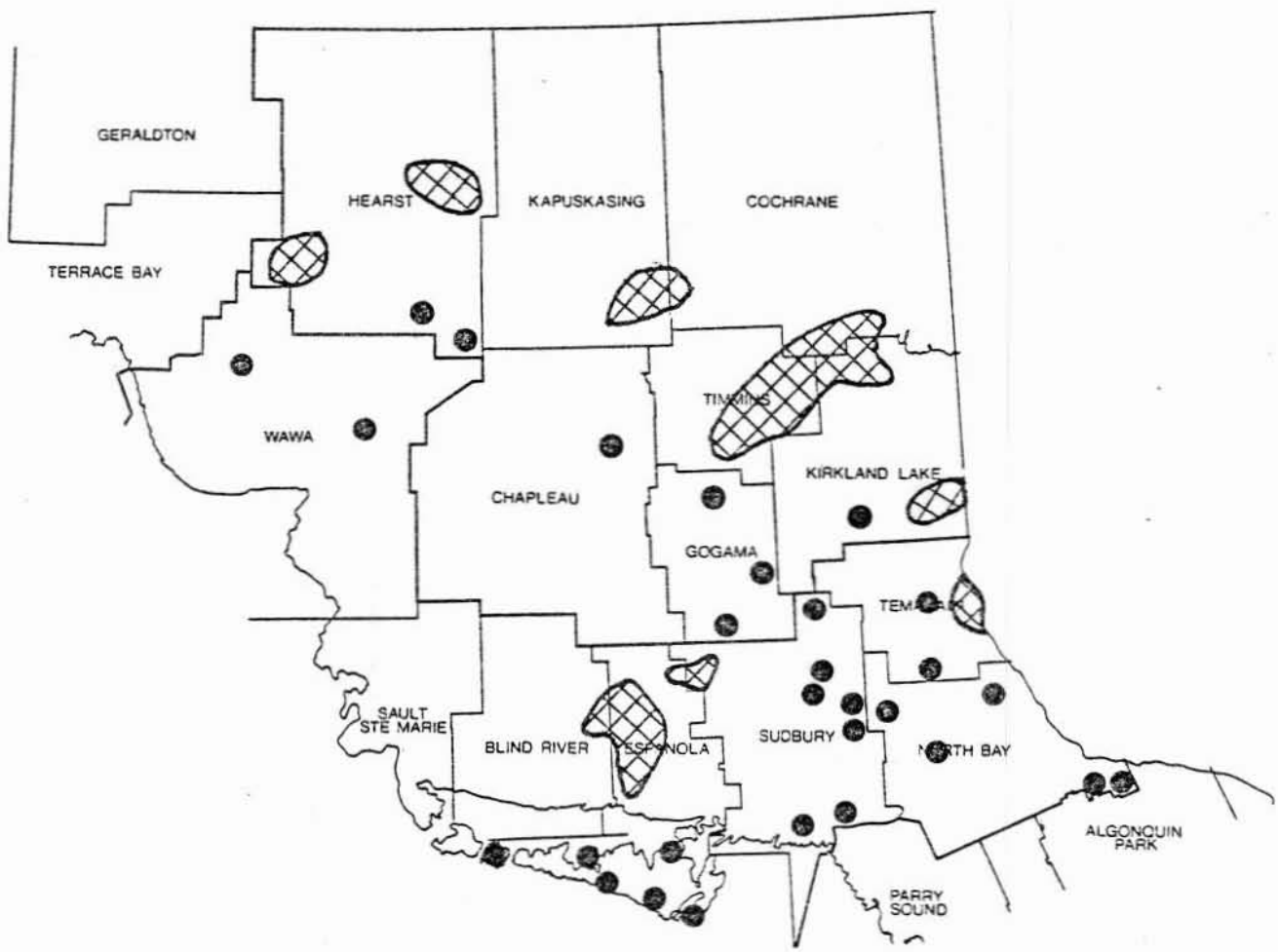
Large Aspen Tortrix

Areas within which defoliation occurred in 1972

LEGEND

Moderate-to-severe defoliation ● or

NORTHEASTERN ONTARIO



Large Aspen Tortrix

Areas within which defoliation occurred in 1973

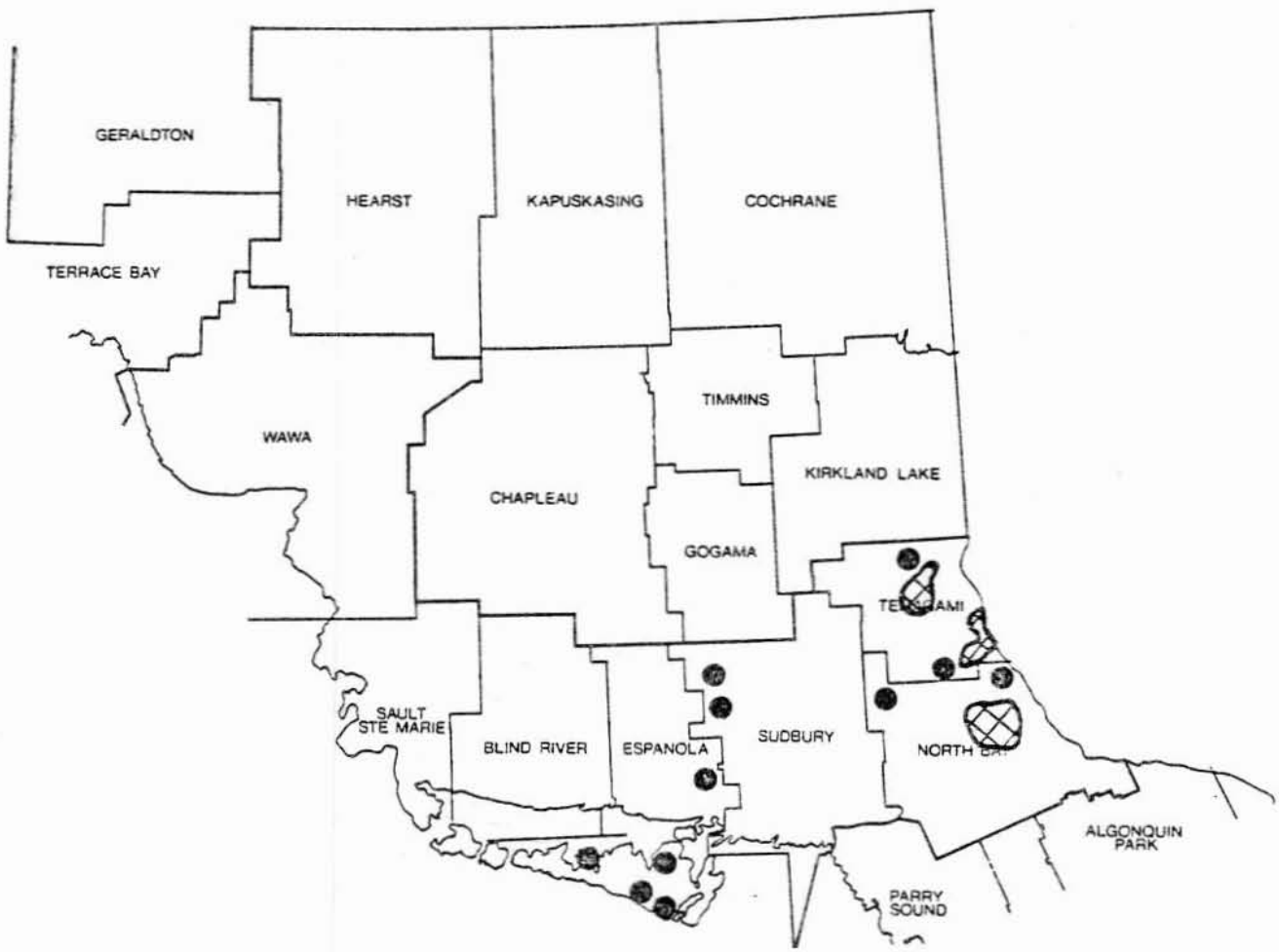
0 Miles 60

0 Kilometres 96

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO



0 Miles 60

0 Kilometres 96

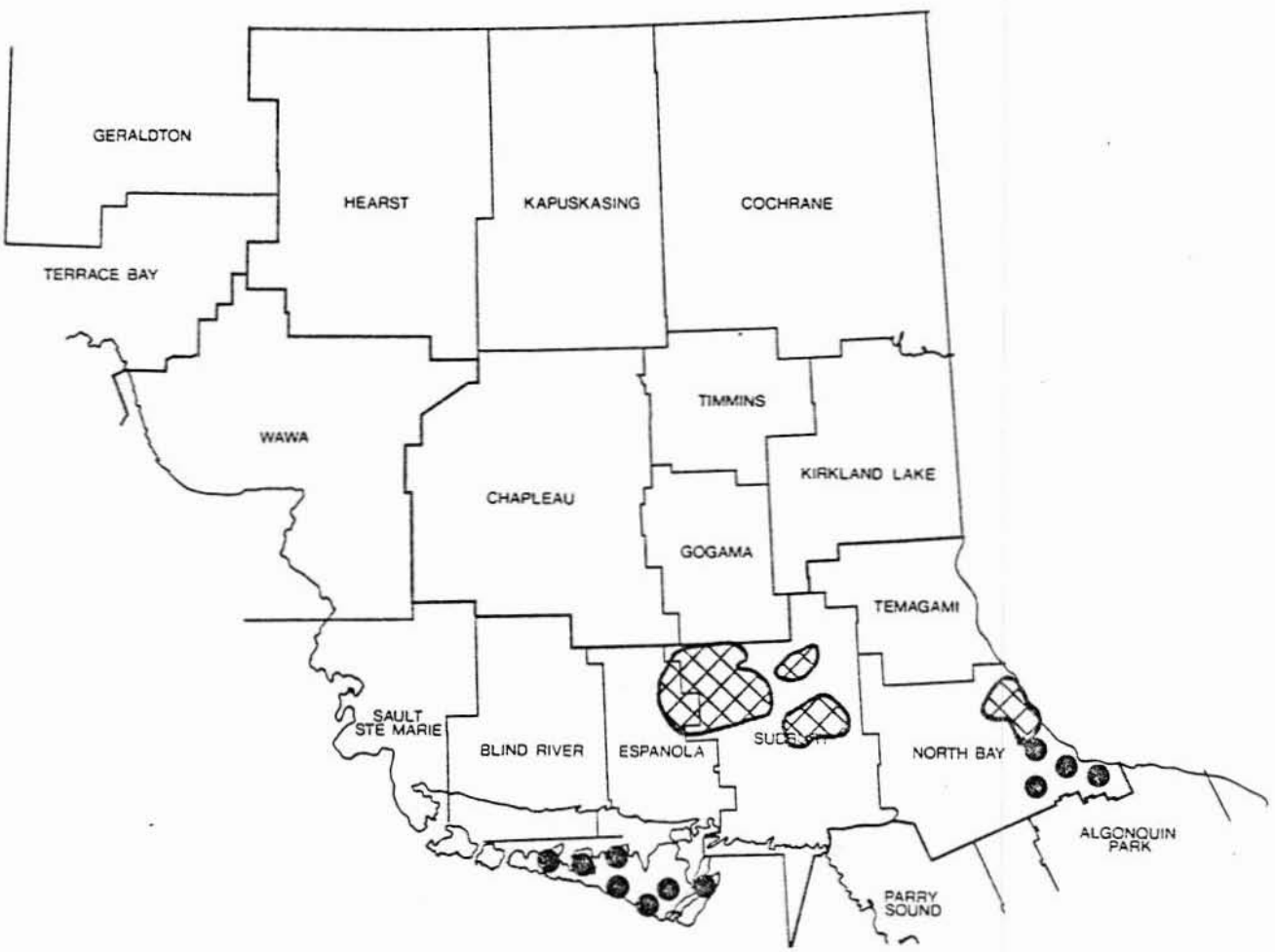
Large Aspen Tortrix

Areas within which defoliation occurred in 1974

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO



Large Aspen Tortrix

Areas within which defoliation occurred in 1975

0 Miles 60

0 Kilometres 96

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO

Spruce Budworm

