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

Compiled by

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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 from 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.

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INTRODUCTION

This is a review of significant forest insects and diseases that have occurred in the Wawa District between 1950 and 1980, with a brief summary of outbreaks prior to 1950. The Wawa District was formed in 1973 from the former White River District including the Lake Superior Park area which was transferred from the Sault Ste. Marie District to the White River District in 1968. In the selection of pests for this report particular attention was paid to the major working groups of host species in the district, mainly 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 9 - 15

This late-season insect defoliates both white birch and yellow birch and widespread outbreaks usually last 3-4 years, then virtually disappear, as evidenced from 1963 to 1965 and again from 1970 to 1972. Defoliation seldom causes mortality but weakened trees are hosts for secondary insects and diseases, and this may be a predisposing factor in the birch decline reported in 1968 and 1970 (see page 113). A previous infestation occurred in 1954.

Large Aspen Tortrix, *Choristoneura conflictana* (Wlk.) [Major]
pages 16 - 22

There has been no record of tree mortality caused by this defoliator of trembling aspen and poplar. Severe defoliation was recorded between 1956 and 1959 and between 1969 and 1973. The insect was first reported at low levels in 1955.

Spruce Budworm, *Choristoneura fumiferana* (Clem.) [Major]
pages 23 - 44

This insect is condered 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. Damaging infestations were first recorded in 1947 and continued until 1950. Balsam fir tree mortality averaged 80% at 11

widespread locations in the district in 1950. Very low populations were reported periodically from 1951 to 1969. The current infestation was first reported in 1970 along the Chapleau District and Lake Superior Provincial Park boundary and had spread north and west to encompass parts of the Pukaskwa National Park by 1976. A decline was noted in the Lake Superior Park between 1977 and 1979 but there was an increase in 1980. Top killing and whole-tree mortality were recorded in Lake Superior Park in 1973 and have since been observed through most of the district.

Larch Casebearer, *Coleophora laricella* Hbn. [Major]
page 45

This serious pest of native larch causes reduced tree growth and tree mortality after 2 successive years of severe defoliation. Moderate-to-severe defoliation was reported in 1963 and 1964 and again in 1971. The insect was first recorded in the district in 1950.

Linden Looper, *Erannis tiliaria* (Harr.) [Major]
pages 45 - 48

The larvae of this pest feed on most deciduous trees but are particularly damaging to shade and ornamental trees. High populations were noted in Lake Superior Park between 1974 and 1976.

Forest Tent Caterpillar, *Malacosoma disstria* Hbn. [Major]
pages 49 - 54

The first recorded infestation in the district was at Missinaibi between 1941 and 1944. A subsequent heavy infestation was recorded between 1949 and 1953. Although this insect seldom causes mortality of aspen, the major host tree in the district, the weakened trees are subject to the attacks of secondary insects and diseases.

Balsam Fir Sawfly, *Neodiprion abietis* complex [Major]
page 55

Mortality of balsam fir and white spruce trees can occur when severe defoliation persists over a period of years. Low populations persisted in the district from 1951 until 1971.

Jack Pine Sawflies, *Neodiprion nanulus nanulus* Schedl. [Major]
N. pratti banksianae Roh.
N. swainei Midd.
N. virginianus complex
pages 55 - 58

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

Yellowheaded Spruce Sawfly, *Pikonema alaskensis* (Roh.) [Major]
pages 58 - 59

This insect is a serious pest of young spruce plantations and open-growing ornamentals. High mortality can occur following a few years of severe defoliation. Varying degrees of infestation have been reported since 1950. No tree mortality has been recorded.

White Pine Weevil, *Pissodes strobi* Peck [Major]
pages 59 - 60

By attacking the leaders of small pine and spruce trees this insect causes 'cabbaging' of the host trees after several years of infestation. Low populations have occurred periodically since 1950.

Larch Sawfly, *Pristiphora erichsonii* (Htg.) [Major]
pages 60 - 69

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 recorded between 1953 and 1956, and from 1968 to 1971. No tree mortality has been recorded in the district.

Mountain-ash Sawfly, *Pristiphora geniculata* (Htg.) [Major]
page 70

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 prolonged severe defoliation occurs and subsequent borer infestations can cause mortality. Populations of varying degrees of intensity have been noted during most years since 1960, when the insect was first recorded in the district.

Ambermarked Birch Leafminer, *Profenusa thomsonii* (Konow) [Major]
pages 71 - 77

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 1958 to 1962 and from 1965 until 1970.

Other Noteworthy Insects
pages 78 - 91

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

FOREST DISEASES

Armillaria Root Rot, *Armillaria mellea* (Vahl ex Fr.) Kumm. [Major]
page 95

This root rot is capable of killing both weakened and healthy trees. The fungus has been reported at low levels periodically from 1958 to 1979.

Needle Rust, *Chrysomyxa ledi* (Alb. & Schw.) d By., [Major]
C. ledicola Lagh.
page 95

Severe infections of 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 1969.

Ink Spot, *Ciborinia whetzelii* (Seaver) Seaver [Major]
page 96

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 1958 and 1960, between 1963 and 1966 and in 1970 and 1978.

Needle Cast, *Davisomycella ampla* (Davis) Darker [Major]
page 97

This disease accounted for severe foliage drop of the previous year's needles in stands in 1967. Lower levels of needle drop have occurred periodically since it was first reported in the district in 1954.

Scleroderris Canker, *Gremmeniella abietina* (Lagerb.) Morelet [Major]
pages 97 - 98

This destructive pathogen of young planted pine was first discovered in the district in 1966. The disease has caused tree mortality periodically at numerous locations.

Hypoxylon Canker, *Hypoxylon mammatum* (Wahl.) J.H. Miller [Major]
pages 98 - 99

This disease usually attacks the stems of immature trees in the 8- to 13-cm diameter class, but also attacks the upper stem and branches of larger trees. It has been common in stands of aspen throughout the district since 1952, the year that the Forest Disease Survey was formed.

Rusts of Pine, Stalactiform Rust, *Cronartium coleosporioides* Arth.
Sweet-fern Blister Rust, *C. comptoniae* Arth.
White Pine Blister Rust, *C. ribicola* J.C. Fisch.
Globose Gall Rust, *Endocronartium harknessii* (J.P. Moore) Y. Hirat. [Major]
pages 99 - 100

These various gall and stem rusts can cause tree mortality in young trees when infections are high. Various levels of infection have been prevalent throughout the district since the diseases were first reported in 1954.

Shoot Blight, *Venturia macularis* (Fr.) Muller & Arx. [Major]
pages 100 - 101

This foliar disease is particularly damaging to leaders of reproduction aspen. Severe damage was reported from 1960 to 1967, and in 1973, 1977 and 1978.

Other Noteworthy Diseases [Major and Minor]
pages 102 - 104

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

ABIOTIC DAMAGE

pages 107 - 109

This condition is caused by a variety of influences, e.g., salt, frost, wind, etc. Weakened trees are then susceptible to a number of diseases. Severe abiotic damage has been reported periodically since 1960.

DIEBACKS AND DECLINES

Birch Decline
page 113

This condition is caused by a variety of factors such as logging, climate and defoliating insects. Severe decline of mature white birch was reported in 1968 and 1970 south of Wawa and in Lake Superior Provincial Park.

INSECTS

Birch Skeletonizer, *Bucculatrix canadensisella* Cham.

Host(s): wB [Major]

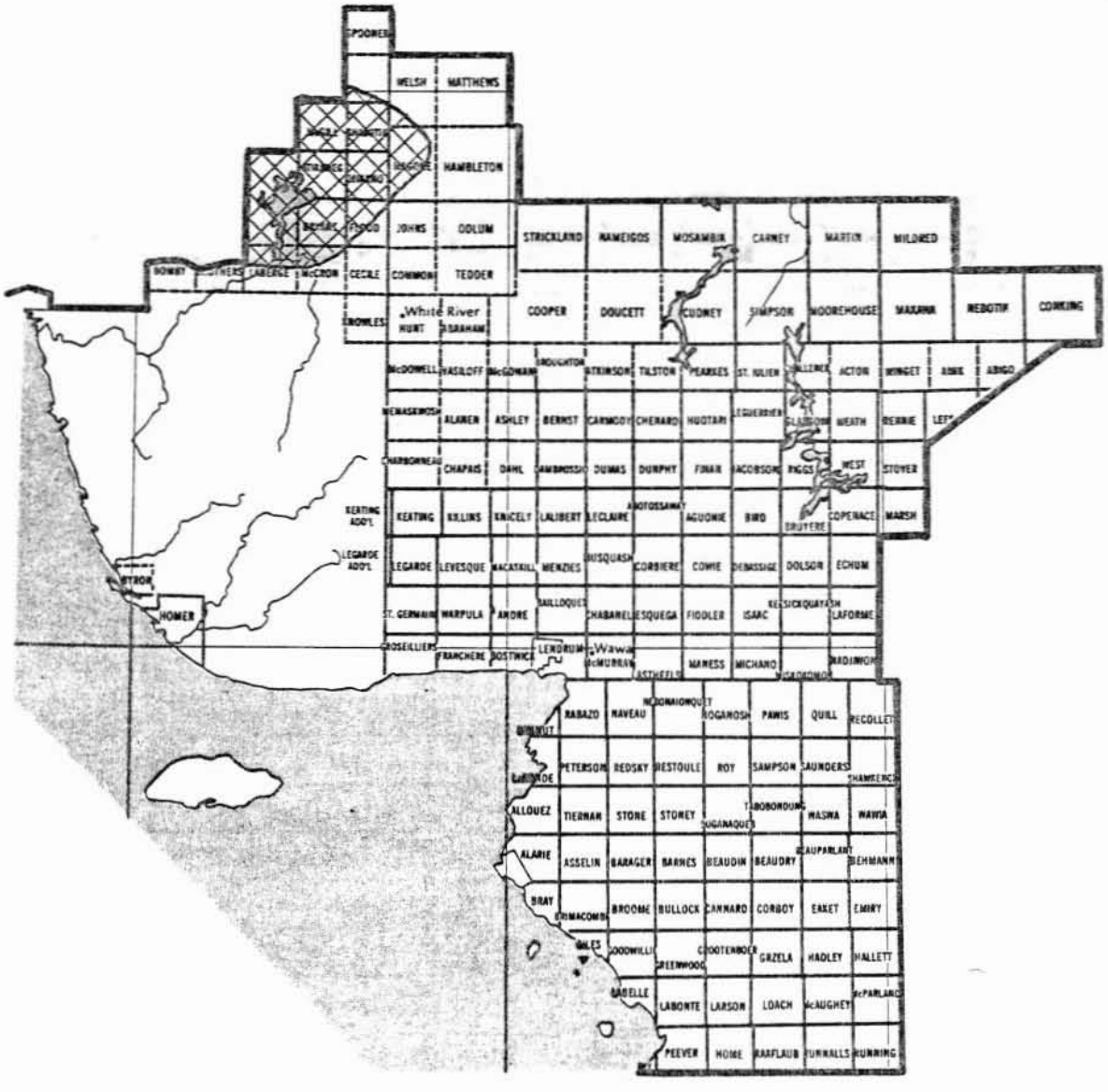
Year	Remarks
1950-1953	not reported
1954	severe defoliation in an area of 1813 km^2 north of Montreal River and east of the Algoma Central Railway (ACR)
1955	light infestation in Riggs Twp
1956-1957	not reported
1958-1960	low populations general
1961	low populations in Laberge, Bryant and Lalibert twps
1962	low populations in Riggs Twp
1963	severe browning in seven townships in the northwestern part of the district (see map, page 11)
1964	pockets of severe browning east of White Lake and in the Wawa, Hawk Junction, and Magpie area (see map, page 12).
1965	decline to moderate defoliation east of White Lake; light near Wawa
1966	very low populations throughout the district
1967	not reported
1968	low populations at Montreal River
1969	low populations at Montreal River
1970	pockets of severe defoliation along Highway 17, between Montreal River and Michipicoten River, near Hammer Lake in Alanen Twp and between Bertrand Creek and White Lake (see map, page 13)

(cont'd)

Birch Skeletonizer, *Bucculatrix canadensisella* Cham. (concl.)

Year	Remarks
1971	severe defoliation in the northwestern part of the district (see map, page 14)
1972	severe defoliation near White Lake; light defoliation in Hunt and Labonte twps (see map, page 15)
1973	Infestations virtually disappeared
1974-1980	not reported

WAWA DISTRICT



Birch Skeletonizer

Areas within which defoliation occurred in 1963

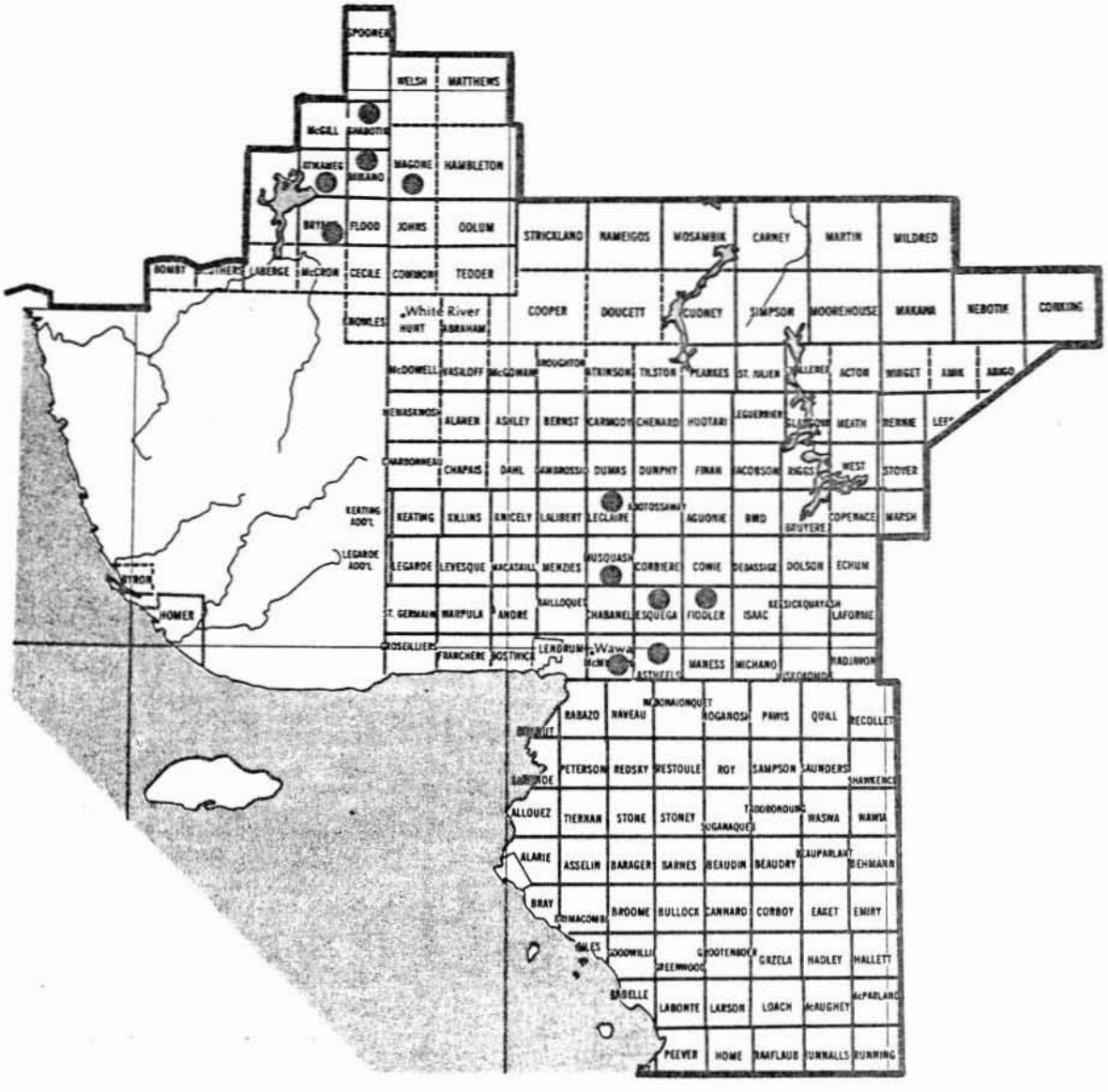
Scale

Kilometres 20 10 0 20

LEGEND

Moderate-to-severe defoliation

WAWA DISTRICT



Birch Skeletonizer

Areas within which defoliation occurred in 1964

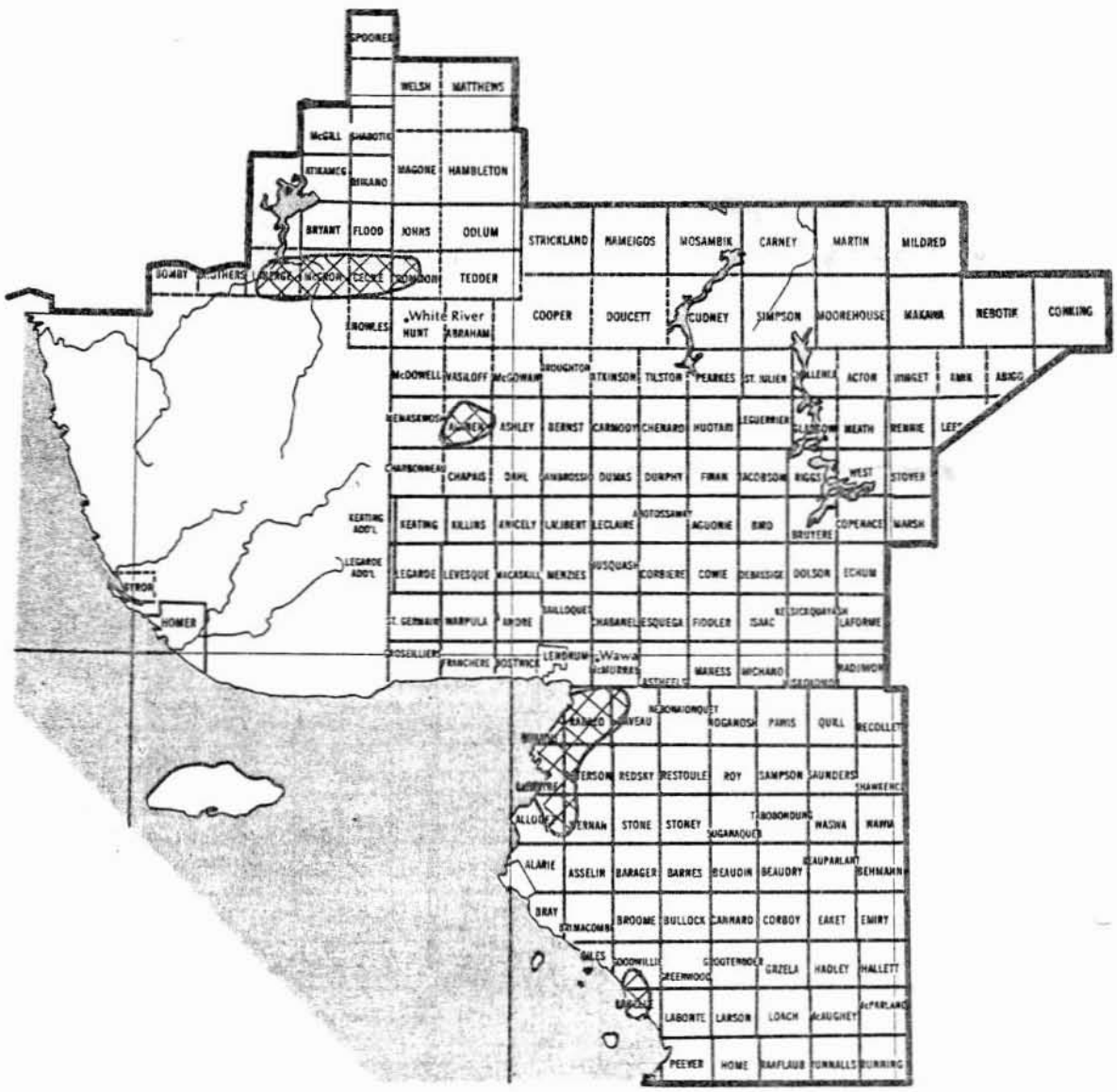
LEGEND

Moderate-to-severe defoliation ●

Scale

Kilometres 20 10 0 20

WAWA DISTRICT



Birch Skeletonizer

Areas within which defoliation occurred in 1970

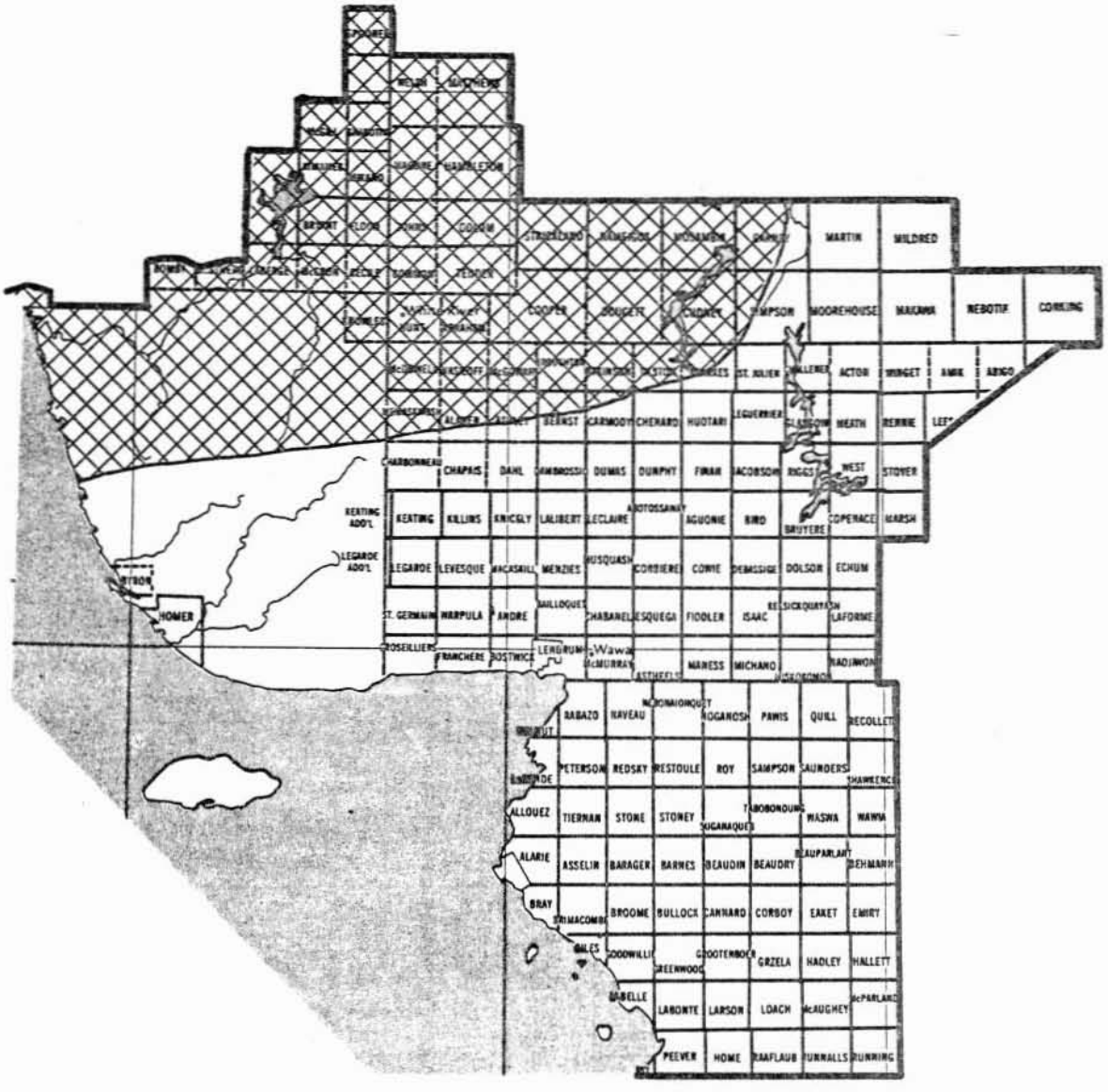
Scale

Kilometres 20 10 0 20

LEGEND

Moderate-to-severe defoliation

WAWA DISTRICT



Birch Skeletonizer

Areas within which defoliation occurred in 1971

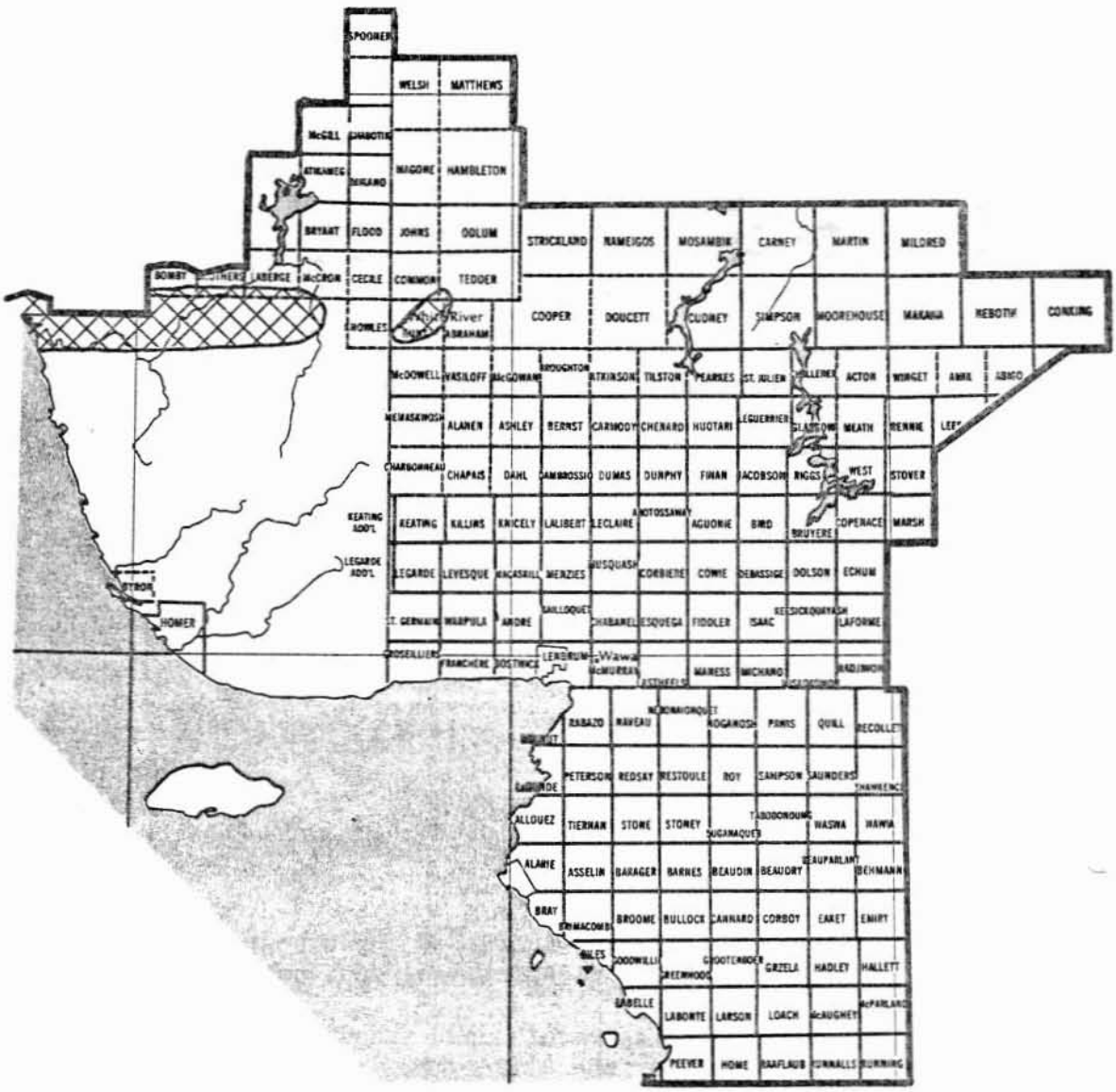
Scale

Kilometres 20 10 0 20

LEGEND

Moderate-to-severe defoliation

WAWA DISTRICT



Birch Skeletonizer

Areas within which defoliation occurred in 1972

Scale .

Kilometres 20 10 0 20

LEGEND

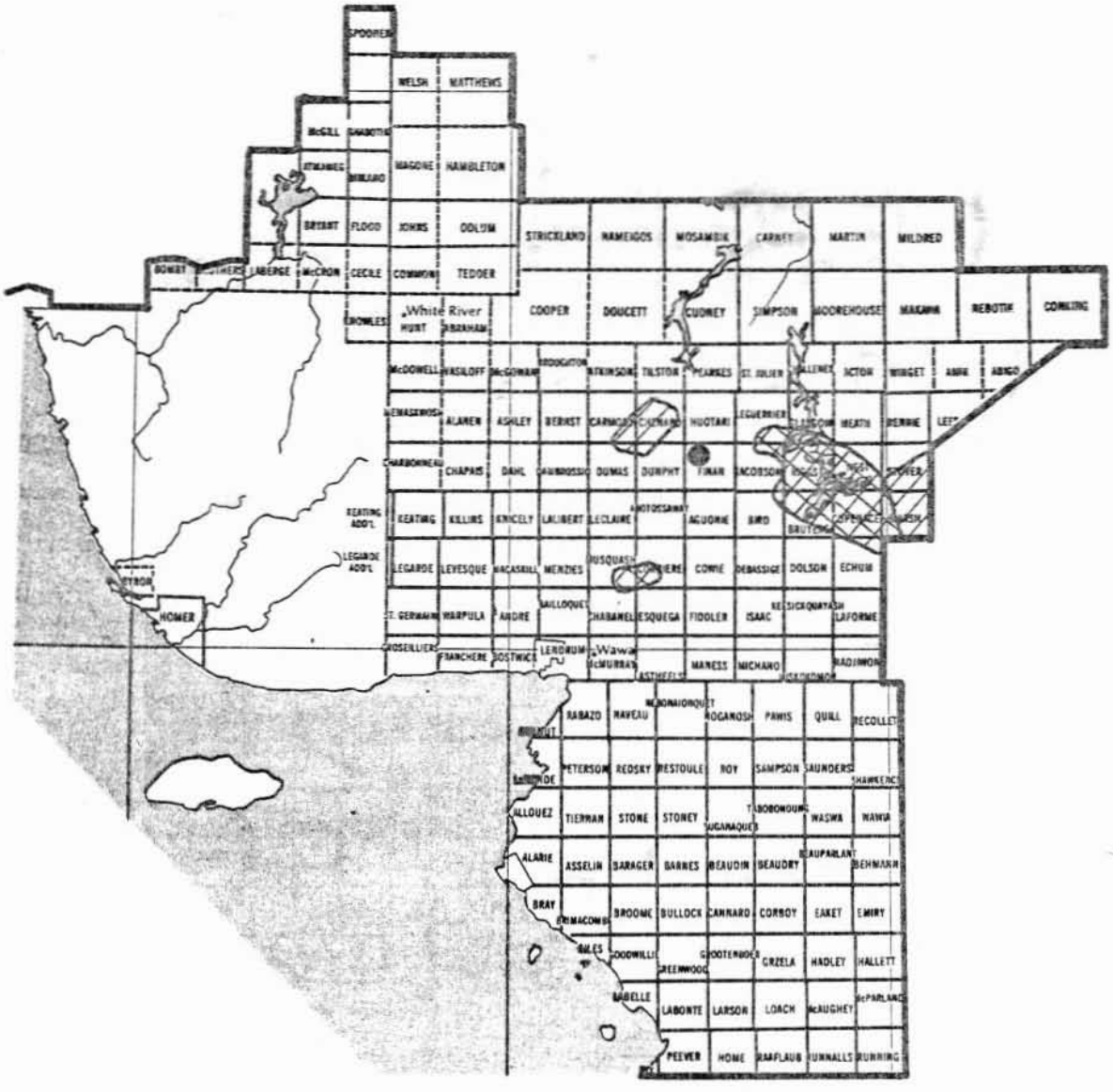
Moderate-to-severe defoliation

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

Host(s): tA [Major]

Year	Remarks
1950-1954	not reported
1955	trace populations in McDowell Twp
1956	low populations general
1957	severe defoliation along the eastern boundary of Wawa and Chapleau districts (see map, page 17); smaller pockets of defoliation adjacent to the ACR in Chenard, Finan and Corbiere twps
1958	continued moderate-to-severe defoliation along the Canadian Pacific Railway (CPR) between Franz and the eastern boundary of the district, and in Corbiere Twp (see map, page 18)
1959	Light defoliation persisted near Franz.
1960	very low populations
1961-1968	not reported
1969	severe defoliation of approximately 64 km^2 in four townships in the Franz-Hawk Junction area
1970	Severe defoliation increased throughout most of the eastern half of the district (see map, page 19).
1971	Severe defoliation of aspen stands persisted in the Franz area for the third year. A decline occurred in the southern part of the district (see map, page 20).
1972	Severe defoliation occurred from the northern boundary of the district to an east-west line from White Lake to Franz and then eastward to Lochalsh (see map, page 21).
1973	Two small areas of severe defoliation occurred near White River and another occurred near Franz (see map, page 22).
1974	very light infestations
1975-1980	not reported