Areas within which defoliation occurred in 1950

0 Miles 60

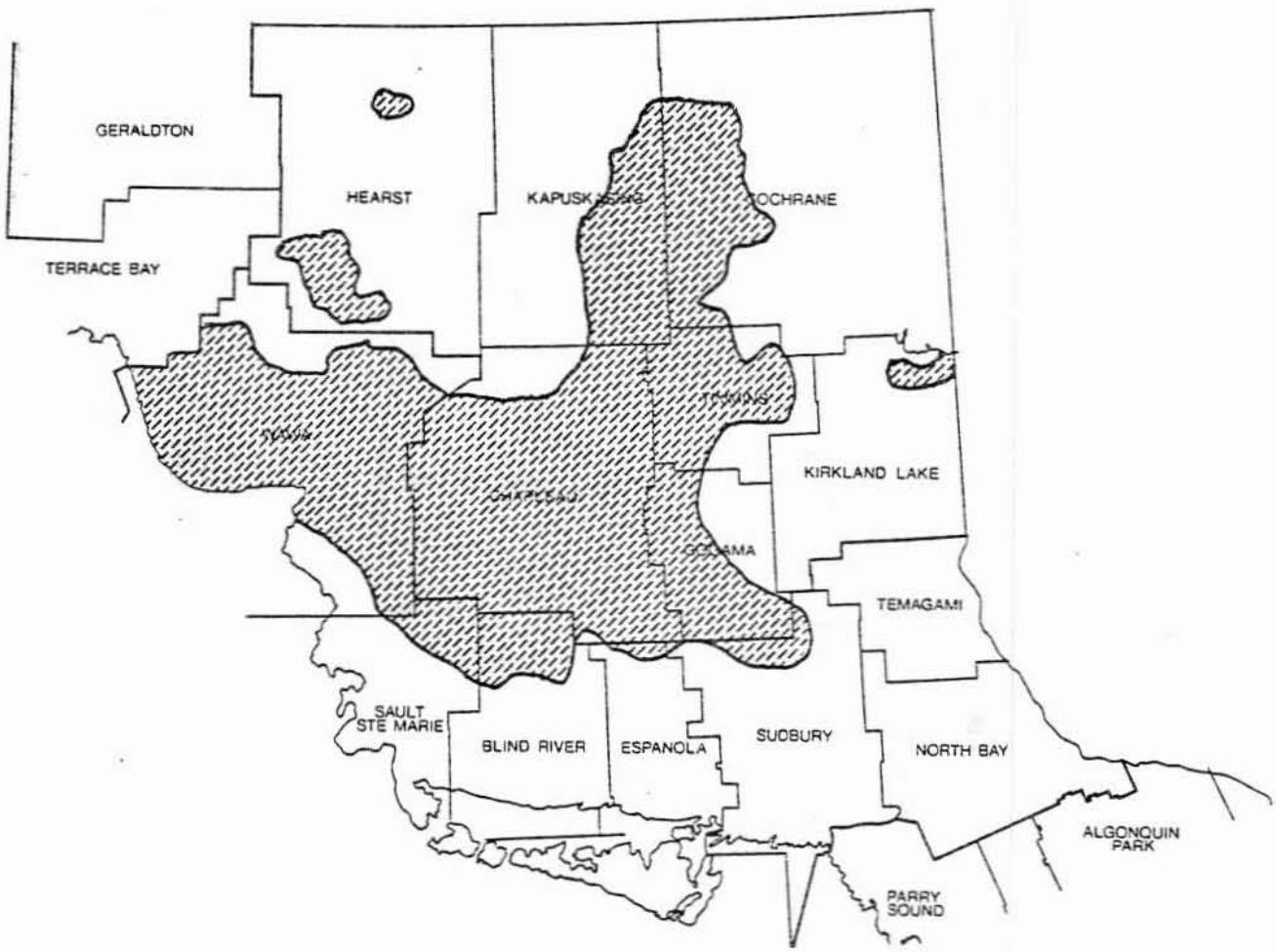
0 Kilometres 96

LEGEND

Light defoliation ◐ or ▨

Moderate-to-severe defoliation ● or ▩

NORTHEASTERN ONTARIO



Spruce Budworm

Areas within which balsam fir whole tree and top mortality occurred in 1950

0 Miles 60

0 Kilometres 96

LEGEND

Mortality

NORTHEASTERN ONTARIO

Spruce Budworm

Areas within which defoliation occurred in 1951

0 Miles 60

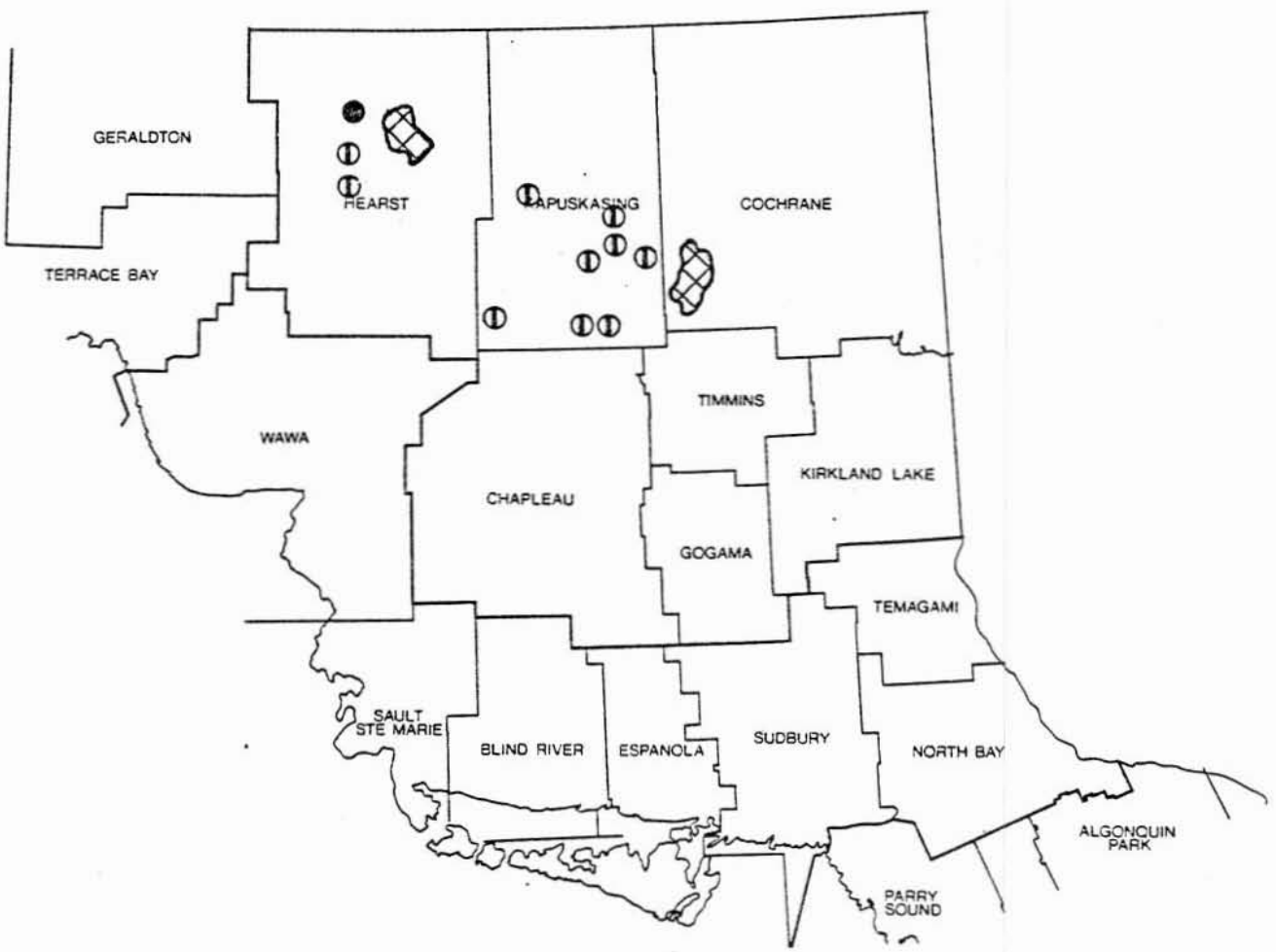
0 Kilometres 96

LEGEND

Light defoliation

Moderate-to-severe defoliation

NORTHEASTERN ONTARIO



0 Miles 60

0 Kilometres 96

Spruce Budworm

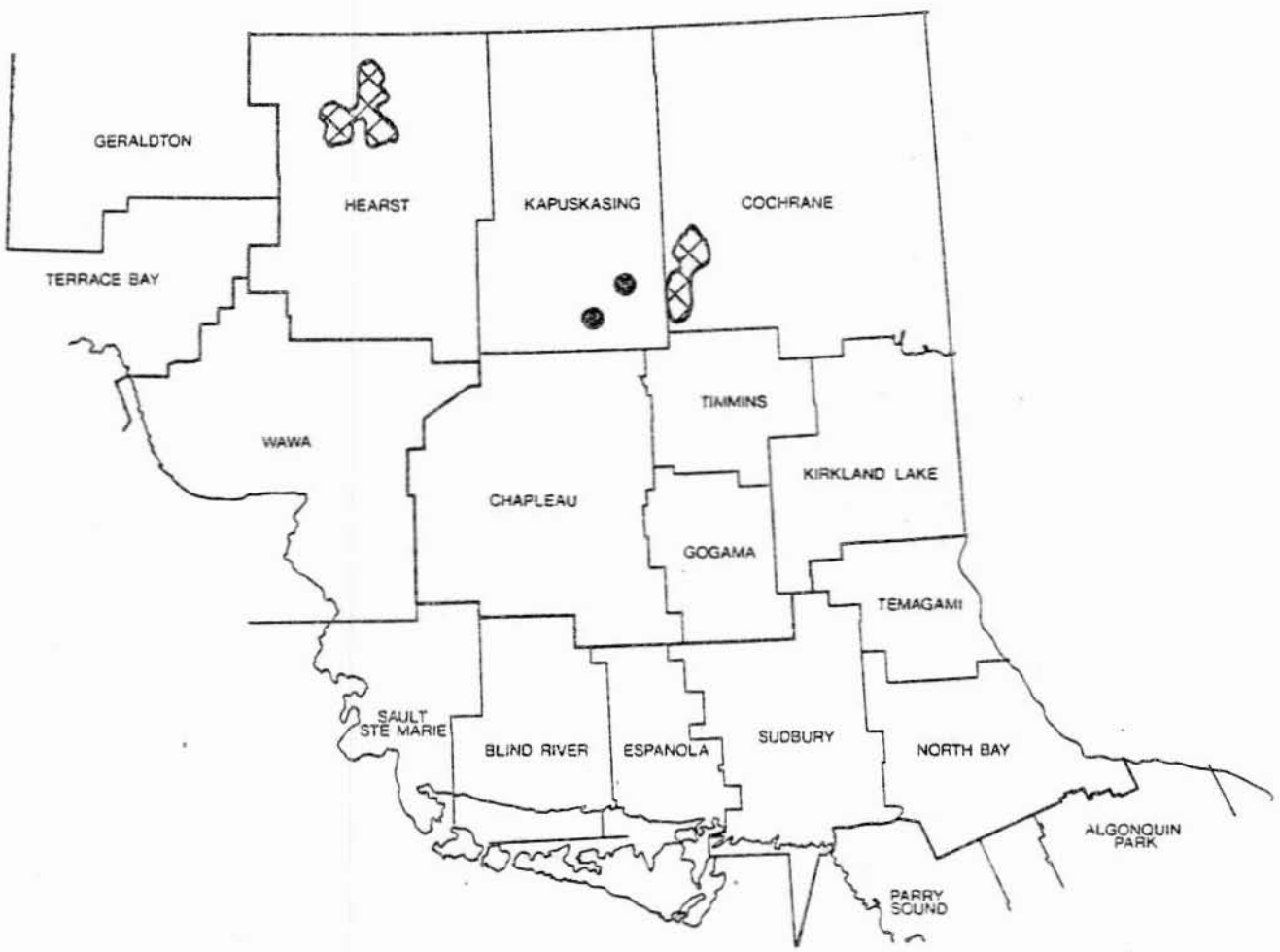
Areas within which defoliation occurred in 1952

LEGEND

Light defoliation

Moderate-to-severe defoliation or

NORTHEASTERN ONTARIO



Spruce Budworm

0 Miles 60

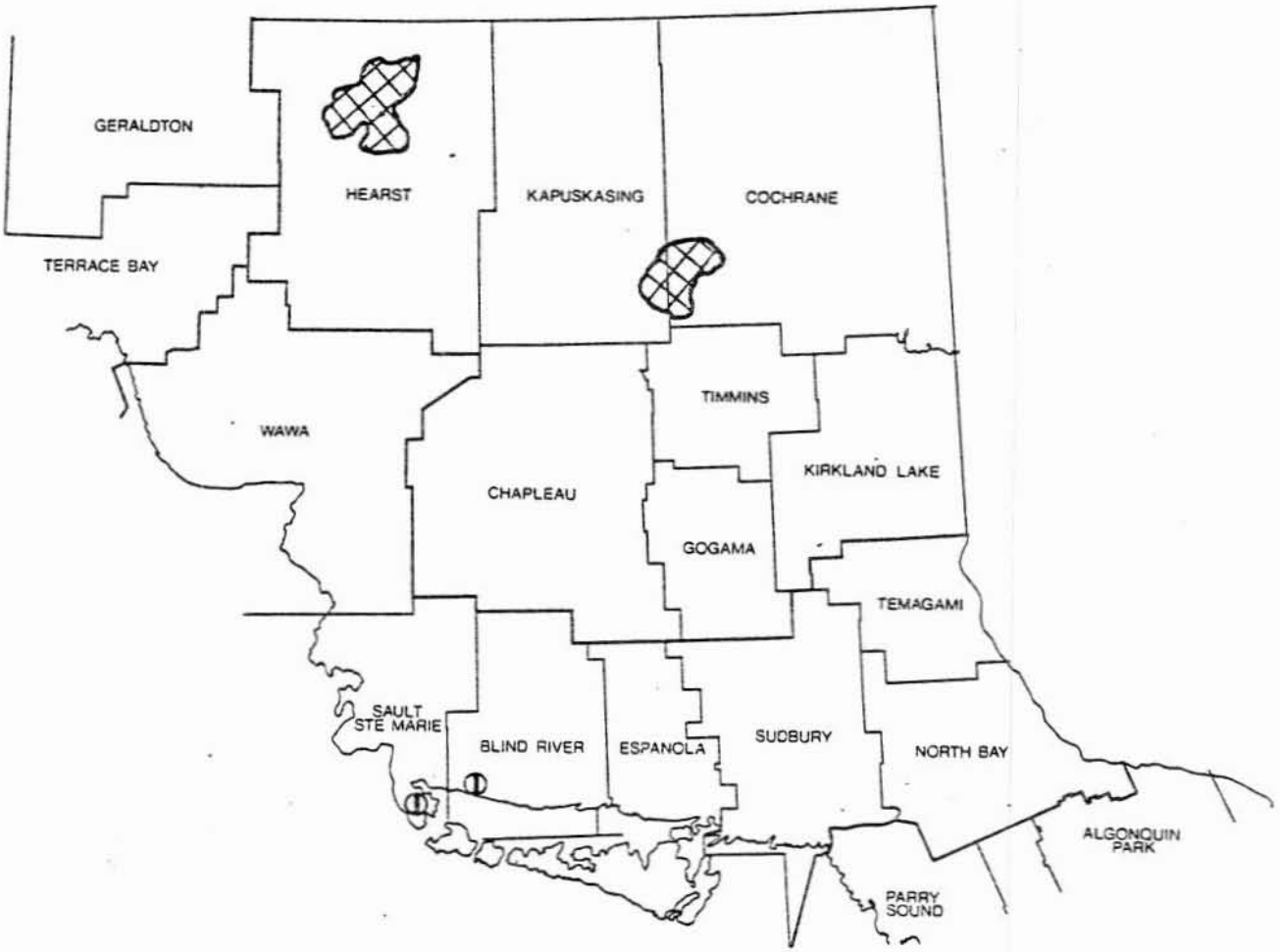
0 Kilometres 96

Areas within which defoliation occurred in 1953

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO



Spruce Budworm

Areas within which defoliation occurred in 1954

0 Miles 60

0 Kilometres 96

LEGEND

Light defoliation ◑

Moderate-to-severe defoliation

NORTHEASTERN ONTARIO

0 Miles 60

0 Kilometres 96

Spruce Budworm

Areas within which defoliation occurred in 1955

LEGEND

Light defoliation ① or

NORTHEASTERN ONTARIO

0 Miles 60

0 Kilometres 96

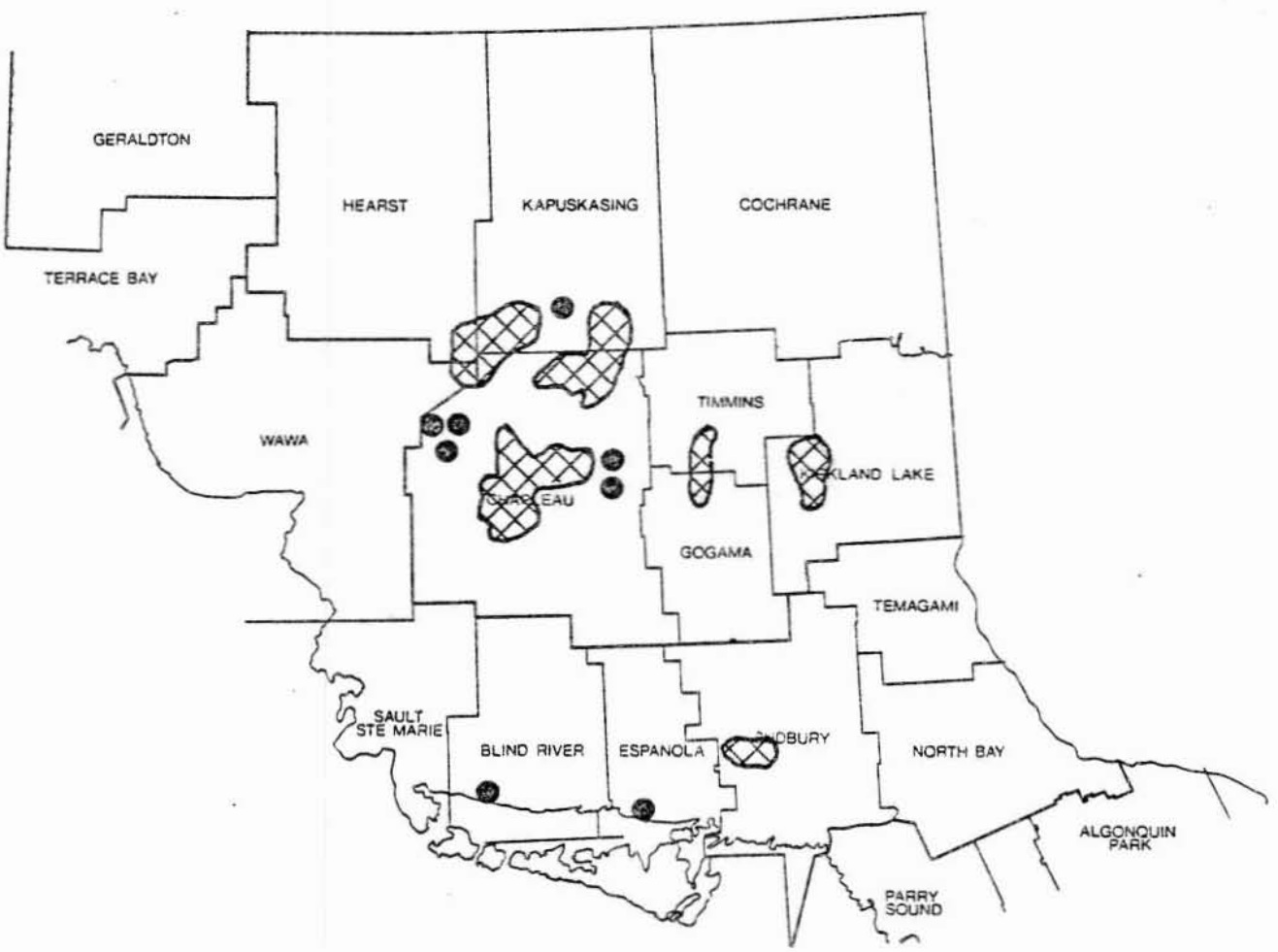
Spruce Budworm

Areas within which defoliation occurred in 1956

LEGEND

Light defoliation

NORTHEASTERN ONTARIO



0 Miles 60

0 Kilometres 96

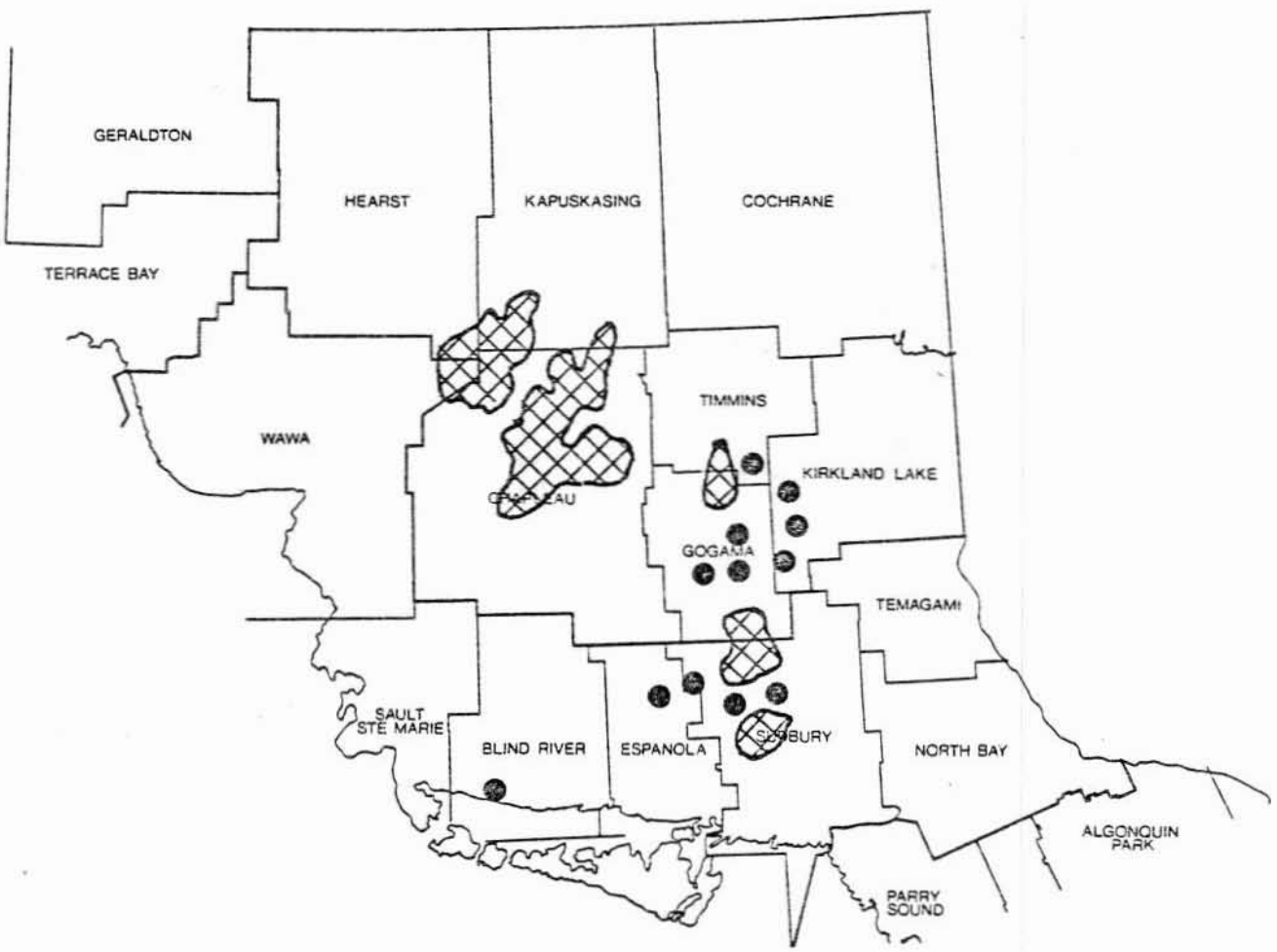
Spruce Budworm

Areas within which defoliation occurred in 1968