WAWA DISTRICT



Large Aspen Tortrix

Areas within which defoliation occurred in 1957

Scale

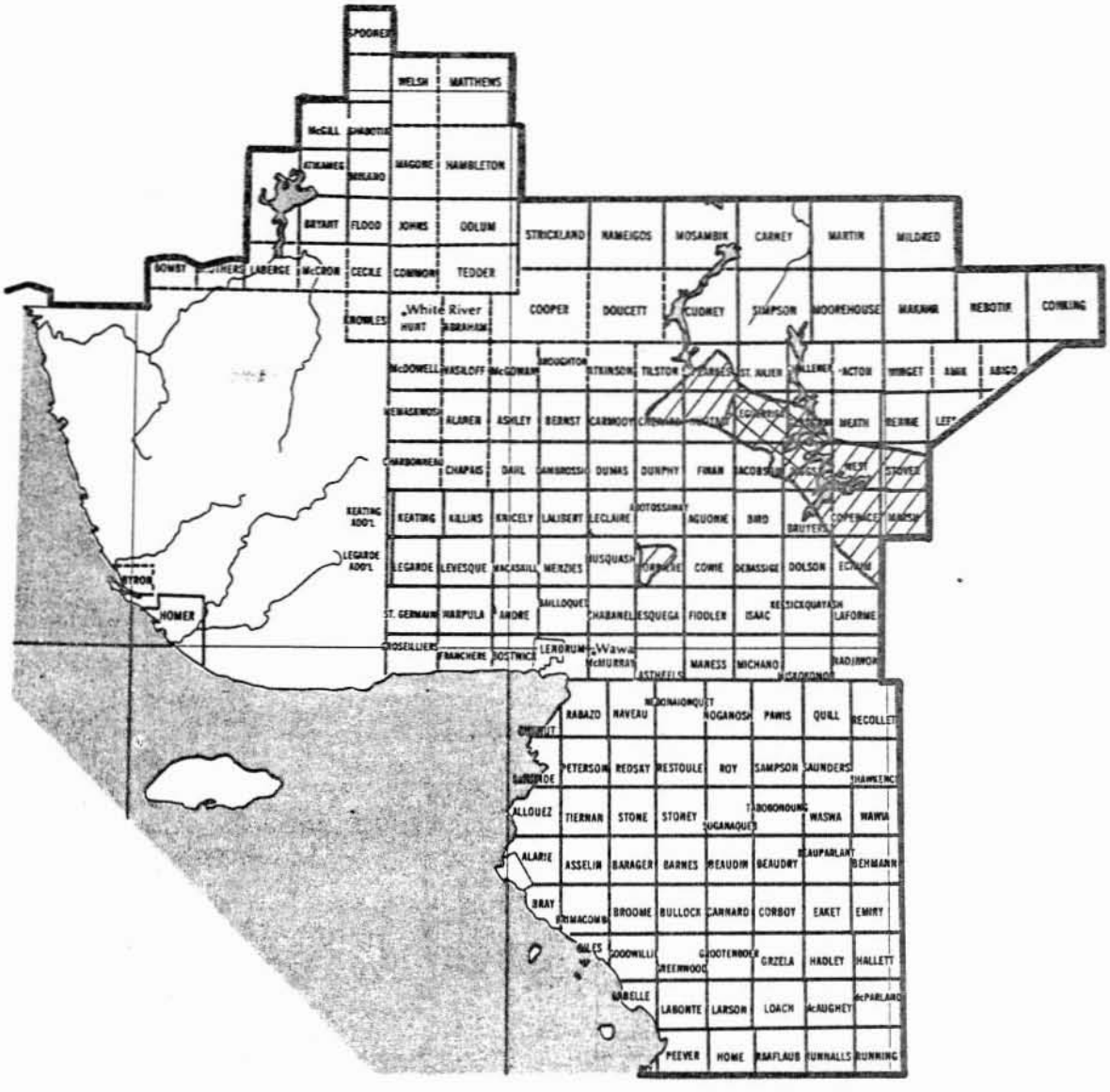
Kilometres 20 10 0 20

LEGEND

Light defoliation

Moderate-to-severe defoliation ● or

WAWA DISTRICT



Large Aspen Tortrix

Areas within which defoliation occurred in 1958

Scale

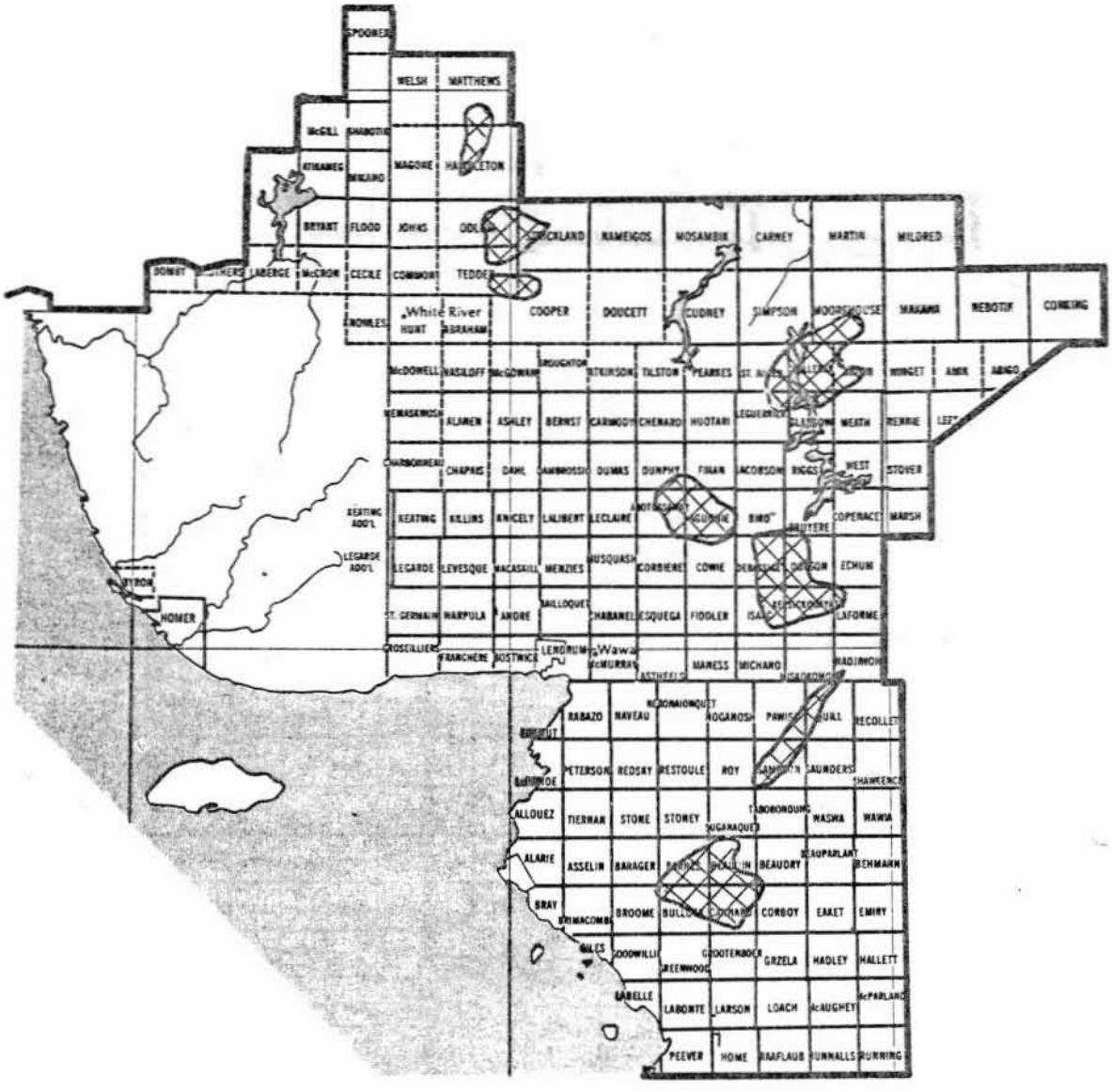
Kilometres 20 10 0 20

LEGEND

Light defoliation

Moderate-to-severe defoliation

WAWA DISTRICT



Large Aspen Tortrix

Areas within which defoliation occurred in 1970

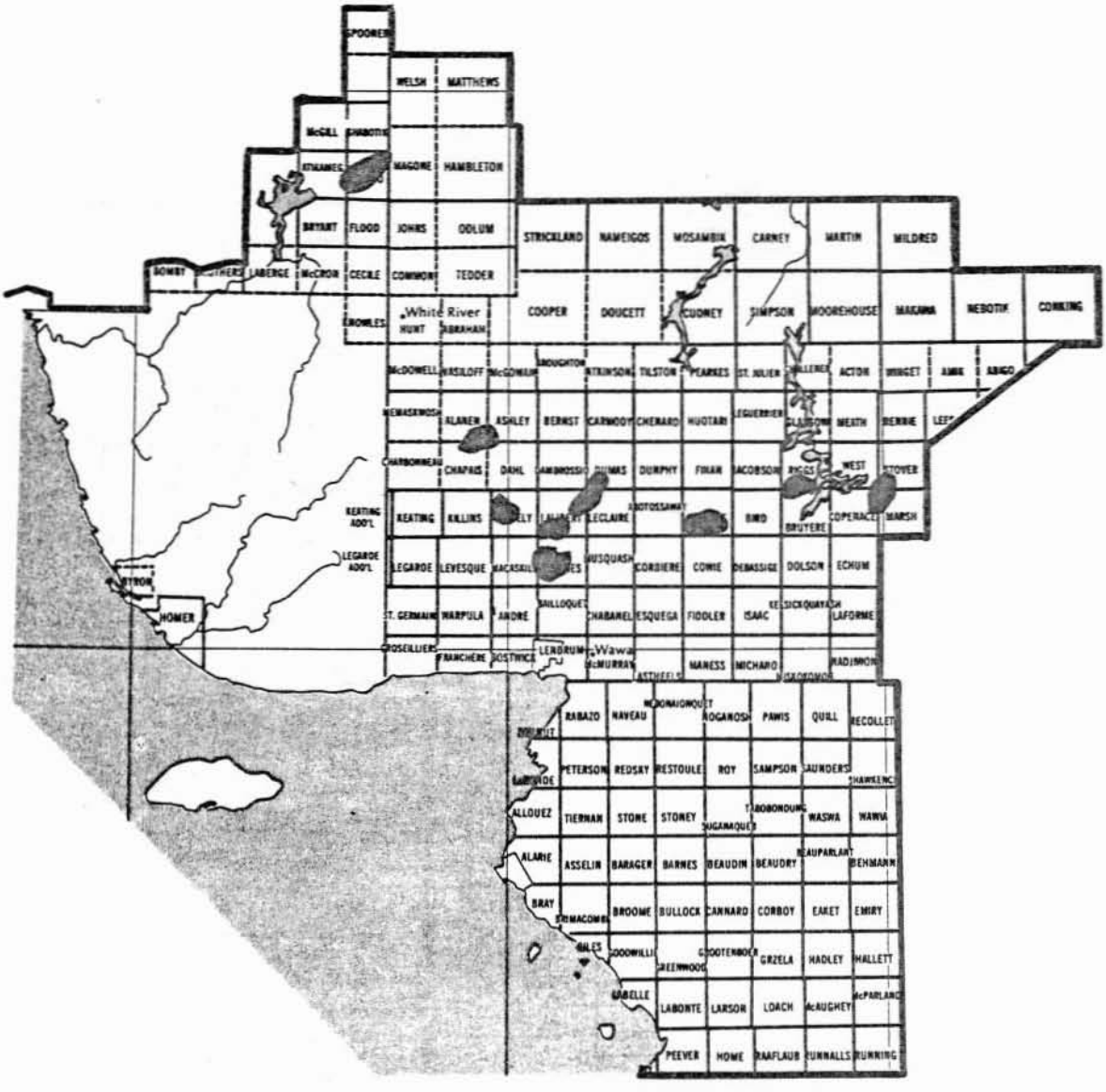
Scale

Kilometres 20 10 0 20

LEGEND

Moderate-to-severe defoliation

WAWA DISTRICT



Large Aspen Tortrix

Areas within which defoliation occurred in 1971

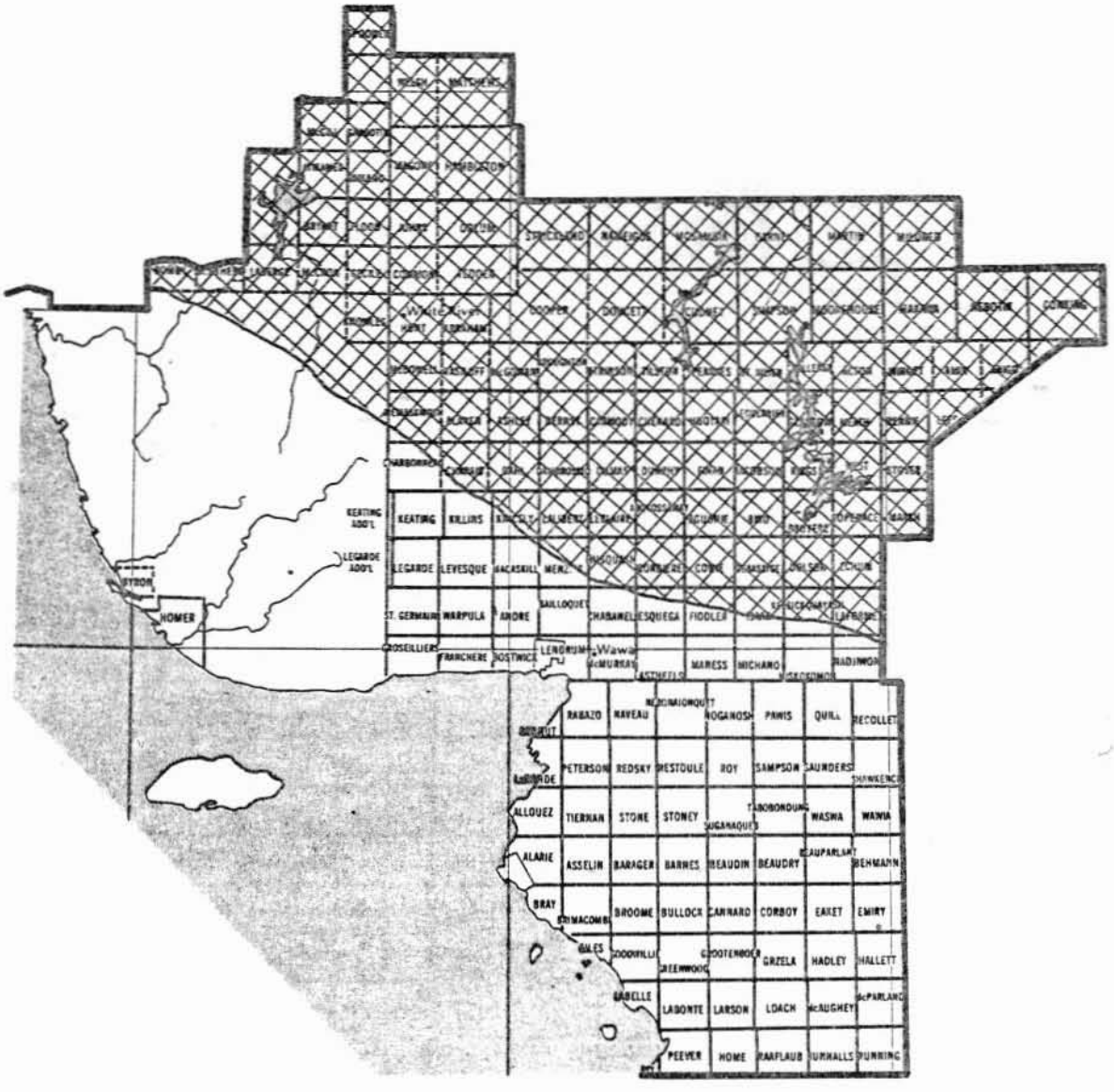
LEGEND

Moderate-to-severe defoliation ●

Scale

Kilometres 20 10 0 20

WAWA DISTRICT



Large Aspen Tortrix

Areas within which defoliation occurred in 1972

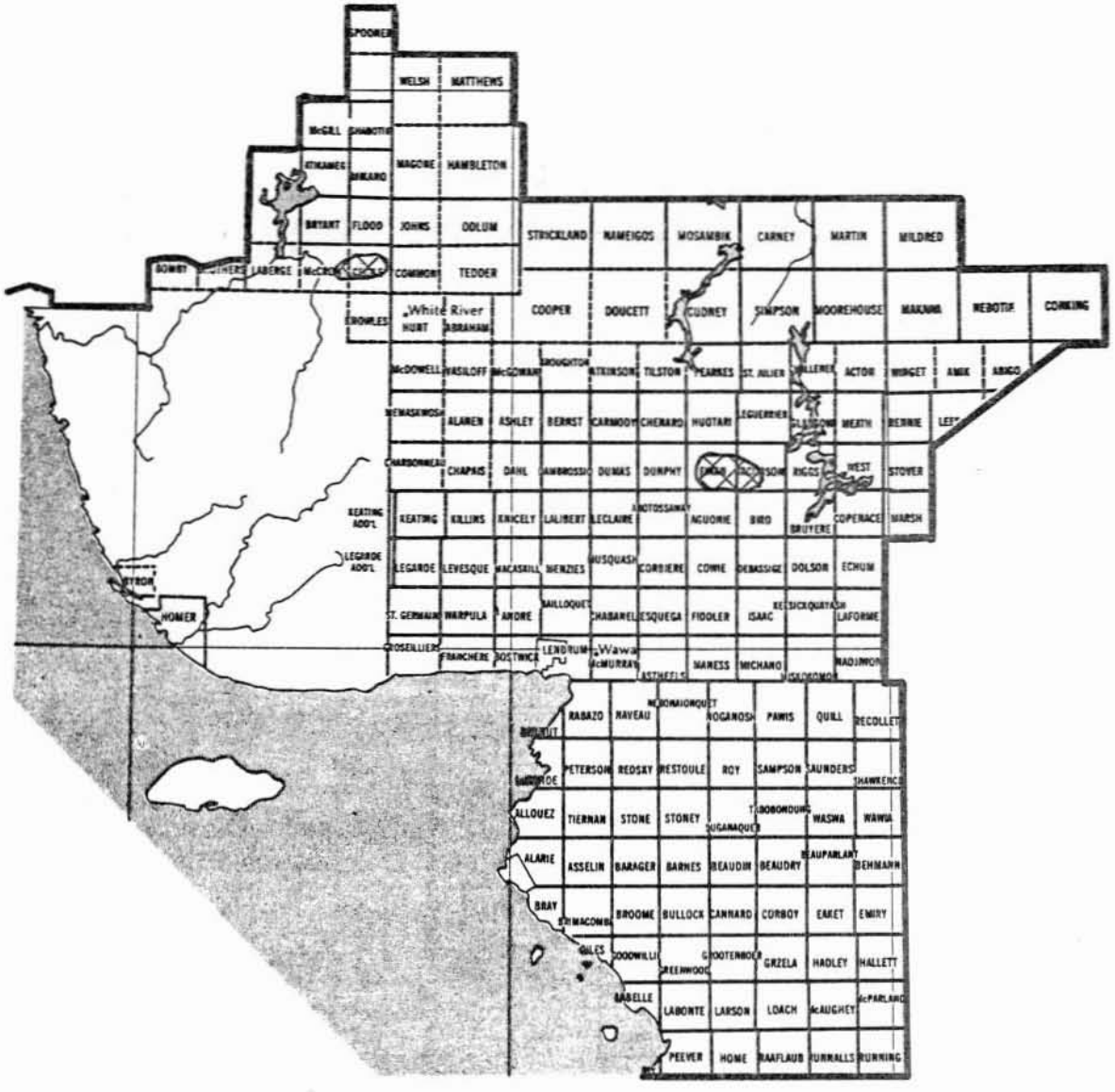
Scale

Kilometres 20 10 0 20

LEGEND

Moderate-to-severe defoliation

WAWA DISTRICT



Large Aspen Tortrix

Areas within which defoliation occurred in 1973

LEGEND

Moderate-to-severe defoliation

Scale

Kilometres 20 10 0 20

Spruce Budworm, *Choristoneura fumiferana* (Clem.)

Host(s): bF, wS, lS [Major]

Year	Remarks
1950	Population declines were evident throughout the district, with only individual larvae found near White Lake and along the Lochalsh-Goudreau road. Mortality of balsam fir averaged 80% at 11 locations throughout the district (see map, page 26).
1951-1952	not reported
1953	light defoliation of balsam fir on Michipicoten Island
1954-1955	not reported
1956-1960	few larvae observed
1961-1964	low populations near the town of Wawa
1965	not reported
1966-1969	intensive surveys but very low larval populations observed
1970	High populations with severe defoliation spread into Lake Superior Park from the Chapleau District (see map, page 27).
1971	Severe defoliation occurred from the Montreal River in the south to a line between Wawa and Debassige Twp, then easterly to Echum Twp (see map, page 28). An aerial spray operation with Fenitrothion was carried out in 404.6 ha in Lake Superior Park.
1972	continued severe defoliation with very little change in infestation boundaries from 1971 (see map, page 29) Aerial spraying with Zectran was carried out over 1,456 ha in Lake Superior Park.
1973	The infestation increased, with severe defoliation, north to a line between Wawa and Meath Twp (see map, page 30). A continuing aerial spray program with Zectran and an experimental application of *Bacillus thuringiensis* were carried out on 1,355 ha in Lake Superior Park. Small pockets of balsam fir tree mortality occurred in Wawa, Shawkence and Quill twps.

(cont'd)

Spruce Budworm, *Choristoneura fumiferana* (Clem.) (cont'd)

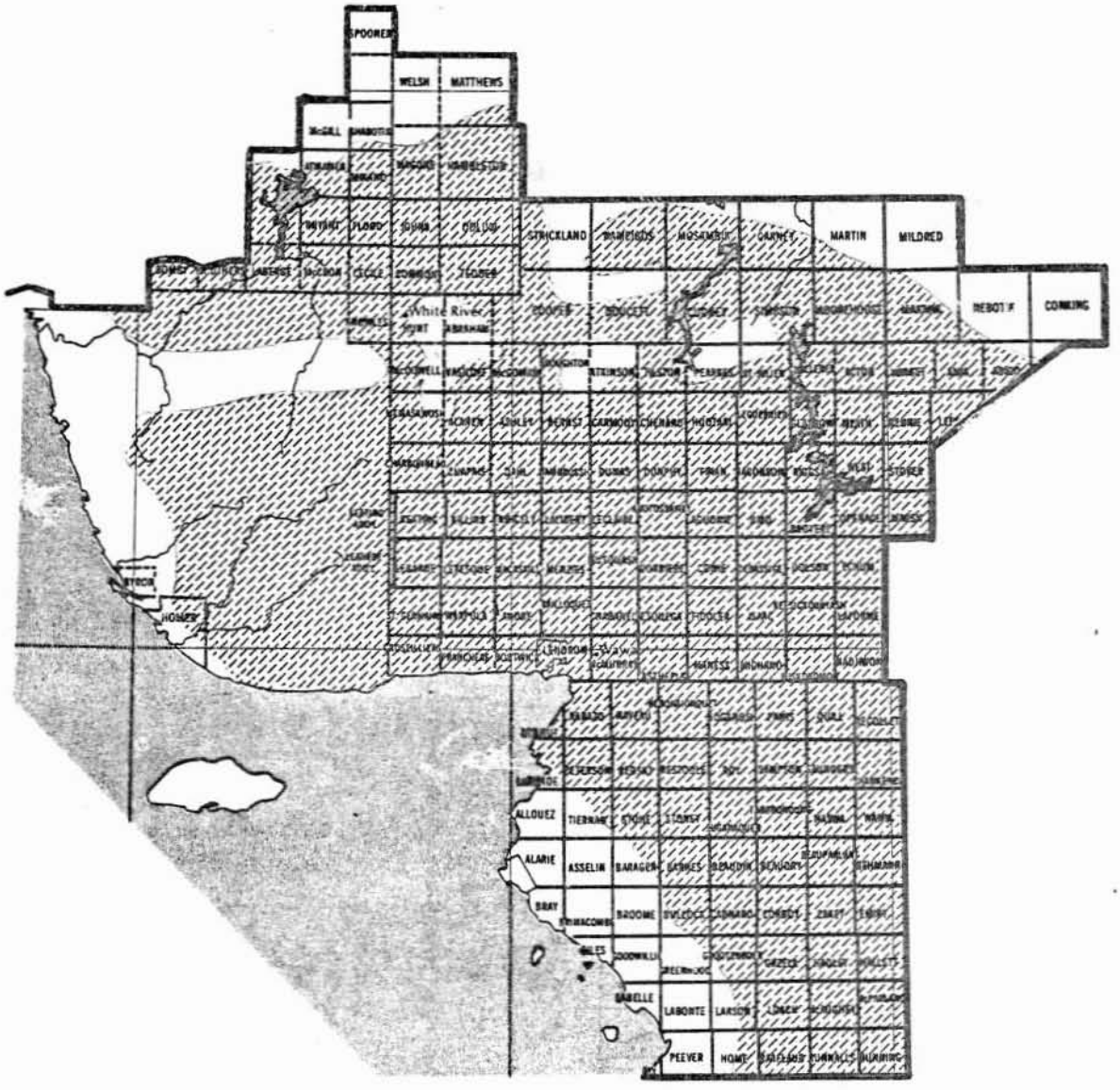
Year	Remarks
1974	There was severe defoliation, but little change in the northern infestation boundary (see maps, pages 31-32; a total of 8,080 ha was aerially sprayed with Zectran. Mortality was observed in Conkin Twp in the northeastern part of the district and throughout Lake Superior Park, particularly in Stoney, Barnes, Broome, Barager and Bullock twps.
1975	A major western and northern extension in infestation occurred between Groseilliers Twp on the shore of Lake Superior and Doucett Twp on the Wawa-Hearst district border. In addition, a new infestation was observed in Byron and Homer twps in the Pukaskwa National Park (see map, page 33). An area of 3,262 ha in Lake Superior Park was sprayed with Fenitrothion and Dylox. Extensive balsam fir tree mortality has occurred within the park and on the Chapleau and Hearst district boundaries (see map, page 34).
1976	There was continued severe defoliation, with modest extensions ranging from 10 to 40 km along the western and northern boundaries. Several new infestations were observed in the Pukaskwa area (see map, page 35). Aerial spraying with Matacil, Fenitrothion and Orthene was carried out on 4,834 ha in Lake Superior Park. Balsam fir tree mortality in the park has averaged from 4 to 95% at 10 locations (see map, page 36).
1977	A decline occurred in the southern part of the district and in the White River area in the western part (see map, page 37). A continuing aerial spray program with Matacil and Orthene was carried out on 2,865 ha in the park. Balsam fir tree mortality ranged from 2 to 96% at 17 locations in the district (see map, page 38).
1978	A further decline occurred in Lake Superior Park, leaving only a narrow corridor of defoliation from the southern boundary at Montreal River to the town of Wawa. The western boundary remained virtually unchanged (see map, page 39). A total of 550 ha in the park was sprayed with Novabac, Dipel and Thuricide. Tree mortality continued but was somewhat less than in 1977 (see map, page 40).

(cont'd)

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

Year	Remarks
1979	Moderate-to-severe defoliation occurred throughout most of the northern part of the district, but declined to light in the southern part (see map, page 41). Continued high mortality occurred in Lake Superior Park (see map, page 42).
1980	Severe defoliation persisted throughout most of the district. Increases were noted in the northern and western parts of Lake Superior Park (see map, page 43). A slight increase in tree mortality occurred, with some dead trees observed in Cecile and Bailloque twps (see map, page 44).