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO



0 Miles 60

0 Kilometres 96

Spruce Budworm

Areas within which defoliation occurred in 1969

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO

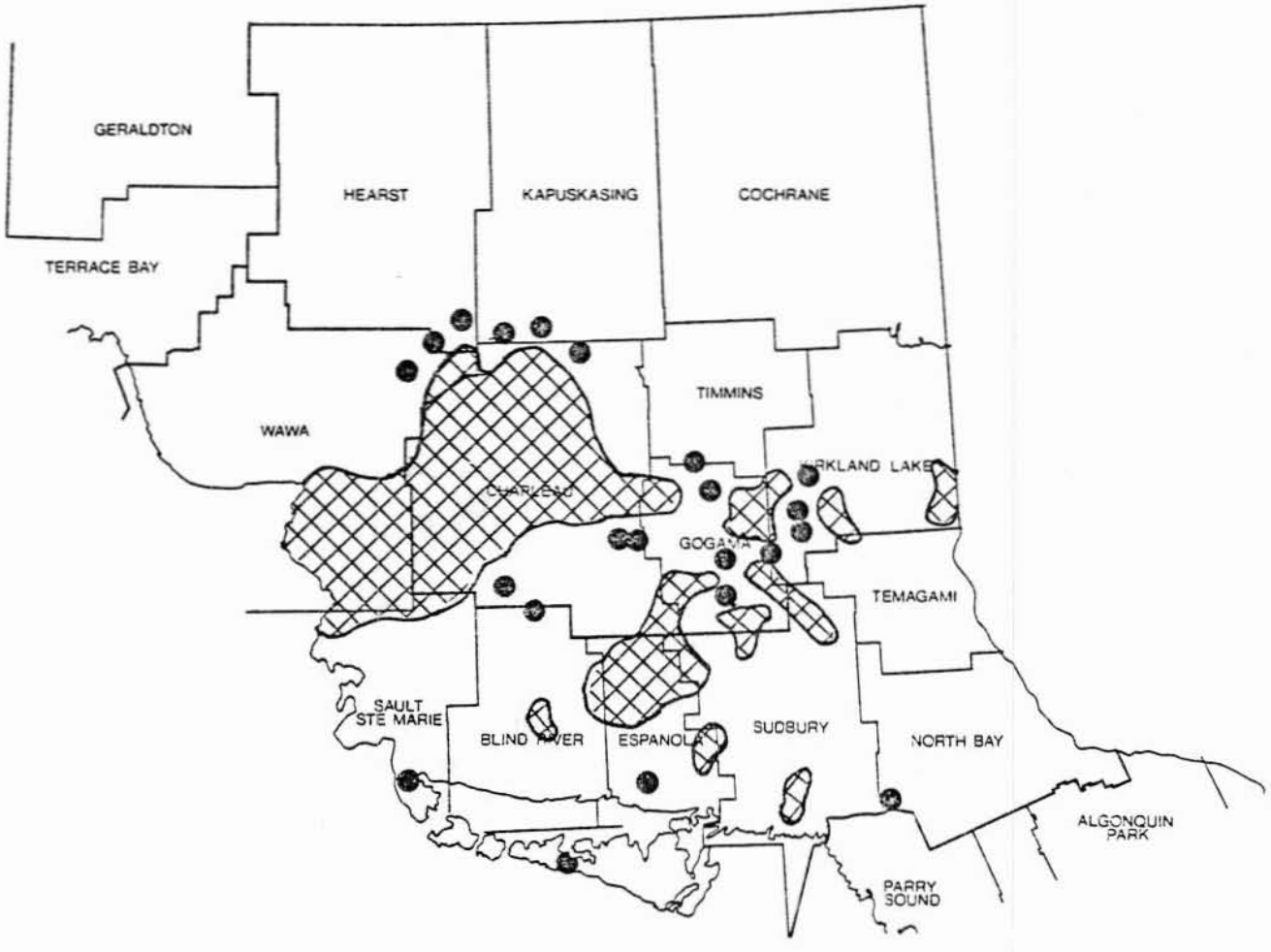
Spruce Budworm

Areas within which defoliation occurred in 1970

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO



0 Miles 60

0 Kilometres 96

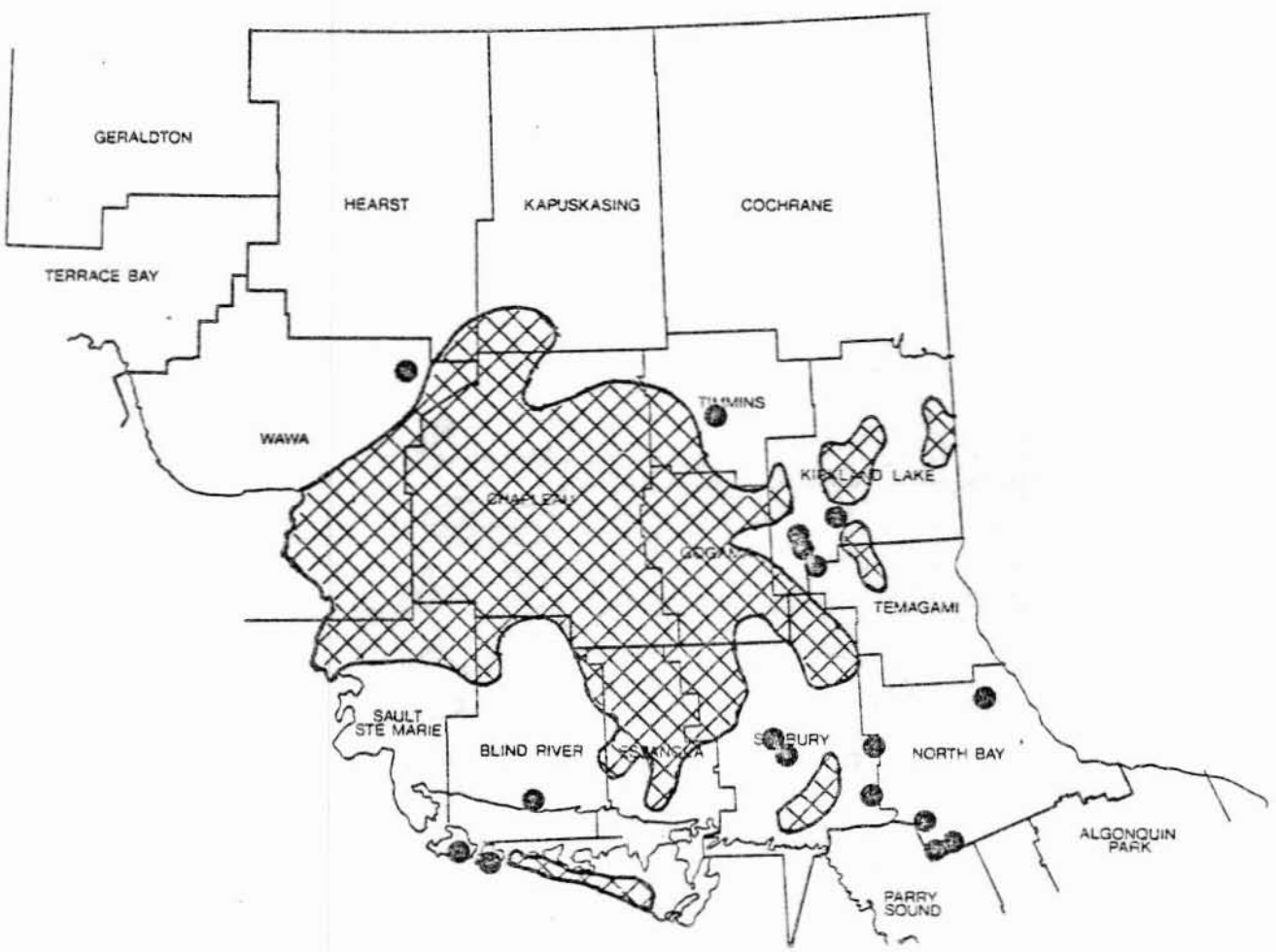
Spruce Budworm

Areas within which defoliation occurred in 1971

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO



0 Miles 60

0 Kilometres 96

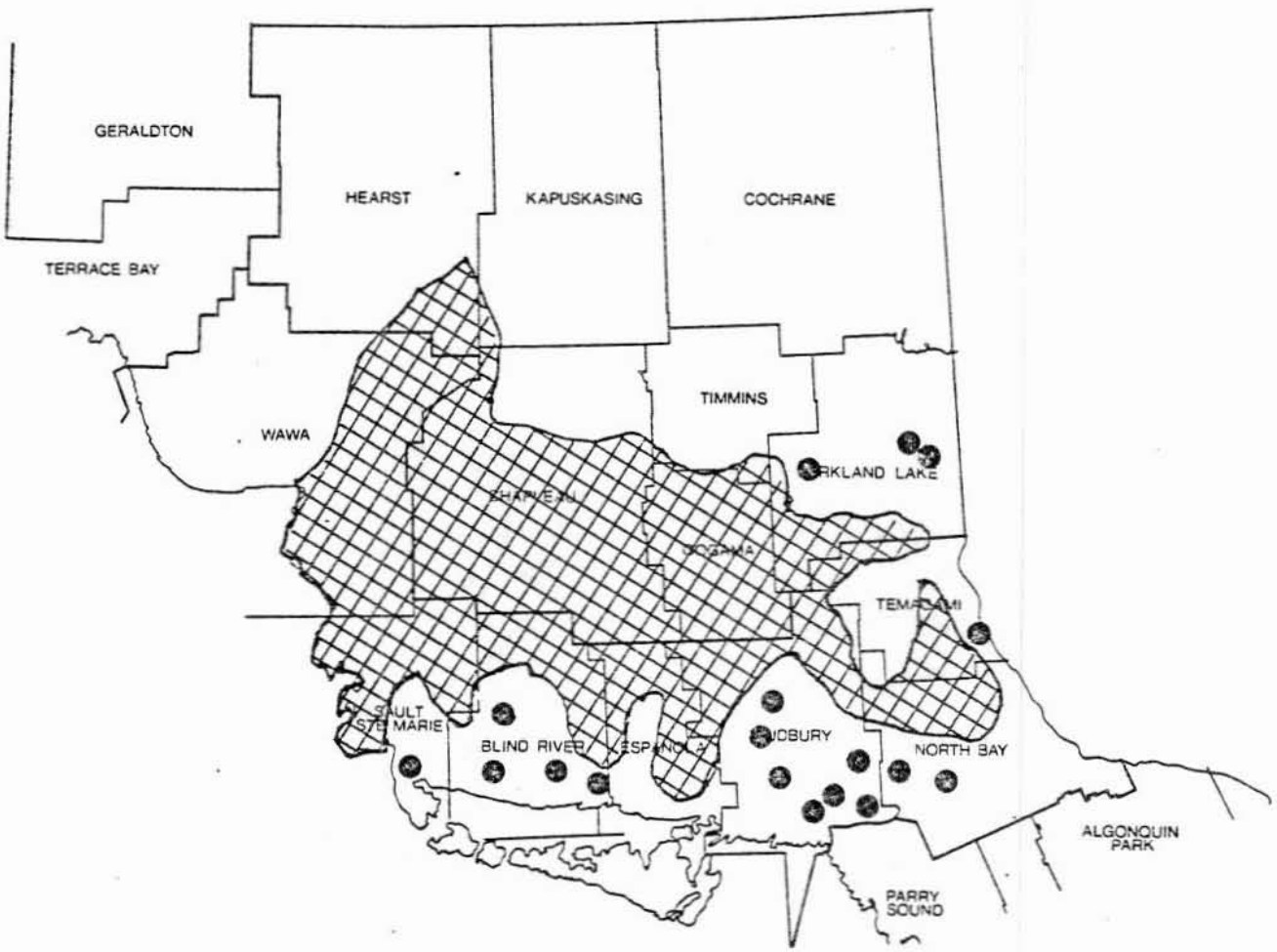
Spruce Budworm

Areas within which defoliation occurred in 1972

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO



0 Miles 60

0 Kilometres 96

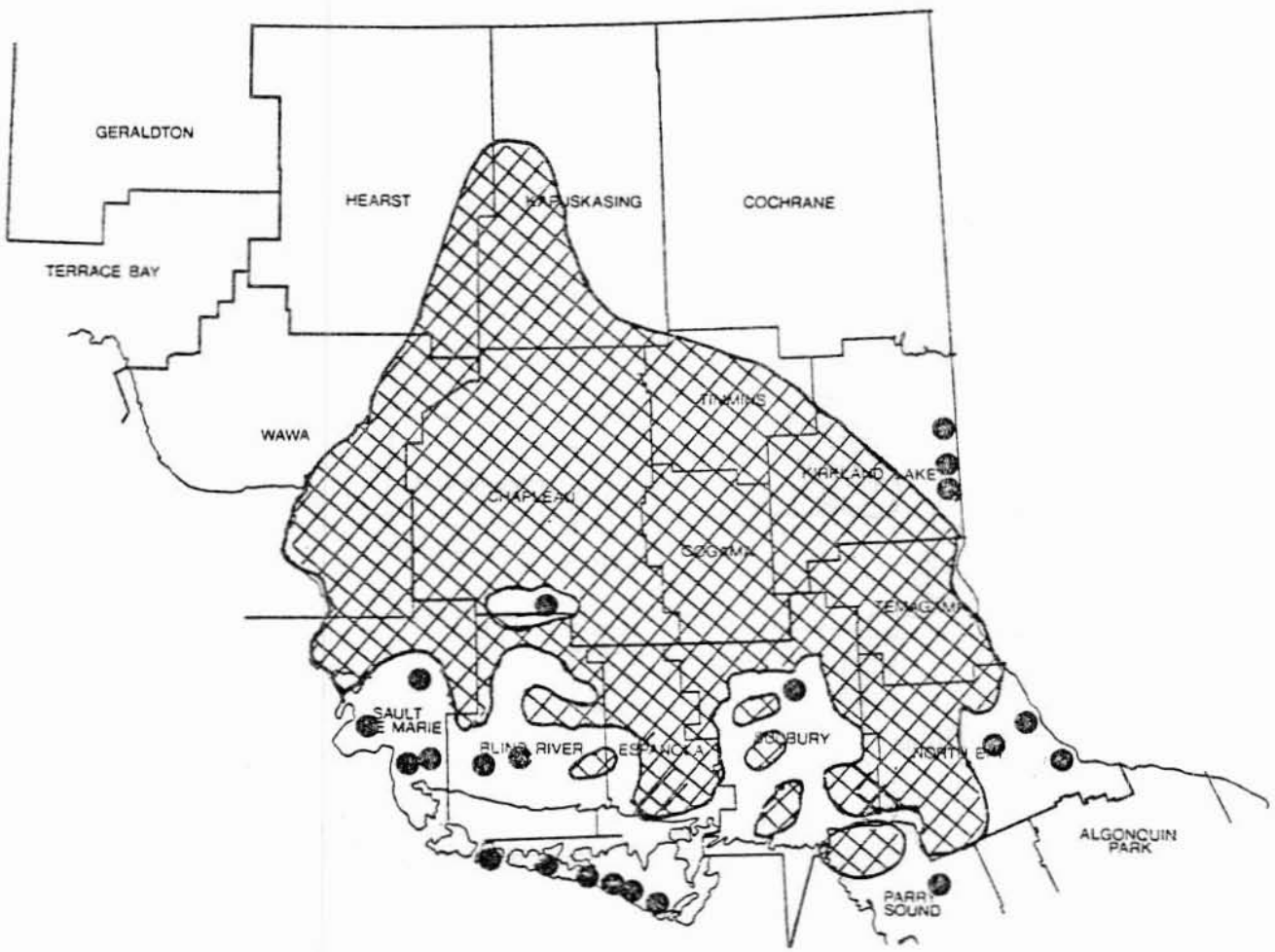
Spruce Budworm

Areas within which defoliation occurred in 1973

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO



Spruce Budworm

Areas within which defoliation occurred in 1974

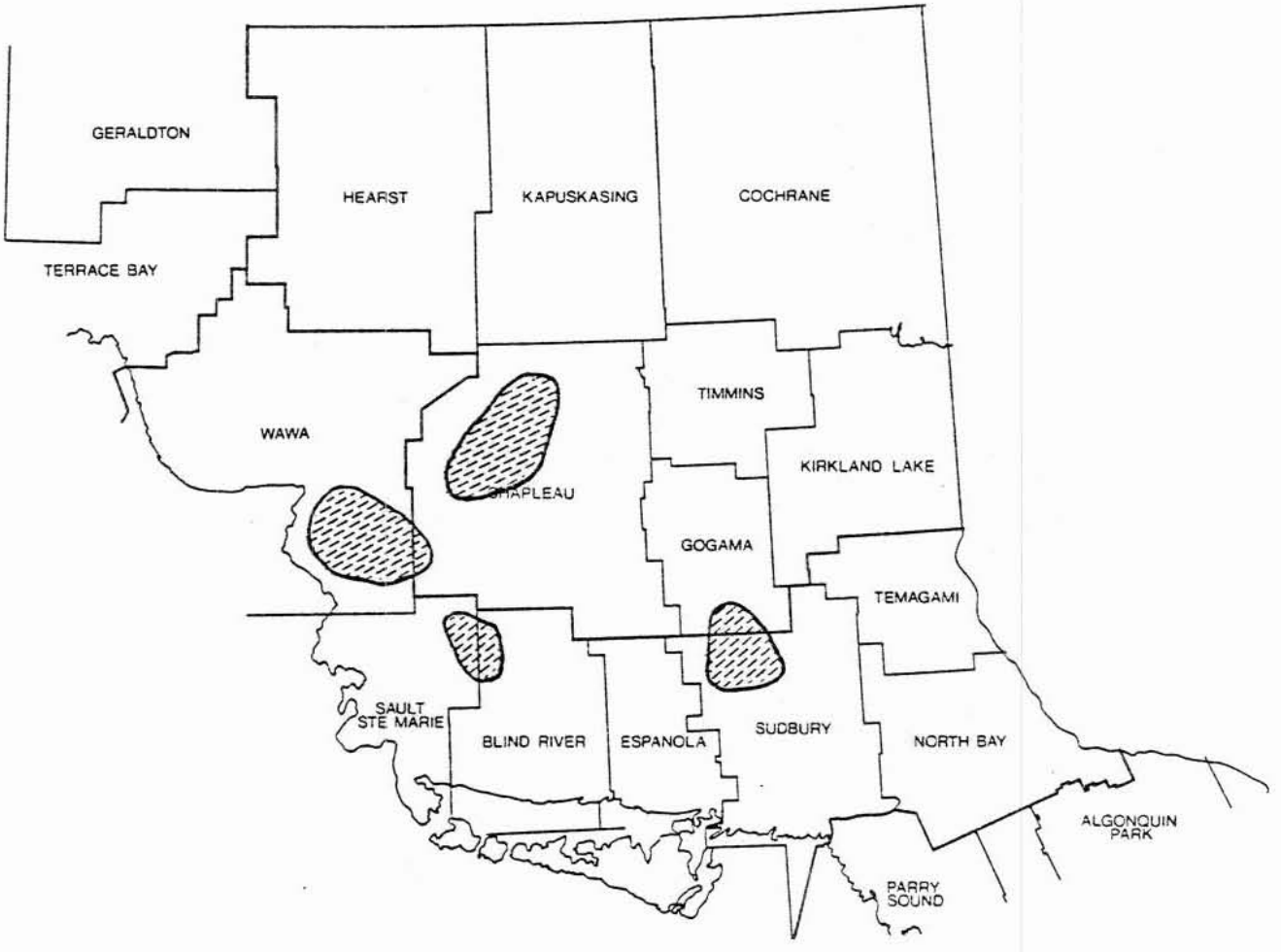
0 Miles 60

0 Kilometres 96

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO



Spruce Budworm

Areas within which balsam fir whole tree and top mortality occurred in 1974

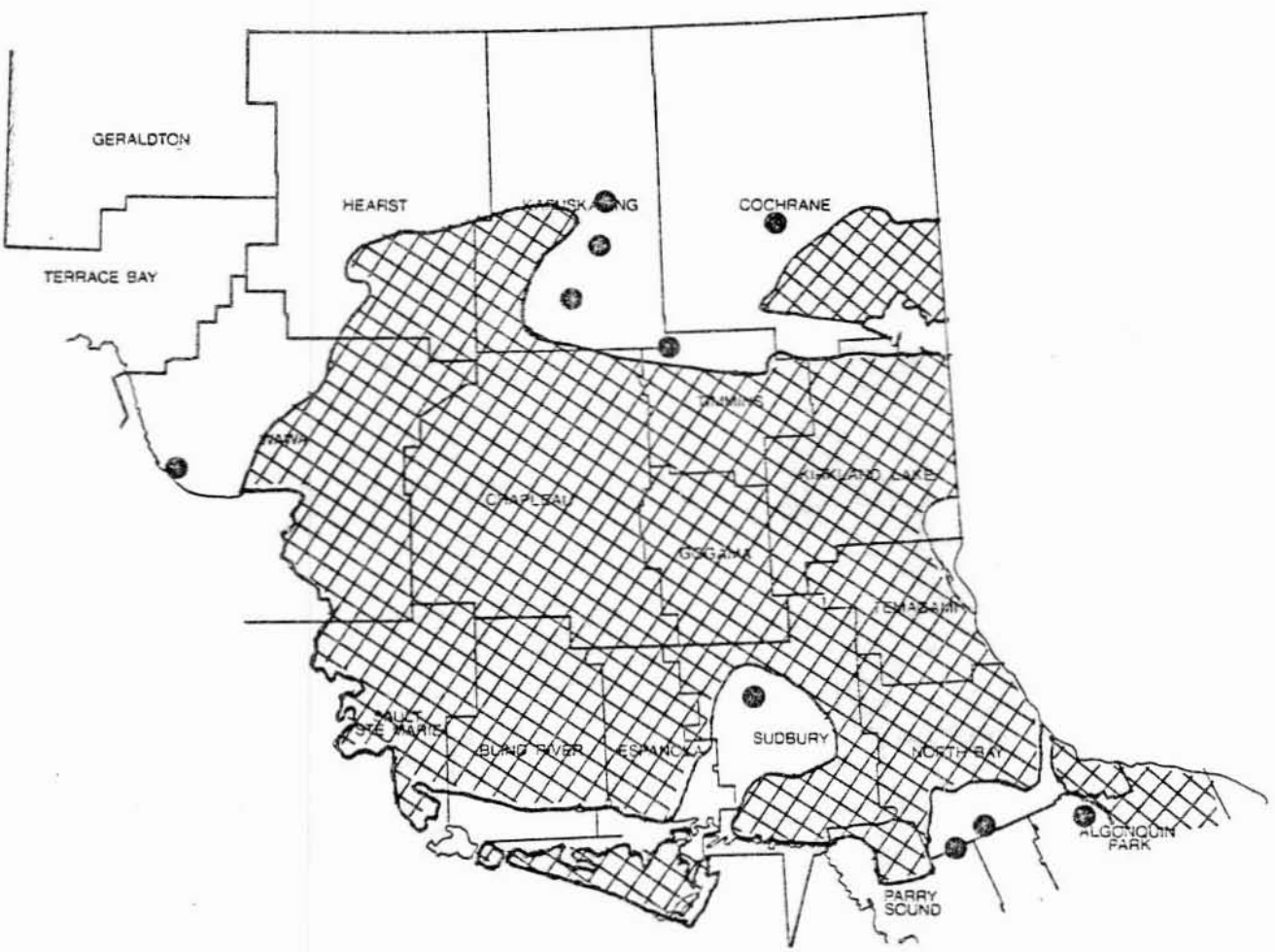
0 Miles 60

0 Kilometres 96

LEGEND

Mortality

NORTHEASTERN ONTARIO



0 Miles 60

0 Kilometres 96

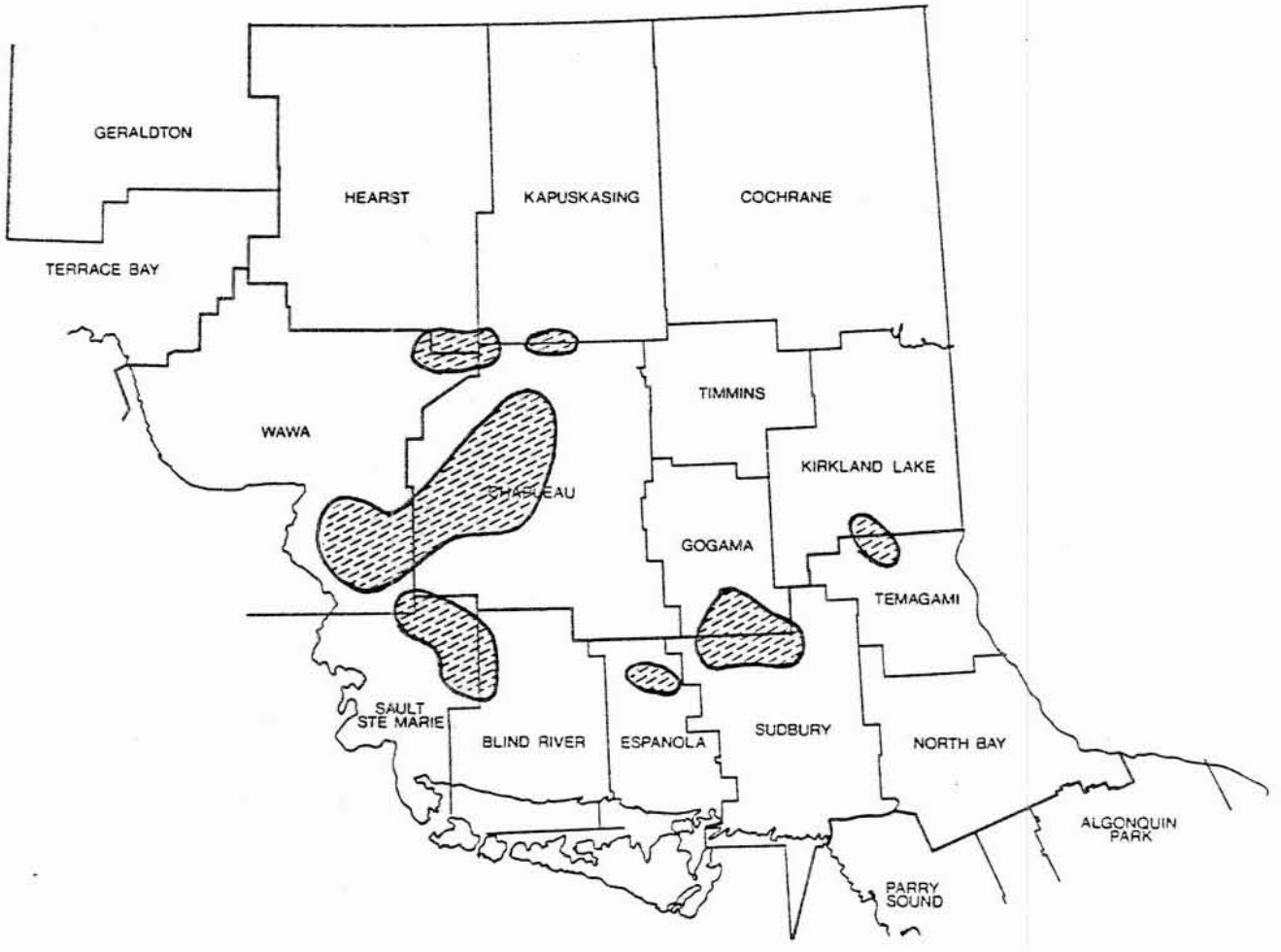
Spruce Budworm

Areas within which defoliation occurred in 1975

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO



Spruce Budworm

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

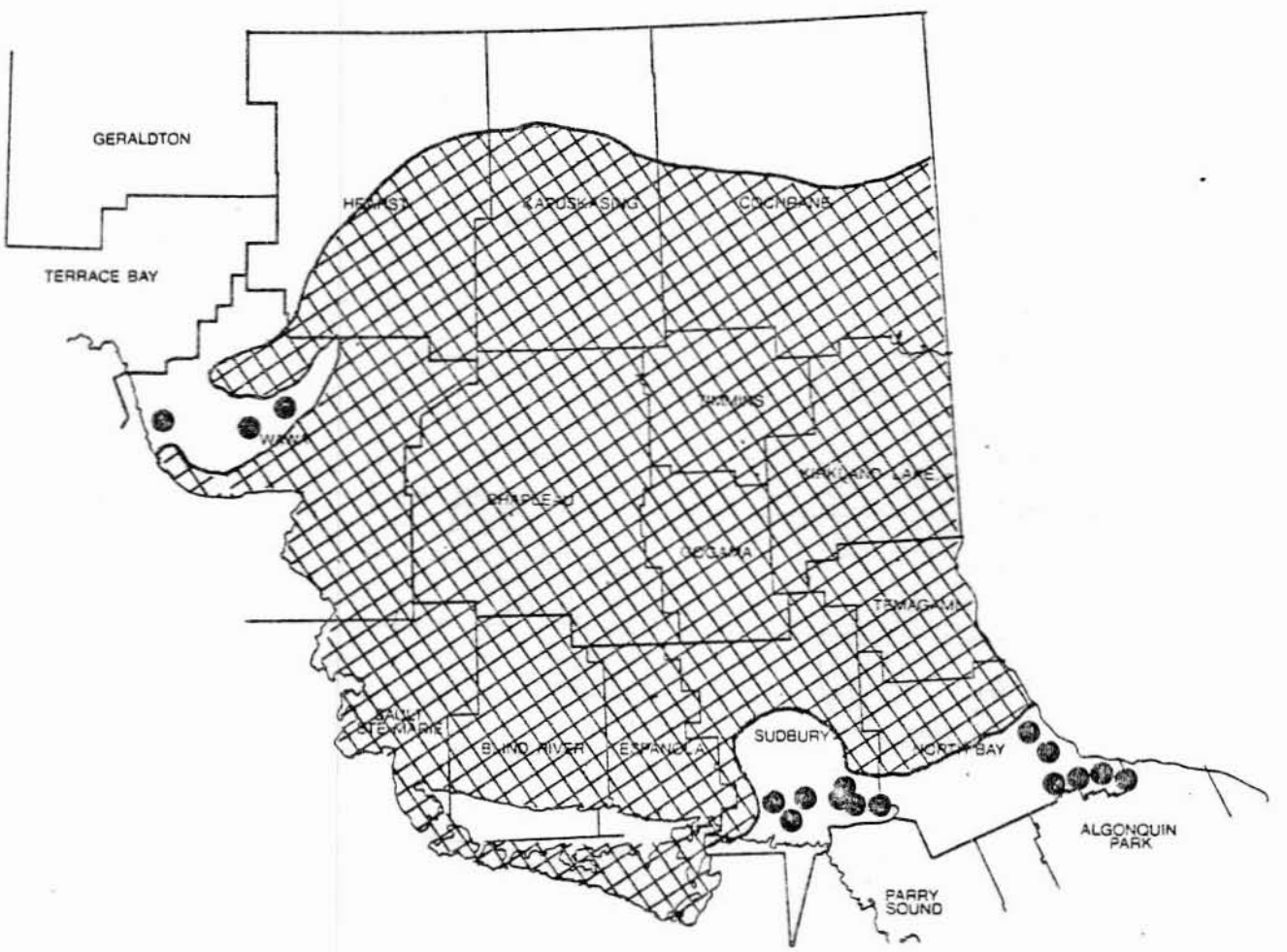
LEGEND

Mortality

0 Miles 60

0 Kilometres 96

NORTHEASTERN ONTARIO



0 Miles 60
0 Kilometres 96

Spruce Budworm

Areas within which defoliation occurred in 1976

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO

Spruce Budworm