WAWA DISTRICT



Spruce Budworm

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

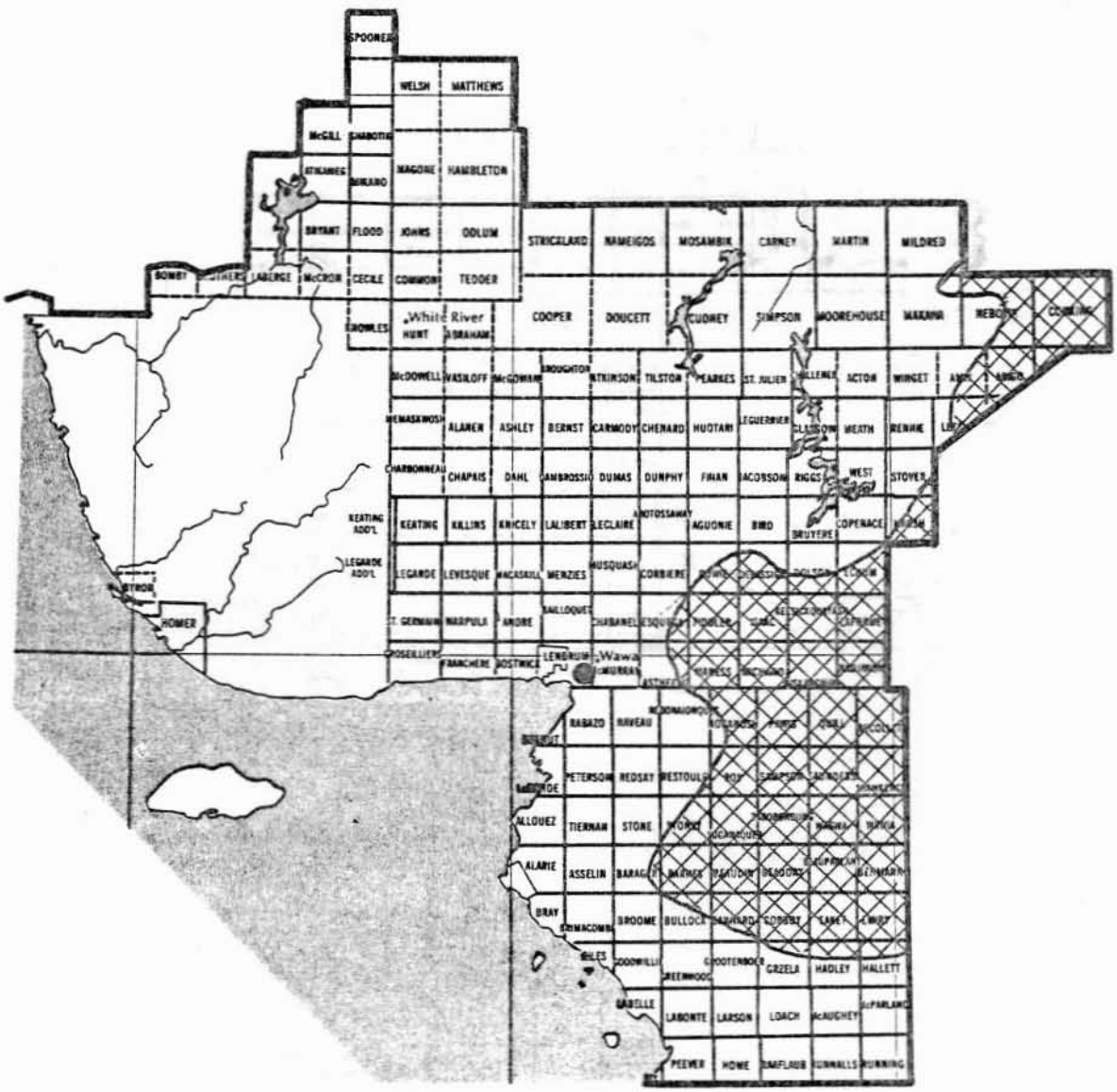
LEGEND

Mortality

Scale

Kilometres 20 10 0 20

WAWA DISTRICT



Spruce Budworm

Areas within which defoliation occurred in 1970

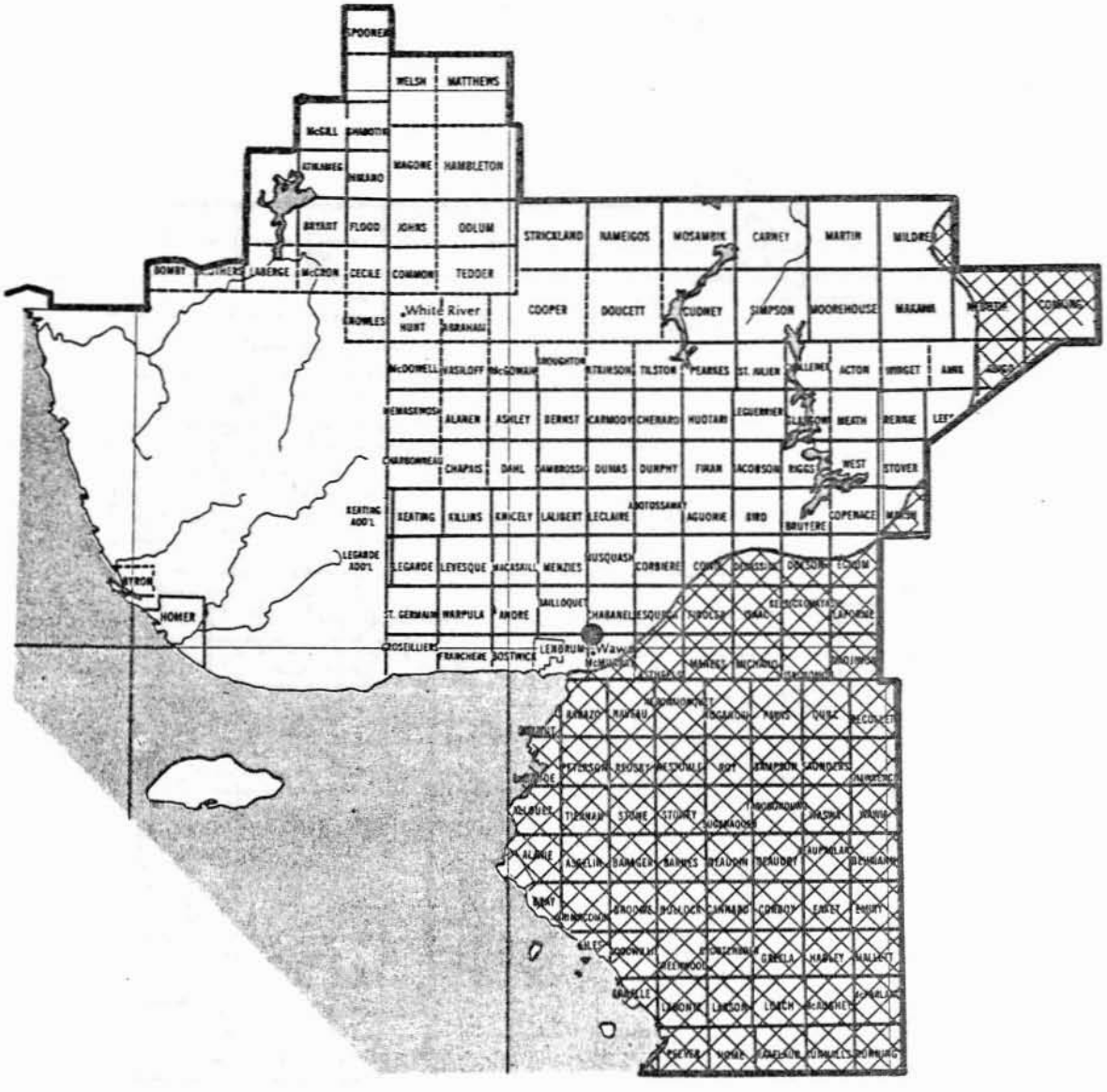
Scale

Kilometres 20 10 0 20

LEGEND

Moderate-to-severe defoliation ● or ▨

WAWA DISTRICT



Spruce Budworm

Areas within which defoliation occurred in 1971

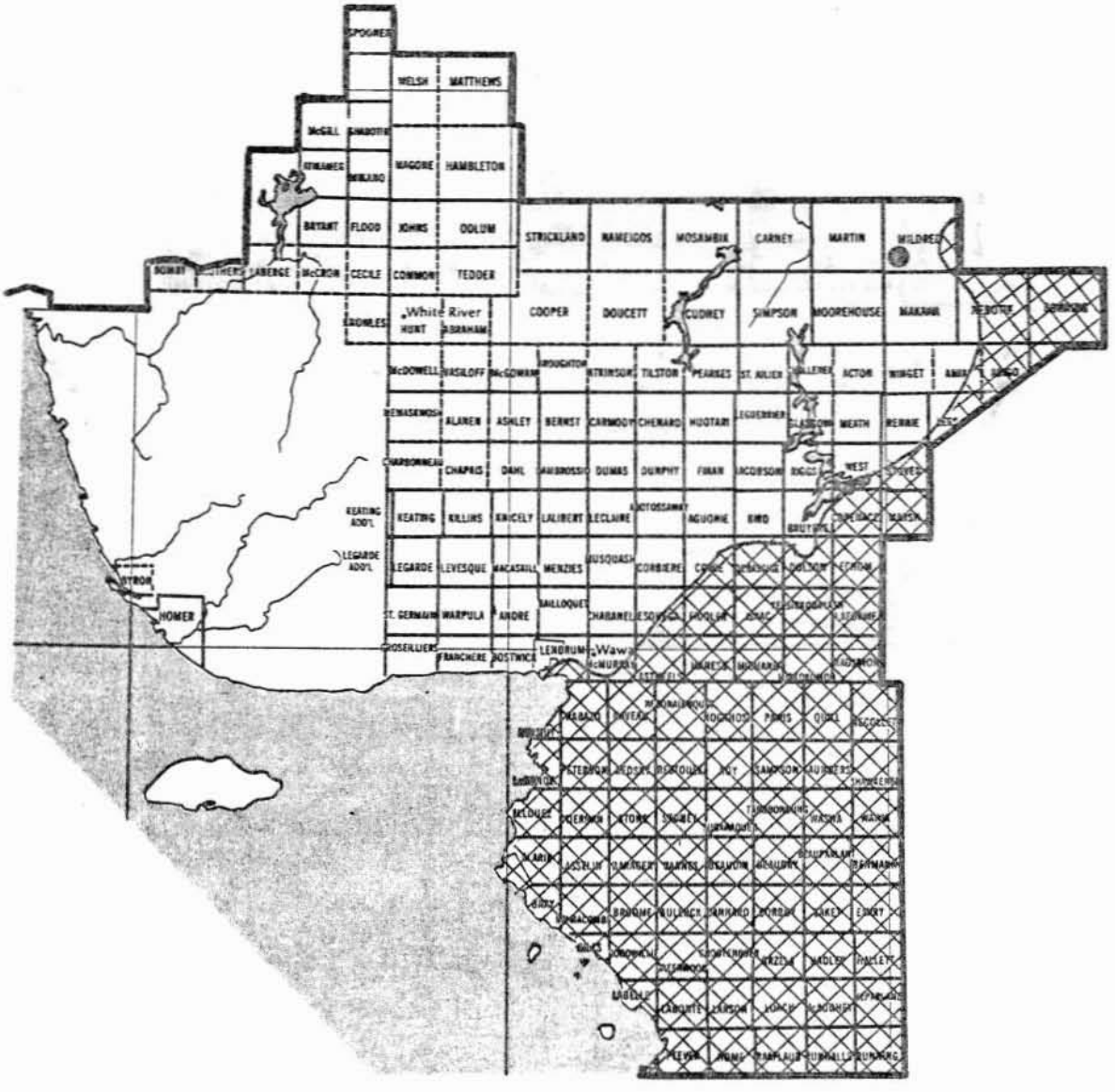
LEGEND

Moderate-to-severe defoliation ● or ▨

Scale

Kilometres 20 10 0 20

WAWA DISTRICT



Spruce Budworm

Areas within which defoliation occurred in 1972

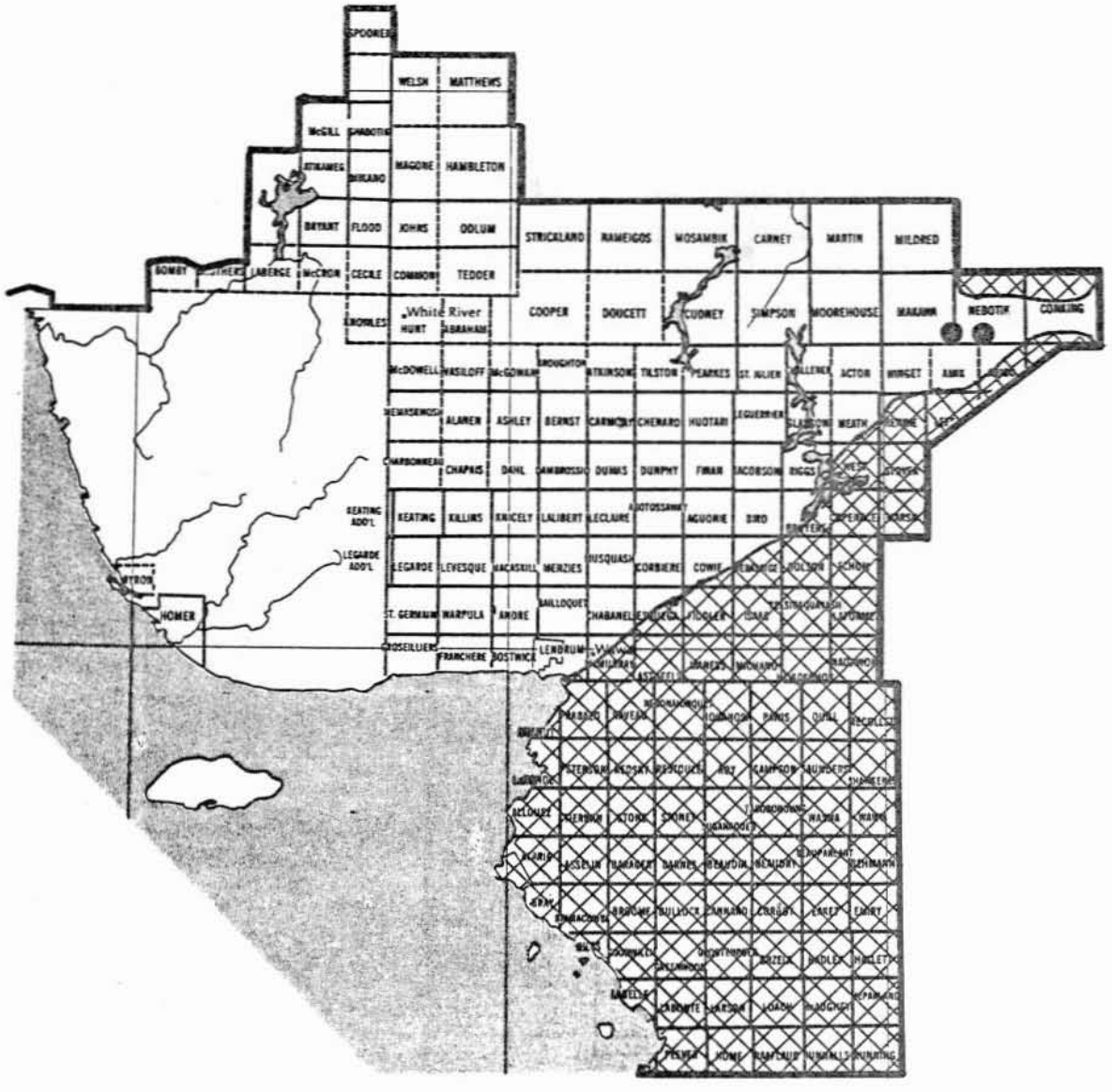
Scale

Kilometres 20 10 0 20

LEGEND

Moderate-to-severe defoliation ● or ▨

WAWA DISTRICT



Spruce Budworm

Areas within which defoliation occurred in 1973

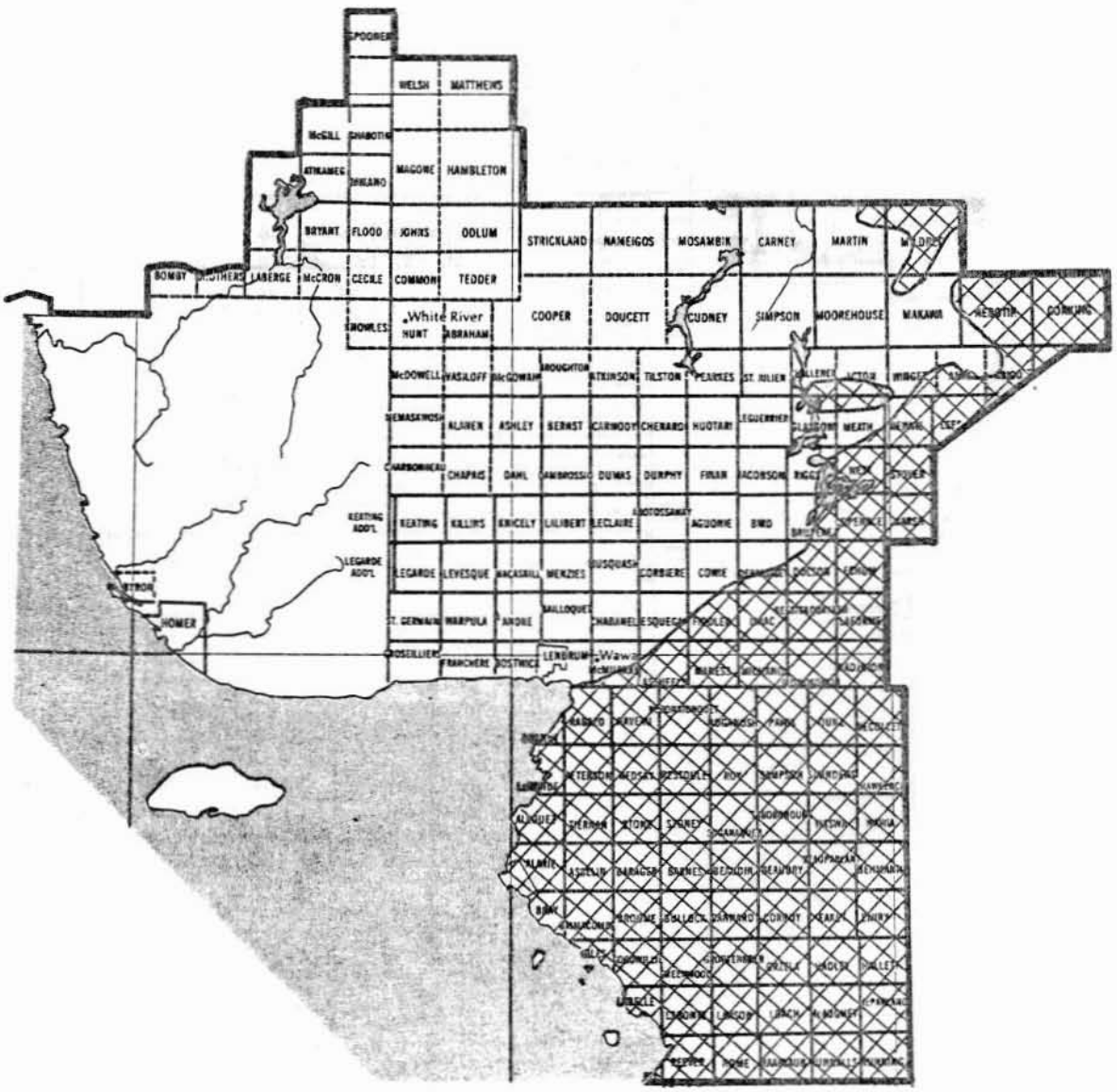
Scale

Kilometres 20 10 0 20

LEGEND

Moderate-to-severe defoliation ● or ▨

WAWA DISTRICT



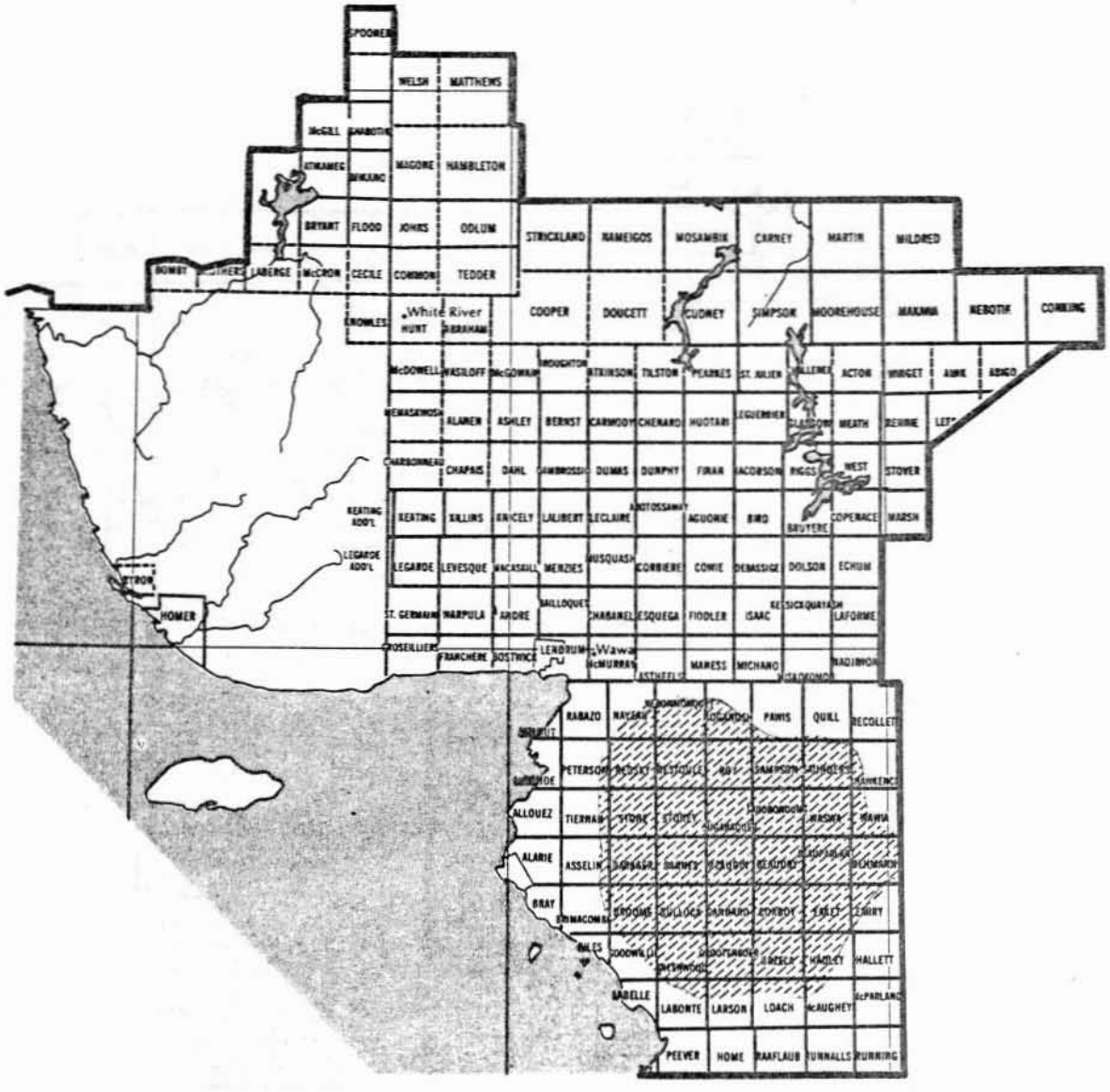
Spruce Budworm

Areas within which defoliation occurred in 1974

LEGEND

Moderate-to-severe defoliation ● or ▨

WAWA DISTRICT



Spruce Budworm

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

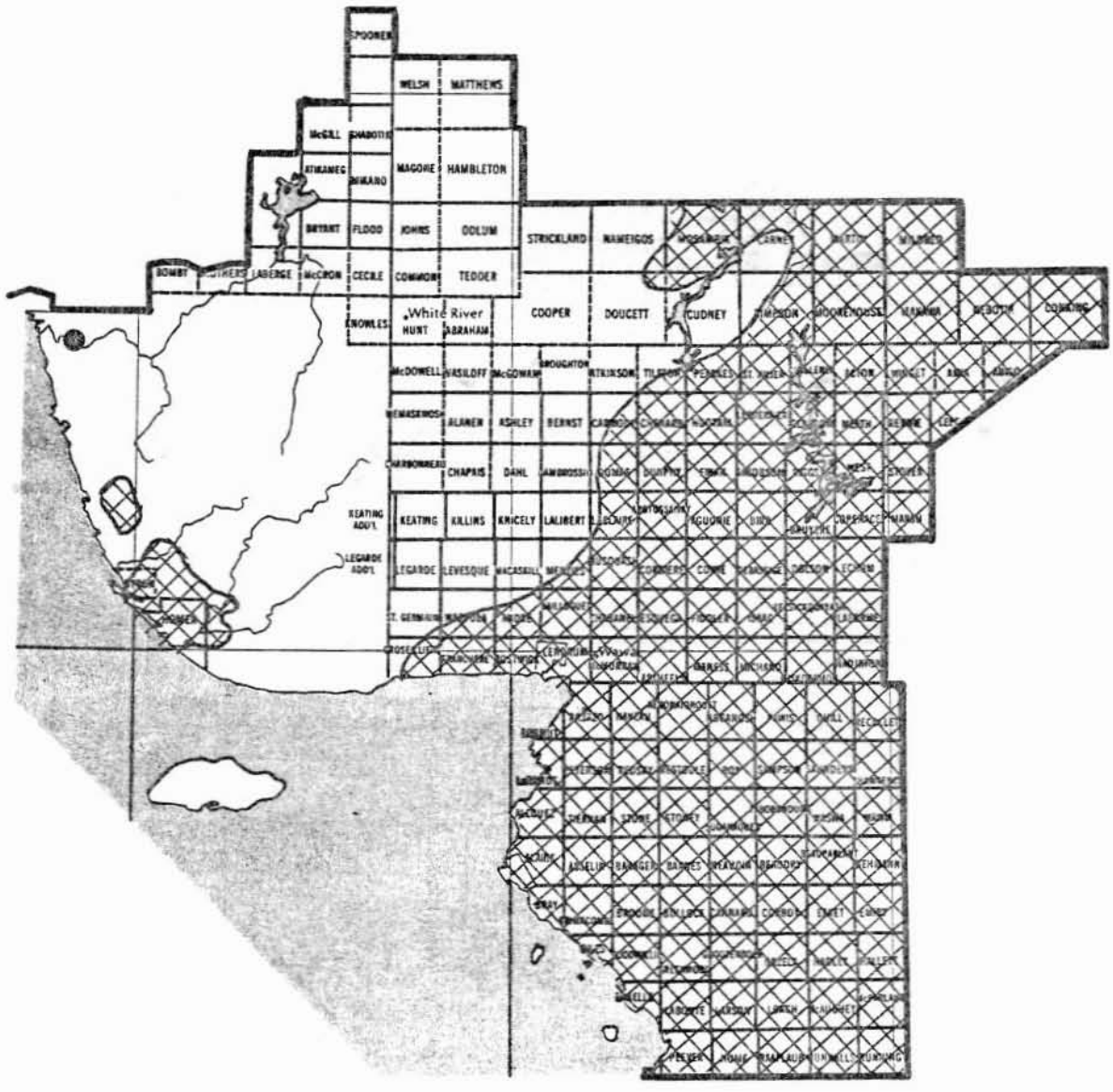
LEGEND

Mortality

Scale

Kilometres 20 10 0 20

WAWA DISTRICT



Spruce Budworm

Areas within which defoliation occurred in 1975

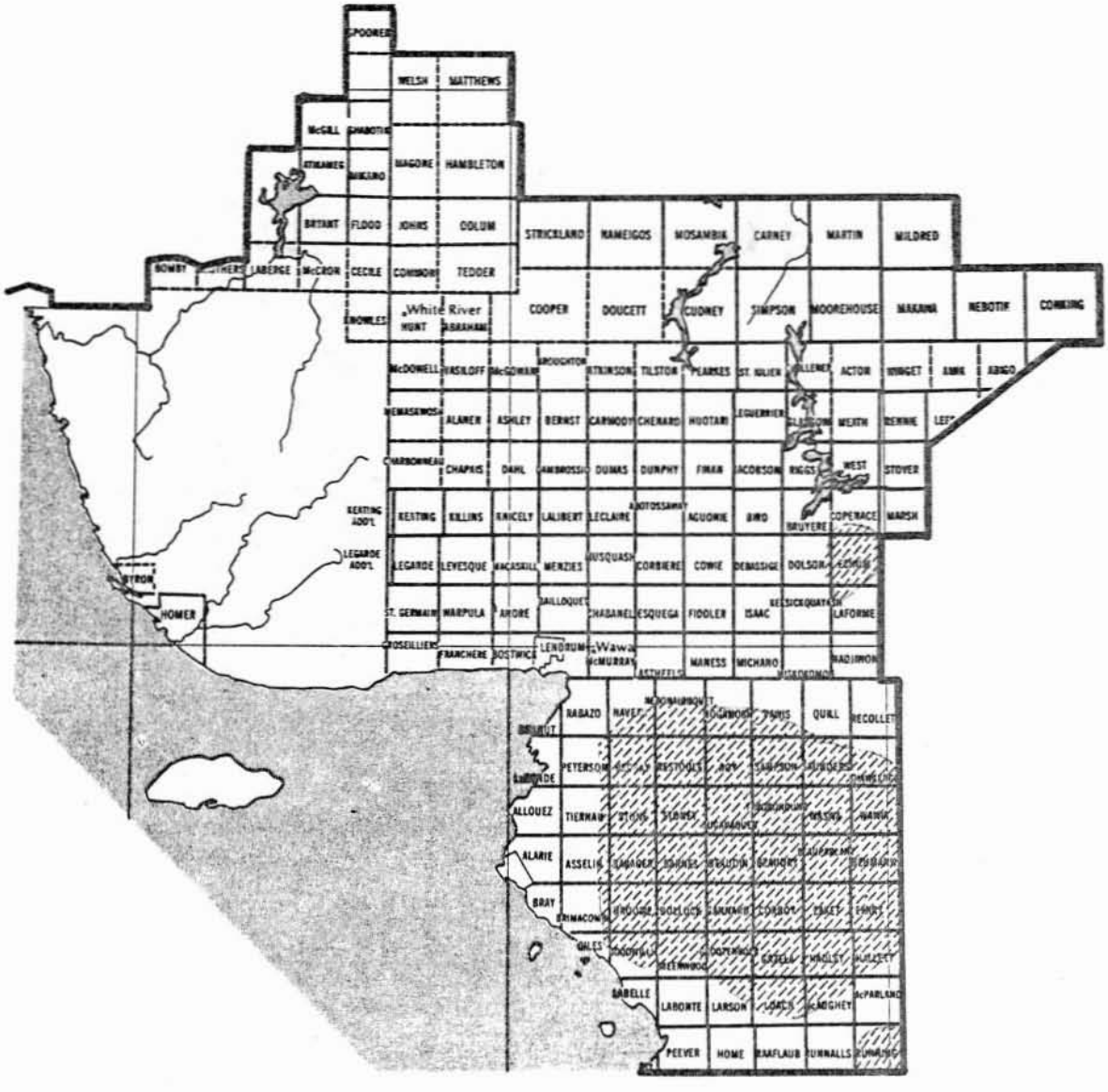
Scale

Kilometres 20 10 0 20

LEGEND

Moderate-to-severe defoliation ● or ▨

WAWA DISTRICT



Spruce Budworm

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

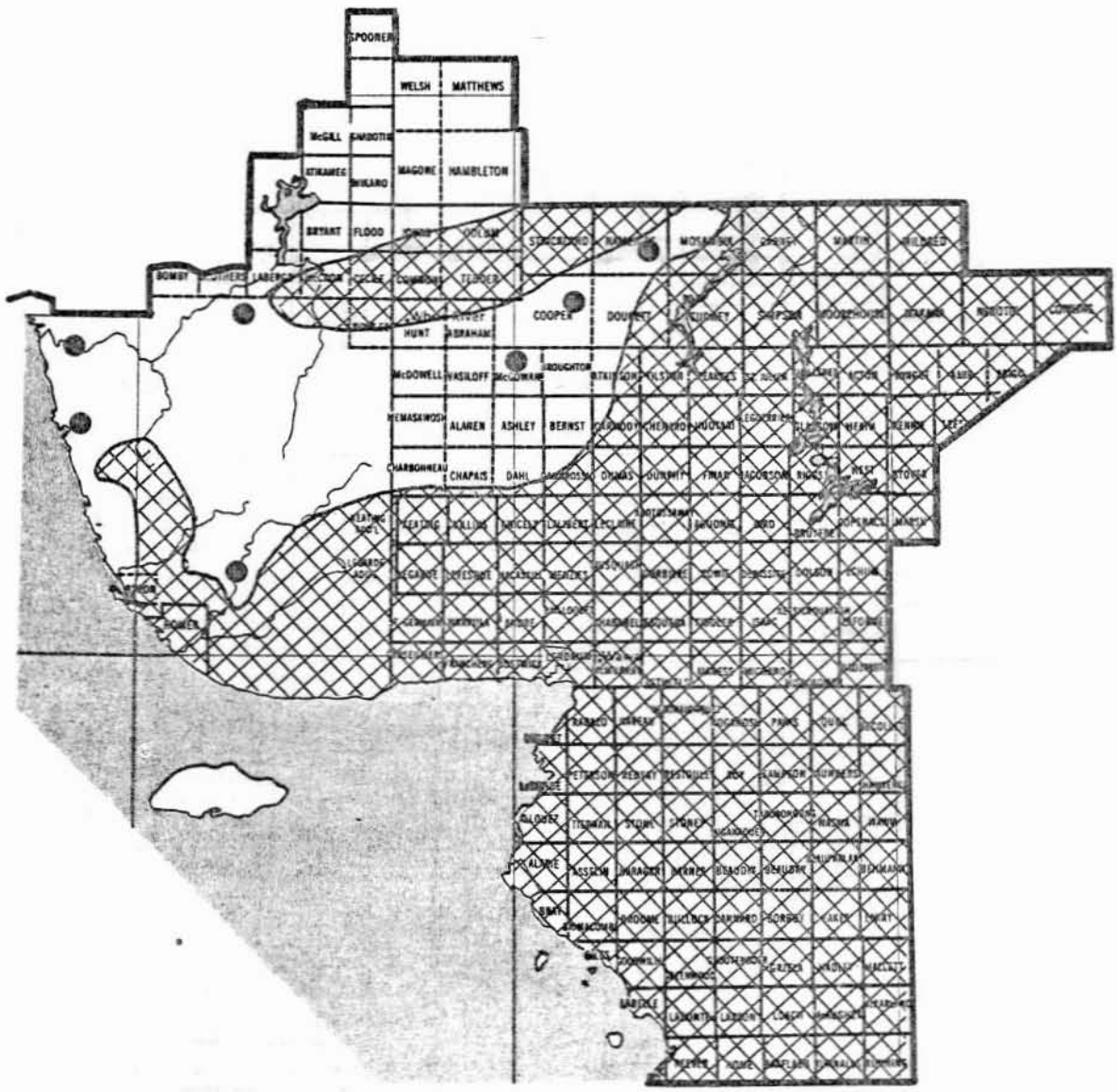
LEGEND

Mortality

Scale

Kilometres 20 10 0 20

WAWA DISTRICT



Spruce Budworm

Areas within which defoliation occurred in 1976

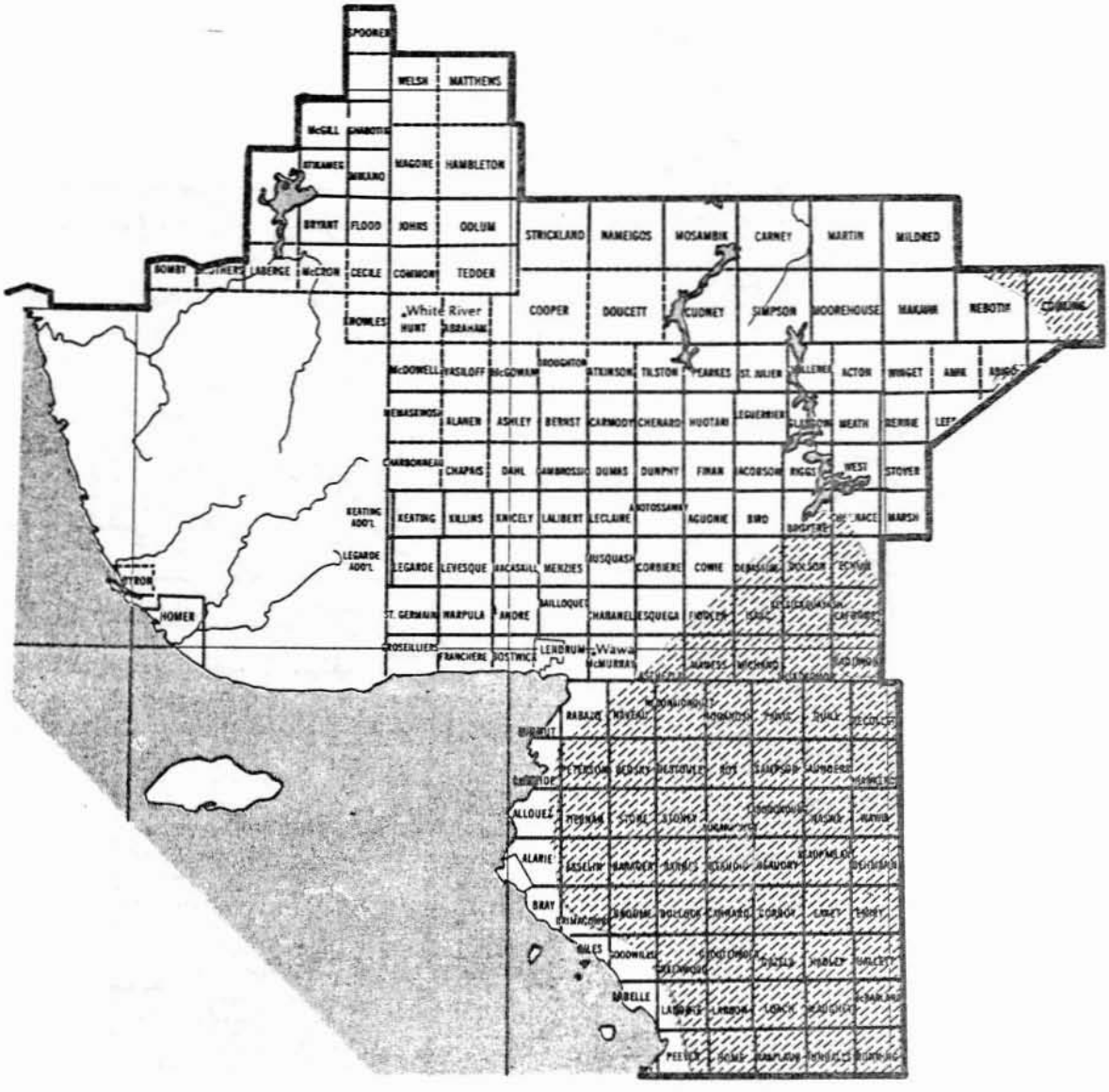
Scale

Kilometres 20 10 0 20

LEGEND

Moderate-to-severe defoliation ● or ▨

WAWA DISTRICT



Spruce Budworm

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

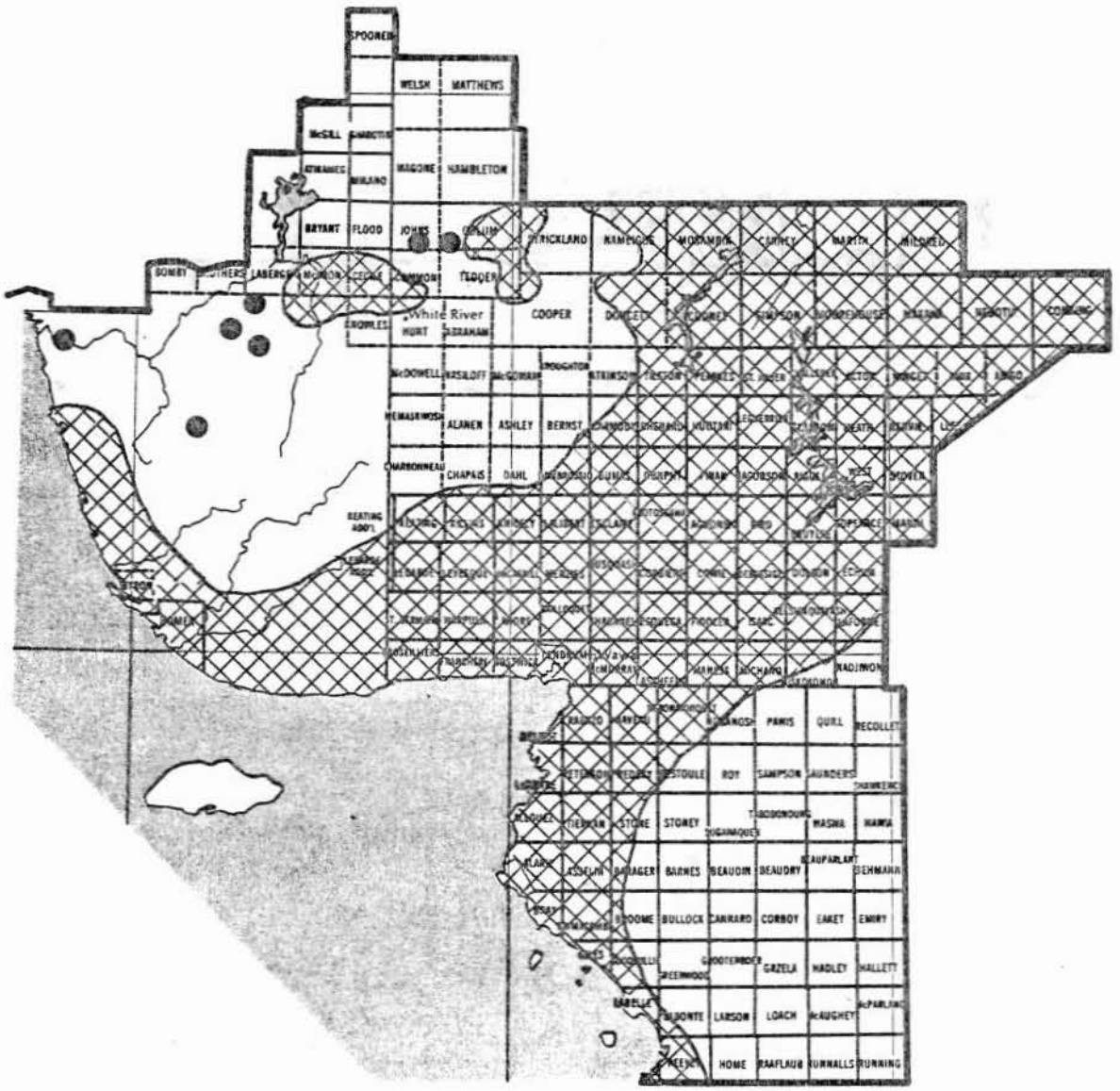
LEGEND

Mortality

Scale

Kilometres 20 10 0 20

WAWA DISTRICT



Spruce Budworm

Areas within which defoliation occurred in 1977

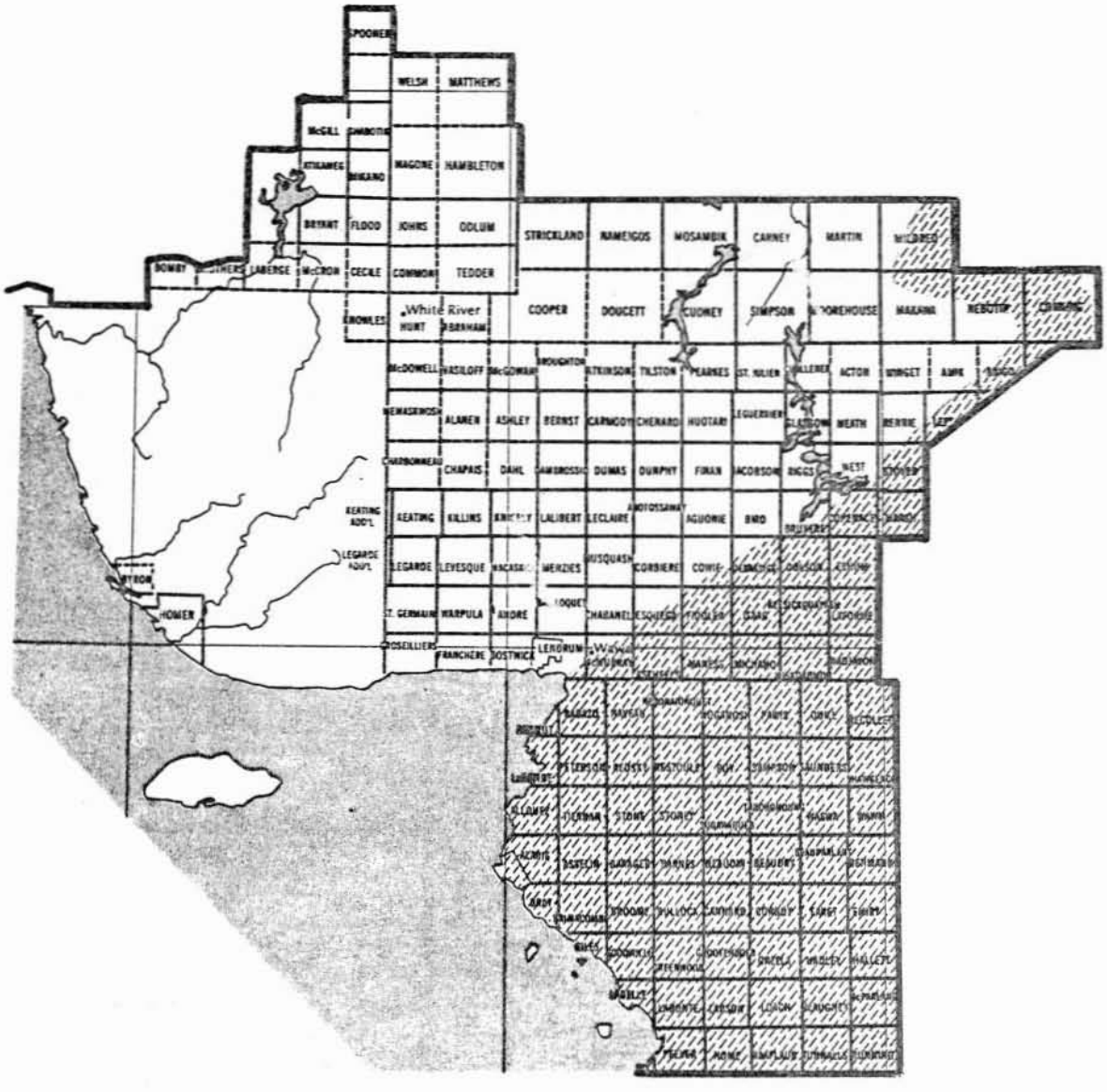
LEGEND

Moderate-to-severe defoliation ● or ▨

Scale

Kilometres 20 10 0 20

WAWA DISTRICT



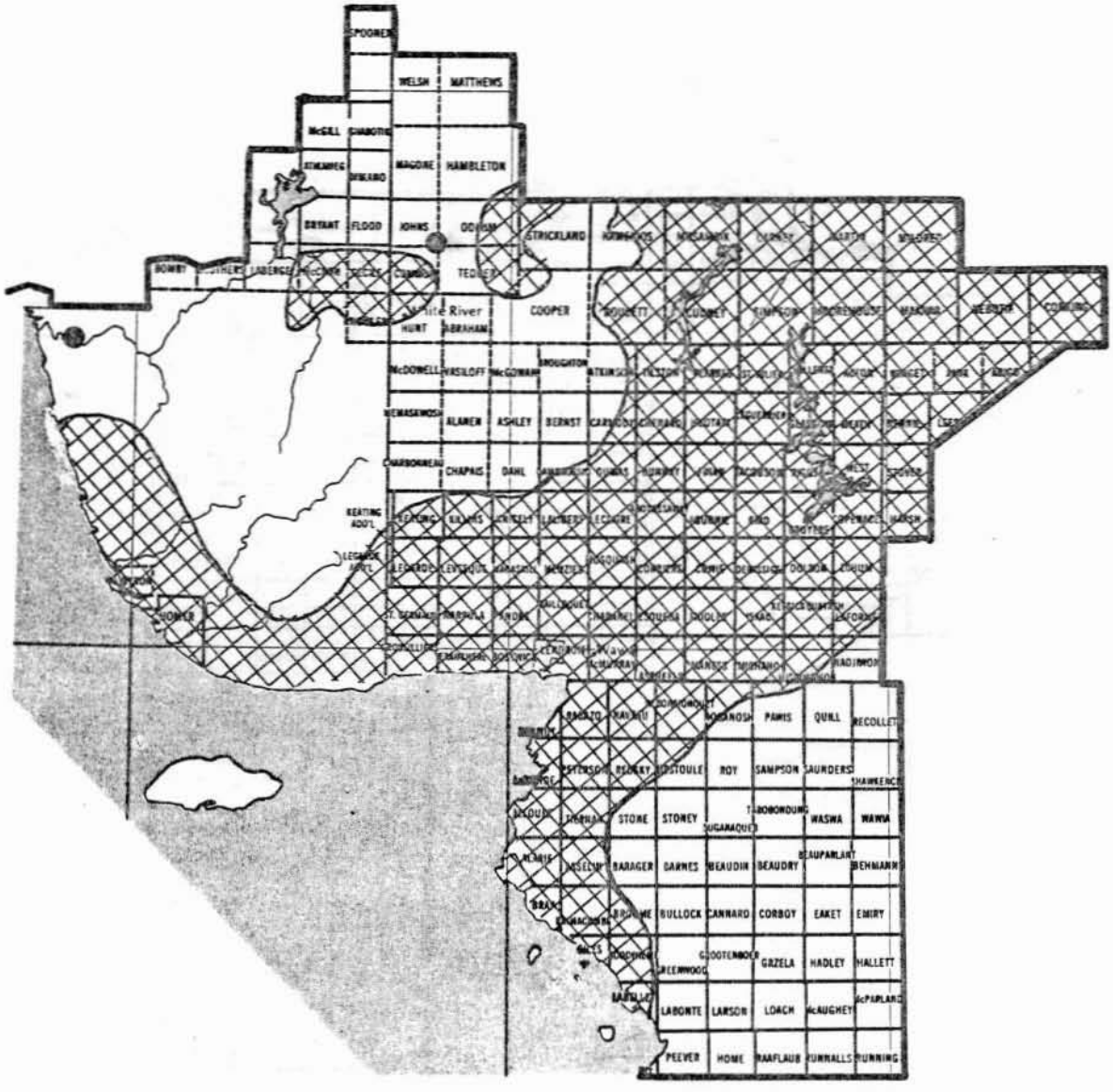
Spruce Budworm

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

LEGEND

Mortality

WAWA DISTRICT



Spruce Budworm

Areas within which defoliation occurred in 1978

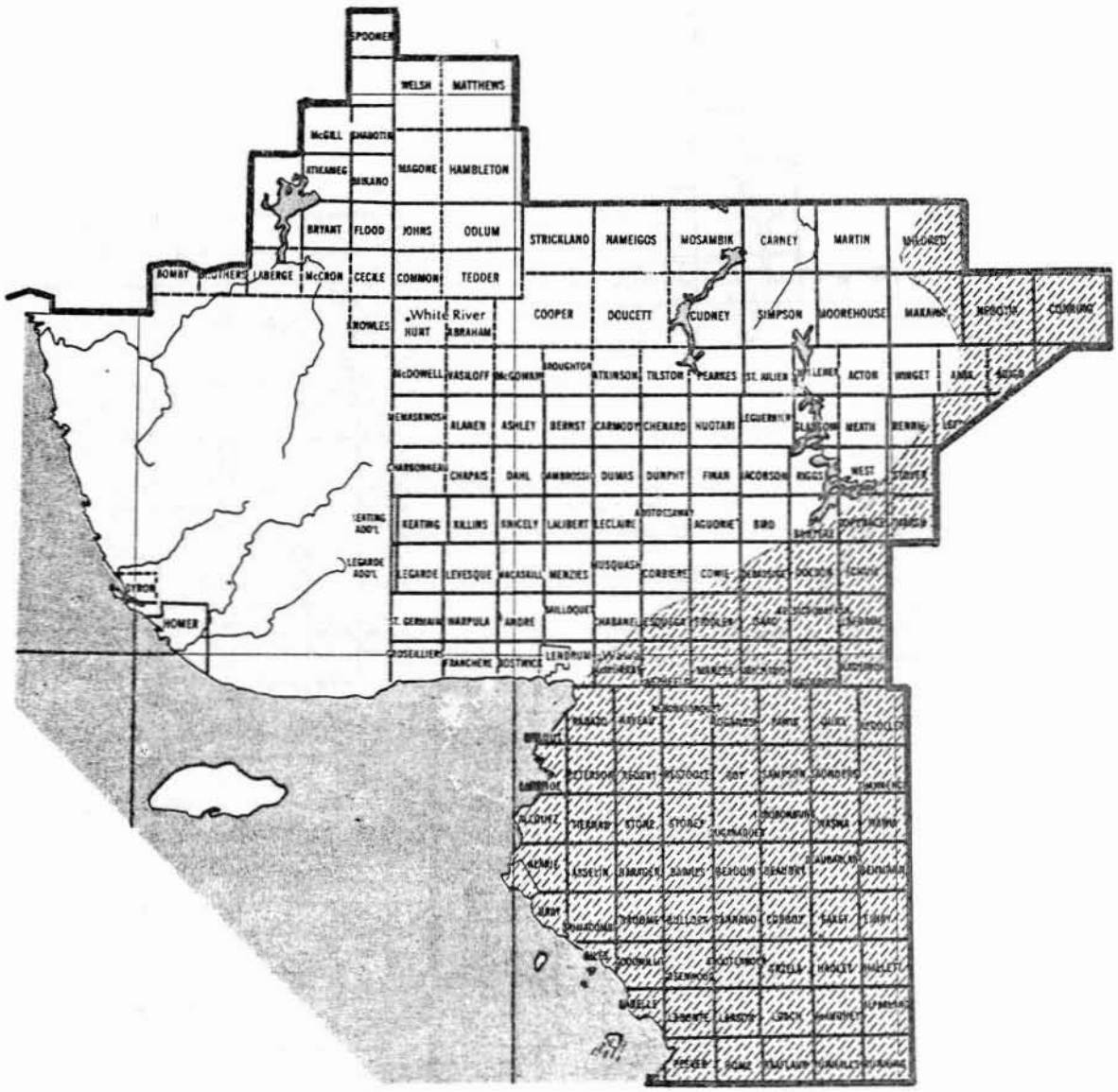
Scale

Kilometres 20 10 0 20

LEGEND

Moderate-to-severe defoliation ● or ▨

WAWA DISTRICT



Spruce Budworm

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

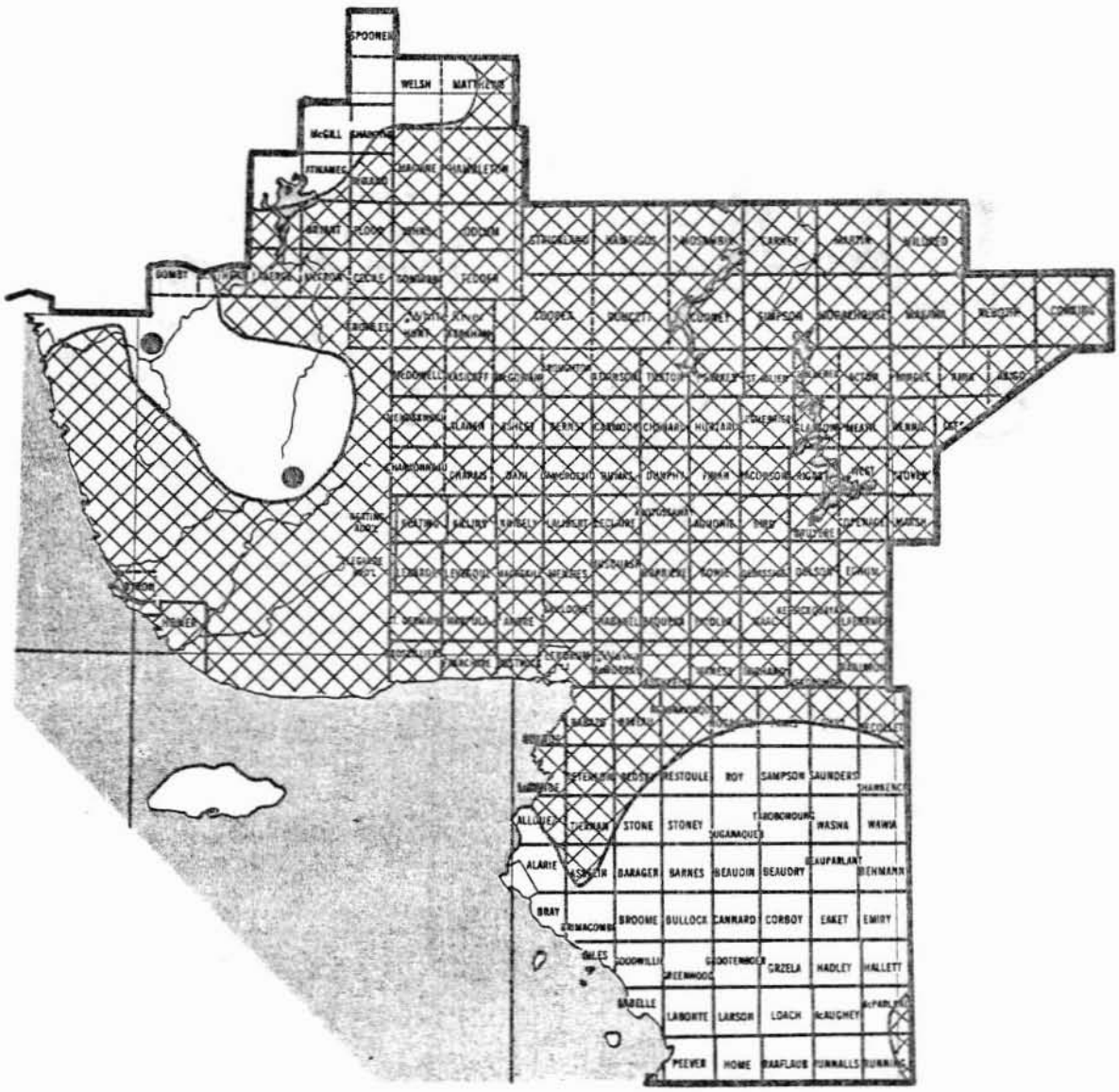
LEGEND

Mortality

Scale

Kilometres 20 10 0 20

WAWA DISTRICT



Spruce Budworm

Areas within which defoliation occurred in 1979

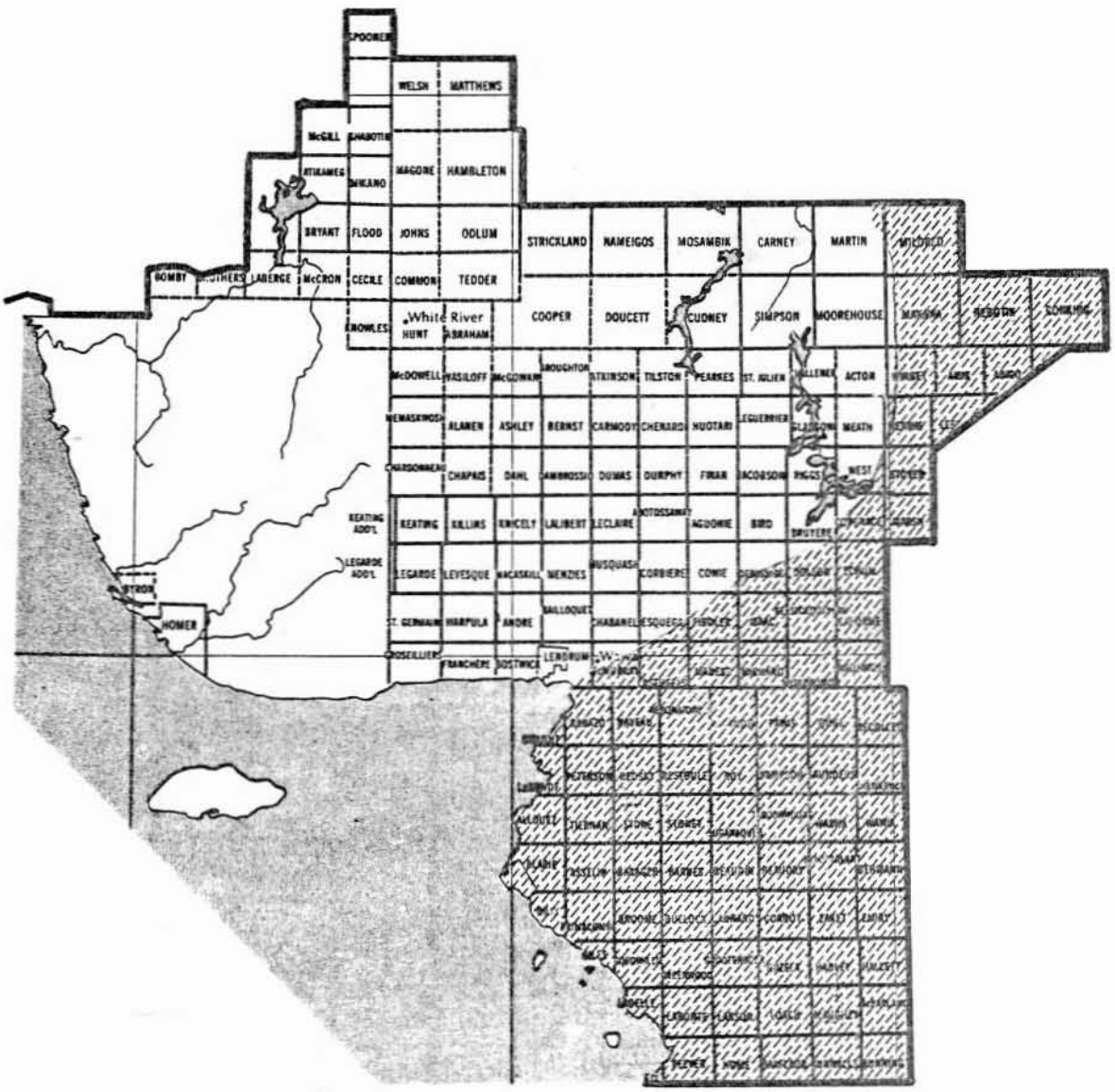
Scale

Kilometres 20 10 0 20

LEGEND

Moderate-to-severe defoliation ● or ▨

WAWA DISTRICT



Spruce Budworm

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

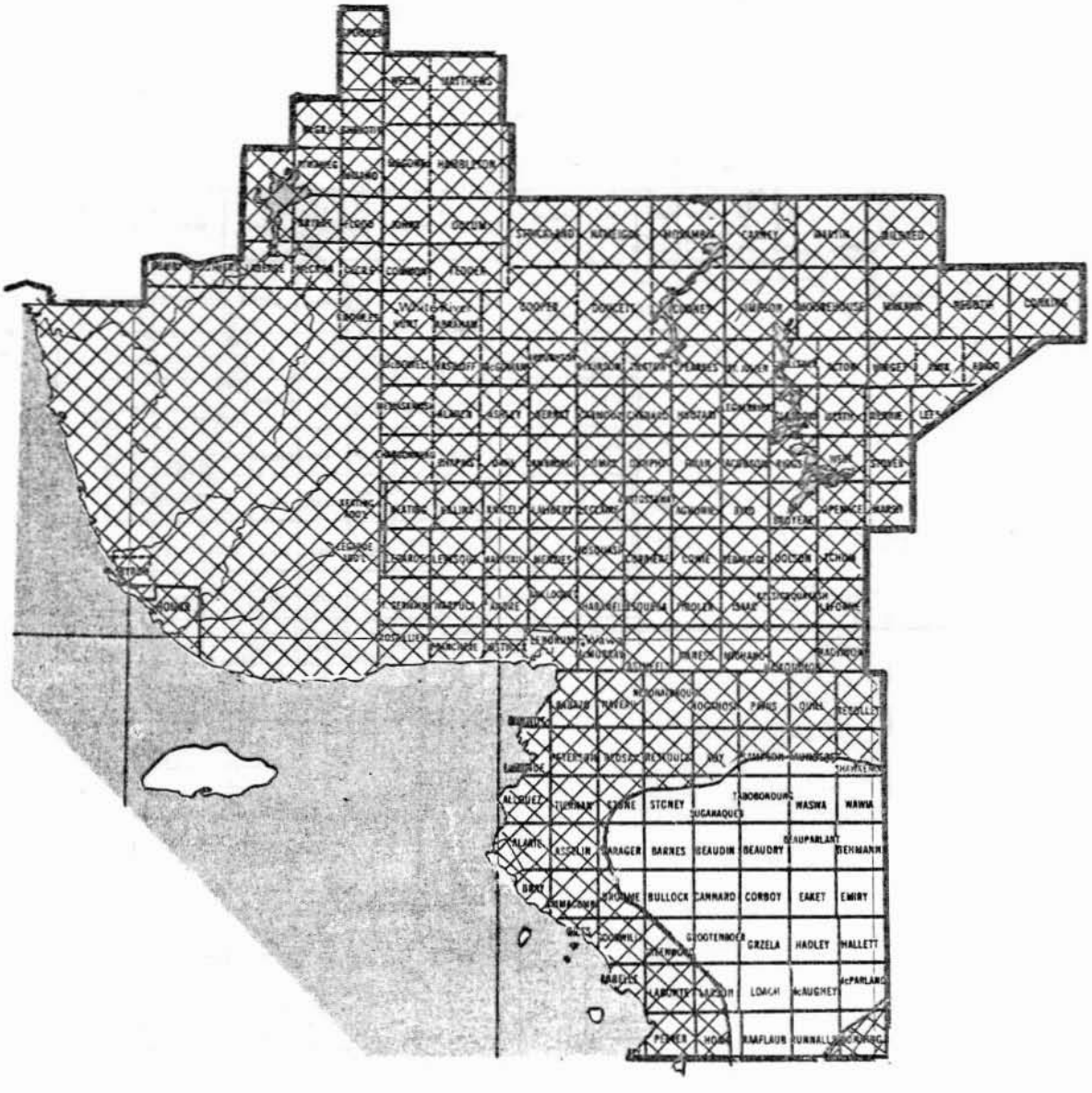
LEGEND

Mortality

Scale

Kilometres 20 10 0 20

WAWA DISTRICT



Spruce Budworm

Areas within which defoliation occurred in 1980

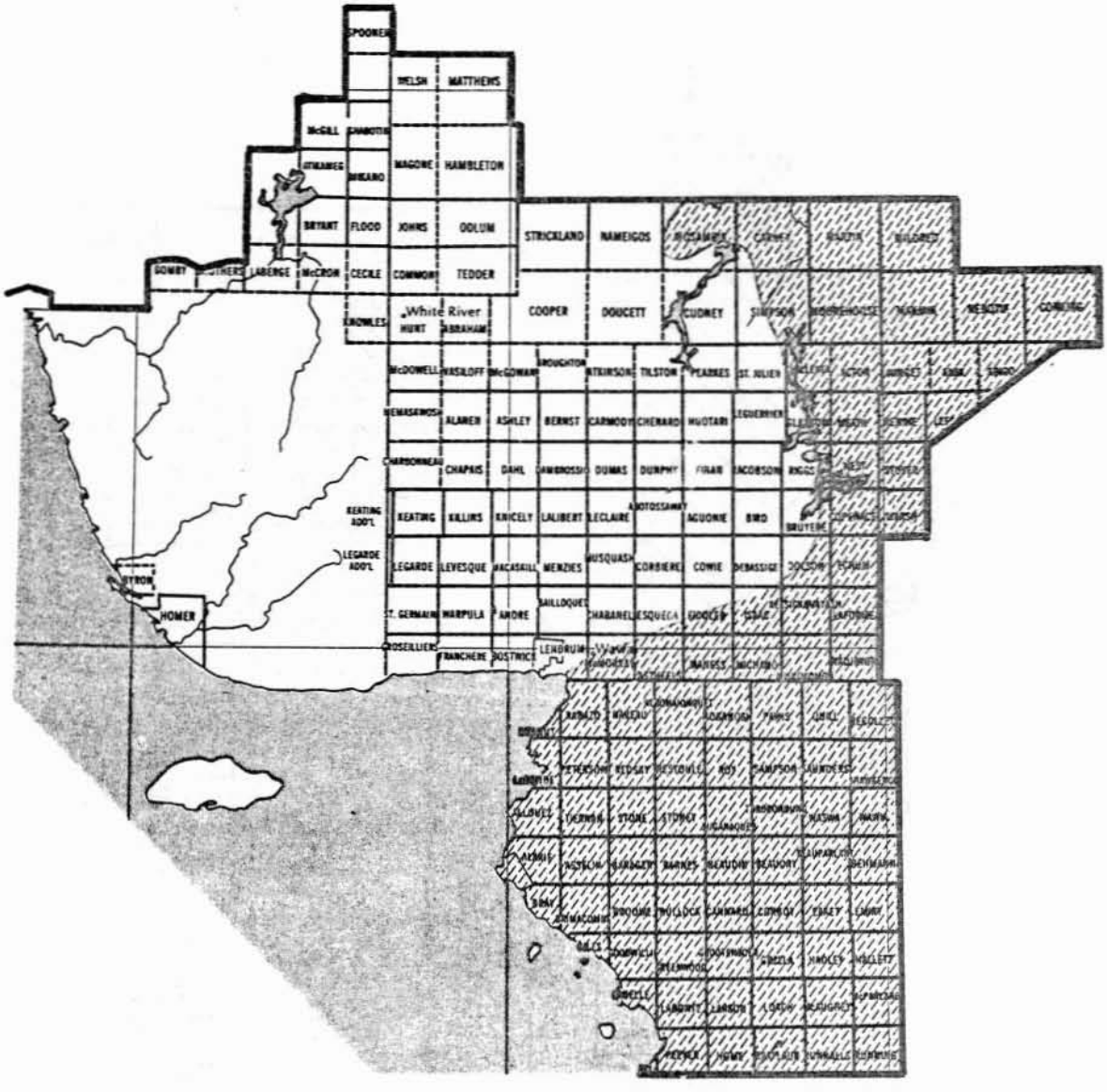
Scale

Kilometres 20 10 0 20

LEGEND

Moderate-to-severe defoliation

WAWA DISTRICT



Spruce Budworm

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

Scale

Kilometres 20 10 0 20

LEGEND

Mortality

Larch Casebearer, *Coleophora laricella* Hbn.

Host(s): tL [Major]

Year	Remarks
1950	Populations increased near the town of Wawa.
1951-1957	not reported
1958-1960	low populations near the town of Wawa
1961	low populations in Laberge, Bomby, Hunt, Baillequet and McMurray twps