Areas within which balsam fir whole tree and top mortality occurred in 1976

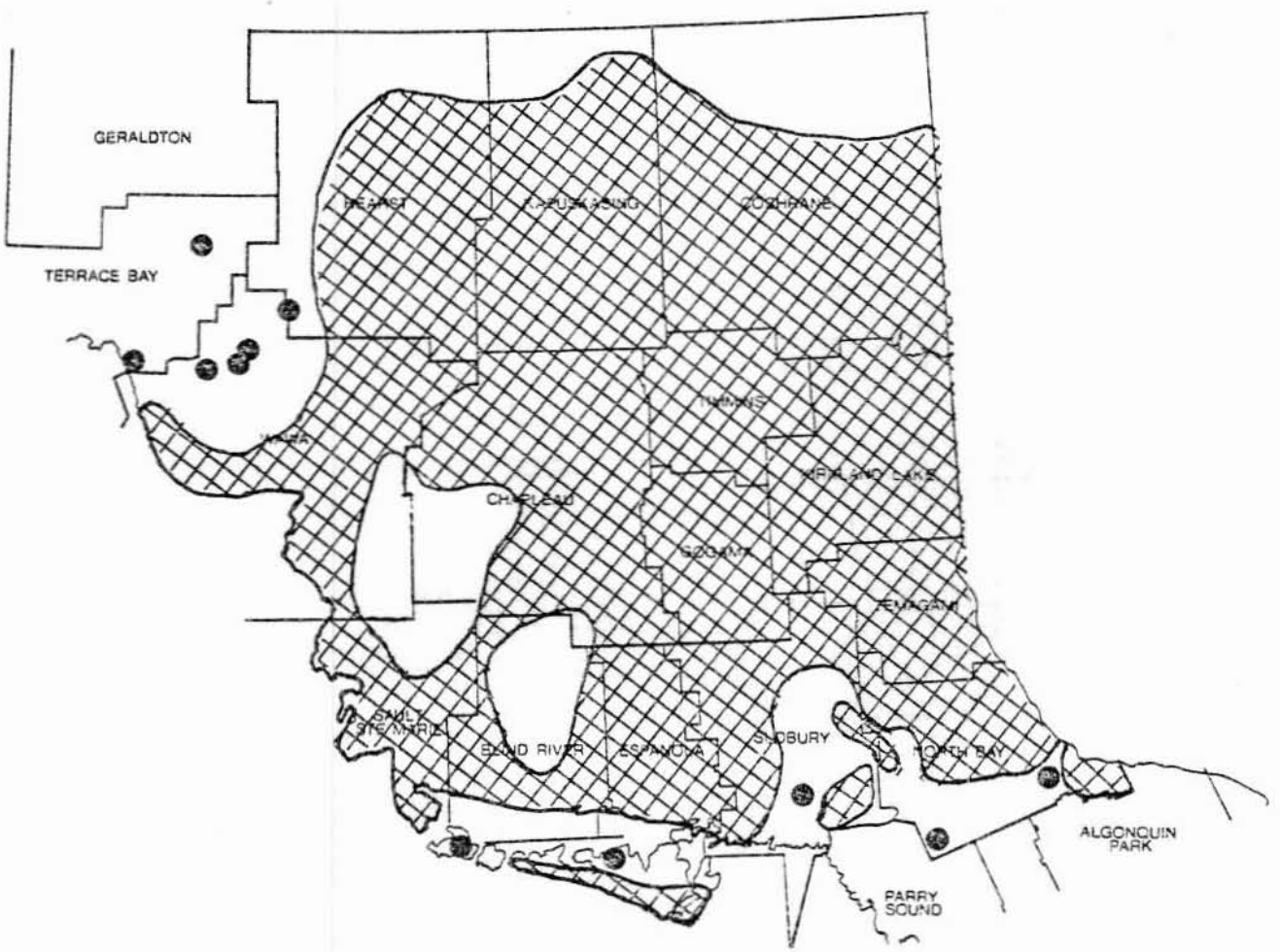
LEGEND

Mortality

0 Miles 60

0 Kilometres 96

NORTHEASTERN ONTARIO



0 Miles 60

0 Kilometres 96

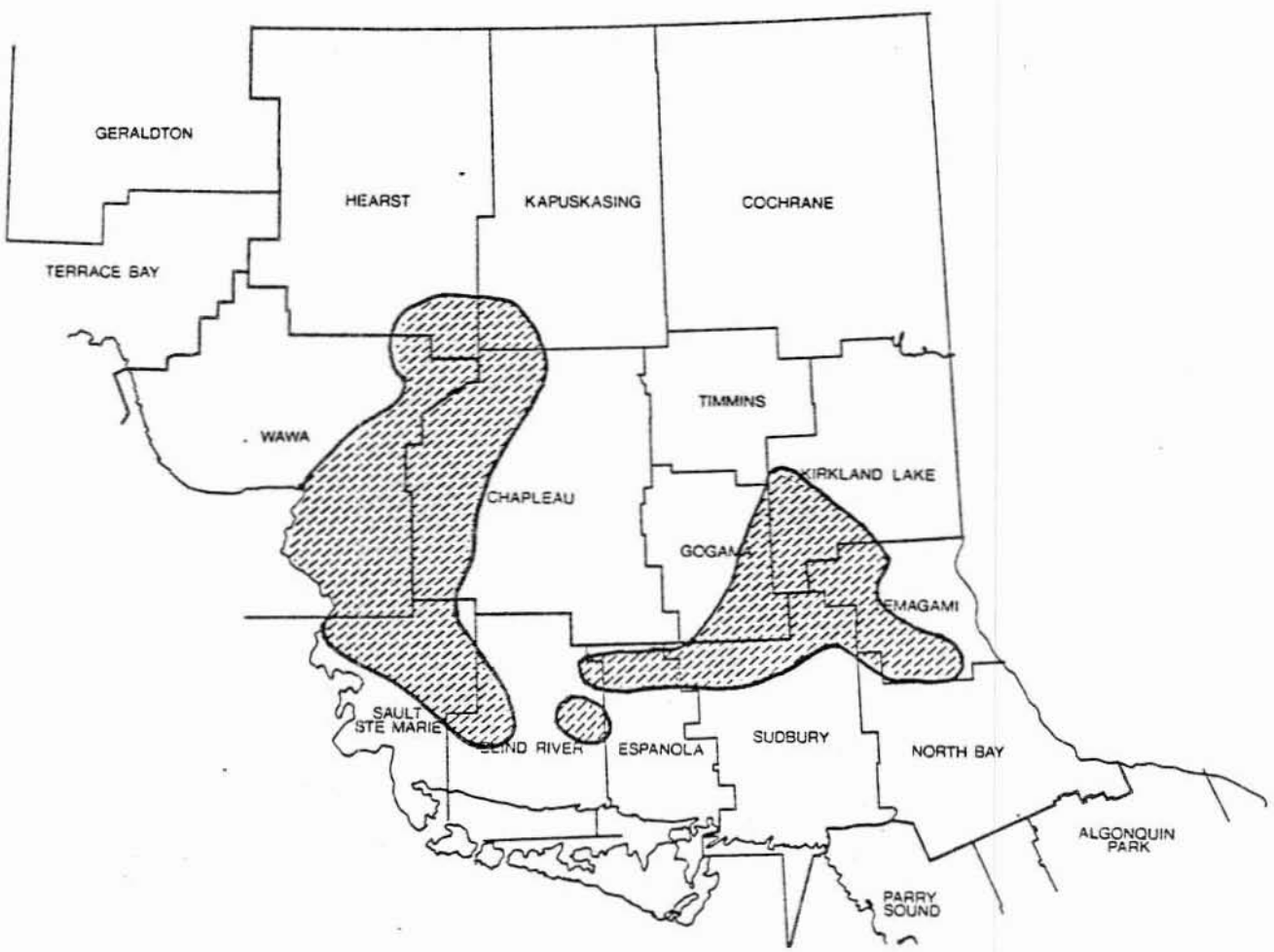
Spruce Budworm

Areas within which defoliation occurred in 1977

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO



Spruce Budworm

Areas within which balsam fir whole tree and top mortality occurred in 1977

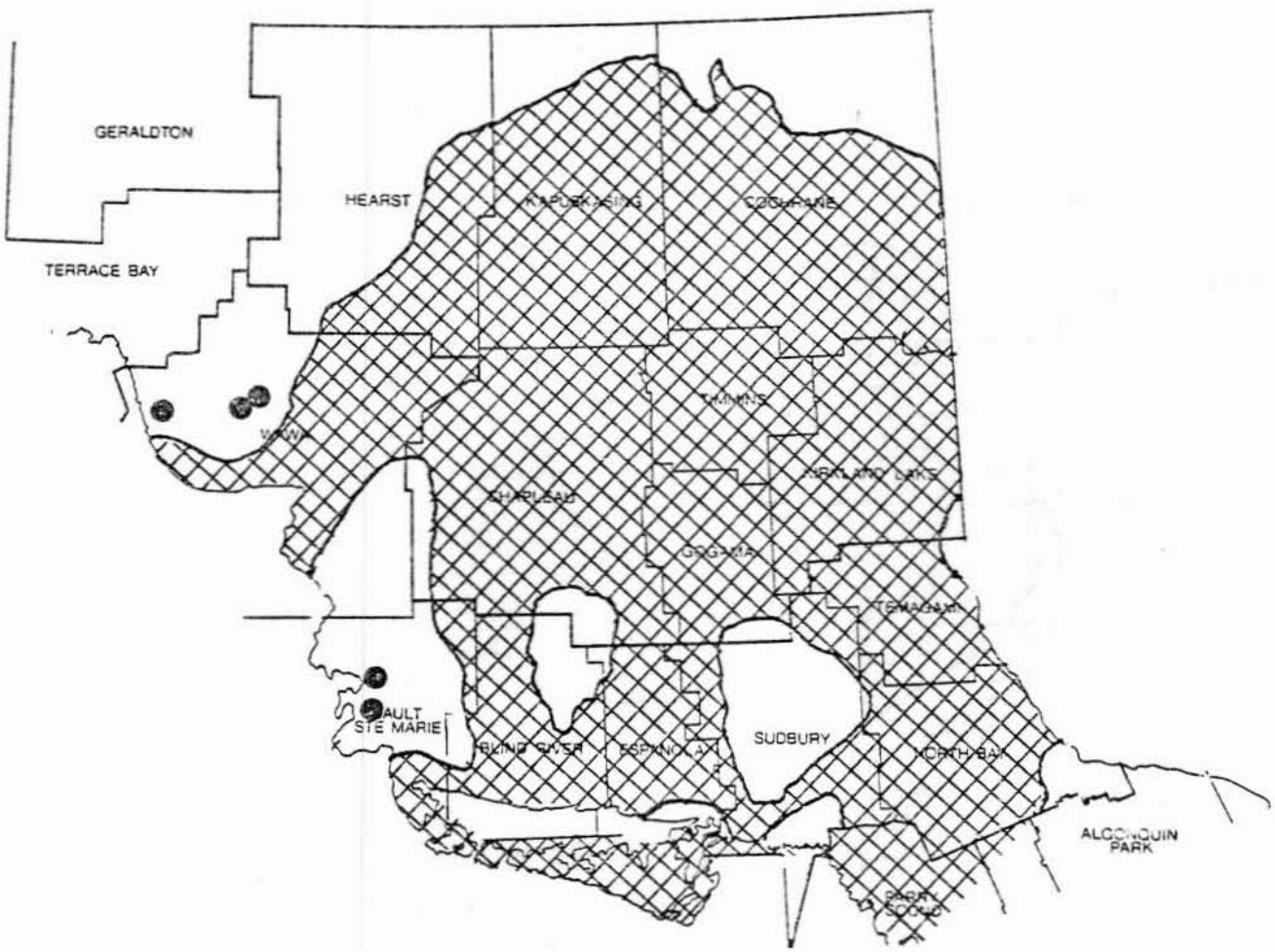
LEGEND

Mortality

0 Miles 60

0 Kilometres 96

NORTHEASTERN ONTARIO



0 Miles 60

0 Kilometres 96

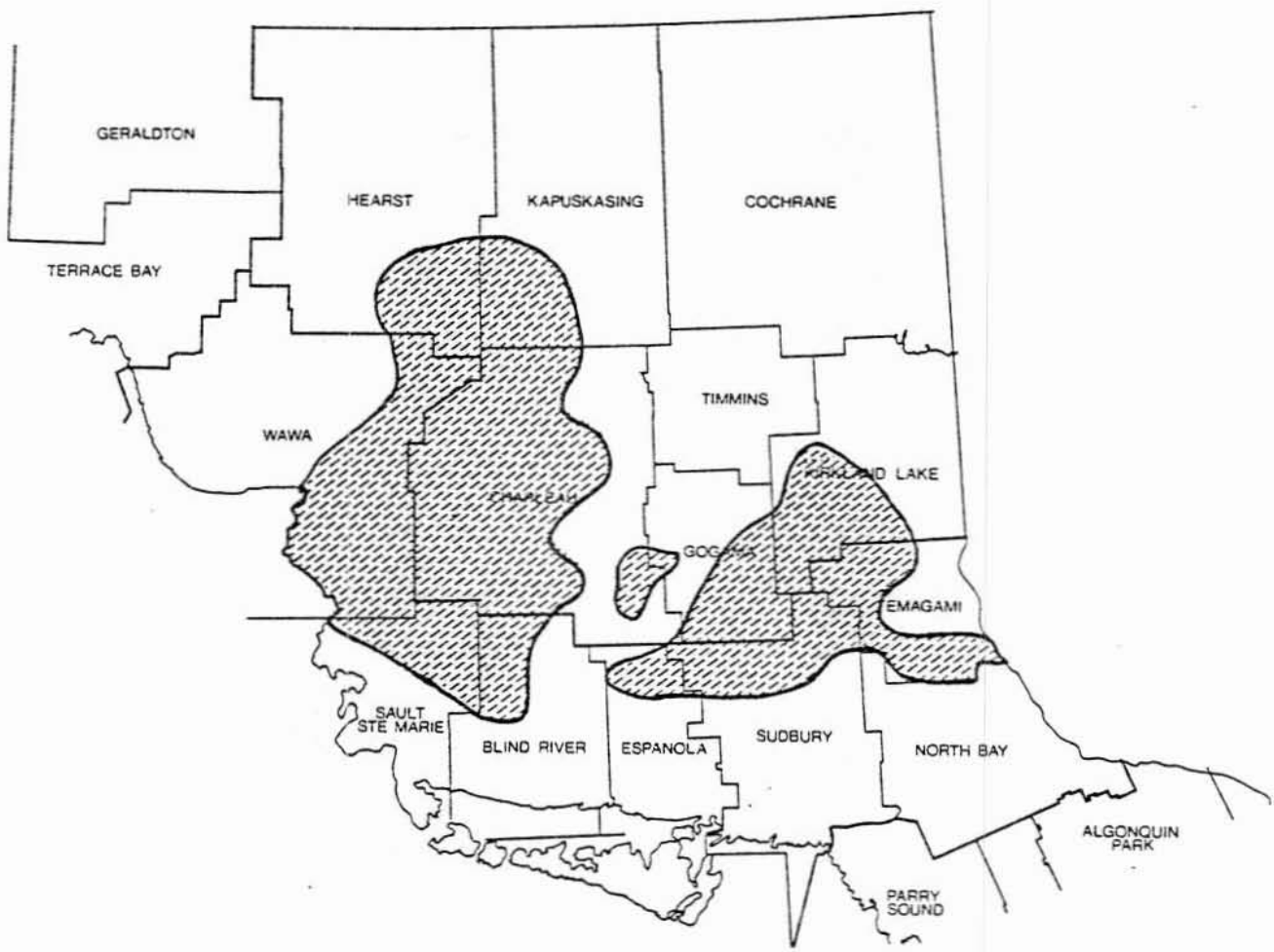
Spruce Budworm

Areas within which defoliation occurred in 1978

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO



Spruce Budworm

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

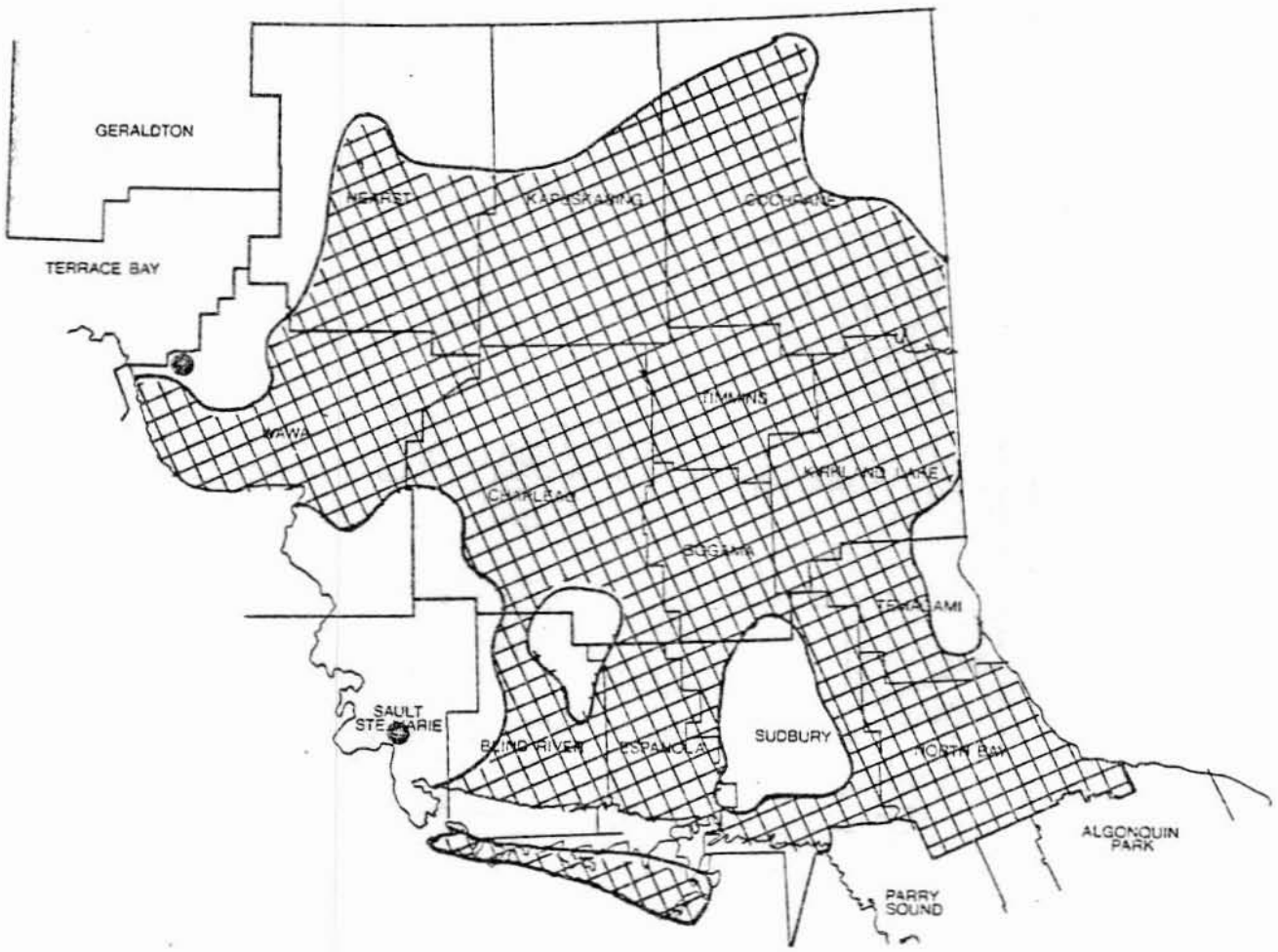
0 Miles 60

0 Kilometres 96

LEGEND

Mortality

NORTHEASTERN ONTARIO



0 Miles 60

0 Kilometres 96

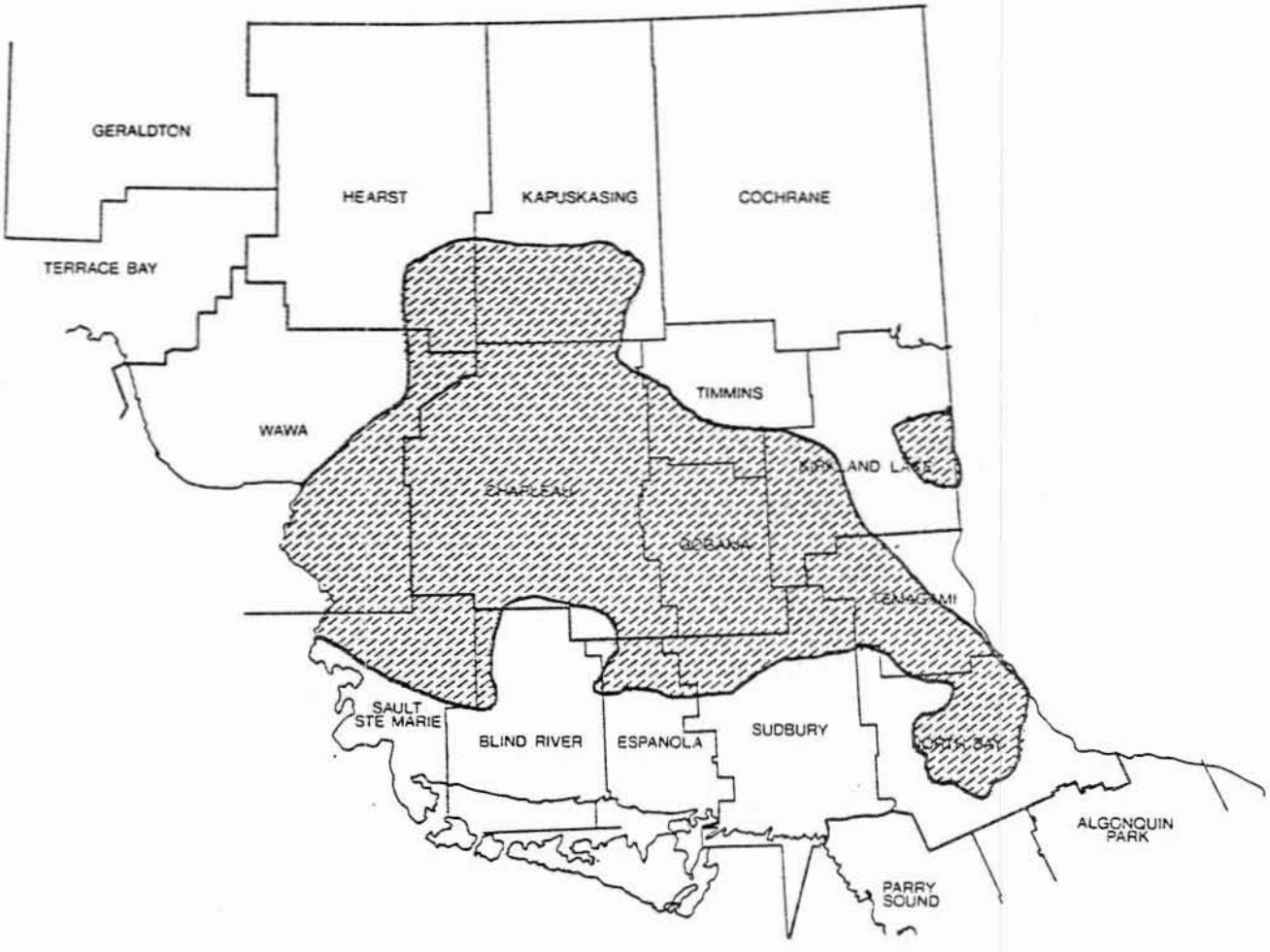
Spruce Budworm

Areas within which defoliation occurred in 1979

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO



Spruce Budworm

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

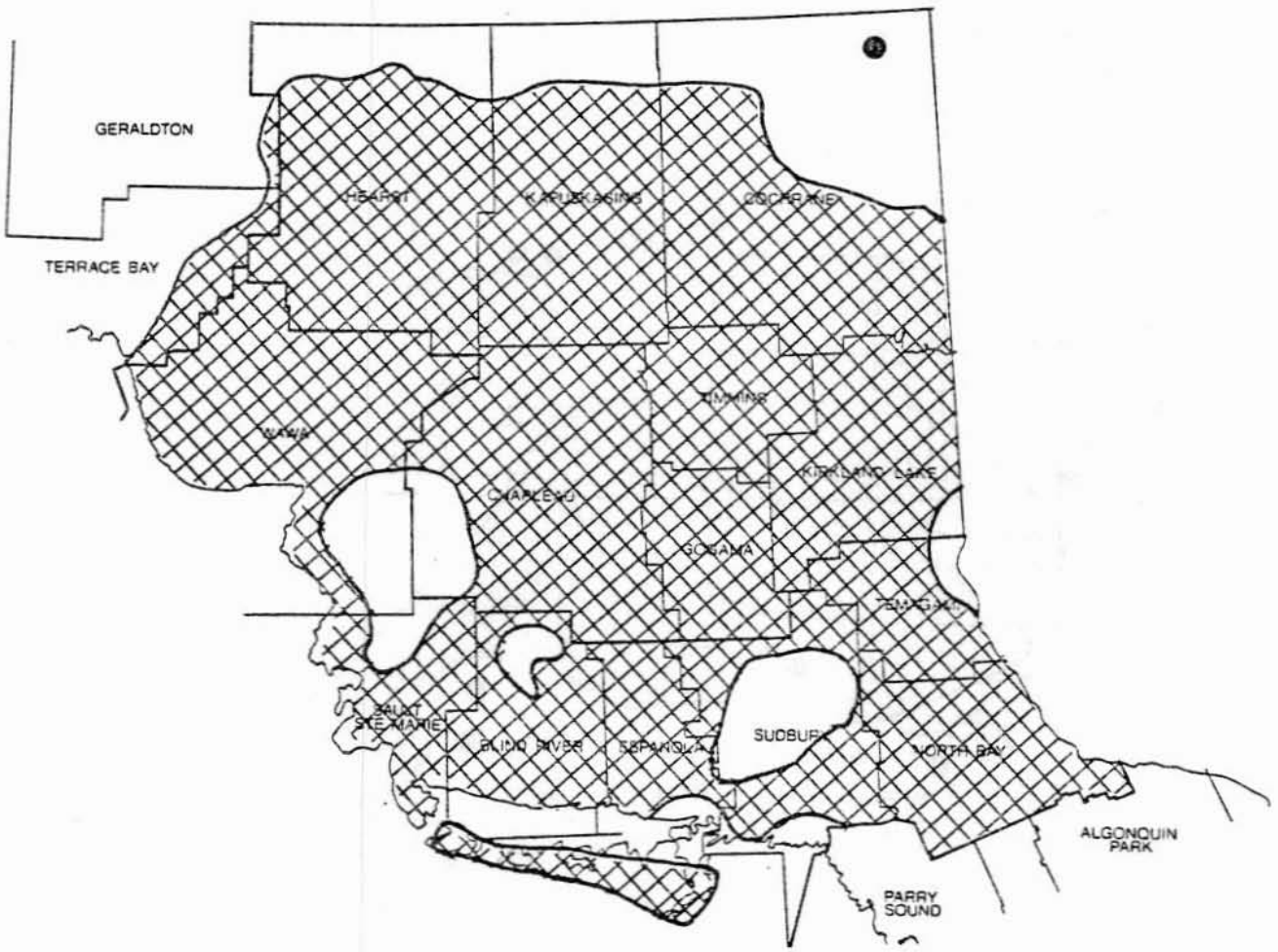
LEGEND

Mortality

0 Miles 60

0 Kilometres 96

NORTHEASTERN ONTARIO



0 Miles 60

0 Kilometres 96

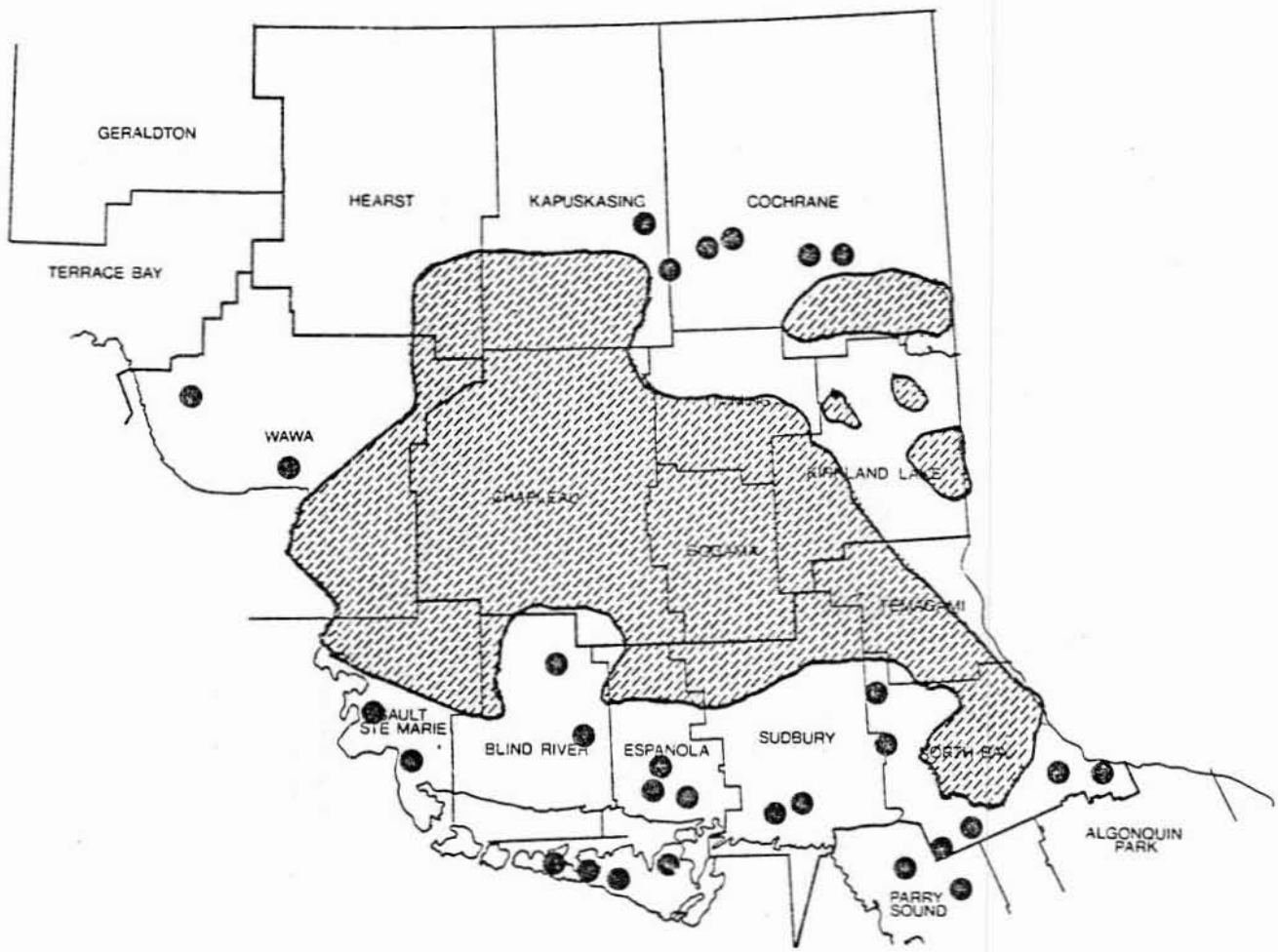
Spruce Budworm

Areas within which defoliation occurred in 1980

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO



Spruce Budworm

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

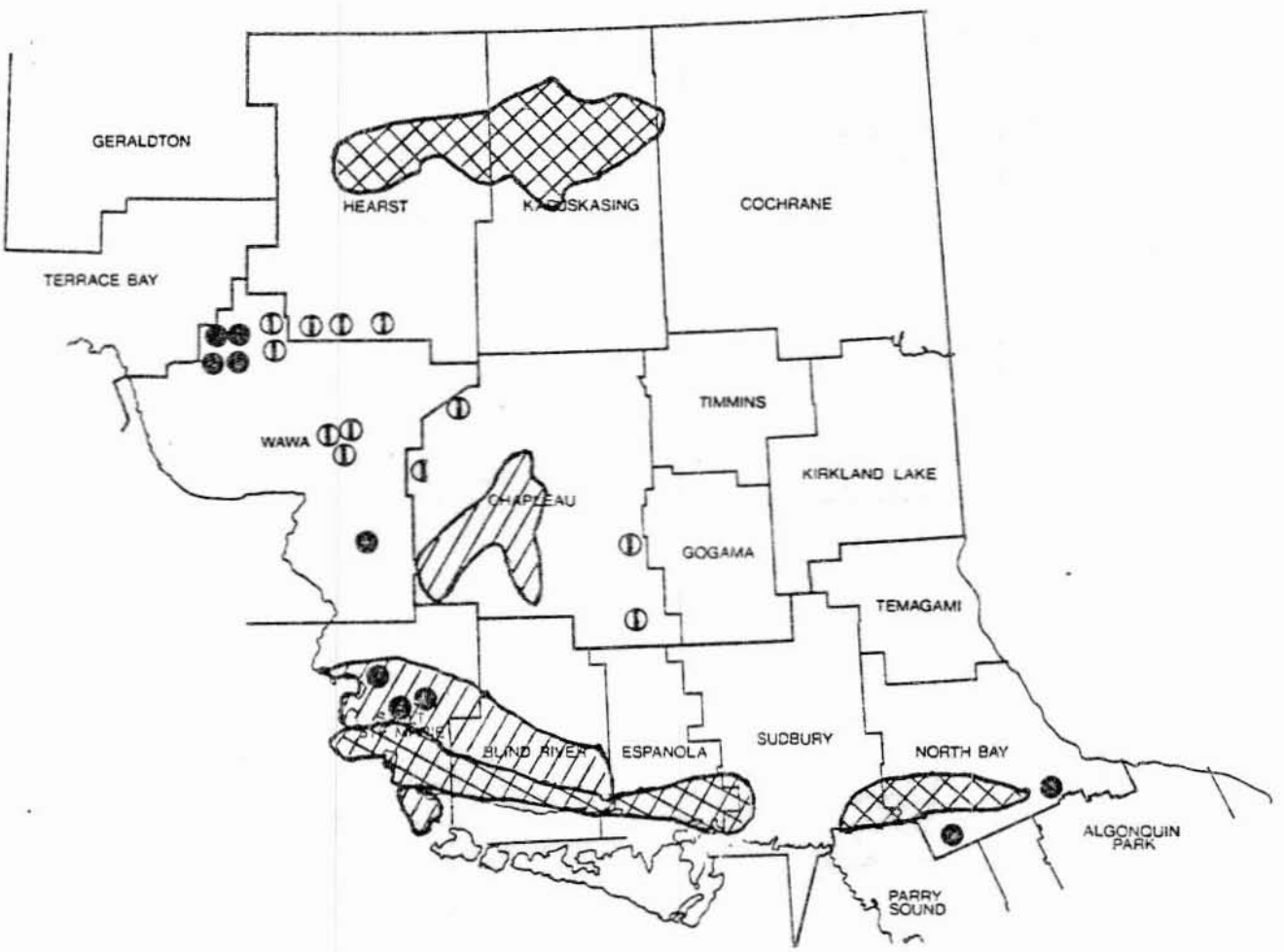
LEGEND

Mortality  or ●

0 Miles 60

0 Kilometres 96

NORTHEASTERN ONTARIO



0 Miles 60

0 Kilometres 96

Forest Tent Caterpillar

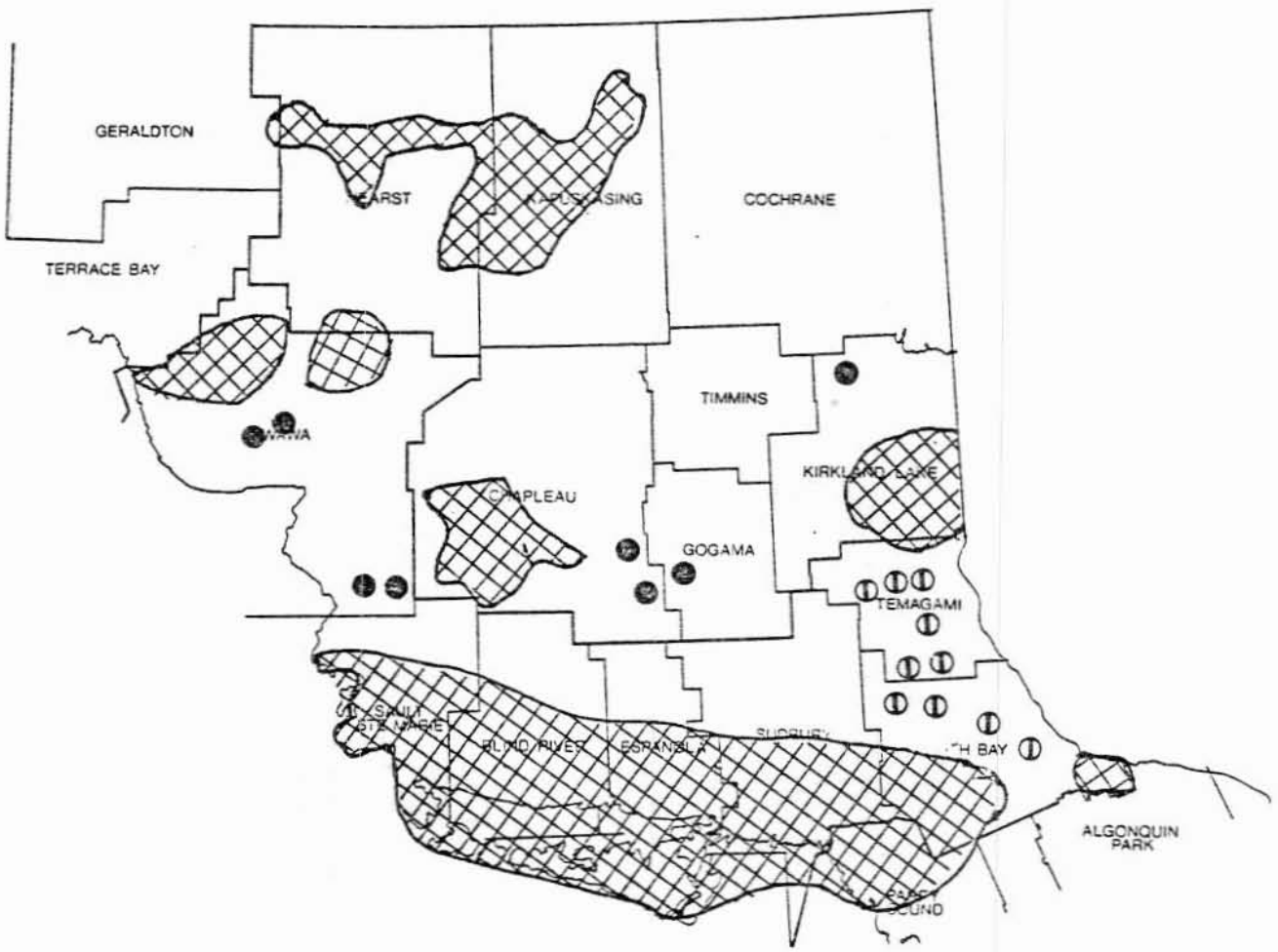
Areas within which defoliation occurred in 1950