1962	Low populations persisted in the above locations.
1963	Populations increased in Laberge, McMurray and Lalibert twps; larval counts averaged five larvae per 46-cm branch tip.
1964	Populations increased to nine larvae per 46-cm branch tip at these locations.
1965	decline in populations
1966-1967	not reported
1968-1970	very low populations
1971	high populations in Lendrum Twp--an average of 33 larvae per 46-cm branch tip, over an area of 80.8 ha
1972	decline to low population levels in Lendrum Twp
1973-1980	not reported

Linden Looper, *Erannis tiliaria* (Harr.)

Host(s): deciduous [Major]

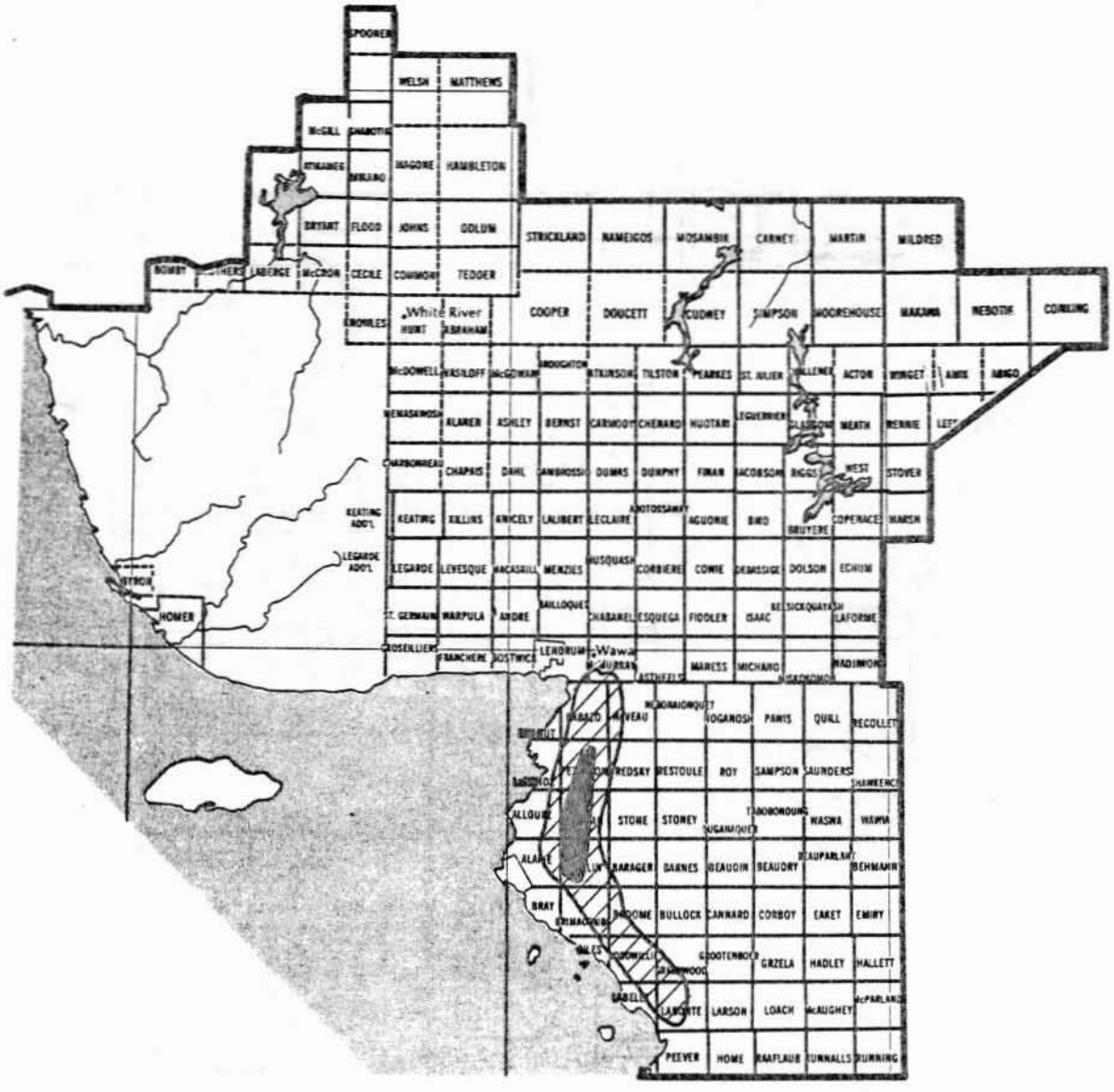
Year	Remarks
1950-1973	not reported

(cont'd)

Linden Looper, *Erannis tiliaria* (Harr.) (concl.)

Year	Remarks
1974	A large infestation occurred in a band along Lake Superior between Montreal River in the south and the town of Wawa in the north, with severe defoliation in Asselin, Tiernan and Peterson twps (see map, page 47).
1975	increased severe defoliation between Wawa and Montreal River (see map, page 48).
1976	There was a sudden decline in populations. A nuclear polyhedral virus was recorded in many parts of the infestation.
1977	A complete collapse of the infestation occurred.
1978-1980	not reported

WAWA DISTRICT



Linden Looper

Areas within which defoliation occurred in 1974

Scale

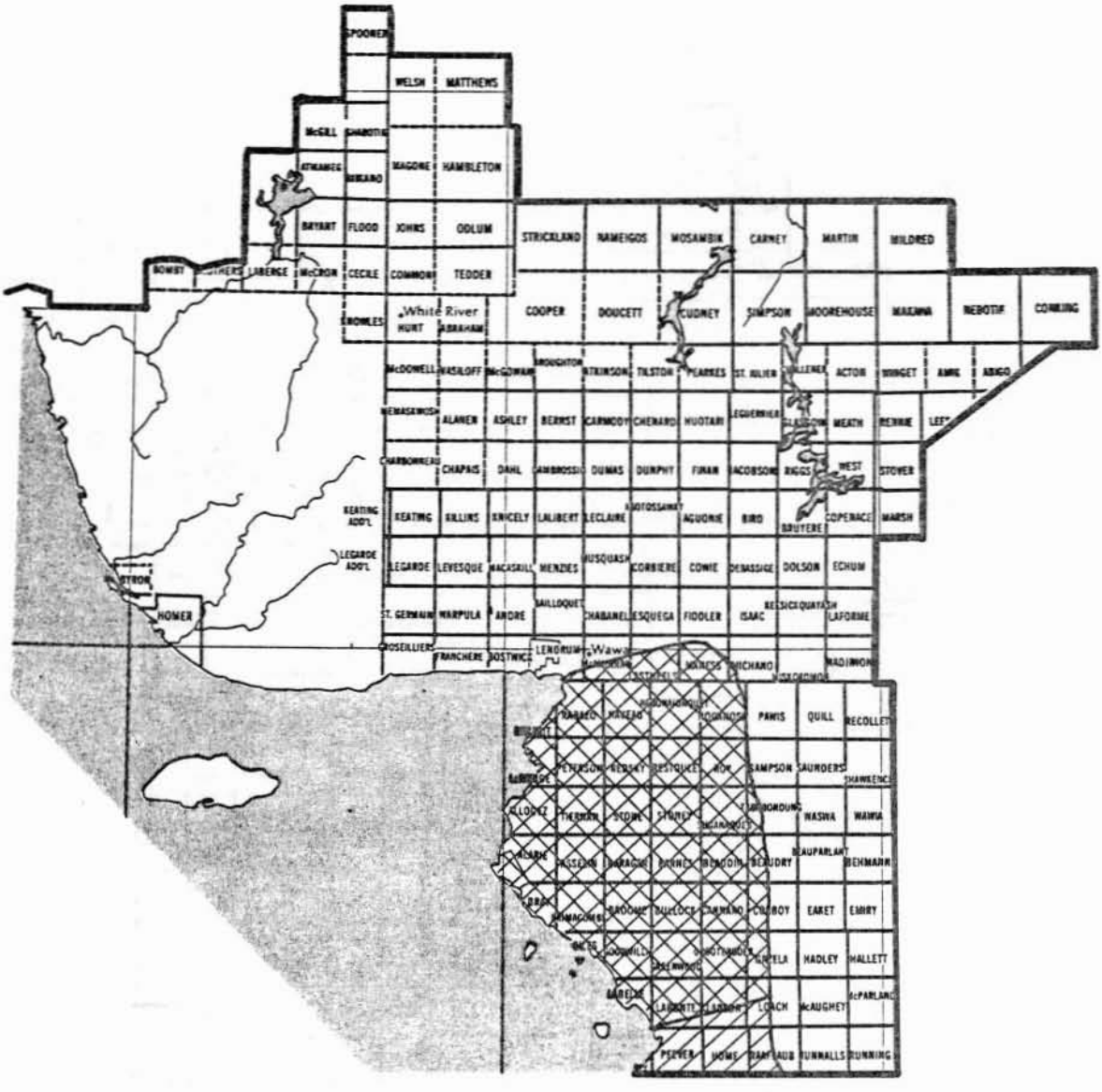
Kilometres 20 10 0 20

LEGEND

Light defoliation

Moderate-to-severe defoliation

WAWA DISTRICT



Linden Looper

Areas within which defoliation occurred in 1975

Scale

Kilometres 20 10 0 20

LEGEND

Light defoliation

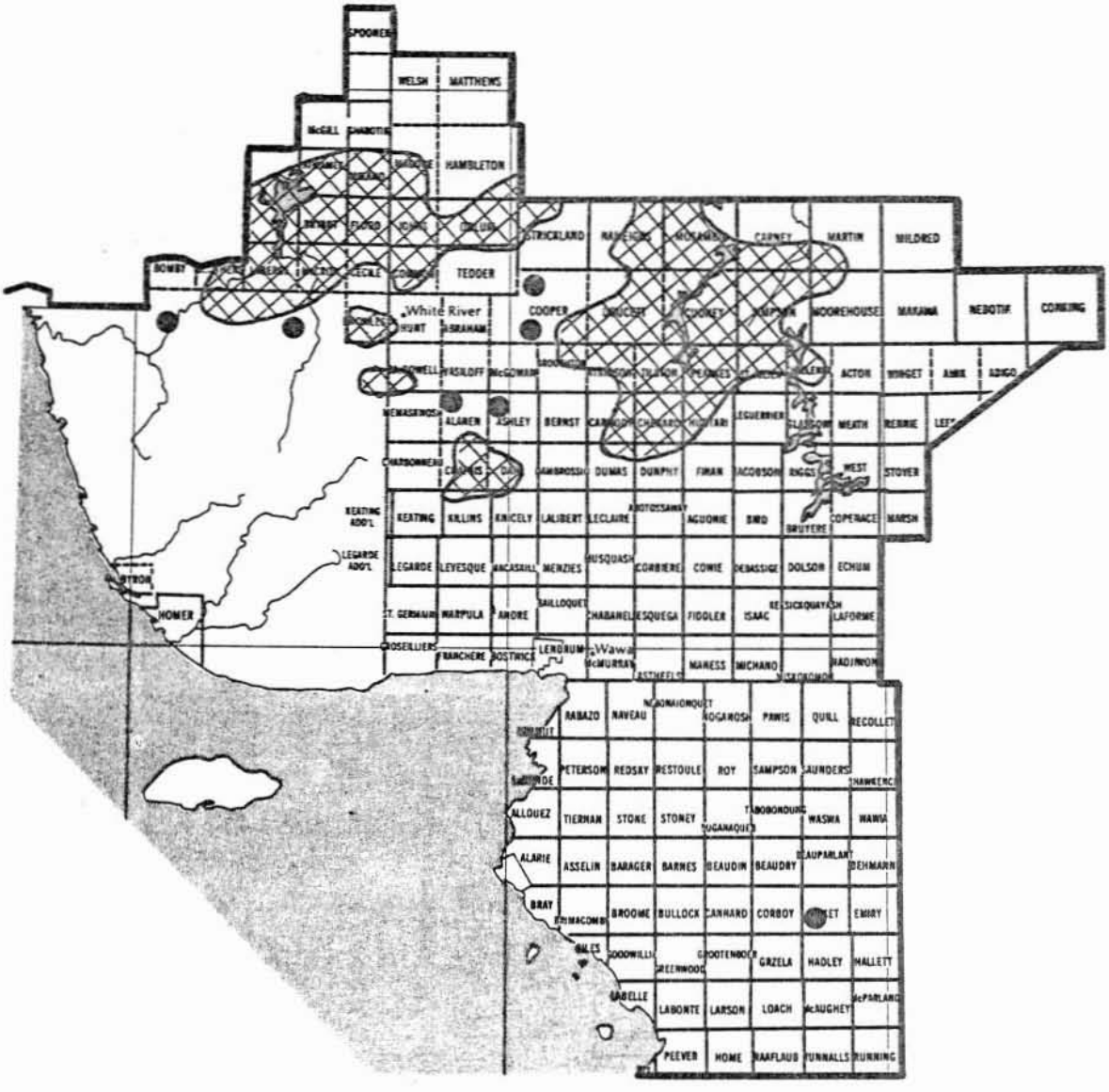
Moderate-to-severe defoliation

Forest Tent Caterpillar, *Malacosoma disstria* Hbn.

Host(s): deciduous [Major]

Year	Remarks
1950	population increases throughout the north-central part of the district, with a small pocket of severe defoliation in Eaket Twp (see map, page 50)
1951	Populations declined in the western part of the district. Infestations remained unchanged in the eastern part, with an enlarged pocket in Eaket and Emiry twp (see map, page 51).
1952	Infestations coalesced to form a large area of defoliation across the northern part of the district and an enlarged infestation in Beaudry, Beauparlant, Hadley and Eaket twps (see map, page 52).
1953	The large infestation increased in area but there was a decline in intensity, whereas there was a decline in area in the Eaket Twp infestation (see map, page 53).
1954	There was an almost complete collapse in infestations. Only a few larvae were collected in Pearkes, Simpson, Jacobson and Laberge twps (see map, page 54).
1955-1964	not reported
1965	low populations in Hunt and Riggs twps
1966-1976	not reported
1977	low populations in Hunt Twp
1978-1980	not reported

WAWA DISTRICT



Forest Tent Caterpillar

Areas within which defoliation occurred in 1950

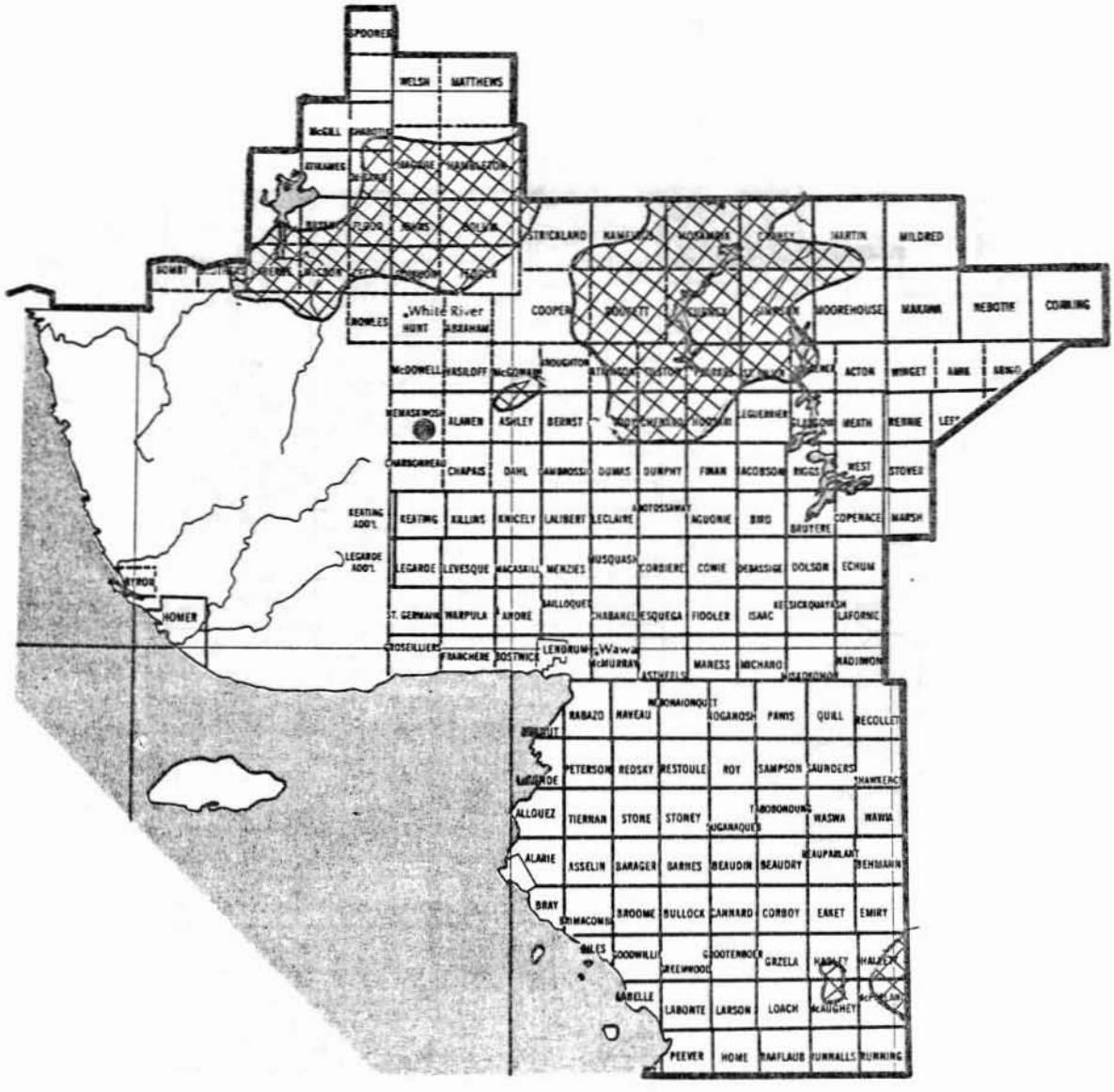
Scale

Kilometres 20 10 0 20

LEGEND

Moderate-to-severe defoliation ● or ▨

WAWA DISTRICT



Forest Tent Caterpillar

Areas within which defoliation occurred in 1951

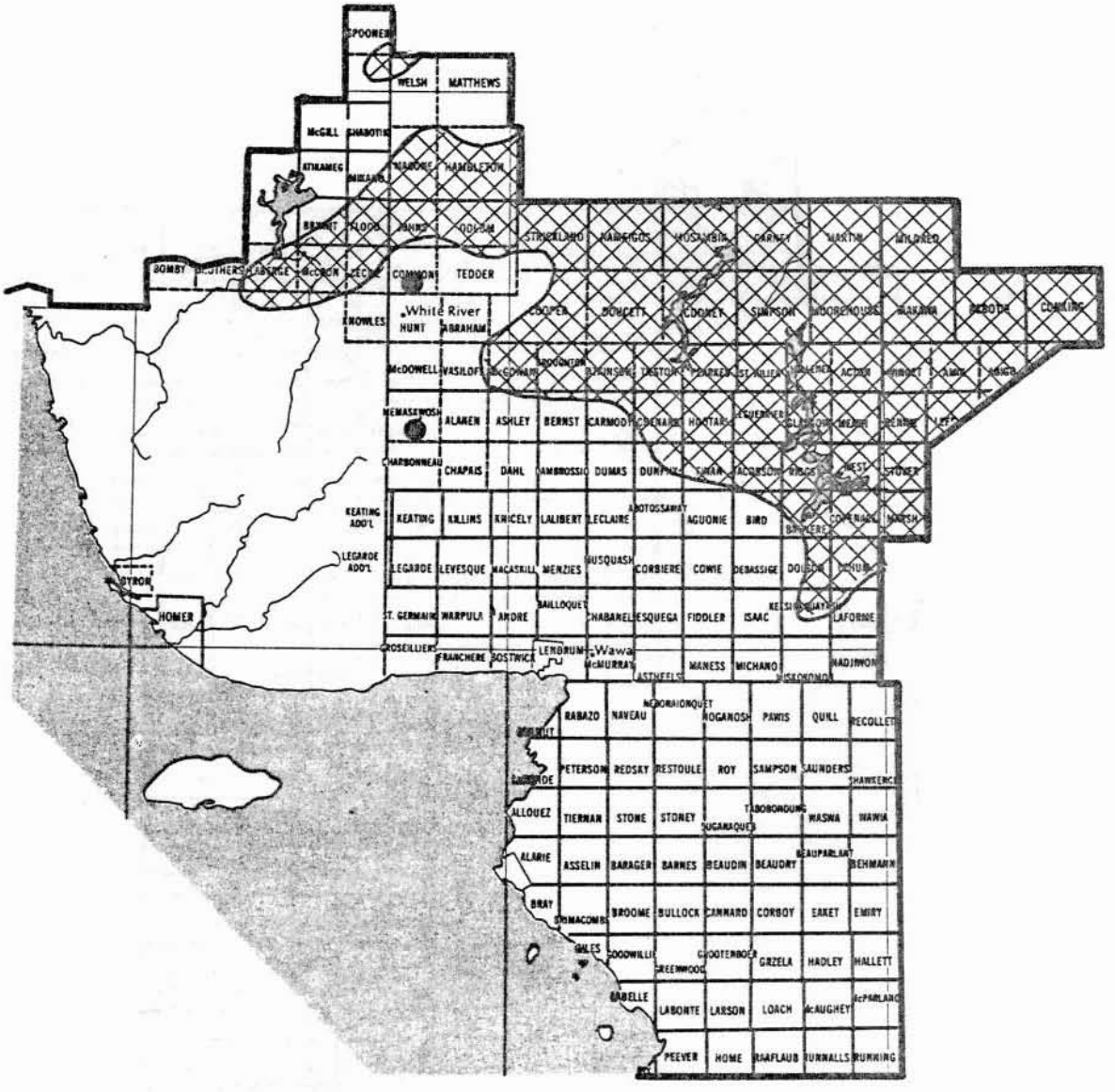
Scale

Kilometres 20 10 0 20

LEGEND

Moderate-to-severe defoliation ● or ▨

WAWA DISTRICT



Forest Tent Caterpillar

Areas within which defoliation occurred in 1952

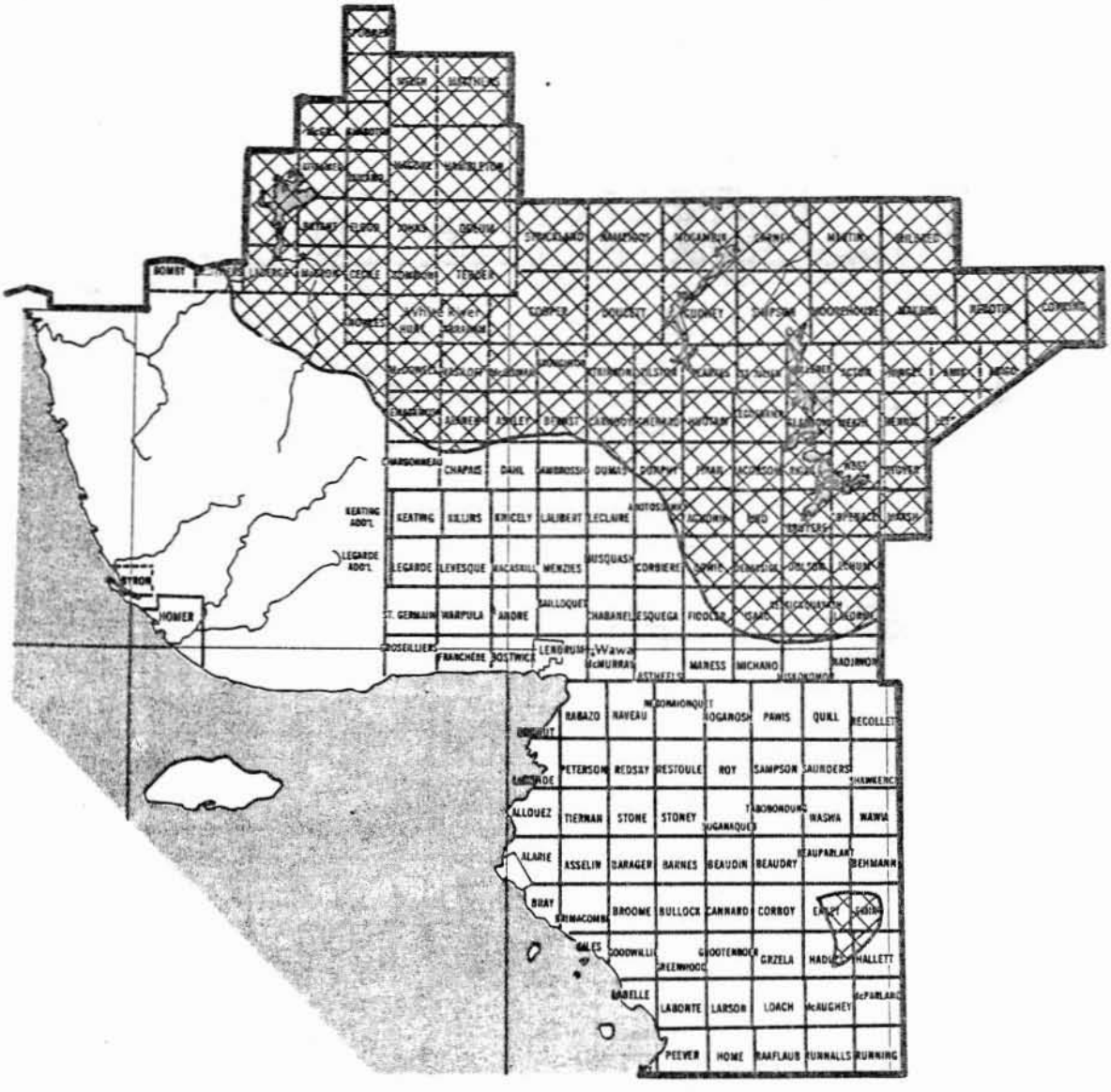
Scale

Kilometres 20 10 0 20

LEGEND

Moderate-to-severe defoliation ● or ▨

WAWA DISTRICT



Forest Tent Caterpillar

Areas within which defoliation occurred in 1953

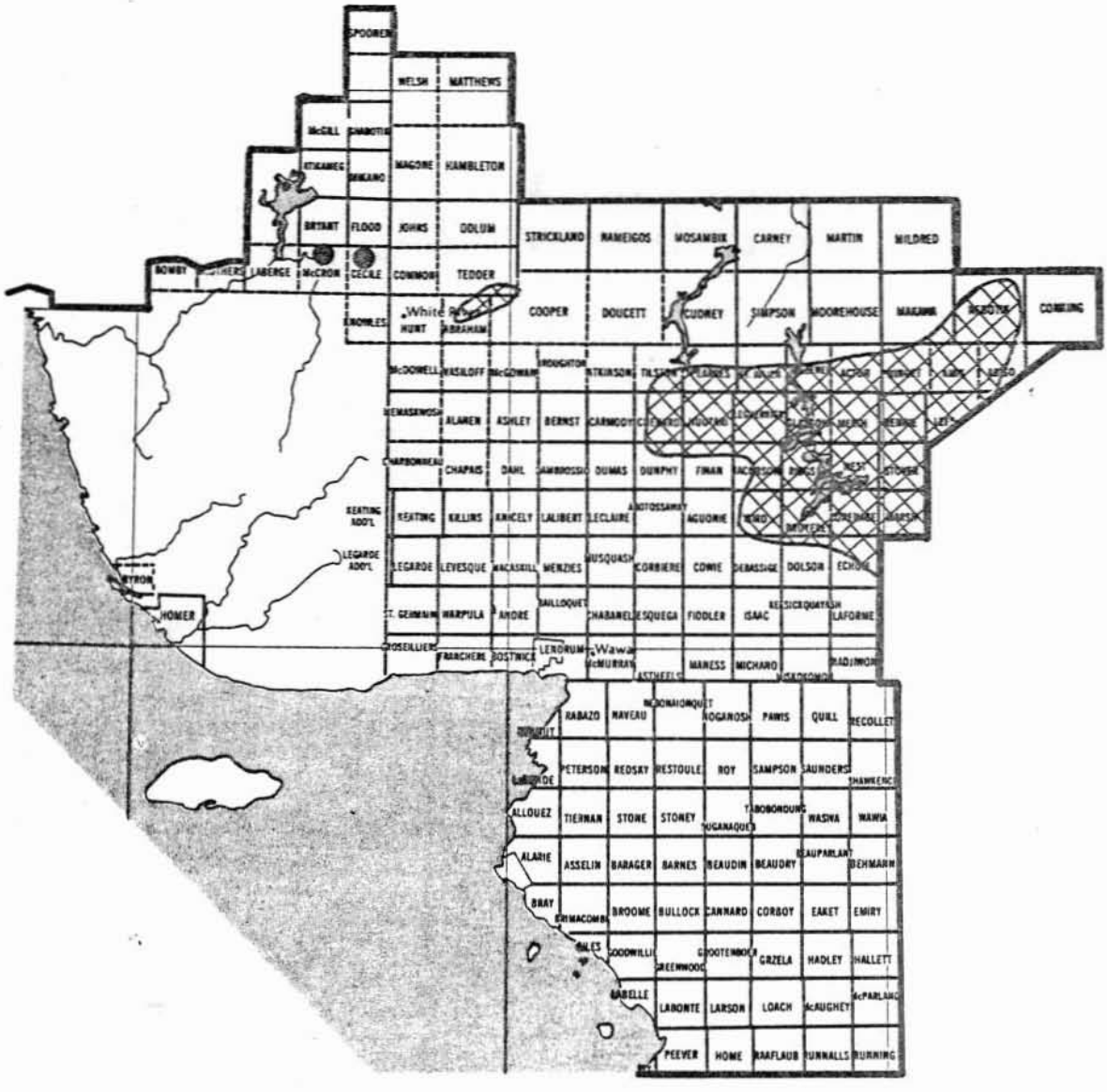
LEGEND

Moderate-to-severe defoliation

Scale

Kilometres 20 10 0 20

WAWA DISTRICT



Forest Tent Caterpillar

Areas within which defoliation occurred in 1954

Scale

Kilometres 20 10 0 20

LEGEND

Moderate-to-severe defoliation ● or ▨

Balsam Fir Sawfly, *Neodiprion abietis* complex

Host(s): bF [Major]

Year	Remarks
1950	not reported
1951	low populations at Sand Lake, Restoule Township
1952	not reported
1953	low populations general in the district
1954	light infestations at 12 widely separated locations
1955	Light infestations persisted throughout the district.
1956	a general decline in populations
1957	not reported
1958-1966	low populations general in the district
1967-1970	not reported
1971	light infestation near Hammer Lake in Alanen Twp
1972-1980	not reported

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

Host(s): jP [Major]

Year		Remarks
1950	*N. pratti banksianae*	- severe defoliation of immature trees in Matthews and Mikano twps
	N. virginianus	- low populations in Simpson, Matthews and Laberge twps

(cont'd)

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

Year		Remarks
1951		not reported
1952	*N. nanulus nanulus*	- low populations near Sand Lake in Restoule Twp
1953	*N. nanulus nanulus*	- light infestations in Cecile, Hunt and Corbiere twps
	N. pratti banksianae	- low populations in Cecile and Hunt twps
	N. virginianus	- low populations in Restoule Twp
1954	*N. nanulus nanulus*	- low numbers of colonies at numerous locations in the western part of the district
	N. pratti banksianae	- moderate infestations in Hunt, Cecile, Common and Knowles twps; light infestations in Atikameg, Pearkes and Atkinson twps
	N. virginianus	- low populations at seven widely separated locations in the district
1955	*N. nanulus nanulus*	- moderate infestations at 13 widely separated locations
	N. pratti banksianae	- a general decline in populations
1956	*N. nanulus nanulus*	- generally low populations at 13 locations
	N. pratti banksianae	- colonies found commonly in the western part of the district
	N. virginianus	- very low populations in Cudney, Common and Restoule twps
1957	*N. nanulus nanulus*	- few larvae observed
	N. pratti banksianae	- low populations in Hunt and St. Julien twps
	N. virginianus	- an increase in populations in Restoule Twp

(cont'd)

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

Year		Remarks
1958	*N. nanulus nanulus*	- low populations
	N. pratti banksianae	- low populations
	N. virginianus	- increases in populations noted in the district; light infestation in Restoule Twp
1959	*N. nanulus nanulus*	- low populations
	N. pratti banksianae	- low populations
	N. virginianus	- light defoliation in Restoule, Cudney, Fiddler and West twps
1960	*N. nanulus nanulus*	- low populations
	N. pratti banksianae	- low populations in Hunt and Gertrude twps
	N. virginianus	- moderate defoliation in McCron, Laberge and Restoule twps
1961	*N. nanulus nanulus*	- low populations
	N. pratti banksianae	- low populations in Challener Township
	N. virginianus	- moderate defoliation in McCron, Pearkes and Vasiloff twps
1962	*N. virginianus*	- a general decline in populations; low populations in Vasiloff Twp
1963	*N. nanulus nanulus*	- light infestation at Agawa Bay in Labelle Twp
	N. virginianus	- an increase in number of locations
1964	*N. nanulus nanulus*	- Light infestation persisted at Agawa Bay
	N. virginianus	- no change in population levels
1965	*N. nanulus nanulus*	- very low populations at several locations
	N. virginianus	- a decline in populations except in Hunt Twp
1966	*N. nanulus nanulus*	- an increase in number of locations
	N. virginianus	- a single colony found in Hunt Twp

(cont'd)

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

Year		Remarks
1967	*N. nanulus nanulus*	- populations comparable to those of 1966
	N. virginianus	- a few colonies in Hunt Twp
1968	*N. nanulus nanulus*	- colonies observed in Hunt and Vasiloff twps
1969	*N. pratti banksianae*	- low populations in Mobert and Lendrum twps
	N. virginianus	- an increase in populations in Hunt, Lendrum and Laberge twps
1970-1975		not reported
1976	*N. virginianus*	- severe defoliation in Magone Twp
1977	*N. virginianus*	- light defoliation in Magone Twp
1978-1980		- not reported

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

Host(s): wS, bS [Major]

Year	Remarks
1950	severe defoliation of young black spruce trees in Huotari, Dunphy, Simpson and Mikano twps
1951	low populations general in the district
1952	severe defoliation in McGill and Hunt twps and near Lurch Lake in Pukaskwa National Park
1953	little change in populations; severe defoliation near Hayward Lake
1954-1957	widespread light defoliation in the district

(cont'd)

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

Year	Remarks
1958	severe defoliation in Atikamag Twp; light defoliation general at numerous other locations
1959	decline in infestation in Atikameg Twp; light defoliation in Lalibert Twp
1960	severe defoliation in Riggs Twp; light at numerous other locations
1961-1964	light defoliation at numerous locations
1965	moderate defoliation in Laberge and Hunt twps
1966	severe defoliation in Laberge, Hunt and Pearkes twps; moderate-to-severe defoliation in the towns of Wawa and White River
1967	severe damage in Shabotik, Bryant, Pearkes and Laberge twps; light defoliation at numerous other locations
1968-1980	not reported

White Pine Weevil, *Pissodes strobi* Peck

Host(s): pine, spruce [Major]

Year	Remarks
1950	low populations on jack pine in Laberge and Nebonaionquet twps
1951-1956	not reported
1957-1961	low populations on pine and spruce throughout the district
1962	numerous leaders of spruce regeneration infested in Shabotik Twp
1963	not reported

(cont'd)

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

Year	Remarks
1964-1967	Damaged leaders of spruce and pine ranged from 2 to 22% at three locations in the district
1968	a few damaged leaders in Hunt Twp
1969	Damaged leaders of pine were 4% and 9% in Mikano and Flood twps, respectively.
1970-1976	not reported
1977-1980	low damage in western part of district

Larch Sawfly, *Pristiphora erichsonii* (Htg.)

Host(s): tL [Major]

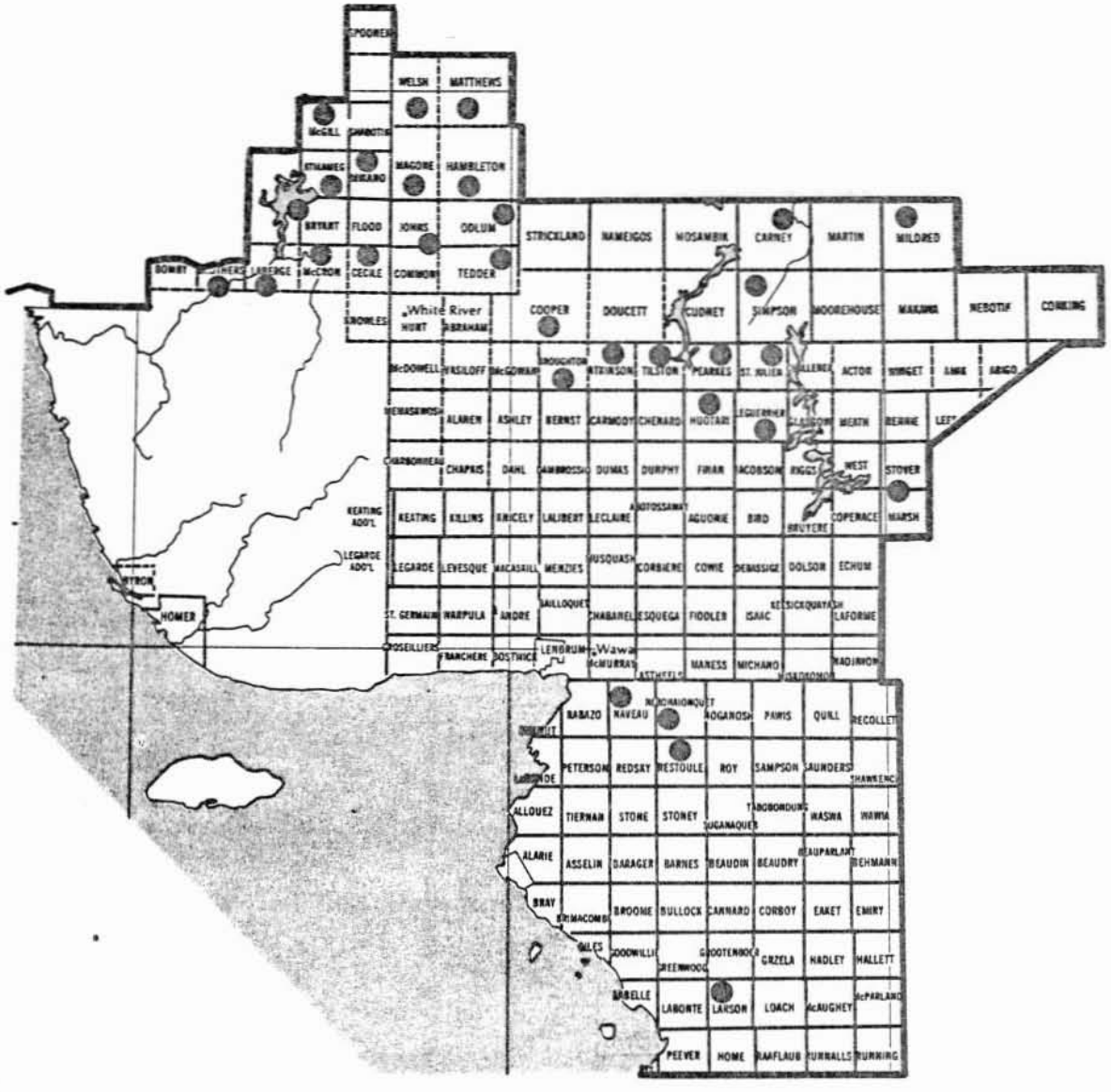
Year	Remarks
1950	moderate defoliation in Mikano, Hambleton and McGowan twps
1951	not reported
1952	light defoliation in Flood, Nameigos and Hunt twps
1953	a marked increase in defoliation in Brothers, Bomby, Hunt and McGowan twps
1954	severe defoliation north of the CPR line between West and Lecours twps; lower populations in Lake Superior Park (see map, page 62)
1955	Severe defoliation of stands occurred generally in the northern part of the district (see map, page 63).
1956	Severe defoliation persisted in the northern part of the district, with an increase in defoliation in Lake Superior Park (see map, page 64).
1957	There was a decline in populations in the district, but an increase in the area of infestation (see map, page 65).

(cont'd)

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

Year	Remarks
1958	A further decline in populations occurred in the district (see map, page 66).
1959	little change in status from previous year (see map, page 67)
1960	Only four areas of severe defoliation were observed (see map, page 68).
1961	Populations declined; there was only one area of severe defoliation in Agawa Bay, Labelle Twp (see map, page 69).
1962	low populations general throughout the district
1963	not reported
1964-1966	very low populations
1967	not reported
1968	pockets of severe defoliation in McCron and Chapais twps
1969-1970	one pocket of severe defoliation in Leclair Twp
1971	pockets of moderate defoliation at five widespread locations
1972-1975	not reported
1976	severe defoliation in the western part of the district
1977	light defoliation in the Pukaskwa National Park
1978-1980	moderate-to-severe defoliation in Dahl Twp

WAWA DISTRICT



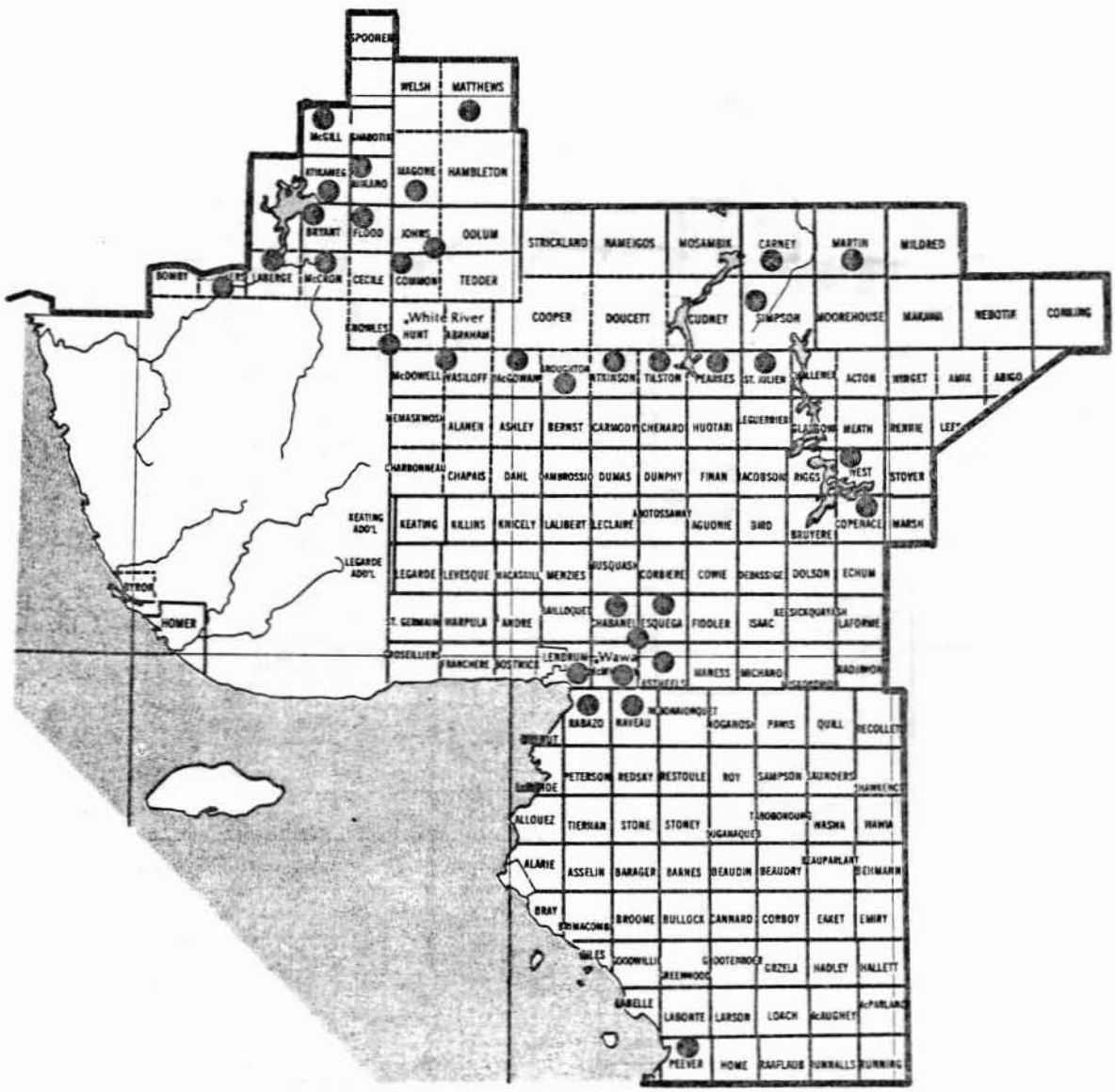
Larch Sawfly

Areas within which defoliation occurred in 1954

LEGEND

Moderate-to-severe defoliation ●

WAWA DISTRICT



Scale

Kilometres 20 10 0 20

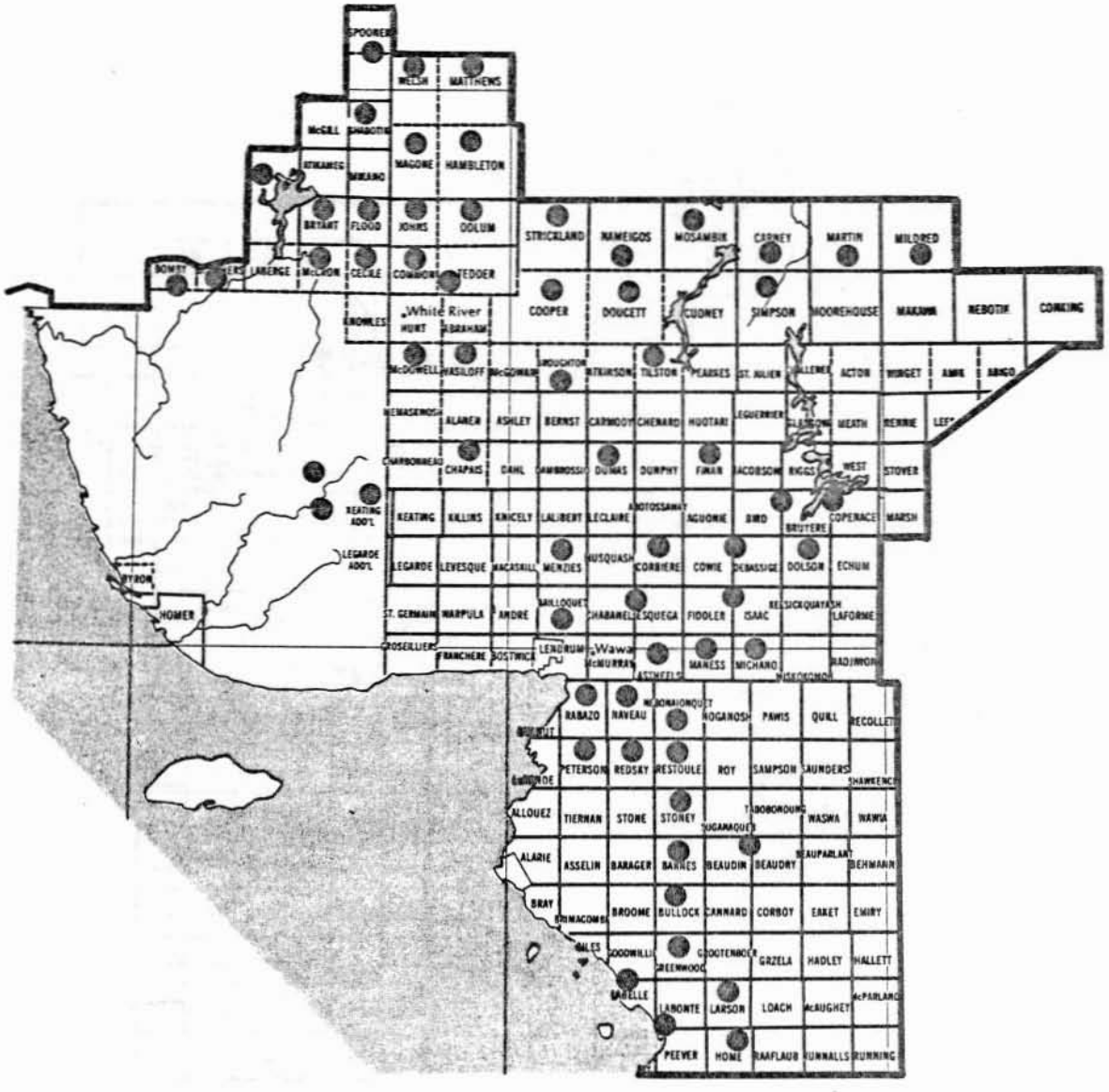
Larch Sawfly

Areas within which defoliation occurred in 1955

LEGEND

Moderate-to-severe defoliation ●

WAWA DISTRICT



Larch Sawfly

Areas within which defoliation occurred in 1956

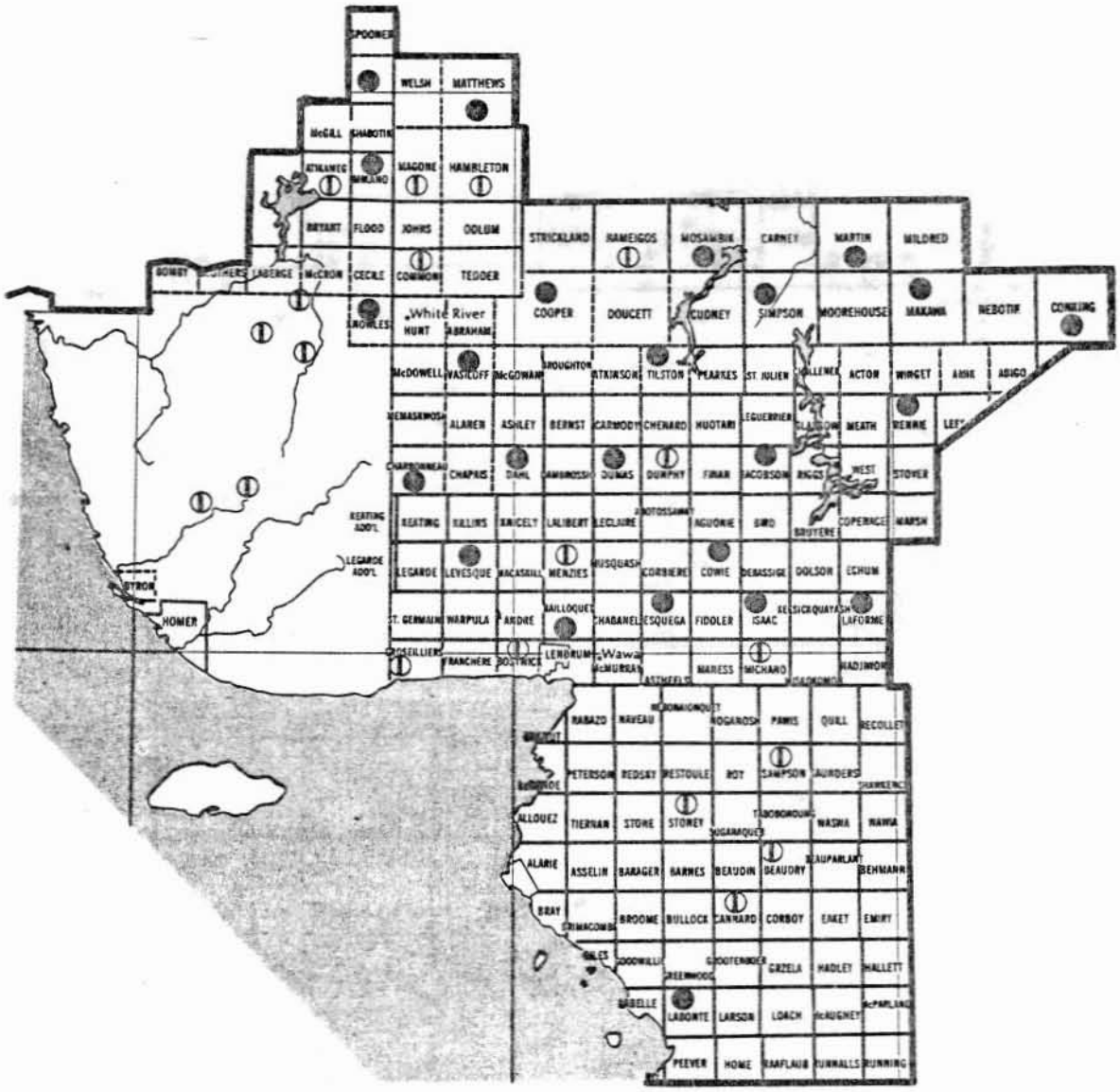
Scale

Kilometres 20 10 0 20

LEGEND

Moderate-to-severe defoliation

WAWA DISTRICT



Larch Sawfly

Areas within which defoliation occurred in 1957

Scale

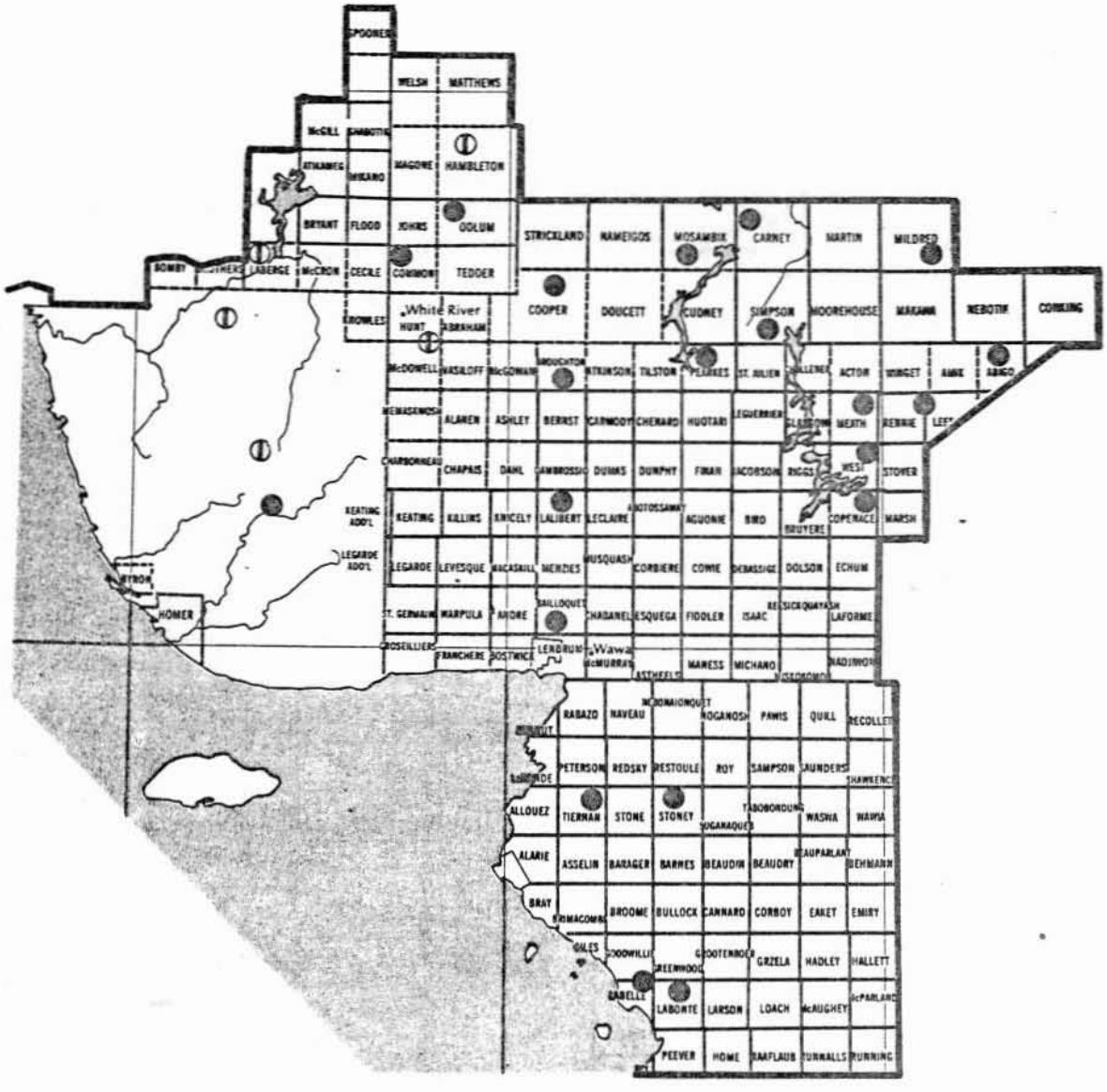
Kilometres 20 10 0 20

LEGEND

Light defoliation ◐

Moderate-to-severe defoliation ●

WAWA DISTRICT



Larch Sawfly

Areas within which defoliation occurred in 1958

LEGEND

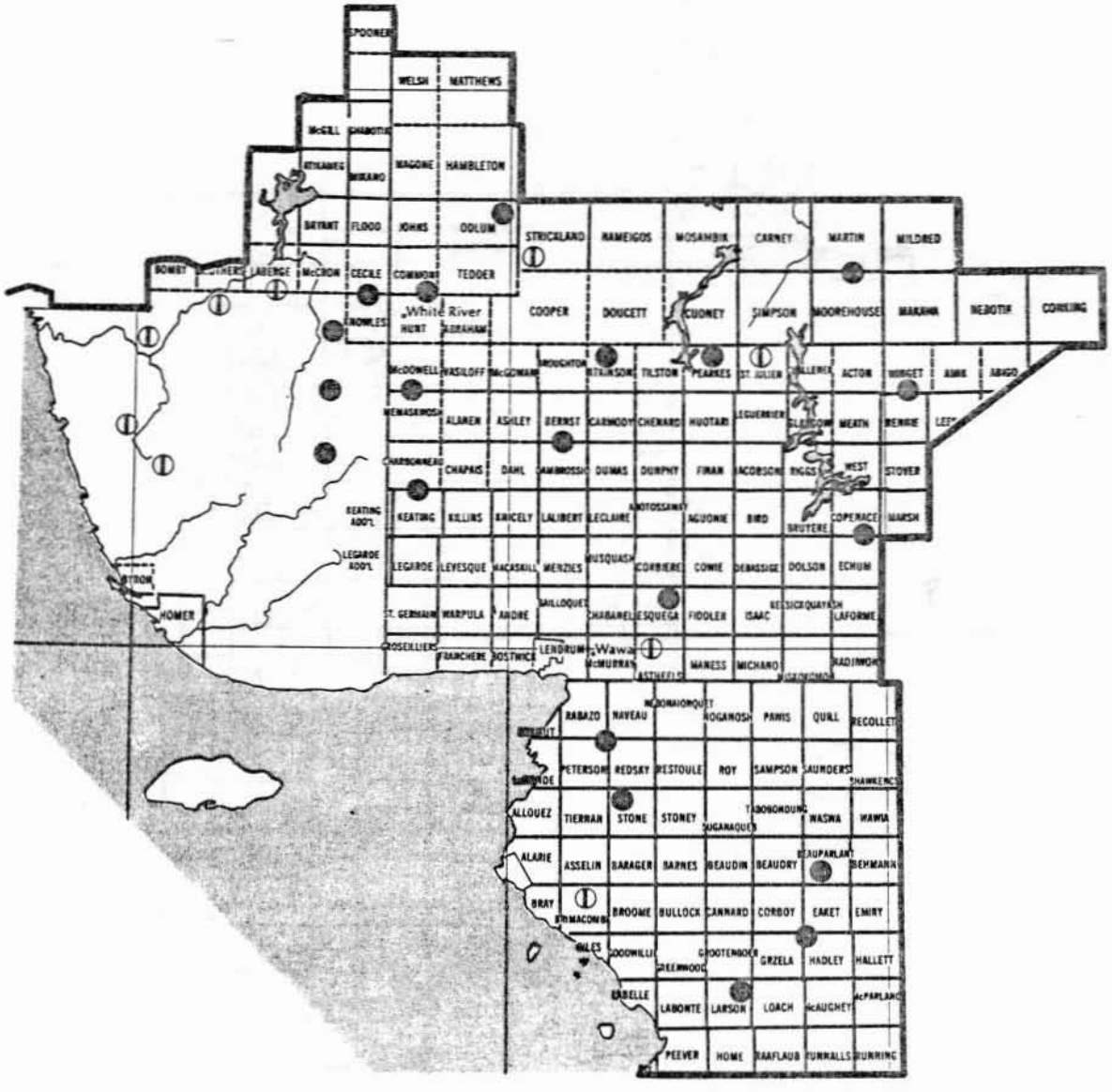
Light defoliation ◐

Moderate-to-severe defoliation ●

Scale

Kilometres 20 10 0 20

WAWA DISTRICT



Scale

Kilometres 20 10 0 20

Larch Sawfly

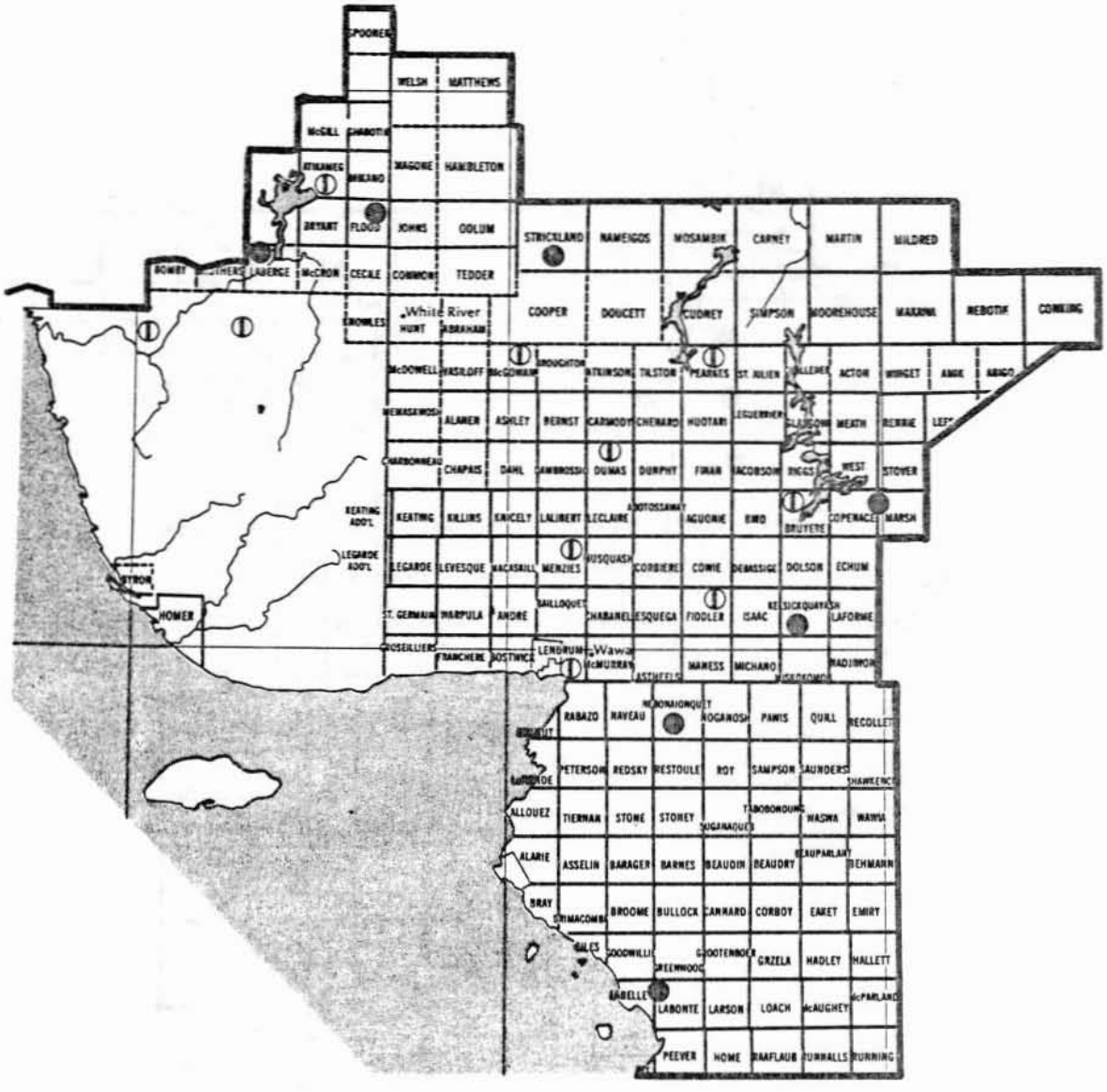
Areas within which defoliation occurred in 1959

LEGEND

Light defoliation ◐

Moderate-to-severe defoliation ●

WAWA DISTRICT



Larch Sawfly

Areas within which defoliation occurred in 1960

LEGEND

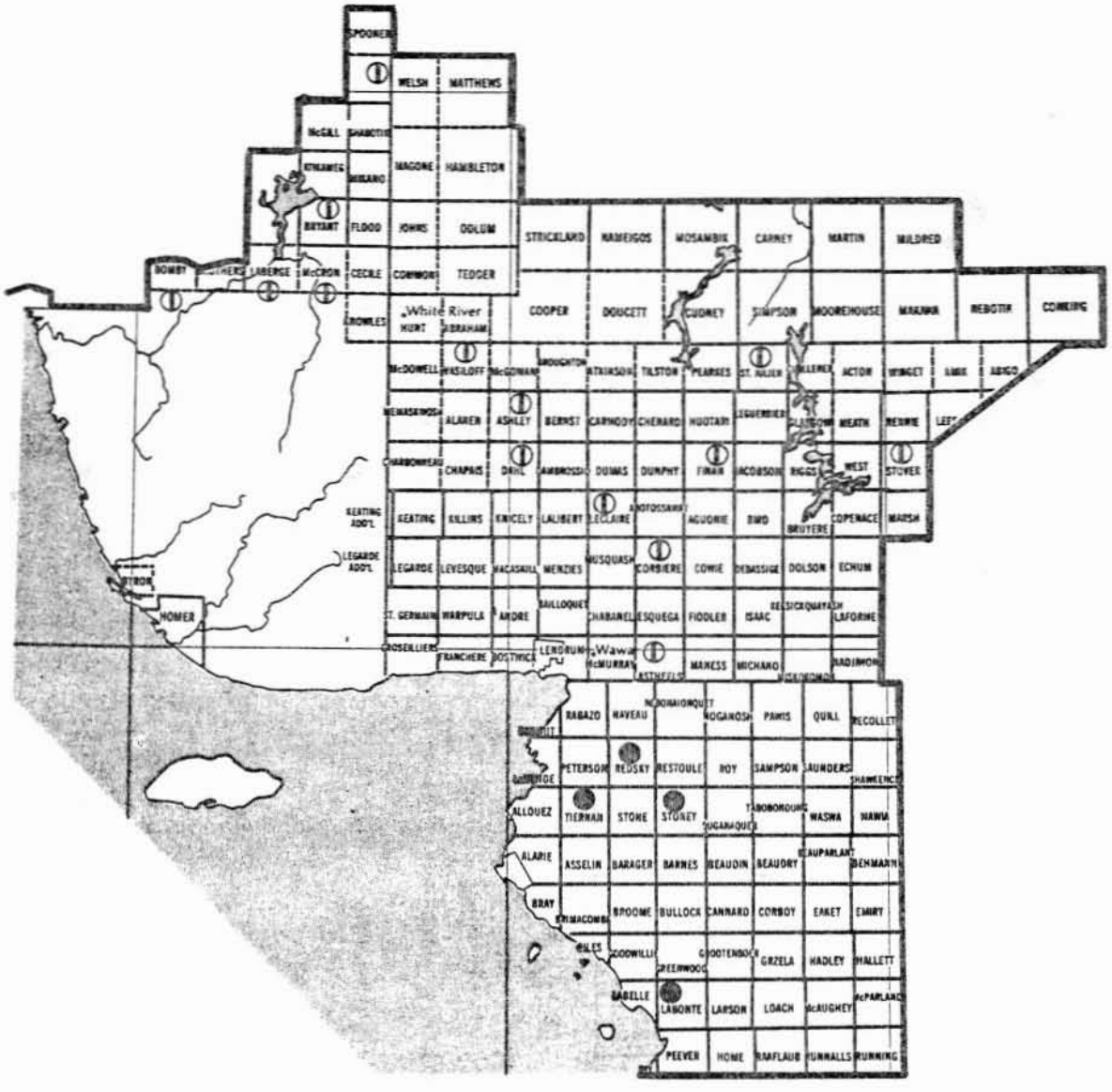
Light defoliation ◐

Moderate-to-severe defoliation ●

Scale

Kilometres 20 10 0 20

WAWA DISTRICT



Larch Sawfly

Areas within which defoliation occurred in 1961

Scale

Kilometres 20 10 0 20

LEGEND

Light defoliation ◑

Moderate-to-severe defoliation ●

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

Host(s): aMo [Major]

Year	Remarks
1950-1959	not reported
1960	first record of the insect in the district; colonies found in Menzies Twp
1961-1965	not reported
1966	high populations at Quebec Harbour, Michipicoten Island
1967	High populations persisted at Quebec Harbour.
1968	High populations occurred between Agawa Bay and Wawa in Lake Superior Park.
1969	There was a decline in populations in Lake Superior Park.
1970	severe defoliation at scattered points in the district
1971	not reported
1972	severe defoliation in the Franz, Wawa and Dubreuilville areas
1973	moderate defoliation in the northern part of Lake Superior Park
1974-1977	severe defoliation along Highway 17 north and west of Wawa
1978	severe defoliation in Lalibert and McMurray twp
1979	a sharp decline in Lalibert and McMurray twps
1980	Moderate-to-severe defoliation occurred in Dahl Twp.