LEGEND

Light defoliation ◑ or ▨

Moderate-to-severe defoliation ● or ▩

NORTHEASTERN ONTARIO



Forest Tent Caterpillar

Areas within which defoliation occurred in 1951

LEGEND

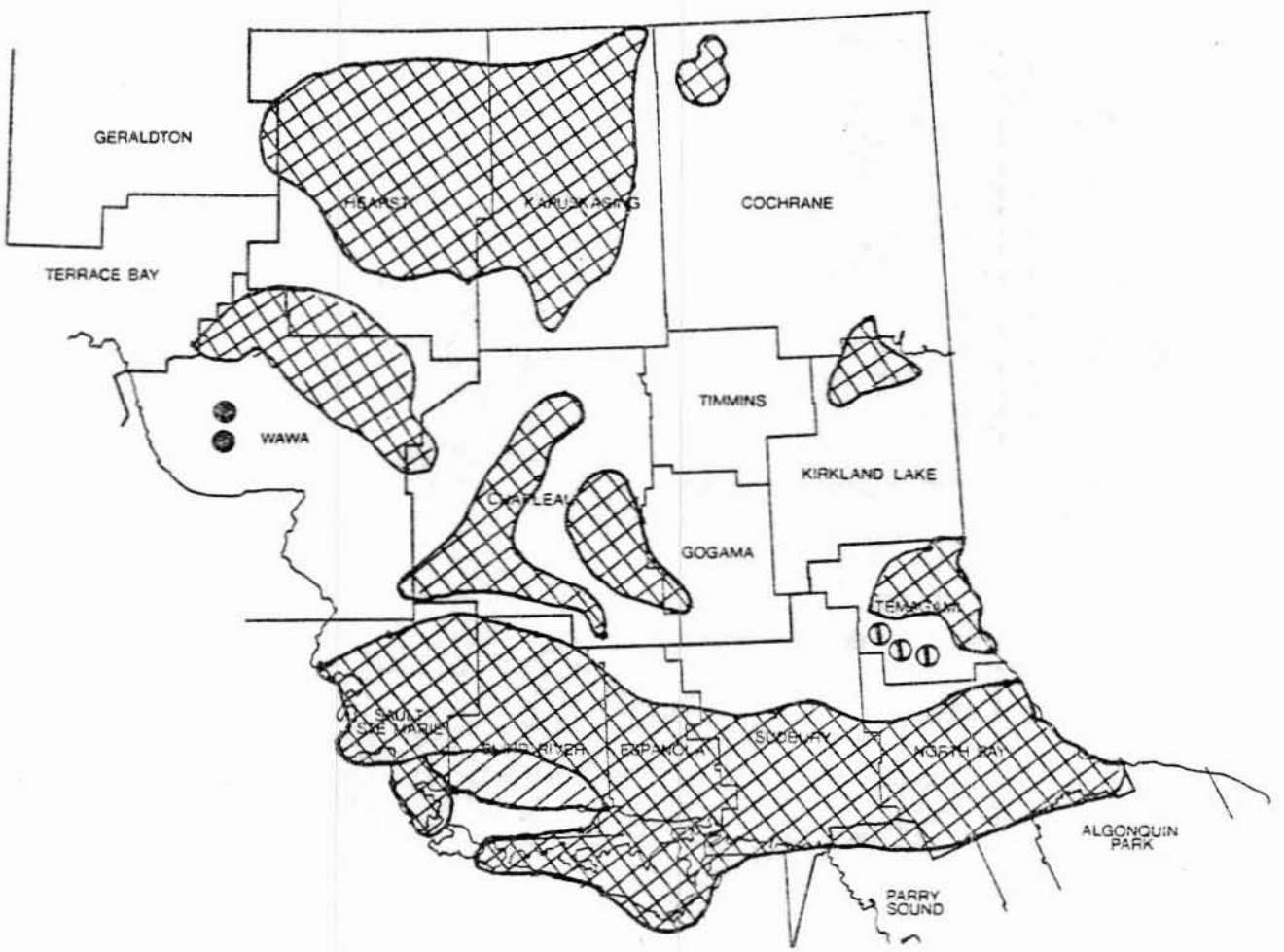
Light defoliation ◐

Moderate-to-severe defoliation ● or ▨

0 Miles 60

0 Kilometres 96

NORTHEASTERN ONTARIO



Forest Tent Caterpillar

Areas within which defoliation occurred in 1952

0 Miles 60

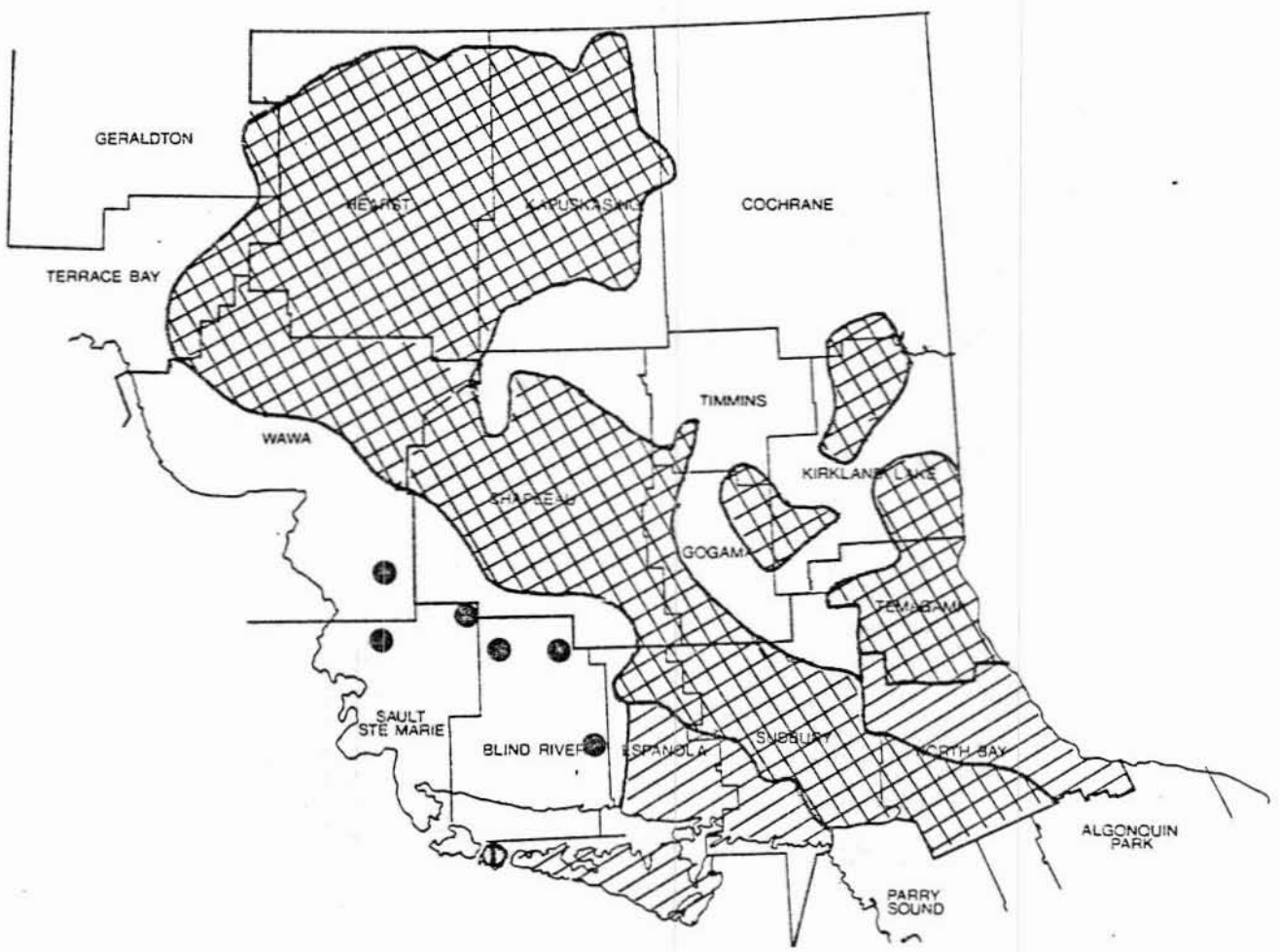
0 Kilometres 96

LEGEND

Light defoliation ◐ or

Moderate-to-severe defoliation ● or

NORTHEASTERN ONTARIO



Forest Tent Caterpillar

Areas within which defoliation occurred in 1953

0 Miles 60

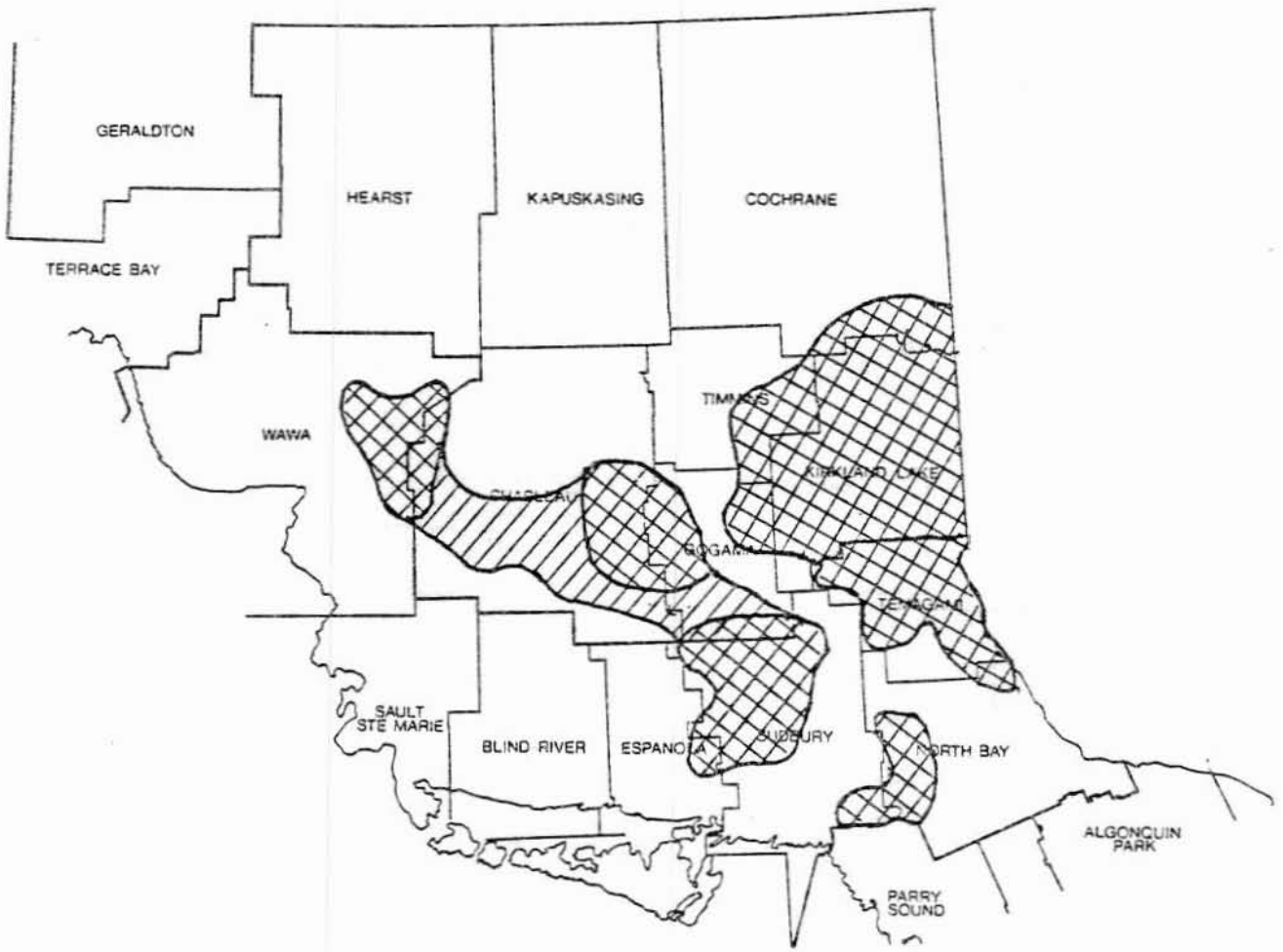
0 Kilometres 96

LEGEND

Light defoliation ◑ or

Moderate-to-severe defoliation ● or

NORTHEASTERN ONTARIO



Forest Tent Caterpillar

Areas within which defoliation occurred in 1954

0 Miles 60

0 Kilometres 96

LEGEND

Light defoliation

Moderate-to-severe defoliation

NORTHEASTERN ONTARIO

0 Miles 60

0 Kilometres 96

Forest Tent Caterpillar

Areas within which defoliation occurred in 1955

LEGEND

Light defoliation ◐ or

Moderate-to-severe defoliation

NORTHEASTERN ONTARIO

Forest Tent Caterpillar

Areas within which defoliation occurred in 1956

0 Miles 60

0 Kilometres 96

LEGEND

Light defoliation

Moderate-to-severe defoliation ● or

NORTHEASTERN ONTARIO

Forest Tent Caterpillar

Areas within which defoliation occurred in 1957

0 Miles 60

0 Kilometres 96

LEGEND

Light defoliation ◑

Moderate-to-severe defoliation ●

NORTHEASTERN ONTARIO

0 Miles 60

0 Kilometres 96

Forest Tent Caterpillar

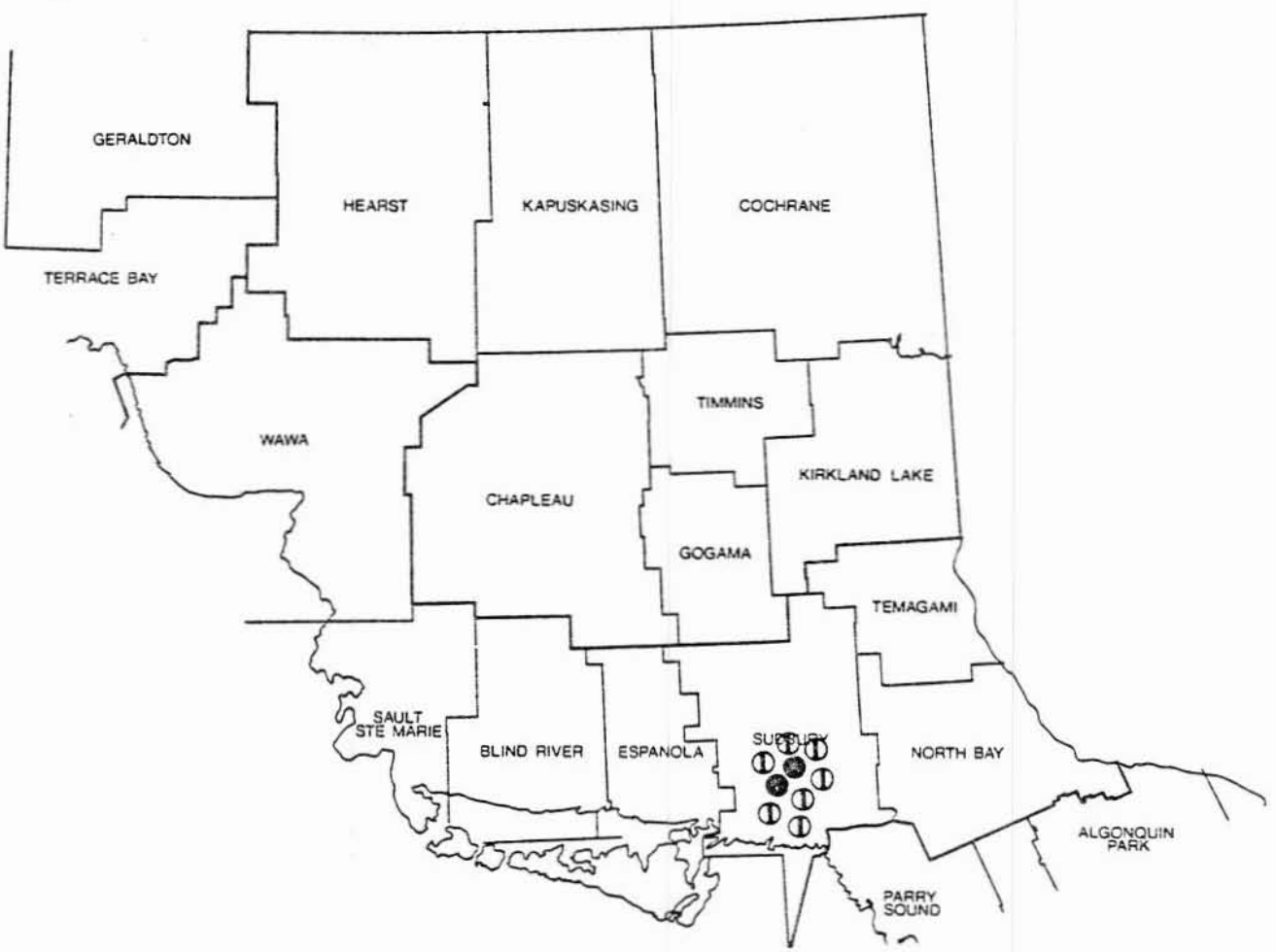
Areas within which defoliation occurred in 1960

LEGEND

Light defoliation ◐

Moderate-to-severe defoliation ●

NORTHEASTERN ONTARIO



Forest Tent Caterpillar

Areas within which defoliation occurred in 1961

LEGEND

Light defoliation ◑

Moderate-to-severe defoliation ●

0 Miles 60

0 Kilometres 96

NORTHEASTERN ONTARIO

0 Miles 60

0 Kilometres 96

Forest Tent Caterpillar

Areas within which defoliation occurred in 1962

LEGEND

Light defoliation ◐

Moderate-to-severe defoliation ▨

NORTHEASTERN ONTARIO

0 Miles 60

0 Kilometres 96

Forest Tent Caterpillar

Areas within which defoliation occurred in 1963

LEGEND

Light defoliation ◐

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO

Forest Tent Caterpillar

Areas within which defoliation occurred in 1964

0 Miles 60

0 Kilometres 96

LEGEND

Light defoliation ◐ or ▨

Moderate-to-severe defoliation ● or ▩

NORTHEASTERN ONTARIO

Forest Tent Caterpillar

Areas within which defoliation occurred in 1965

LEGEND

Light defoliation ◑ or

Moderate-to-severe defoliation

0 Miles 60

0 Kilometres 96

NORTHEASTERN ONTARIO

0 Miles 60

0 Kilometres 96

Forest Tent Caterpillar

Areas within which defoliation occurred in 1966

LEGEND

Light defoliation

Moderate-to-severe defoliation ● or

NORTHEASTERN ONTARIO

0 Miles 60

0 Kilometres 96

Forest Tent Caterpillar

Areas within which defoliation occurred in 1967

LEGEND

Light defoliation ◐

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO

0 Miles 60

0 Kilometres 96

Forest Tent Caterpillar

Areas within which defoliation occurred in 1968

LEGEND

Light defoliation ①

Moderate-to-severe defoliation

NORTHEASTERN ONTARIO

Forest Tent Caterpillar

Areas within which defoliation occurred in 1969

LEGEND

Light defoliation ◐

Moderate-to-severe defoliation ●

0 Miles 60

0 Kilometres 96

NORTHEASTERN ONTARIO

0 Miles 60

0 Kilometres 96

Forest Tent Caterpillar

Areas within which defoliation occurred in 1973

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO

Forest Tent Caterpillar

Areas within which defoliation occurred in 1974

0 Miles 60

0 Kilometres 96

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO

0 Miles 60

0 Kilometres 96

Forest Tent Caterpillar

Areas within which defoliation occurred in 1975

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO

Forest Tent Caterpillar

Areas within which defoliation occurred in 1976

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO

0 Miles 60

0 Kilometres 96

Forest Tent Caterpillar

Areas within which defoliation occurred in 1977

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO

0 Miles 60

0 Kilometres 96

Forest Tent Caterpillar

Areas within which defoliation occurred in 1978

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO

Forest Tent Caterpillar

Areas within which defoliation occurred in 1979

LEGEND

Moderate-to-severe defoliation ●

0 Miles 60

0 Kilometres 96

NORTHEASTERN ONTARIO

0 Miles 60

0 Kilometres 96

Forest Tent Caterpillar

Areas within which defoliation occurred in 1980

LEGEND

Moderate-to-severe defoliation

NORTHEASTERN ONTARIO

0 Miles 60

0 Kilometres 96

Ambermarked Birch Leafminer

Areas with which defoliation occurred in 1958

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO

0 Miles 60

0 Kilometres 96

Ambermarked Birch Leafminer

Areas within which defoliation occurred in 1960

LEGEND

Light defoliation

Moderate-to-severe defoliation