Ambermarked Birch Leafminer, *Profenusa thomsonii* (Konow)

Host(s): birch [Major]

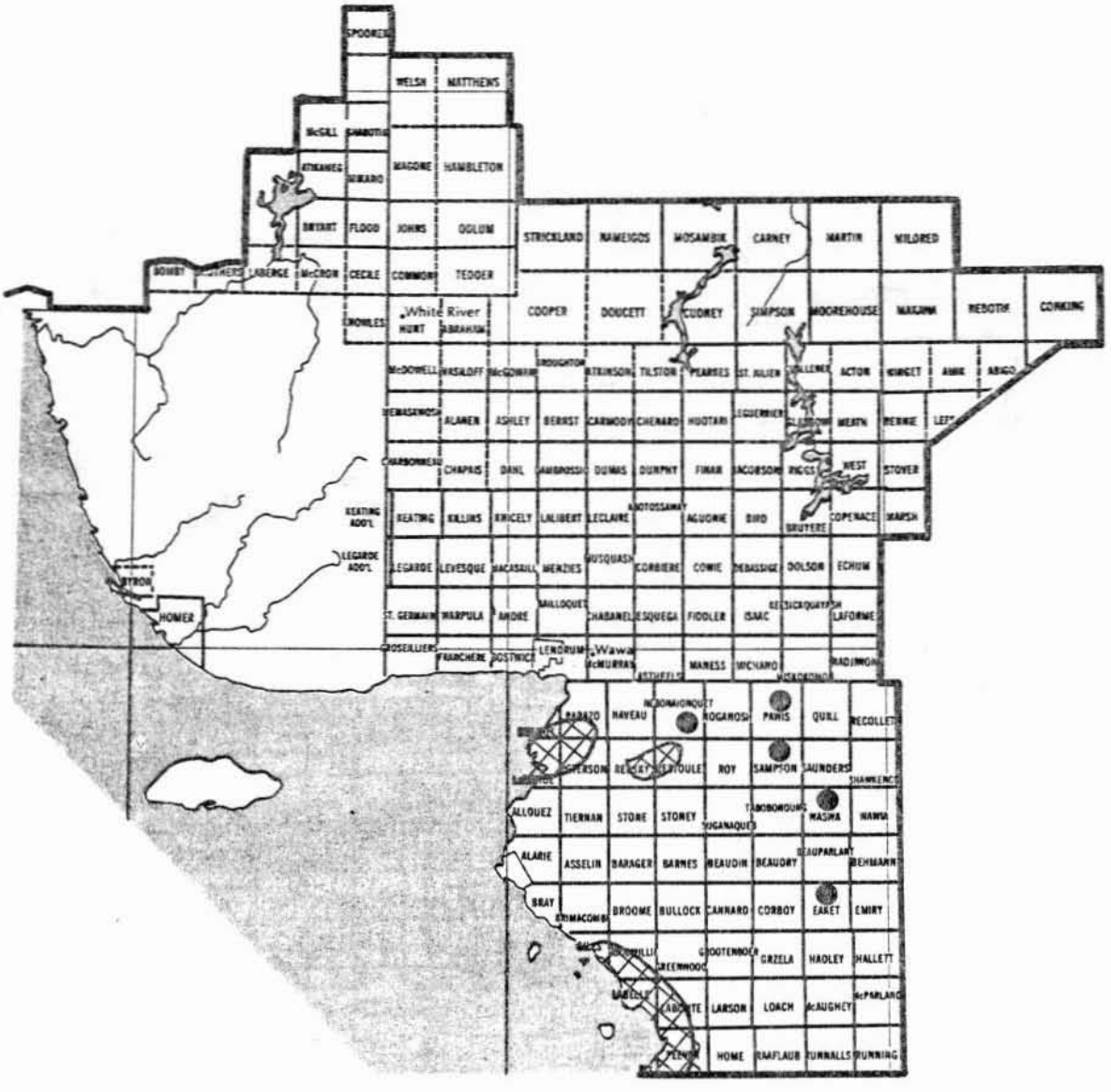
Year	Remarks
1950-1957	not reported
1958	severe defoliation along Lake Superior between Montreal River and the town of Wawa, in Nebonaionquet Twp, and in the Old Woman River watershed; moderate in Fiddler and Pearkes twps (see map, page 73.)
1959	continued severe defoliation in Lake Superior Park; moderate defoliation in Fiddler, Esqueqa, McMurray, Pearkes and St. Julien twp
1960	Severe defoliation persisted along the Lake Superior shore. Defoliation was moderate in Esquega, Lalibert and Fiddler twps, and light in Pearkes Twp (see map, page 74).
1961	continued severe defoliation in the above locations, and on a few ornamentals in White River in Hunt Twp (see map, page 75)
1962	Severe browning persisted in these locations, but there was a decline in defoliation along Lake Superior.
1963	a decline in infestations
1964	a further decline in infestations
1965	an increase to severe infestations in the north-central part of the district
1966	continued severe browning in known infestations (see map, page 76)
1967	continued severe browning (see map, page 77)
1968	slight declines throughout the infestations
1969	further declines except in Hunt and Magone twps
1970	high populations in Rabazo Twp

(cont'd)

Ambermarked Birch Leafminer, *Profenusa thomsonii* (Konow) (concl.)

Year	Remarks
1971	very low populations
1972	light infestation in Nadjiwan Twp
1973-1975	not reported
1976	severe defoliation of 1 ha in Nadjiwan Twp
1977-1980	not reported

WAWA DISTRICT



Ambermarked Birch Leafminer

Areas within which defoliation occurred in 1958

Scale

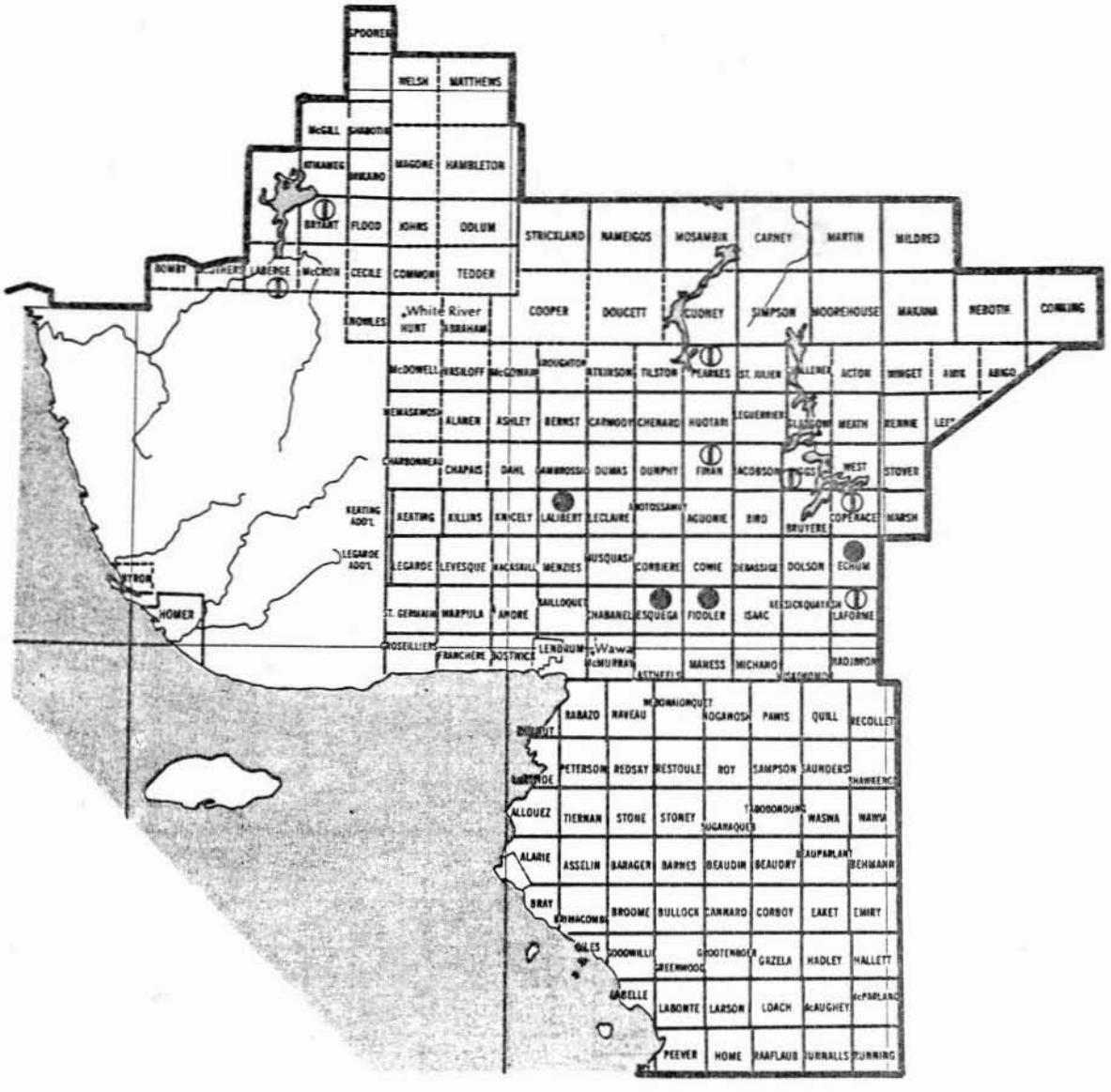
Kilometres 20 10 0 20

LEGEND

Light defoliation

Moderate-to-severe defoliation ● or ▨

WAWA DISTRICT



Ambermarked Birch Leafminer

Areas within which defoliation occurred in 1960

Scale

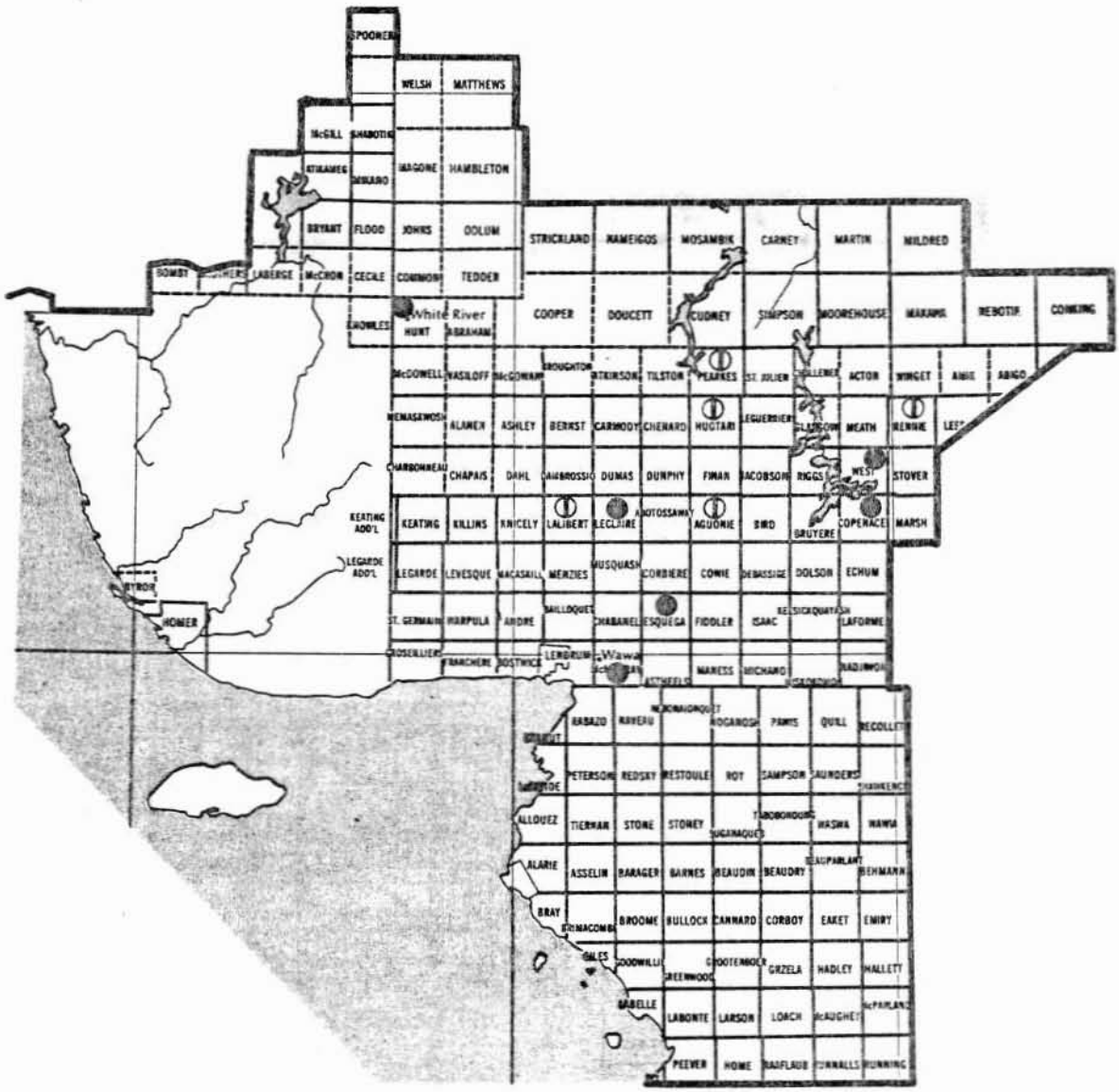
Kilometres 20 10 0 20

legend

Light defoliation ◐

Moderate-to-severe defoliation ●

WAWA DISTRICT



Ambermarked Birch Leafminer

Areas within which defoliation occurred in 1961

LEGEND

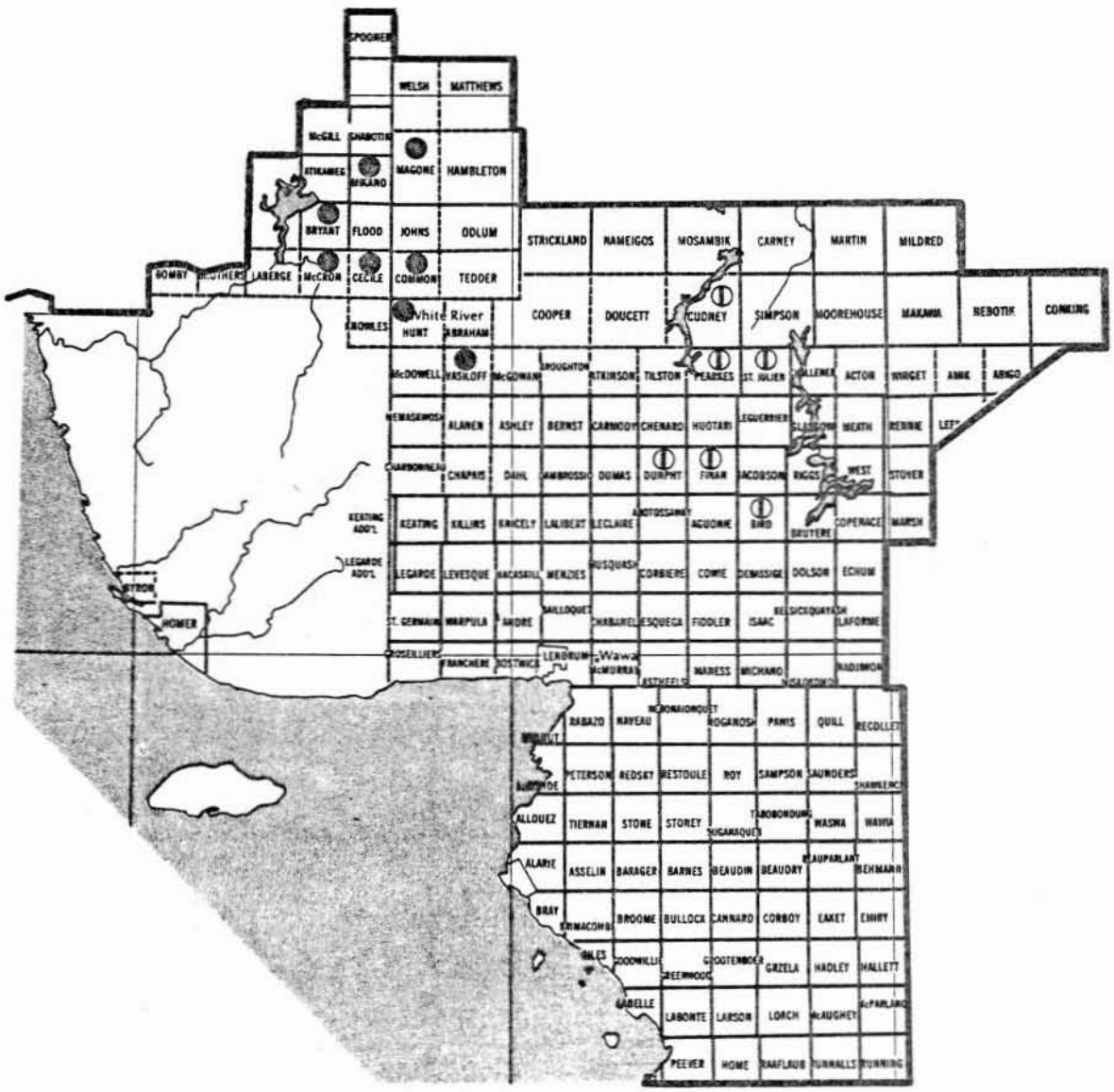
Light defoliation ◑

Moderate-to-severe defoliation ●

Scale

Kilometres 20 10 0 20

WAWA DISTRICT



Ambermarked Birch Leafminer

Areas within which defoliation occurred in 1966

Scale

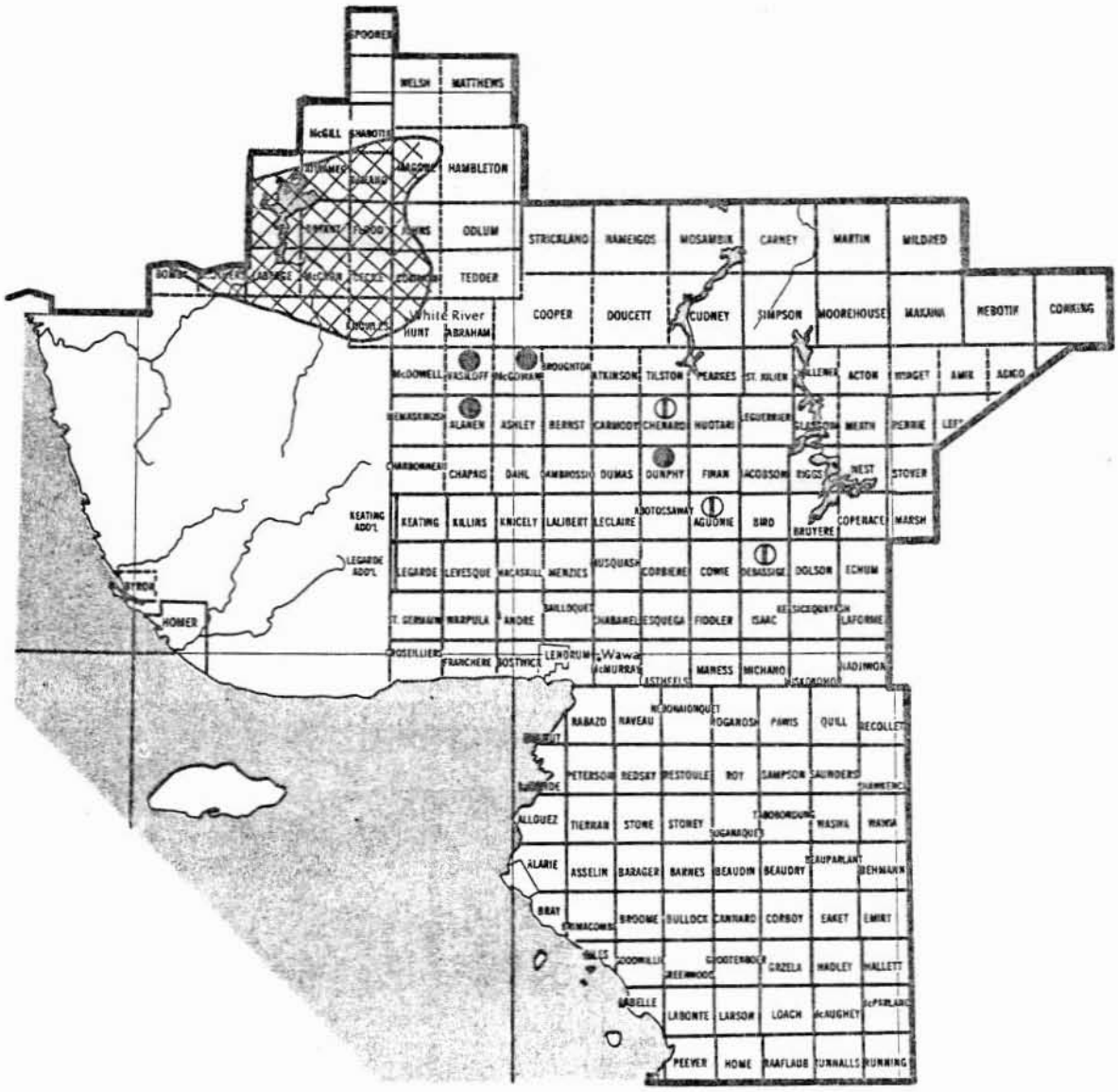
Kilometres 20 10 0 20

LEGEND

Light defoliation ◐

Moderate-to-severe defoliation ●

WAWA DISTRICT



Ambermarked Birch Leafminer

Areas within which defoliation occurred in 1967

Scale

Kilometres 20 10 0 20

LEGEND

Light defoliation ◐

Moderate-to-severe defoliation ● or ▨

Other Noteworthy Insects

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

Host(s): spruce, bF [Minor]

Year	Remarks
1950	very low populations at scattered points
1951-1952	not reported
1953	small numbers at three locations
1954	small numbers at four locations
1955	commonly observed in the district
1956-1957	not reported
1958	small numbers observed at scattered points
1959-1960	not reported
1961	larvae found at three locations
1962-1966	low populations observed at widely separated points
1967-1980	not reported

Yellow Birch Leaffolder, *Anchylopera discigerana* Wlk.

Host(s): yB [Minor]

Year	Remarks
1950-1969	not reported
1970-1971	High populations occurred in the Wawa area.
1972-1980	not reported

Birch Sawfly, *Arge pectoralis* (Leach)

Host(s): birch [Major]

Year	Remarks
1950	small numbers observed at widely separated points
1951-1980	not reported

Cedar Leafminer, *Argyresthia aureoargentella* Braun

Host(s): eC [Major]

Year	Remarks
1950-1957	not reported
1958	Light defoliation occurred in Simpson Twp.
1959	small numbers observed at 12 locations
1960	not reported
1961	Low populations were observed at four locations.
1962-1966	not reported
1967	Light infestations occurred at four points.
1968-1980	not reported

Jack Pine Resin Midge, *Cecidomyia resinicola* (O.S.)

Host(s): jP [Minor]

Year	Remarks
1950-1977	not reported

(cont'd)

Jack Pine Resin Midge, *Cecidomyia resinicola* (O.S.)(concl.)

Year	Remarks
1978	A heavy infestation occurred on a few trees in Dunphy Twp.
1979	small numbers observed in Dunphy Twp
1980	not reported

Jack Pine Budworm, *Choristoneura pinus pinus* Free.

Host(s): pines [Major]

Year	Remarks
1950-1955	not reported
1956	small numbers observed in Lendrum Twp
1957	not reported
1958	low populations observed in Lendrum Twp
1959	small numbers collected at one point
1960-1961	Low populations occurred in Mosambik Twp.
1962	small numbers observed in Vasiloff Twp
1963-1968	not reported
1969	A light infestation occurred near Wawa.
1970	not reported
1971	small numbers observed near Wawa
1972-1973	not reported
1974-1975	Light defoliation occurred in Lastheels Township
1976-1980	not reported

Aspen Leaf Beetle, *Chrysomela crotchi* Brown

Host(s): Aspen [Major]

Year	Remarks
1950-1963	not reported
1964	first record in the district, observed in Hunt and Lendrum twps
1965-1980	not reported

Fringed Birch Sawfly, *Dimorphopteryx melanoganathus* Roh.

Host(s): yB [Major]

Year	Remarks
1950-1968	not reported
1969	small pockets of severe defoliation observed near Montreal River
1970-1980	not reported

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

Host(s): sM, rM [Major]

Year	Remarks
1950-1952	not reported
1953	small numbers observed near Sand Lake
1954-1963	not reported
1964-1965	Severe defoliation occurred in a sugar maple stand in Bray Twp.
1966	Populations declined in Bray Twp.
1967-1980	not reported

Aspen Twoleaf Tier, *Enargia decolor* Wlk.

Host(s): tA [Major]

Year	Remarks
1950-1968	not reported
1969	low populations observed in Leguerrier, Lastheels and Maness twps
1970	high populations recorded in the eastern part of the district
1971	high populations general in the district
1972-1980	not reported

Birch Leafminer, *Fenusa pusilla* (Lep.)

Host(s): wB [Major]

Year	Remarks
1950-1969	not reported
1970	Light leafmining occurred at several locations in Lake Superior Park.
1971	Heavy defoliation occurred at numerous locations in Lake Superior Park and on fringe trees along Hwy 101.
1972	Heavy defoliation recurred in Lake Superior Park and in the Missanabi area.
1973-1975	not reported
1976	light leafmining evident in Nadjiwan Twp
1977	light leafmining observed at numerous locations
1978	Light defoliation occurred in the Frater area and in Labonte Twp.
1979	high populations observed in the Agawa Bay area
1980	heavy defoliation common throughout the southern part of the district

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

Host(s): spruce [Minor]

Year	Remarks
1950-1960	not reported
1961	small numbers observed at one location
1962-1963	not reported
1964	Trace populations occurred at three locations.
1965	not reported
1966	small numbers of larvae found in Laberge Twp, represents a westerly extension in the known range of this insect
1967	Only small numbers of larvae could be found.
1968	not reported
1969	populations observed at five locations
1970-1980	not reported

American Aspen Beetle, *Gonioctena americana* (Schaef.)

Host(s): Poplar [Major]

Year	Remarks
1950	moderate-to-severe defoliation observed in Hunt Township
1951	Light-to-moderate defoliation occurred on fringe trees along the CPR between Franz and Lochalsh
1952	not reported
1953	small pockets of moderate-to-severe defoliation observed at numerous points
1954	Populations decreased to small numbers at five locations.

(cont'd)

American Aspen Beetle, *Gonioctena americana* (Schaef.) (concl.)

Year	Remarks
1955	not reported
1956	small pockets of moderate-to-severe defoliation detected at five points
1957	only one pocket of moderate-to-severe defoliation observed
1958-1959	Numerous pockets of light defoliation occurred.
1960-1962	only small numbers observed
1963	not reported
1964	Light defoliation occurred at eight locations.
1965	light defoliation detected at two points
1966-1967	light defoliation more widely distributed than in the previous year
1968-1972	not reported
1973	low populations widespread in the district
1974-1975	not reported
1976	light defoliation detected at many locations
1977-1980	not reported

Fall Webworm, *Hyphantria cunea* (Dru.)

Host(s): deciduous [Major]

Year	Remarks
1950-1955	not reported
1956	light defoliation observed at one location

(cont'd)

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

Year	Remarks
1957	Light defoliation occurred at two locations.
1958-1959	not reported
1960	small numbers observed at one location
1961-1980	not reported

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

Host(s): general [Major]

Year	Remarks
1950-1963	not reported
1964	small numbers of larvae collected on balsam fir in Simpson and Challener twps
1965-1980	not reported

Northern Tent Caterpillar, *Malacosoma californicum pluviale* Dyar.

Host(s): cherry [Major]

Year	Remarks
1950	common on roadside trees at many locations
1951	not reported
1952	very low populations at widely separated points
1953	small numbers at six locations
1954	small numbers at eight locations

(cont'd)

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

Year	Remarks
1955	low populations at three points
1956	low populations at six points
1957	low populations at three points
1958	Distribution increased; collected at 12 locations
1959	not reported
1960	small numbers observed at five locations
1961	heavy infestations observed at six locations
1962	Populations declined to a low incidence.
1963-1965	only small numbers observed
1966	Populations increased at five locations.
1967	little change in populations over the previous year
1968	Populations declined to a low ebb.
1969-1980	not reported

Whitespotted Sawyer, *Monochamus scutellatus* (Say)

Host(s): coniferous [Major]

Year	Remarks
1950	Moderate-to-severe damage occurred to skidways of logs.
1951-1953	not reported
1954	small numbers evident at two locations
1955	low populations observed in Magone and Charbonneau twps

(cont'd)

Whitespotted Sawyer, *Monochamus scutellatus* (Say) (concl.)

Year	Remarks
1956-1959	not reported
1960	small numbers observed at scattered locations
1961-1976	not reported
1977	high populations present in log skidways and in some cutover areas
1978	not reported
1979	high populations present in skidway logs in Tiernan Twp; small numbers observed elsewhere
1980	high populations observed in skidway logs at several locations

Spiny Elm Caterpillar, *Nymphalis antiopa* (L.)

Host(s): deciduous [Minor]

Year	Remarks
1950-1963	not reported
1964	severe defoliation observed at eight locations
1965-1966	not reported
1967	high populations observed at four locations
1968-1980	not reported

Northern Pine Weevil, *Pissodes approximatus* Hopk.

Host(s): pine [Major]

Year	Remarks
1950-1963	not reported
1964	Small numbers occurred in a red pine plantation in Hunt Twp.
1965-1966	light tree mortality observed in a plantation in Hunt Twp
1967-1980	not reported

Balsam Fir Weevil, *Pissodes similis* Hopk.

Host(s): bF [Minor]

Year	Remarks
1950-1964	not reported
1965	first record in the district; small numbers in Dunphy Twp
1966-1980	not reported

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

Host(s): aspen [Major]

Year	Remarks
1950-1951	moderate-to-severe defoliation general throughout the district
1952	severe defoliation observed at seven locations
1953	Populations declined markedly.
1954	Populations continued to decline.
1955	Light damage was evident in Pearkes Twp.

(cont'd)

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

Year	Remarks
1956	small numbers observed at five locations
1957	Populations remained low.
1958-1959	not reported
1960-1964	small numbers observed at widely separated points
1965	Populations increased and caused light defoliation in Hunt Township.
1966	Populations increased for the second consecutive year.
1967	Numbers declined.
1968	light defoliation observed in Hunt Township
1969-1970	not reported
1971	high populations observed in Esquega, Glasgow and Huotari twps
1972	Severe defoliation occurred in Esquega and Huotari twps.
1973-1977	not reported
1978	heavy infestations observed in Labonte Twp
1979	not reported
1980	A heavy infestation recurred in Labonte Twp.

Spruce Bud Midge, *Rhabdophaga swainei* Felt.

Host(s): spruce [Minor]

Year	Remarks
1950-1959	not reported

(cont'd)

Spruce Bud Midge, *Rhabdophaga swainei* Felt. (concl.)

Year	Remarks
1960	High populations were observed at five locations.
1961	Populations declined.
1962	Populations declined to a low ebb.
1963	Numbers increased; observed at several locations
1964-1965	small numbers observed at four points
1966	Bud damage increased at three points.
1967	Bud damage increased for the second consecutive year.
1968-1980	not reported

Spearmarked Black Moth, *Rheumaptera hastata* Linn.

Host(s): birch, alder [Major]

Year	Remarks
1950-1979	not reported
1980	severe defoliation at scattered locations in the district

Pine Tip Moth, *Rhyacionia adana* Heinr.

Host(s): pine [Minor]

Year	Remarks
1950-1966	not reported
1967	small numbers observed at nine locations
1968-1980	not reported

Red Jack Pine Shoot Borer, *Rhyacionia buoliana* Heinr.

Host(s): jP [Minor]

Year	Remarks
1950-1962	not reported
1963	small numbers observed at eight locations
1964	a trace population observed at one point
1965-1980	not reported

Larch Needleworm, *Zeiraphera improbana* (Walker)

Host(s): larch, spruce

Year	Remarks
1950-1969	not reported [Minor]
1970	A small pocket of heavy infestation occurred near Wawa.
1971	Populations declined to small numbers.
1972-1980	not reported

DISEASES

Armillaria Root Rot, *Armillaria mellea* [Vahl ex Fr.] Kumm.

Host(s): all species [Major]

Year	Remarks
1950-1957	not reported
1958	common in the Sand Lake area
1959-1961	not reported
1962-1963	some mortality of natural jack pine trees at several locations
1964-1966	little change in infection level
1967-1975	not reported
1976-1979	a few infected roots in Challener, Nadjiwon and Recollet twps
1980	not reported

Needle rust, *Chrysomyxa ledi* (Alb. & Schw.) d By.
C. ledicola Lagh.

Host(s): wS, bS [Major]

Year	Remarks
1950-1958	not reported
1959-1972	severe infection of black spruce in McMurray Township
1973	light infection of black spruce in Lendrum, Laberge, Strickland, Vasiloff and Dahl twps
1974	not reported
1975-1979	light infection in Lendrum, Rabazo, Dambrossio and Menzies twps
1980	decline in infection levels in the Dubreuilville area, and a trace level in Bryant Twp

Ink Spot, *Ciborinia whetzelii* (Seaver) Seaver

Host(s): tA [Major]

Year	Remarks
1950-1957	not reported
1958	severe browning of foliage in the southern part of the district
1959	several large areas of severe browning throughout the district
1960	light infection levels general in the district
1961-1962	not reported
1963-1964	small areas of moderate infection in Pearkes, Riggs and Hunt twps
1965-1966	light browning of foliage common in the district
1967-1969	not reported
1970	high incidence in Hunt and Maness twp
1971-1972	not reported
1973	trace levels of infection in Knowles Township
1974-1976	not reported
1977	trace levels of infection in Peever Twp
1978	moderate infection in Maness Twp; light levels in Dumas and Miskokomon twps
1979	trace levels of infection in Peever Township
1980	not reported

Needle Cast, *Davisomycella ampla* (Davis) Darker

Host(s): jP [Major]

Year	Remarks
1950-1953	not reported
1954	light infection of open-grown trees near Wawa
1955-1965	not reported
1966	several small areas of light infection
1967	heavy infection in Hunt and Vasiloff twps
1968-1975	not reported
1976	trace levels in Lendrum Township
1977-1978	not reported
1979	trace level in Recollet Township
1980	not reported

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

Host(s): jP, rP [Major]

Year	Remarks
1950-1965	not reported
1966	severe infection in a 1-ha red pine (*Pinus resinosa* Ait.) plantation in Hunt Township, where 98% of the trees were infected and 46% of the trees were dead
1967	Severe infection persisted in Hunt Township; 51% of the trees were infected and 15% newly dead trees were observed.
1968	10% of inspected trees were infected near Wawa.

(cont'd)

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

Year	Remarks
1969	not reported
1970-1971	Infection was prevalent on red pine trees in Hunt Township. In 1971, new areas were observed in Gertrude and Nickle twps; infection was 10% and 1%, respectively.
1972-1977	not reported
1978	trace levels observed in Recollet Township
1979	not reported
1980	high level of infection in Lendrum Township

Hypoxylon Canker, *Hypoxylon mammatum* (Wahl.) J.H. Miller

Host(s): tA [Major]

Year	Remarks
1950-1952	not reported
1953	moderate-to-severe infection in Hunt and Cecile twps
1954	common in Hunt, Cecile and Simpson twps and near Wawa
1955	widespread infection in the district
1956-1958	not reported
1959	found commonly in the district
1960-1963	not reported
1964	12% of the trees examined in Hunt Township infected
1965-1967	no change in infection level
1968	light infections in Cecile and Hunt twps
1969-1972	not reported

(cont'd)

Hypoxylon Canker, *Hypoxylon mammatum* (Wahl.) J.H. Miller (concl.)

Year	Remarks
1973	moderate infections in Hunt and Cecile twps and trace levels in Laberge Township
1974-1976	not reported
1977-1978	disease widespread but light in the district
1979-1980	not reported

Rusts of Pine, Stalactiform Rust, *Cronartium coleosporioides* Arth.
Sweet-fern Blister Rust, *C. comptoniae* Arth.
White Pine Blister Rust, *C. ribicola* J.C. Fisch.
Globose Gall Rust, *Endocronartium harknessii* (J.P. Moore) Y. Hirat.

Host(s): jP, wP [Major]

Year		Remarks
1950-1953		not reported
1954	*C. comptoniae*	light infection on jack pine in Lendrum Township
1955-1959		not reported
1960	*C. comptoniae*	found occasionally in the district
1961-1966		not reported
1967	*E. harknessii*	light infection on jack pine in Hunt and Vasiloff twps
1968-1969		not reported
1970	*C. comptoniae*	high incidence in Vasiloff and Maness twps
	E. harknessii	several infected jack pine in Vasiloff and Lendrum twps

(cont'd)

Rusts of Pine, Stalactiform Rust, *Cronartium coleosporioides* Arth.
Sweet-fern Blister Rust, *C. comptoniae* Arth.
White Pine Blister Rust, *C. ribicola* J.C. Fisch.
Globose Gall Rust, *Endocronartium harknessii* (J.P. Moore) Y. Hirat. (concl.)

Year		Remarks
1971	*E. harknessii*	15% of the trees examined in Hunt Township infected
1972		not reported
1973	*C. ribicola*	a few infected white pine trees in Labelle Township
	C. coleosporioides	high infection level on jack pine in Lendrum Township
	E. harknessii	trace levels in Vasiloff Township
1974	*C. ribicola*	a few infected white pine trees in Peever Township
1975	*E. harknessii*	low infection levels in Maness and Lendrum twps
1976-1977		not reported
1978	*C. ribicola*	infection on 18% of white pine trees examined in Peever Township
1979	*E. harknessii*	low levels of infection in Huotari Township
1980		not reported

Shoot Blight, *Venturia macularis* (Fr.) Muller & Arx.

Host(s): tA [Major]

Year	Remarks
1950-1959	not reported
1960-1962	high on trembling aspen reproduction throughout the district

(cont'd)

Shoot Blight, *Venturia macularis* (Fr.) Muller & Arx. (concl.)

Year	Remarks
1963-1966	small pockets of severe infection along Dubreuilville road
1967	pockets of severe infection in Hunt Township; moderate infection in Pearkes Township
1968-1972	not reported
1973	small area severely infected in Lalonde Township; light infection in West, McCron and Alanen twps
1974	not reported
1975-1976	Damage was light at numerous locations.
1977	moderate damage to regeneration in Dambrossio Township
1978	small area of heavy infection in Labelle Township
1979-1980	not reported

Other Noteworthy Diseases

Spruce Broom Rust, *Chrysomyxa arctostaphyli* Diet.

Host(s): spruce [Major]

Year	Remarks
1950-1975	not reported
1976	Infection of host trees ranged from 0.5% to 9.9% in areas surveyed.
1977-1980	not reported

Needle Rust, *Coleosporium asterum* (Diet.) Syd.

Host(s): pines [Major]

Year	Remarks
1950-1962	not reported
1963	light infection observed in Hunt Twp
1964-1980	not reported

Root Rot, *Fomes pinicola* (Swartz ex Fr.) Karst. [Minor]

Host(s): spruce

Year	Remarks
1950-1970	not reported
1971	Light infection occurred in a one-ha stand in Magone Twp.
1972-1980	not reported

Needle Cast, *Lophodermium pinastri* (Schrad. ex Hook.) Chev.

Host(s): pines [Major]

Year	Remarks
1950-1952	not reported
1953	Light damage was recorded in Lendrum Township.
1954-1958	not reported
1959	widely distributed in the district
1960-1964	not reported
1965	light infection observed in Lendrum Township

Stem Canker of Birch, *Melanconium bicolor* Nees

Host(s): birch [Major]

Year	Remarks
1950-1976	not reported
1977	a high incidence of infection recorded in Tiernan and Home twps; 41 and 50 percent respectively
1978-1980	not reported

White Trunk Rot, *Phellinus igniarius* (L. ex F.)

Host(s): deciduous [Major]

Year	Remarks
1950-1953	not reported
1954-1955	common throughout the northern part of the district
1956-1980	not reported

Red Ring Rot, *Phellinus pini* (Brot. ex Fr.) Ames

Host(s): conifers [Major]

Year	Remarks
1950-1953	not reported
1954-1955	varying degrees of infection present in Welsh, Magone and Michano twps
1956-1980	not reported

Tea Pot Fungus, *Rhizina undulata* Fr.

Host(s): conifers [Major]

Year	Remarks
1950-1969	not reported
1970	abundant in Esquega Twp
1971-1980	not reported

Shoot Blight, *Sirococcus strobilinus* Preuss

Host(s): pines, blue spruce [Major]

Year	Remarks
1950-1972	not reported
1973	eighty-one ha lightly infested in Labelle Twp
1974-1979	not reported
1980	trace damage evident in Labelle Township

ABIOTIC DAMAGE

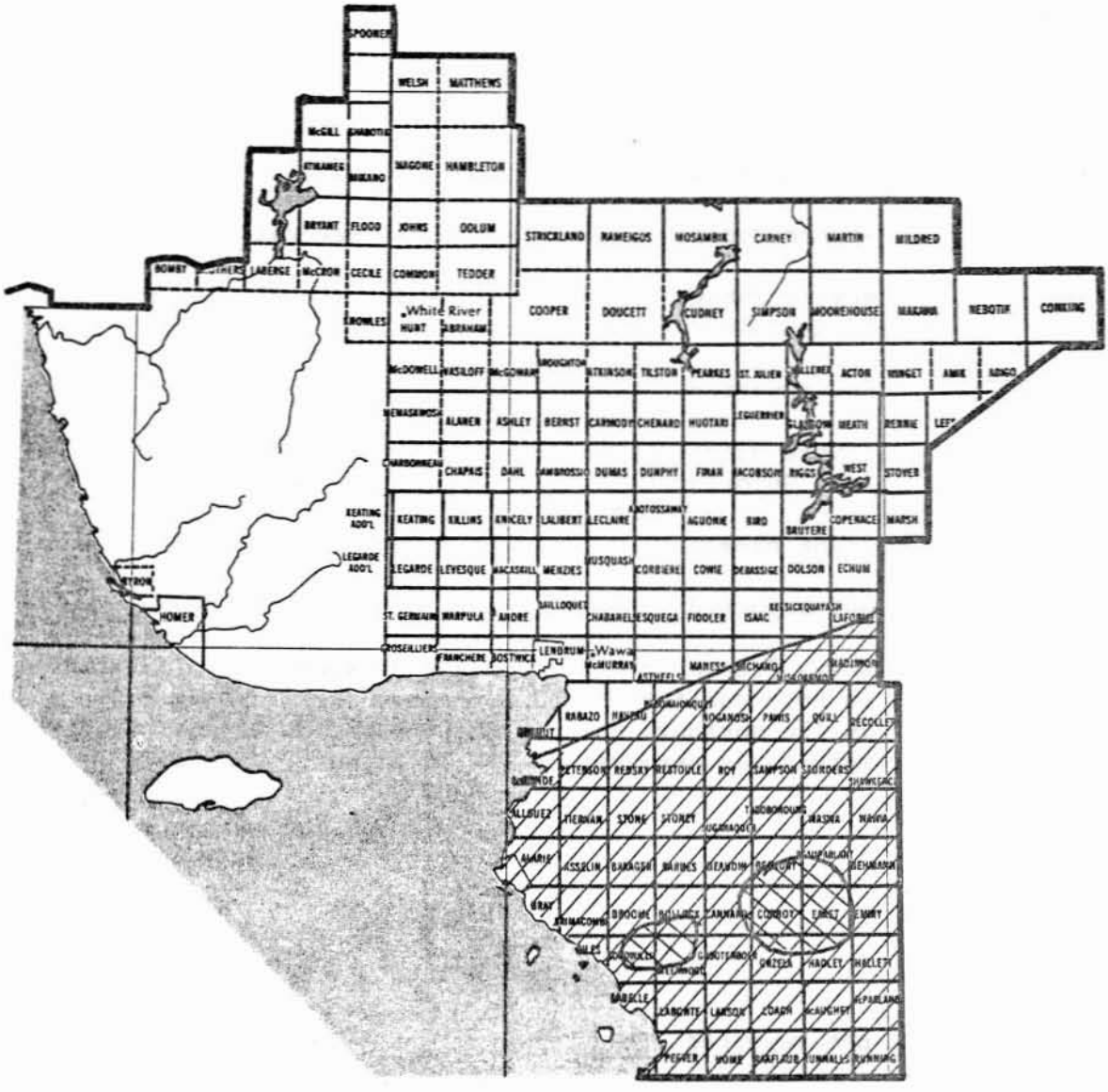
Frost

Year	Remarks
1950-1964	not reported
1965	severe damage to black spruce at several locations
1966	severe damage to balsam fir and white spruce in Lendrum Twp
1967-1976	not reported
1977	severe damage to balsam fir in the central part of Lake Superior Park
1978	light damage to white spruce in Lendrum Township
1979	not reported
1980	Heavy frosts in mid-June caused extensive foliar damage to both coniferous and deciduous trees over a large area in the southern part of the district. Damage to black spruce was assessed at 10% in Bryant Township.

Ice

Year	Remarks
1950-1959	not reported
1960	Severe ice storm in early May caused considerable damage to all tree species in the southern part of the district between Lake Superior and the Chapleau District boundary, from Montreal River to just south of Wawa (see map, page 108).
1961-1980	not reported

WAWA DISTRICT



Wind and Ice Damage

Areas within which damage occurred in 1960

LEGEND

Large pockets of severe damage

Small pockets of moderate-to-severe damage

Salt

Year	Remarks
1950-1965	not reported
1966	damage to roadside trees along Hwy 17 between White River and the western district boundary
1967-1980	not reported

Scorch

Year	Remarks
1950-1971	not reported
1972	Most maple trees in the Lake Superior Park were severely affected.
1973-1980	not reported

Wind

Year	Remarks
1950-1959	not reported
1960	severe tornado damage in Runnalls, Running and McParland twps
1961-1980	not reported

DIEBACKS AND DECLINES

Birch Decline [Major]

Host(s): wB, yB

Year	Remarks
1950-1967	not reported
1968	severe decline of mature white birch south of Wawa
1969	not reported
1970	severe decline of mature white birch in Lake Superior Provincial Park
1971-1970	not reported

APPENDICES

APPENDIX A

DECIDUOUS HOST

Common Name	Scientific Name	Abbreviations
Alder	*Alnus* spp.	AL
Apple	*Malus*	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

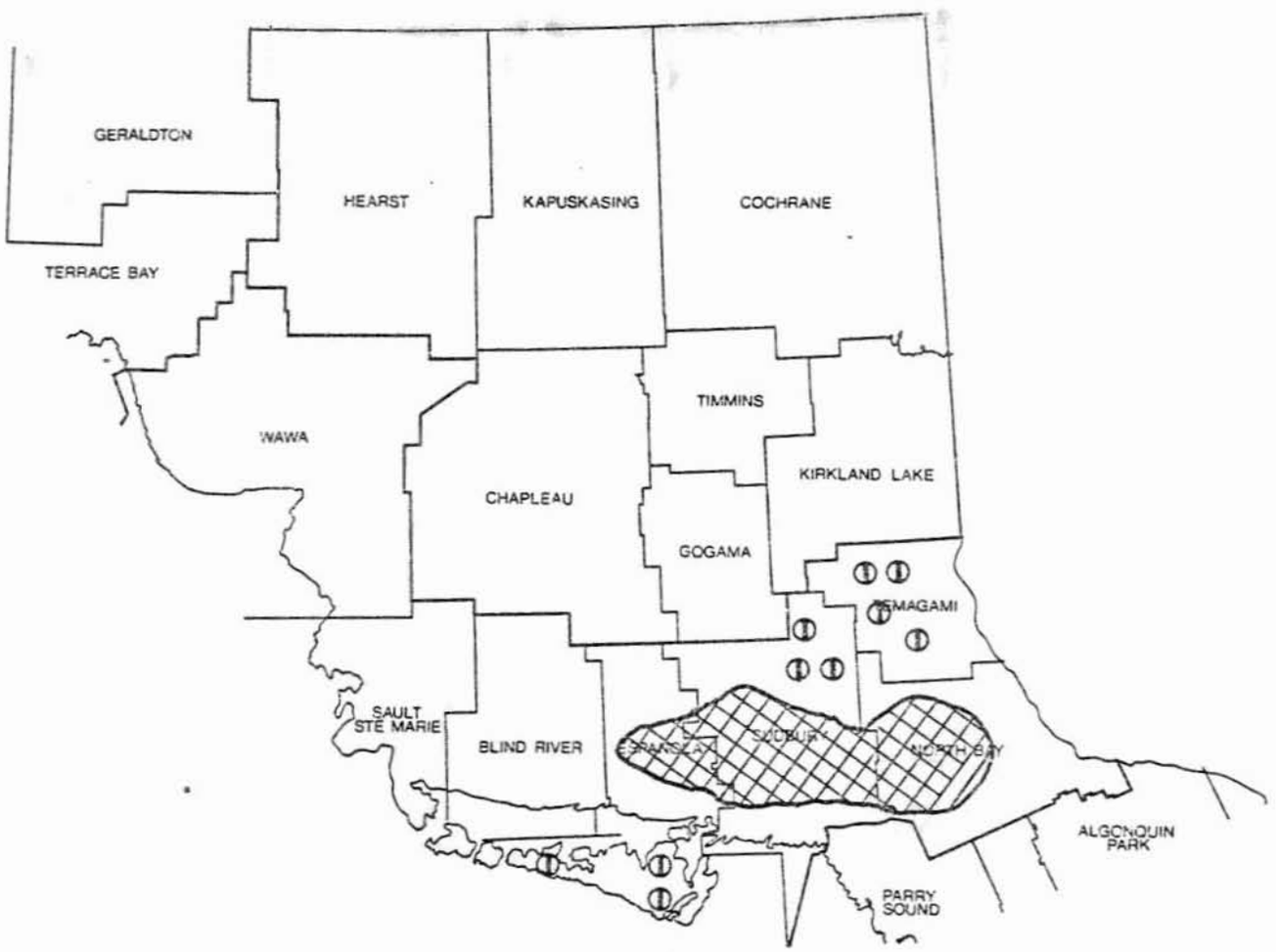
CONIFEROUS HOST

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

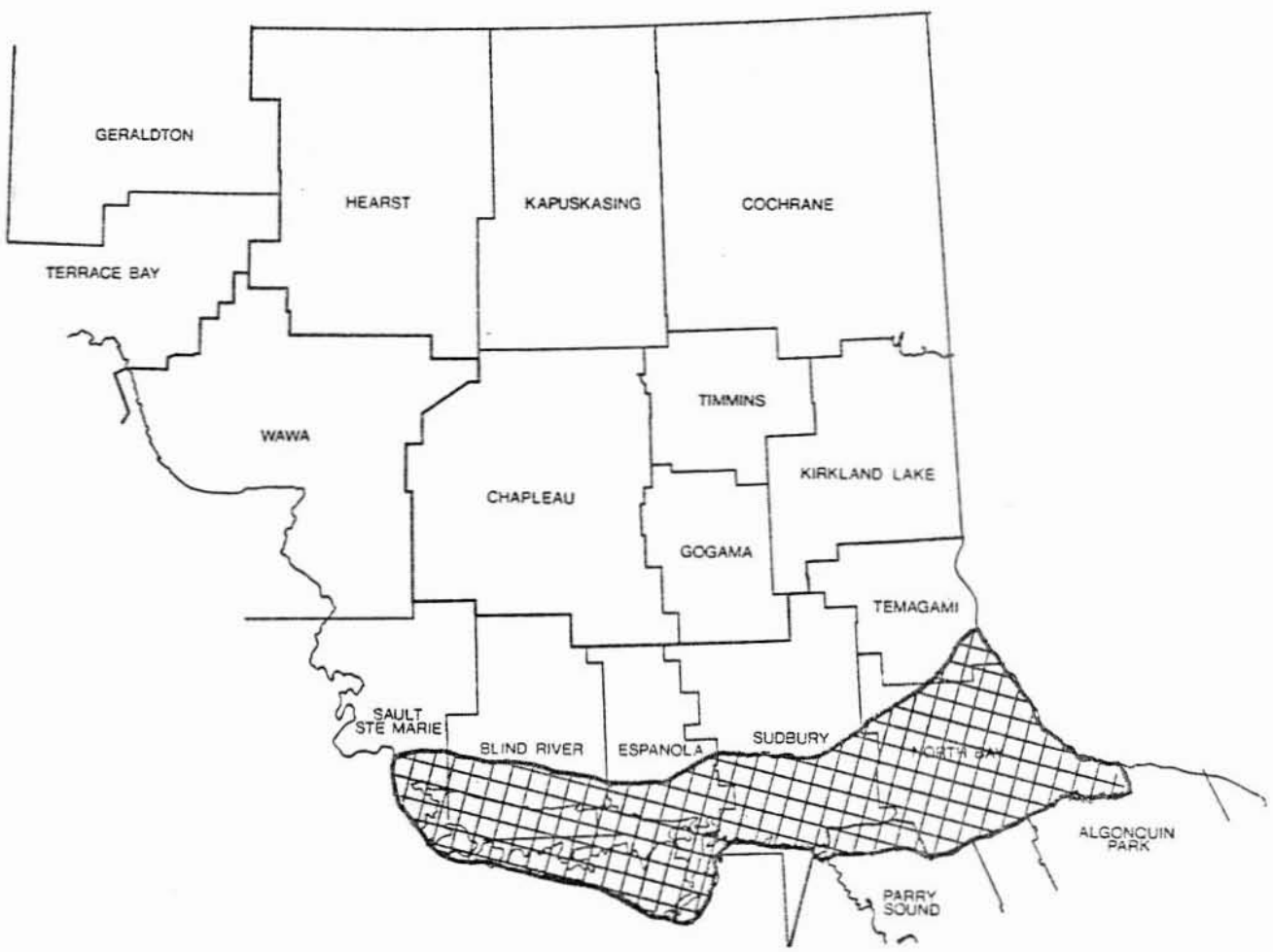
Areas within which defoliation occurred in 1950

LEGEND

Light defoliation ◐

Moderate-to-severe defoliation ▨

NORTHEASTERN ONTARIO



Birch Skeletonizer

Areas within which defoliation occurred in 1961

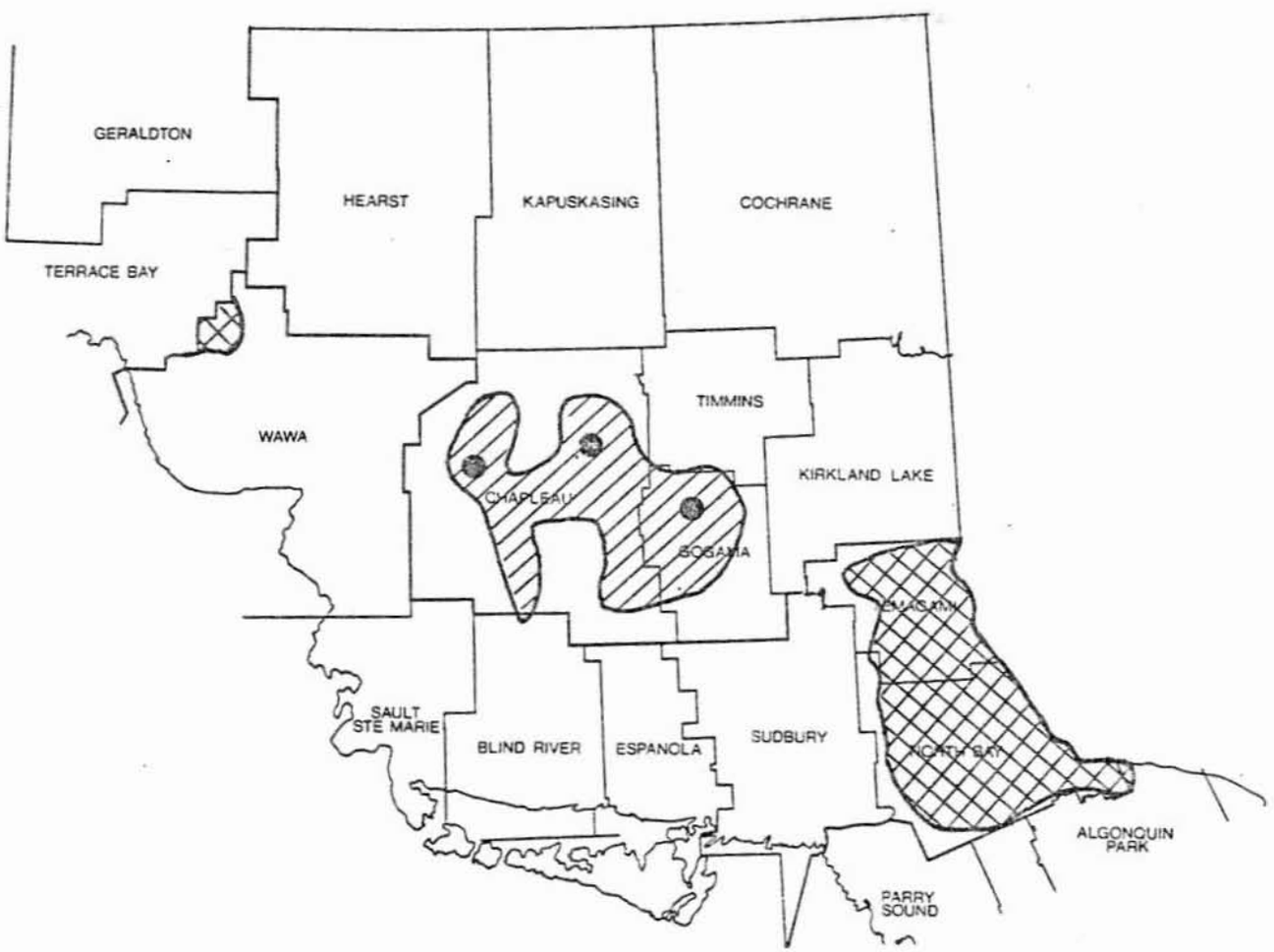
0 Miles 60

0 Kilometres 96

LEGEND

Moderate-to-severe defoliation

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

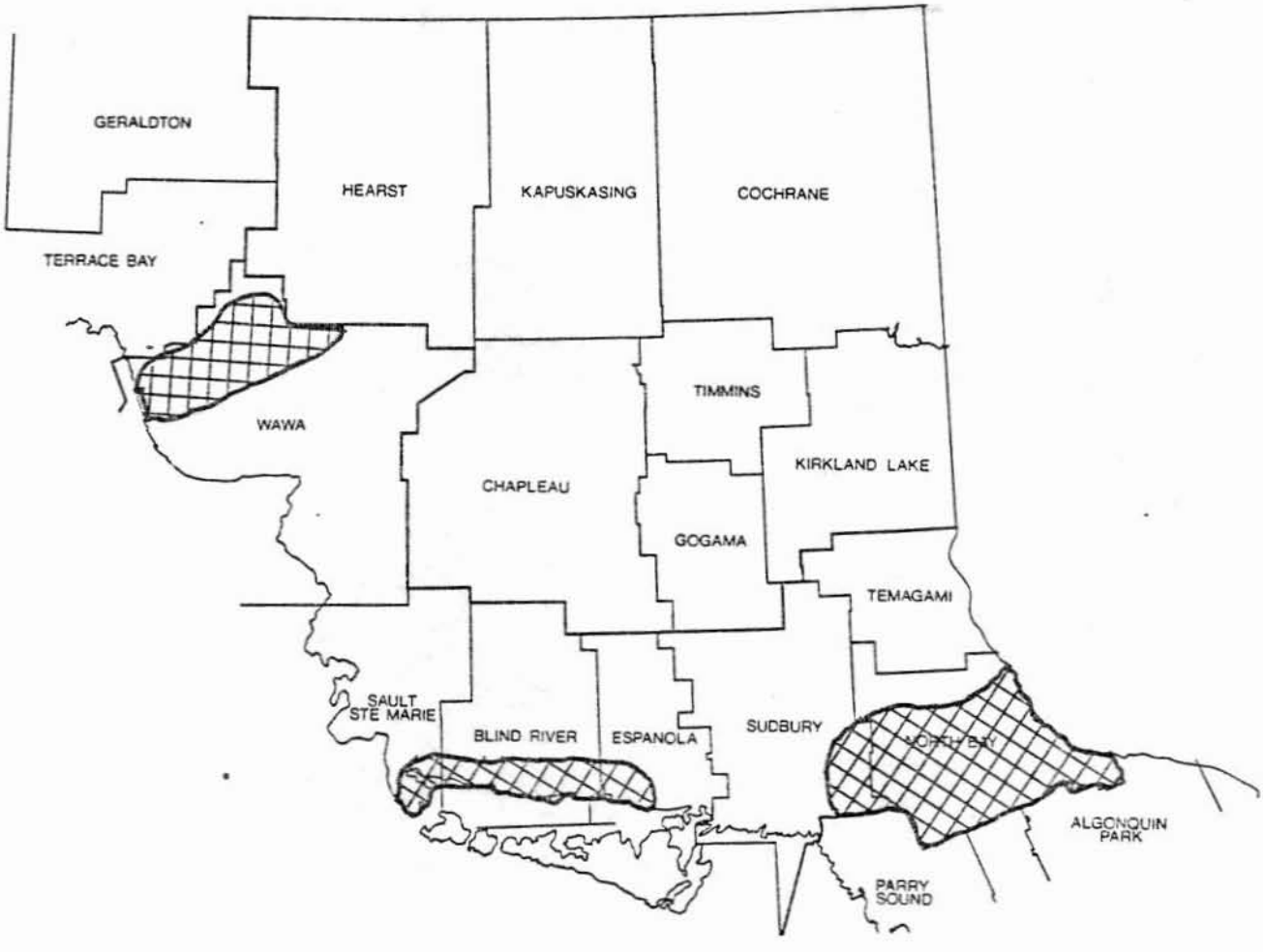
0 Miles 60
0 Kilometres 96

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

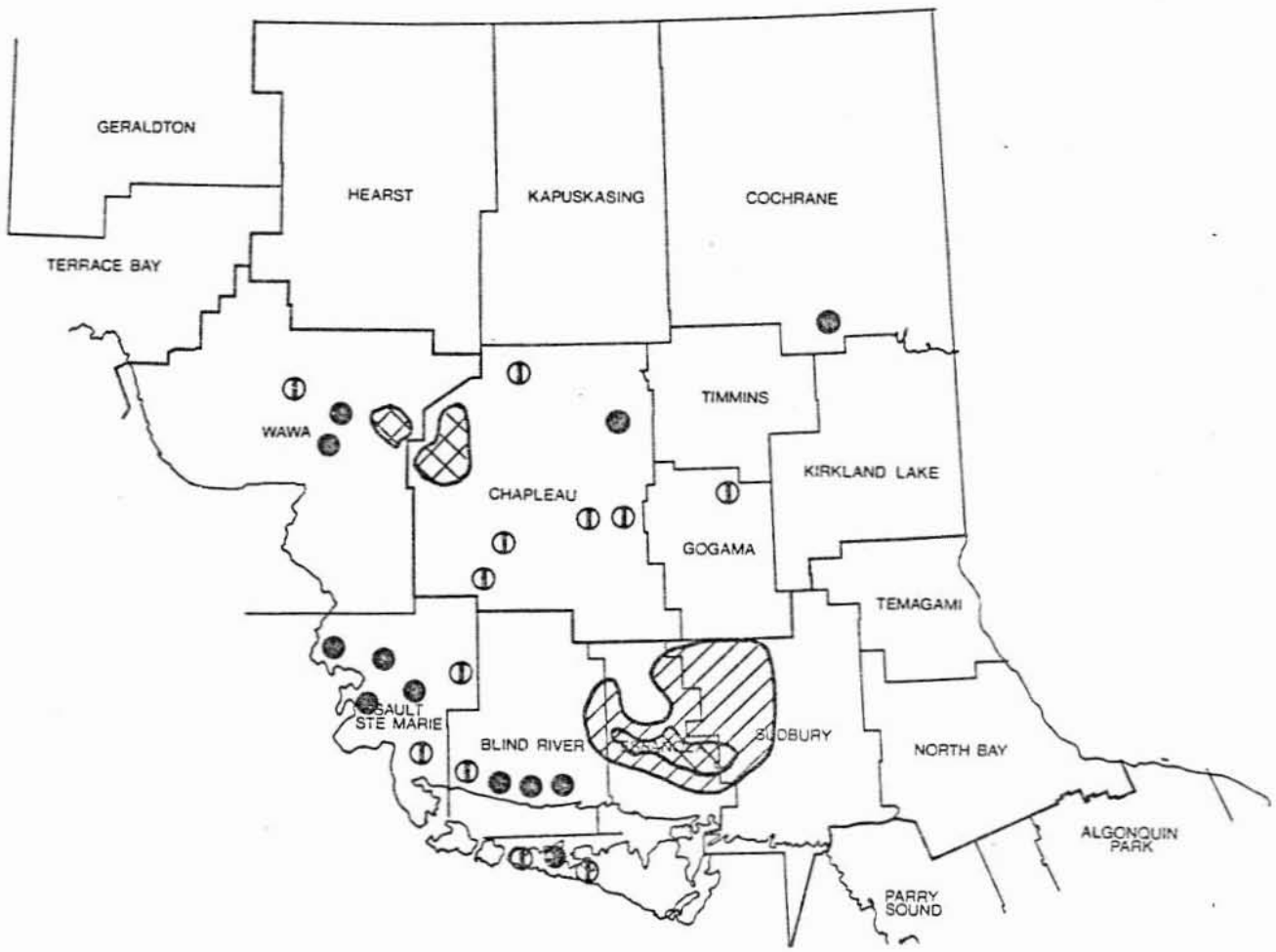
0 Kilometres 96

LEGEND

Light defoliation ◐ or

Moderate-to-severe defoliation ● or

NORTHEASTERN ONTARIO



Large Aspen Tortrix

Areas within which defoliation occurred in 1957

0 Miles 60

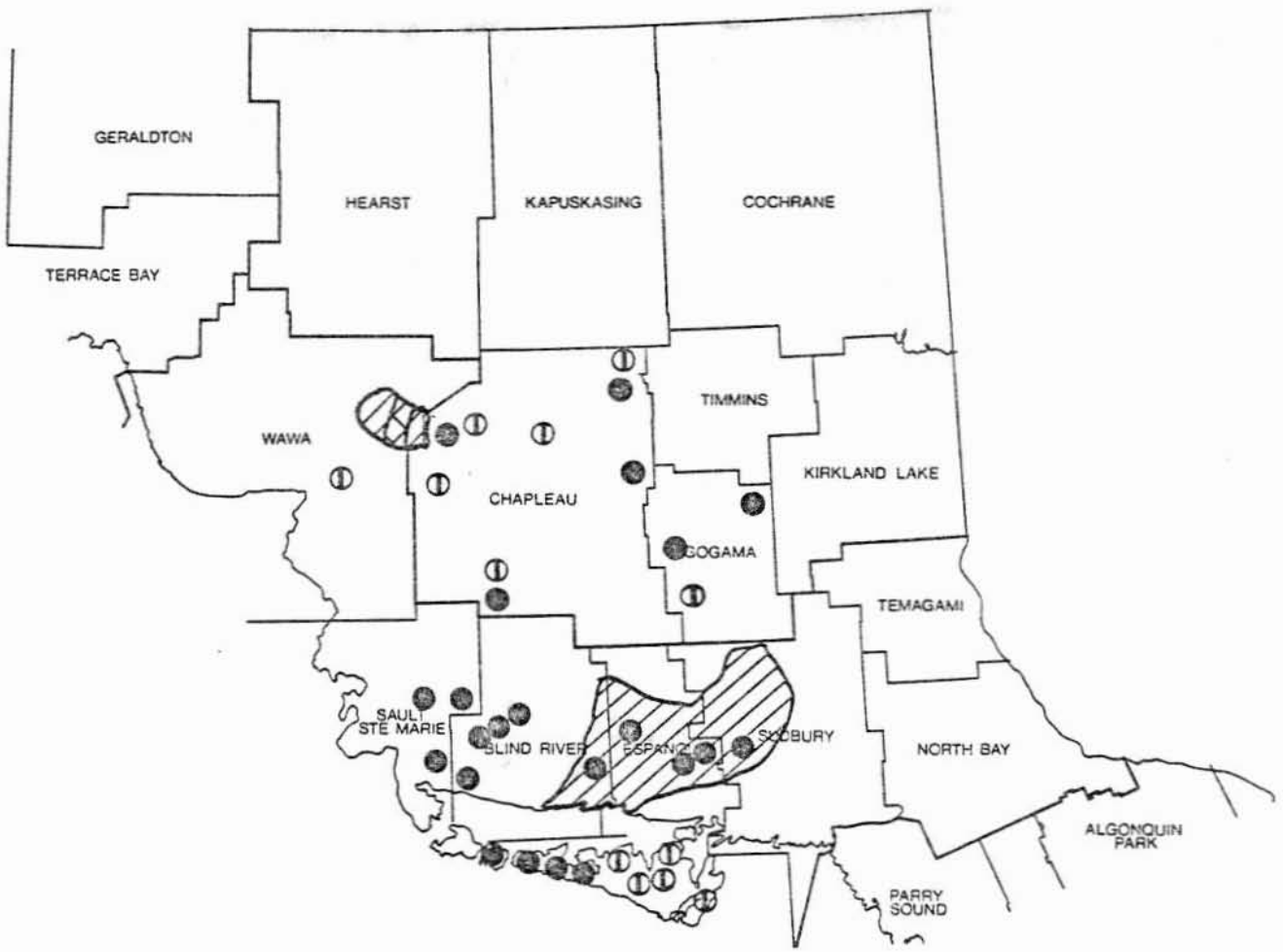
0 Kilometres 96

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

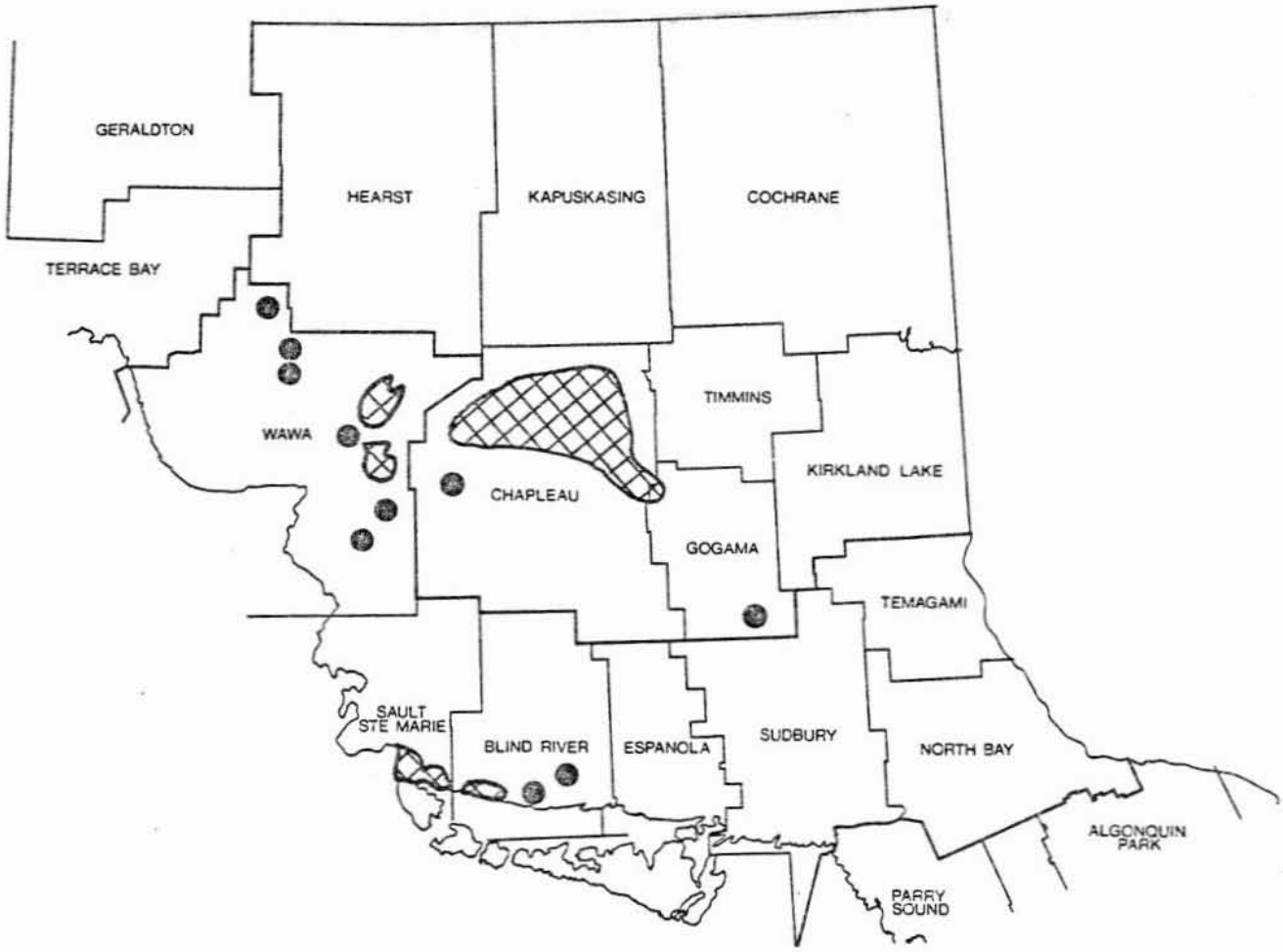
0 Kilometres 96

LEGEND

Light defoliation ◐ or ▨

Moderate-to-severe defoliation ● or ▩

NORTHEASTERN ONTARIO



0 Miles 60

0 Kilometres 96

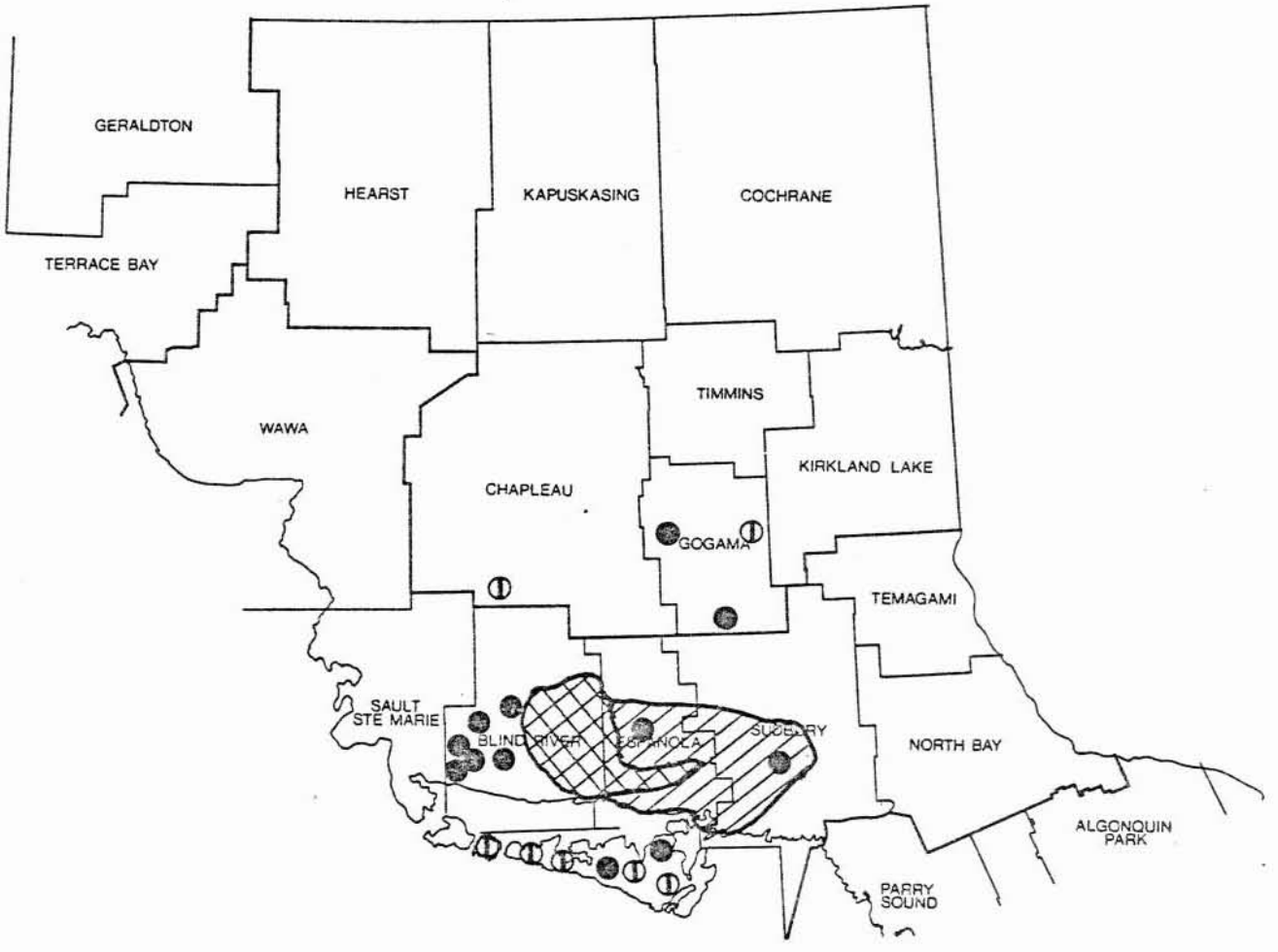
Large Aspen Tortrix

Areas within which defoliation occurred in 1970

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO



Large Aspen Tortrix

Areas within which defoliation occurred in 1959

0 Miles 60

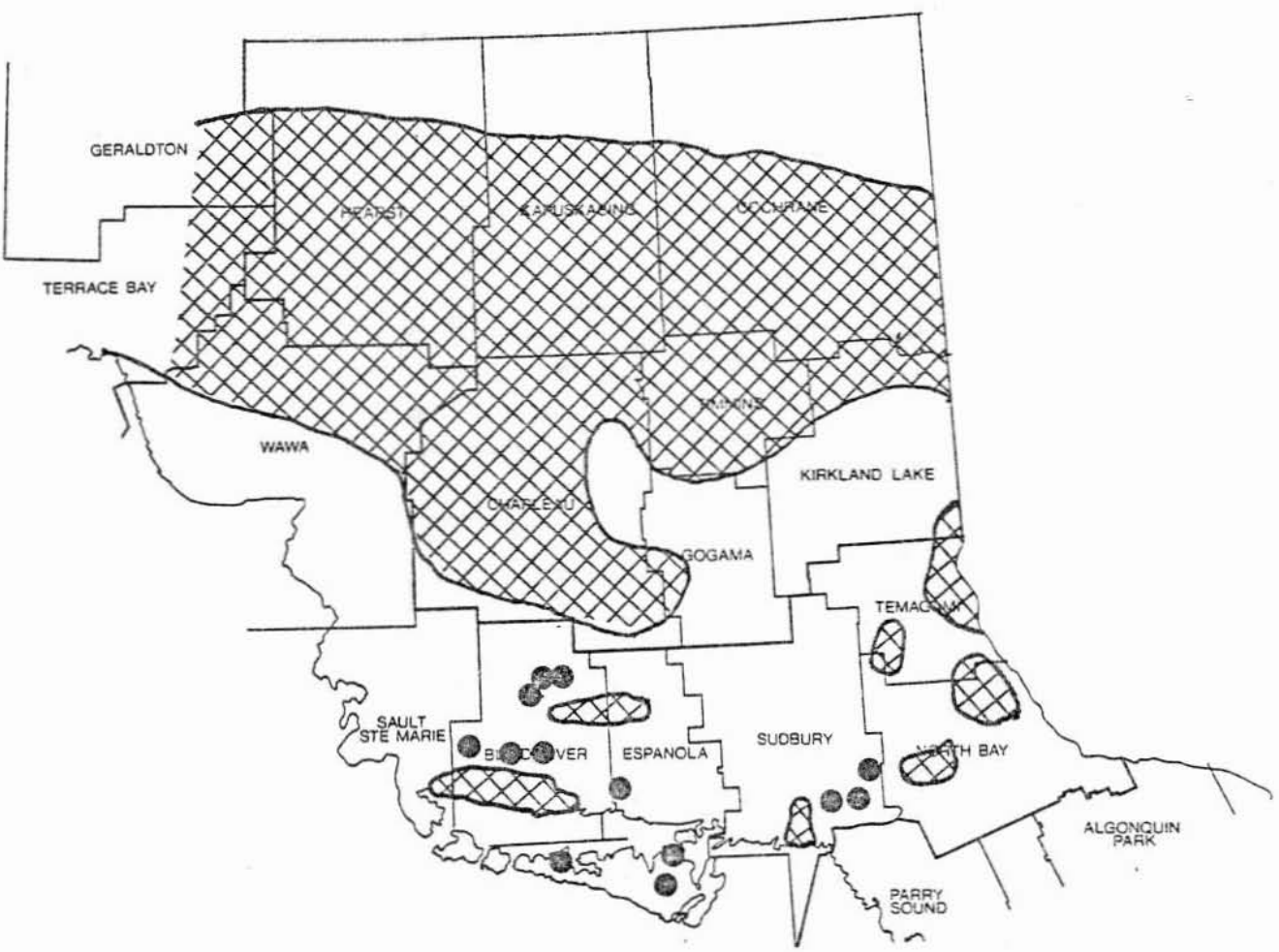
0 Kilometres 96

LEGEND

Light defoliation ◐ or ▨

Moderate-to-severe defoliation ● or ▩

NORTHEASTERN ONTARIO



0 Miles 60

0 Kilometres 96

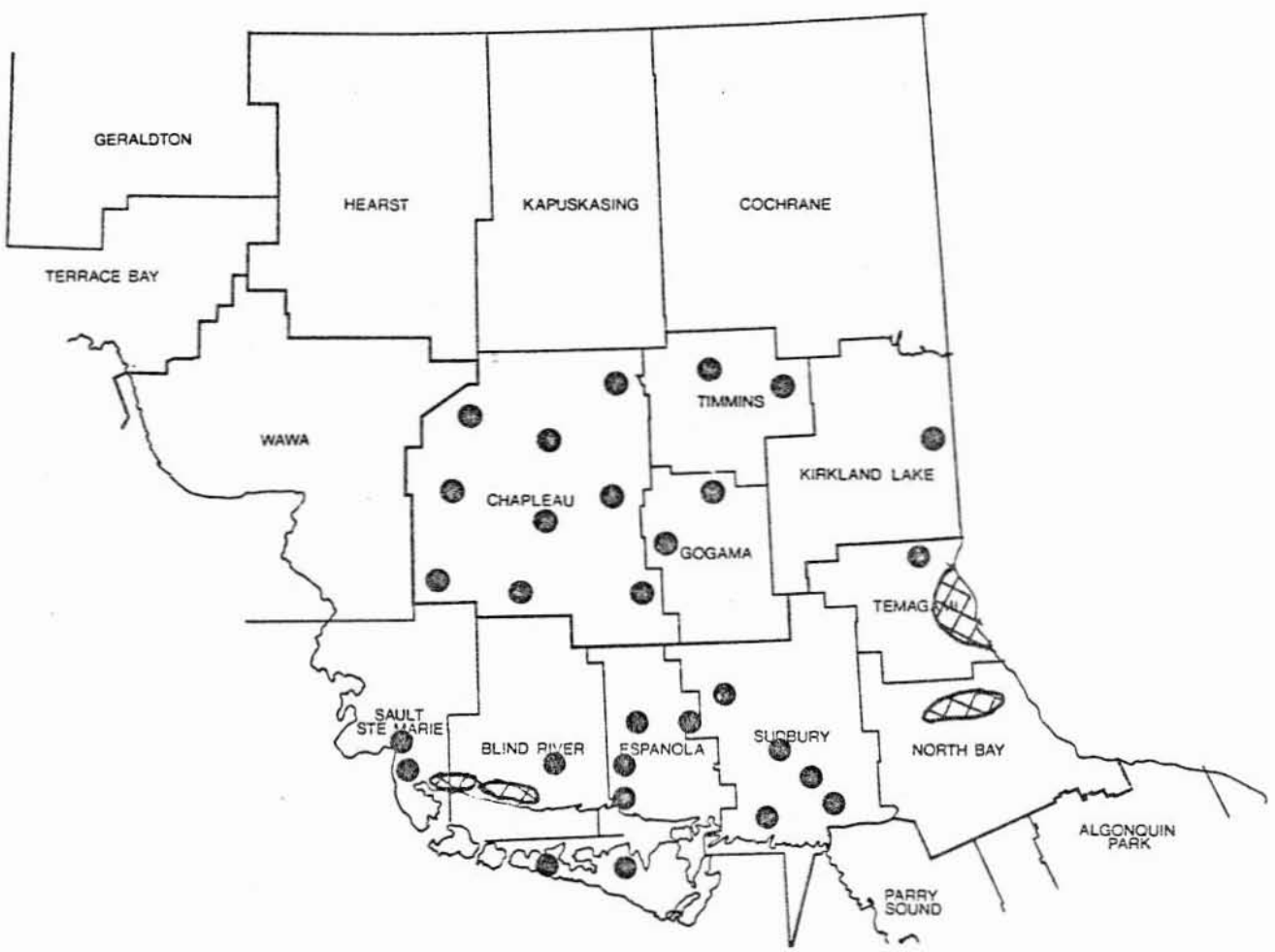
Large Aspen Tortrix

Areas within which defoliation occurred in 1972

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

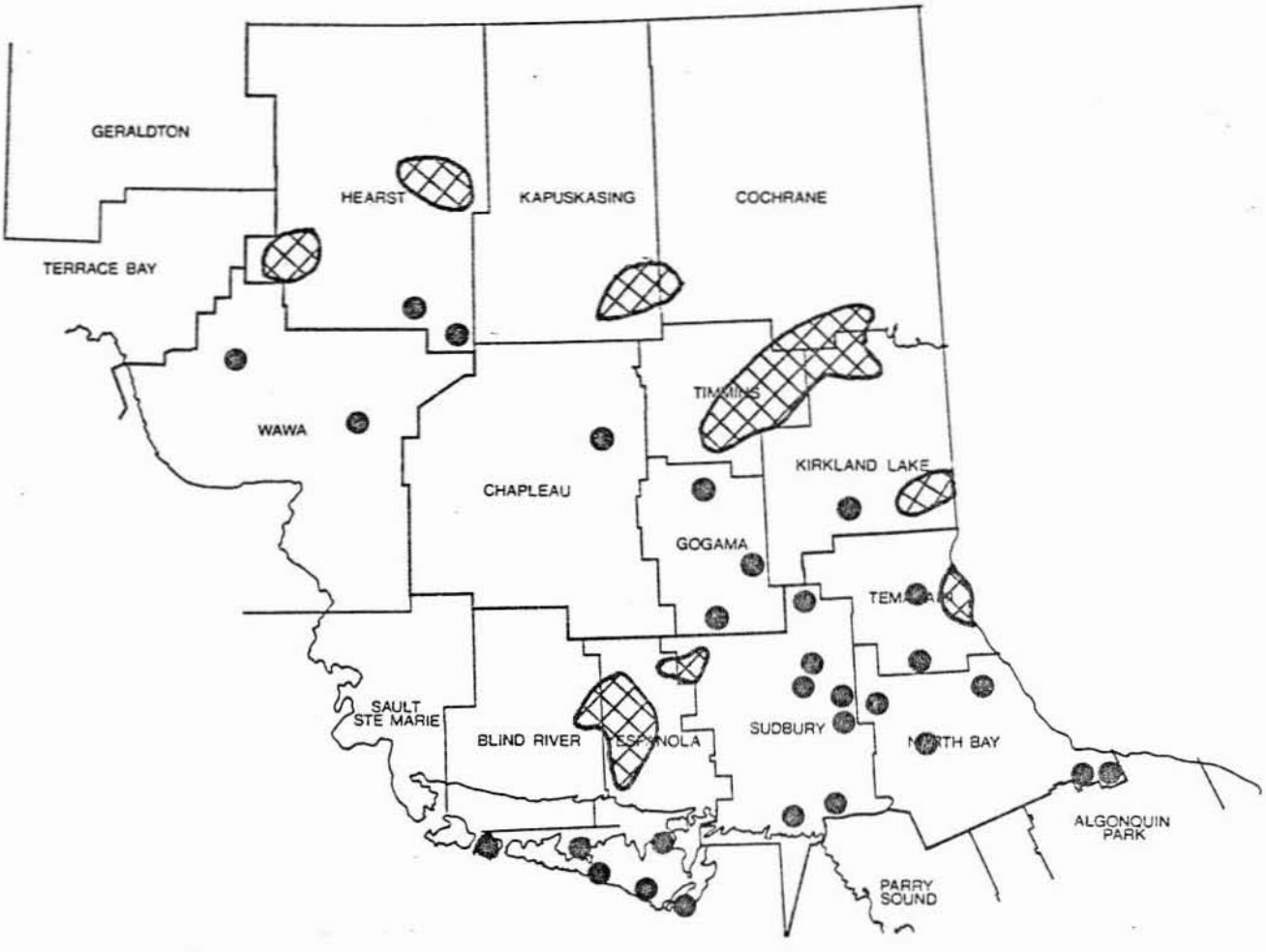
Large Aspen Tortrix

Areas within which defoliation occurred in 1974

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO



Large Aspen Tortrix

Areas within which defoliation occurred in 1973

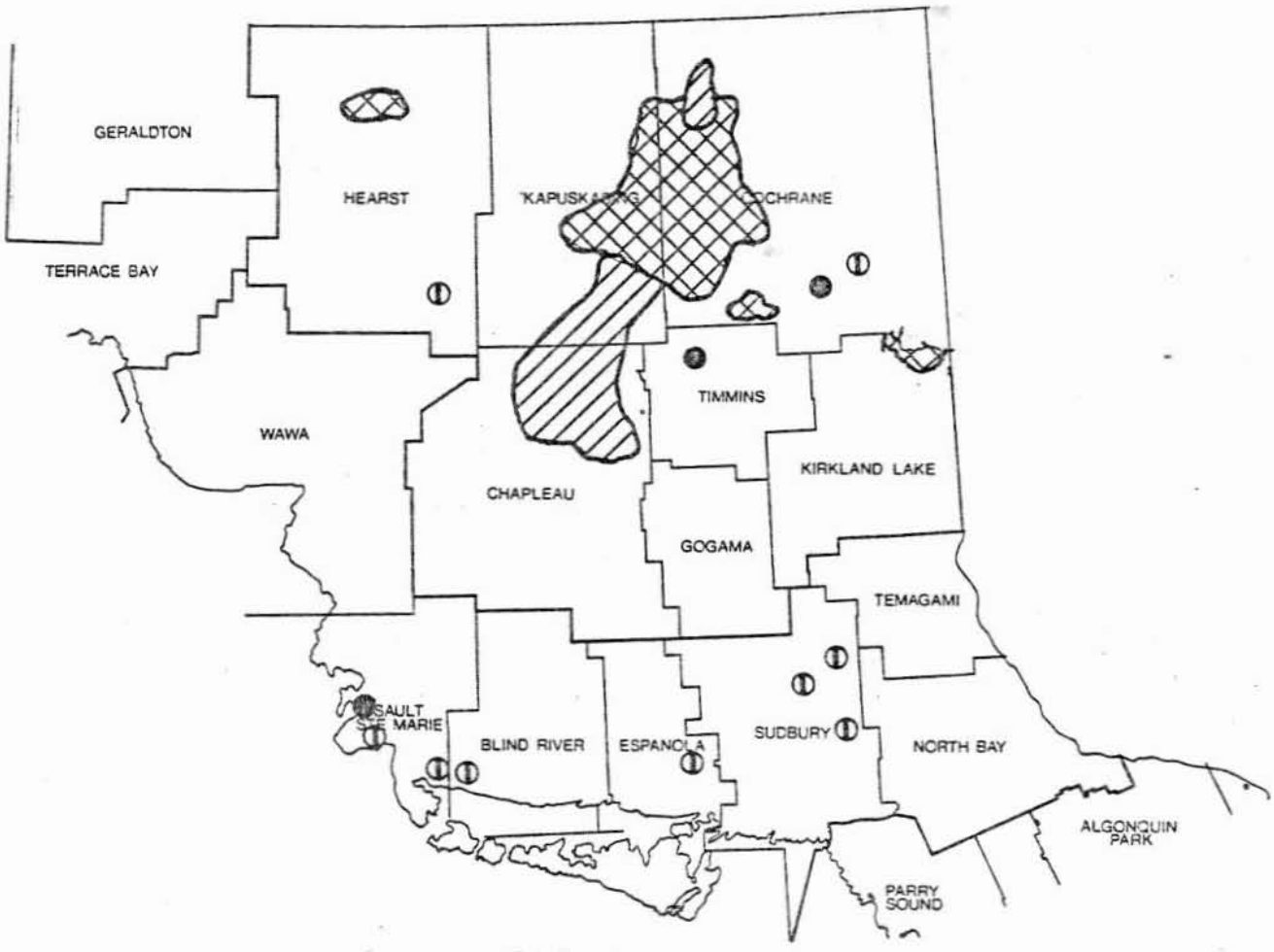
0 Miles 60

0 Kilometres 96

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO



Spruce Budworm

Areas within which defoliation occurred in 1950

0 Miles 60

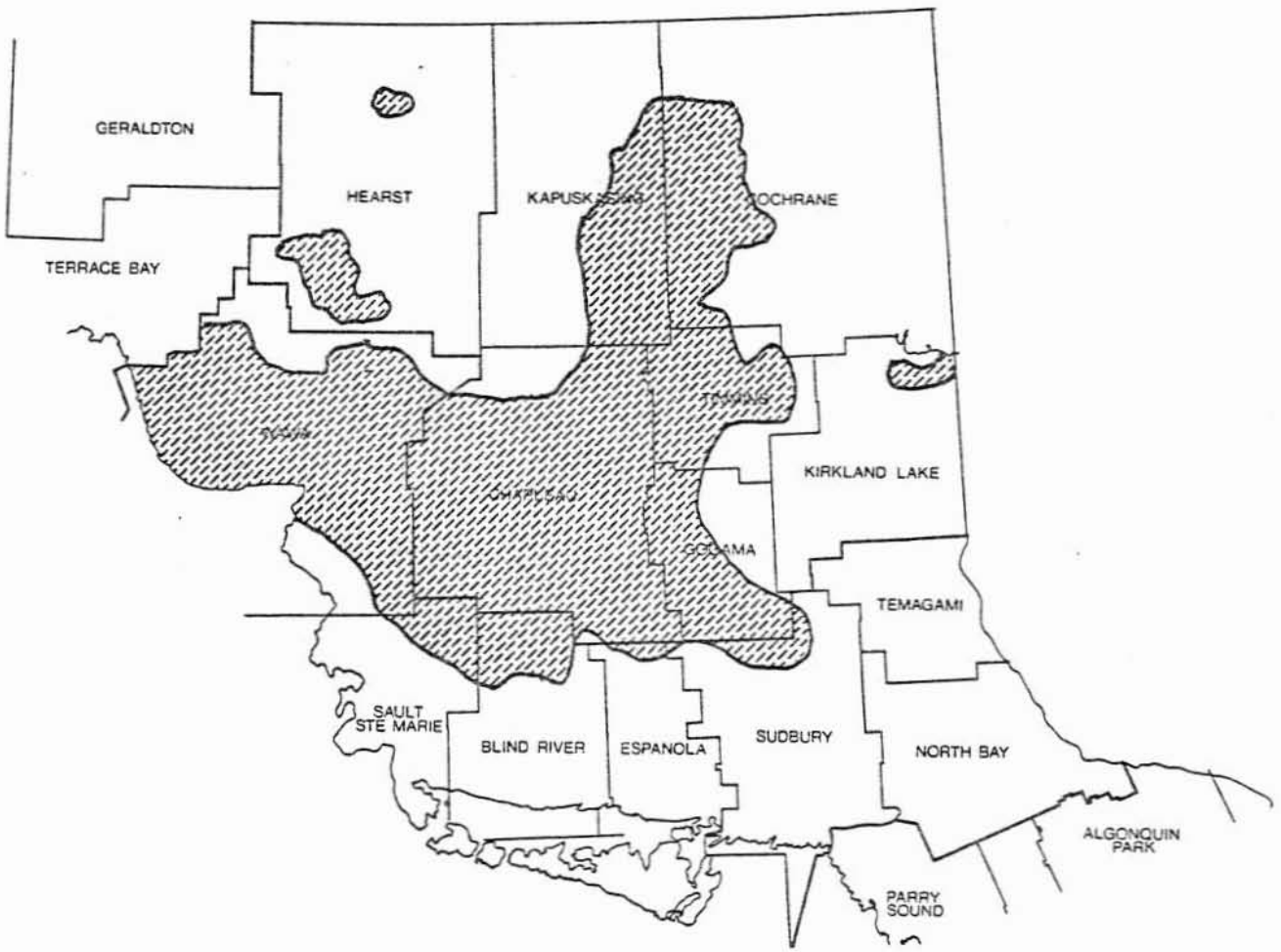
0 Kilometres 96

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

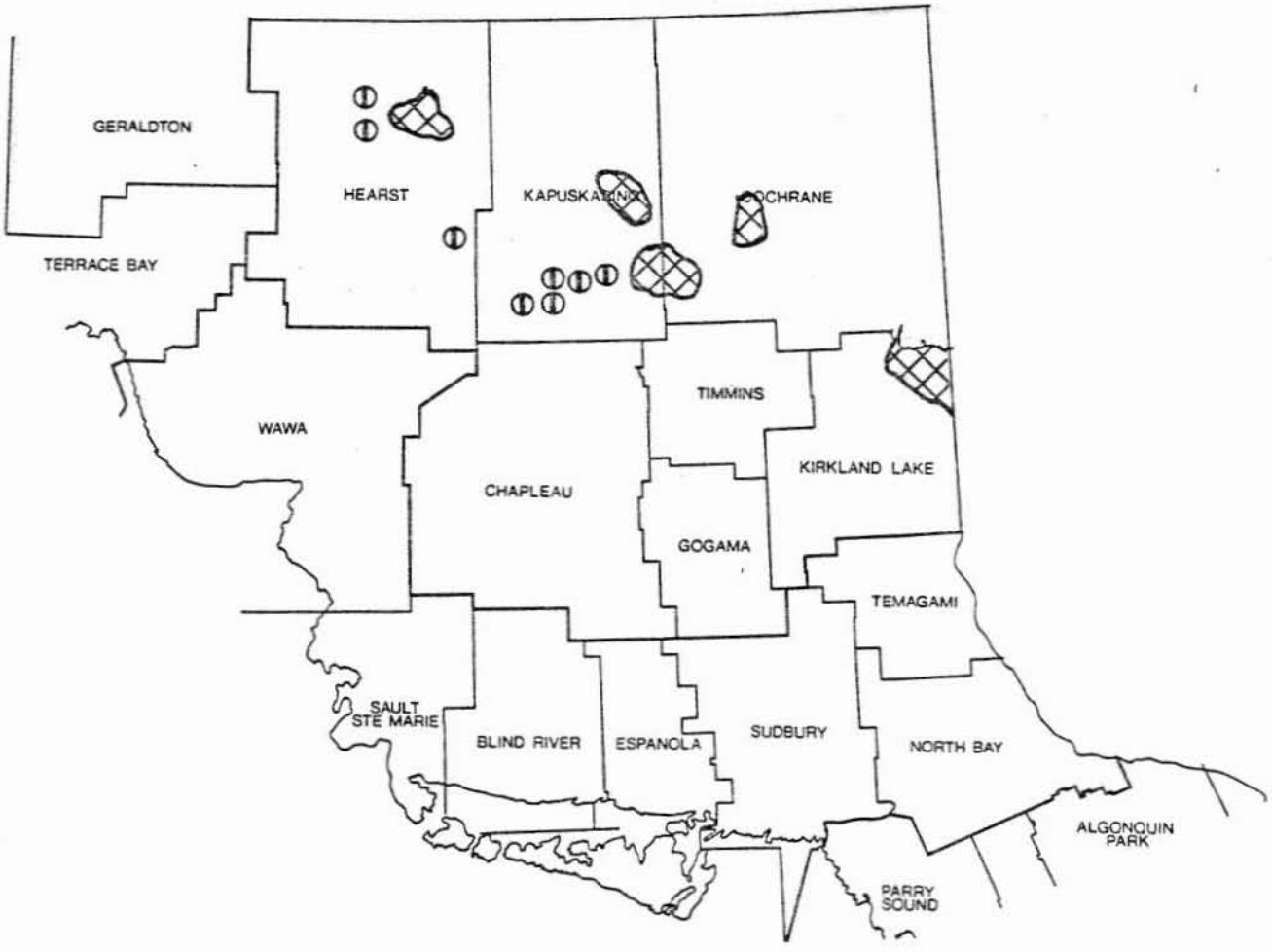
0 Miles 60

0 Kilometres 96

LEGEND

Mortality

NORTHEASTERN ONTARIO



Spruce Budworm

Areas within which defoliation occurred in 1951

0 Miles 60

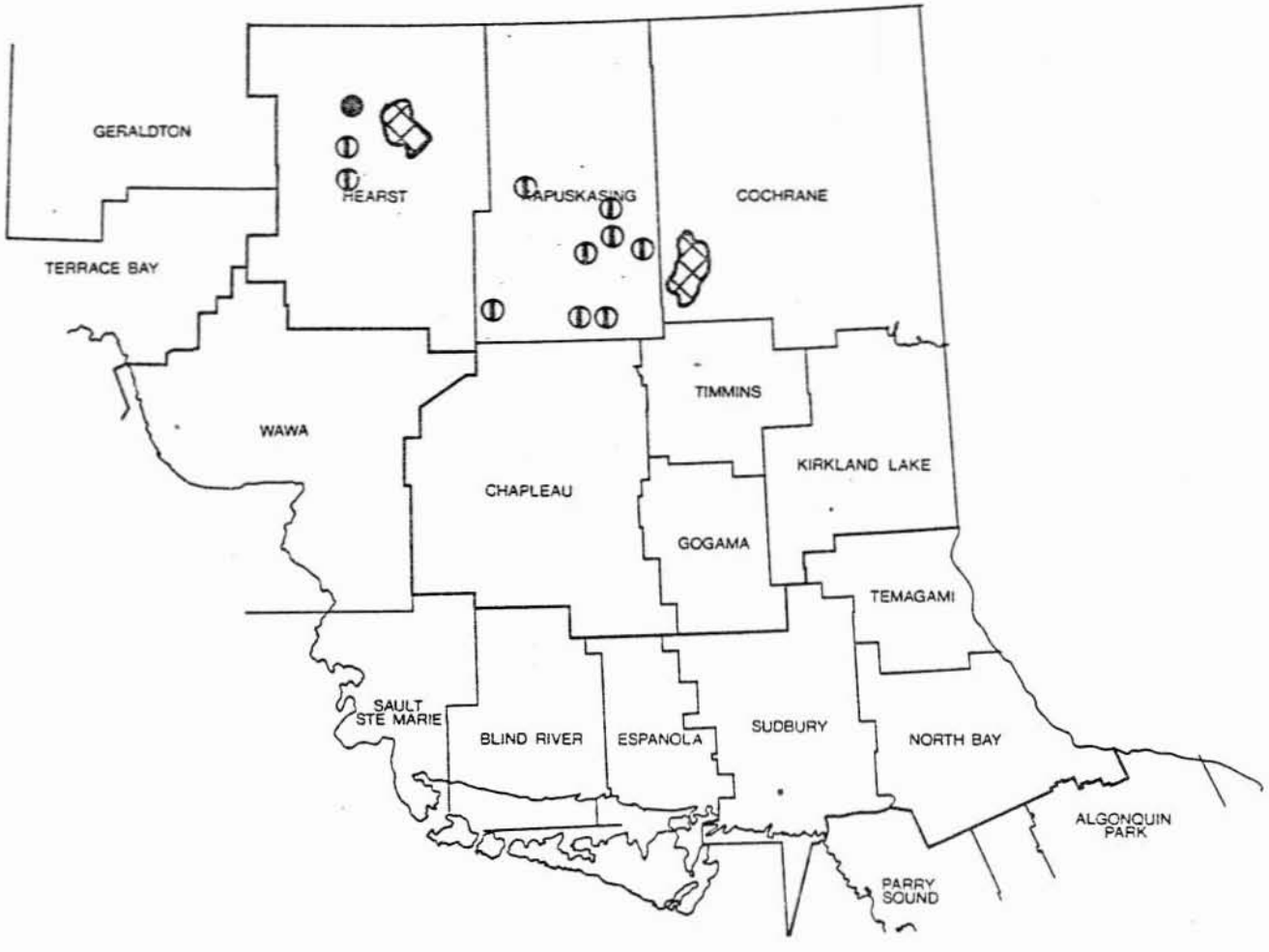
0 Kilometres 96

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

0 Miles 60

0 Kilometres 96

Areas within which defoliation occurred in 1954

LEGEND

Light defoliation ①

Moderate-to-severe defoliation

NORTHEASTERN ONTARIO

0 Miles 60

0 Kilometres 96

Spruce Budworm

Areas within which defoliation occurred in 1955

LEGEND

Light defoliation ◑ or

NORTHEASTERN ONTARIO

0 Miles 60

0 Kilometres 96

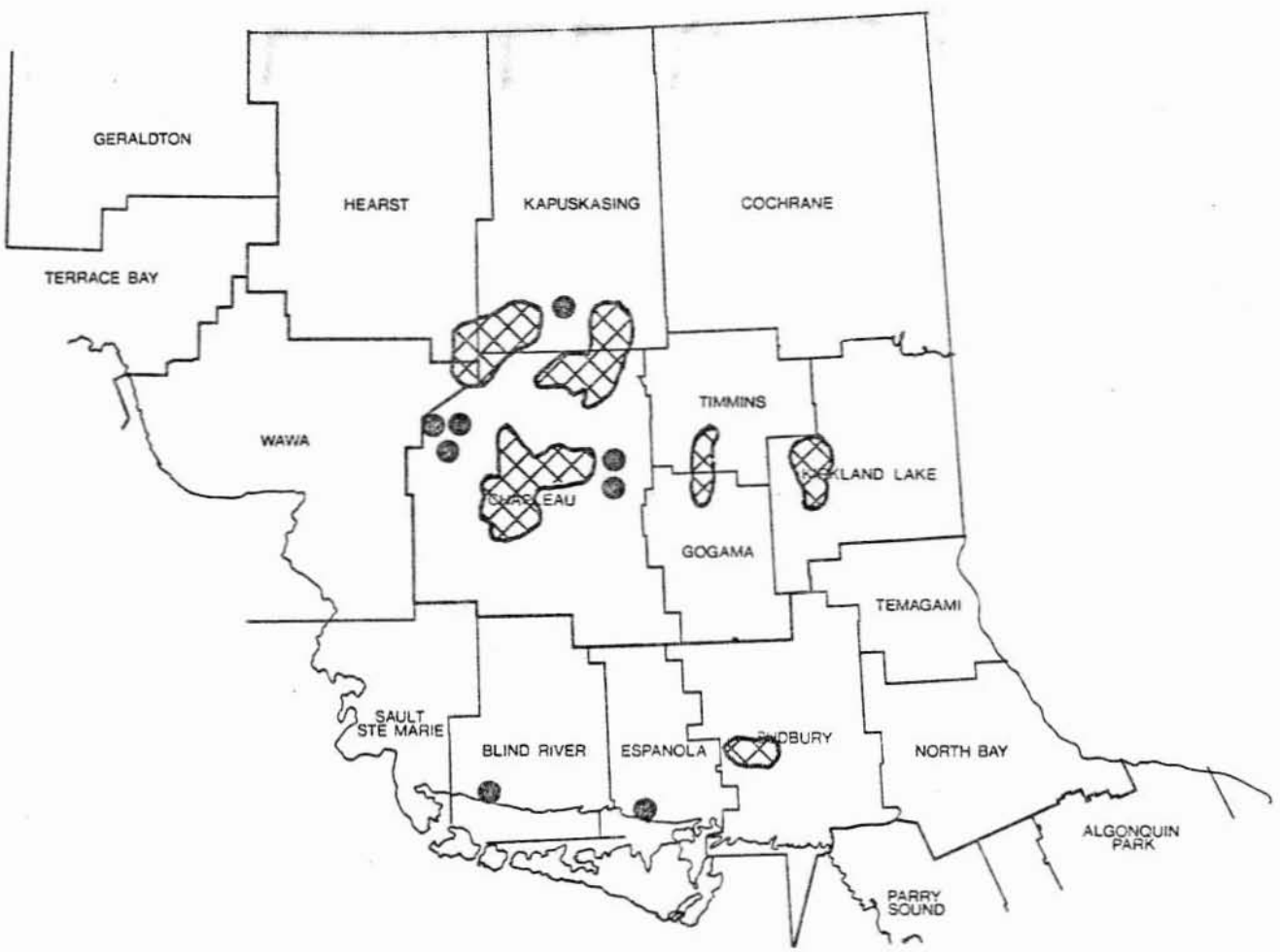
Spruce Budworm

Areas within which defoliation occurred in 1956

LEGEND

Light defoliation

NORTHEASTERN ONTARIO



0 Miles 60

0 Kilometres 96

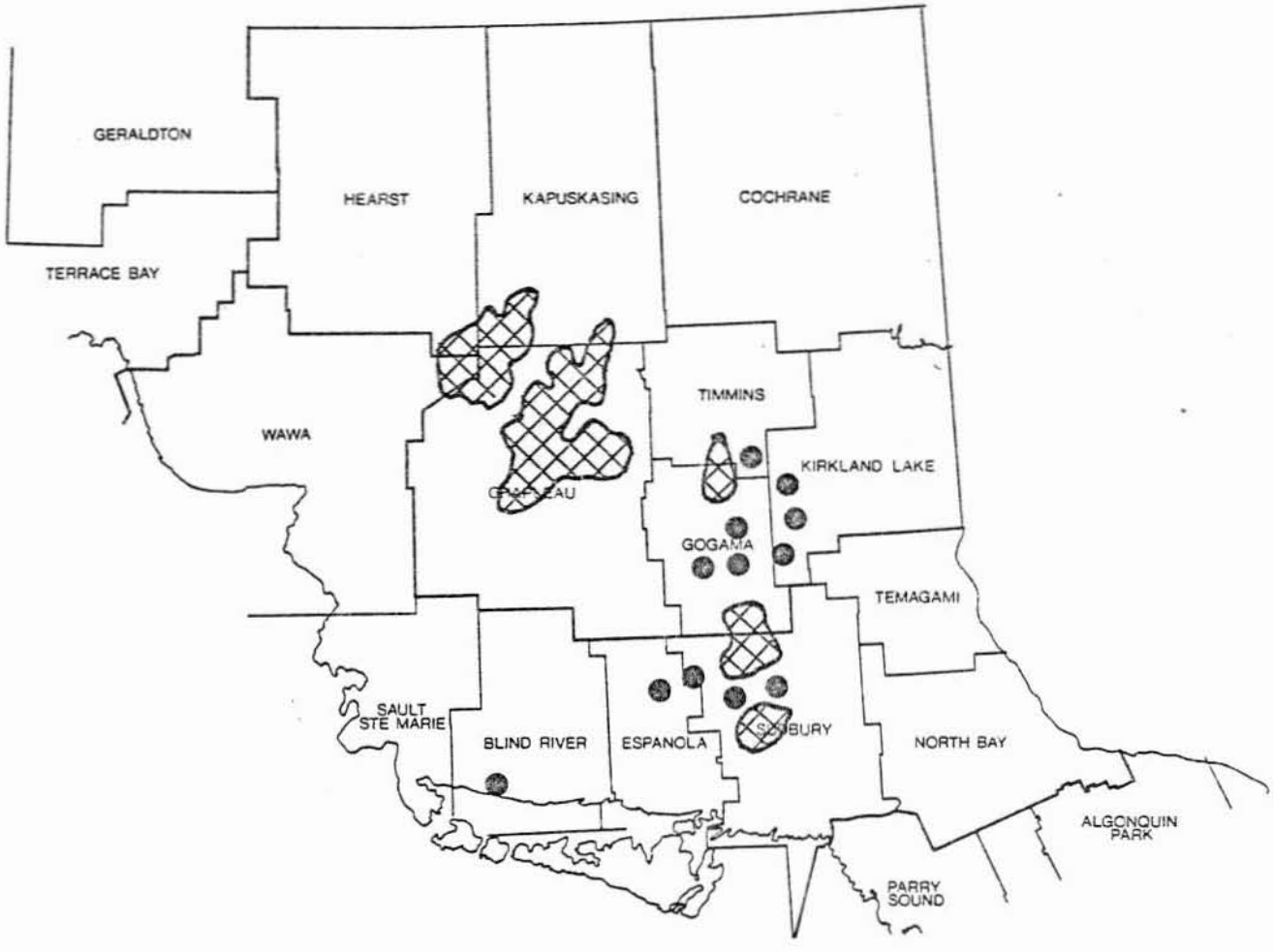
Spruce Budworm

Areas within which defoliation occurred in 1968

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO



0 Miles 60

0 Kilometres 96

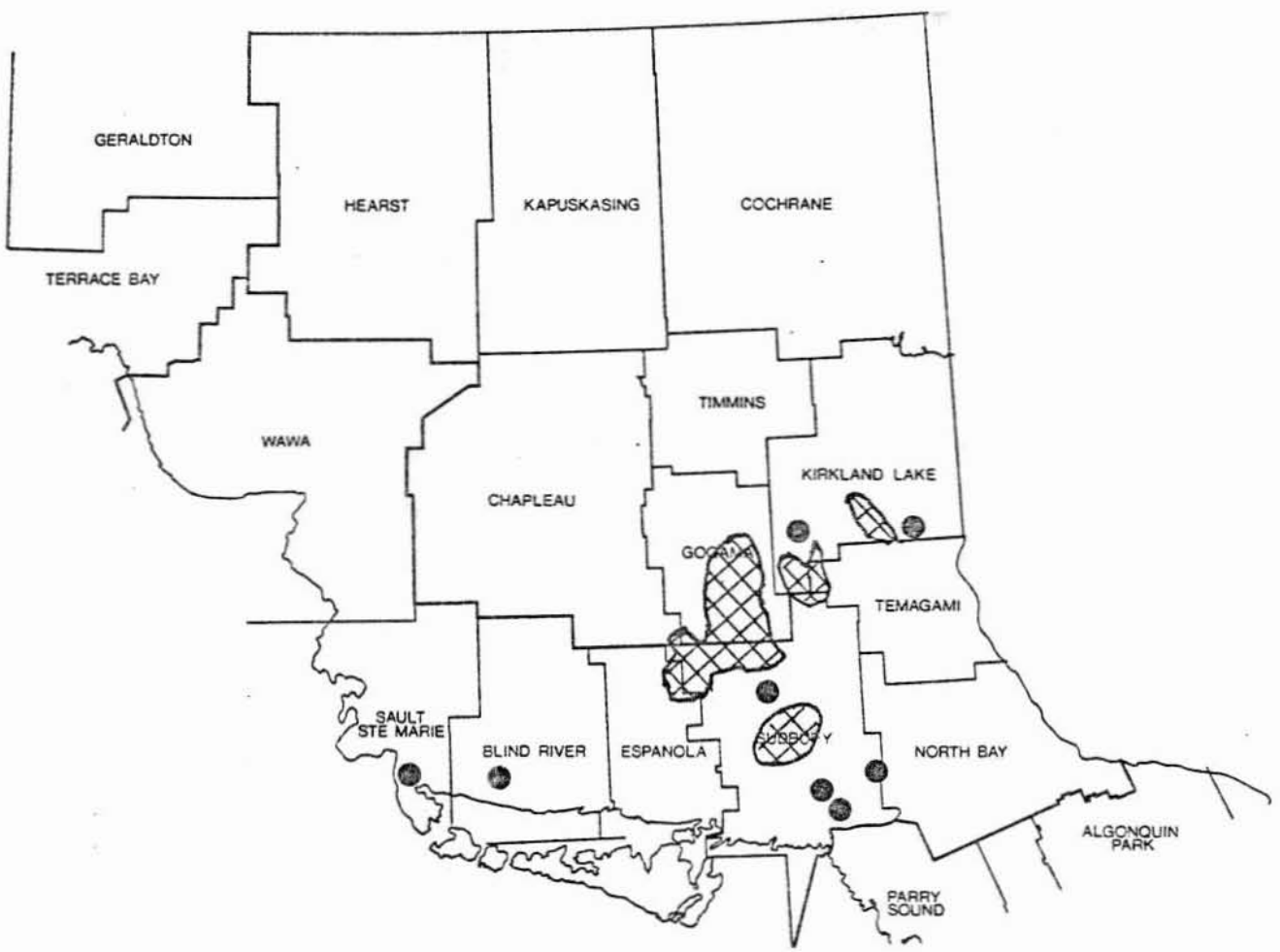
Spruce Budworm

Areas within which defoliation occurred in 1969

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO



0 Miles 60

0 Kilometres 96

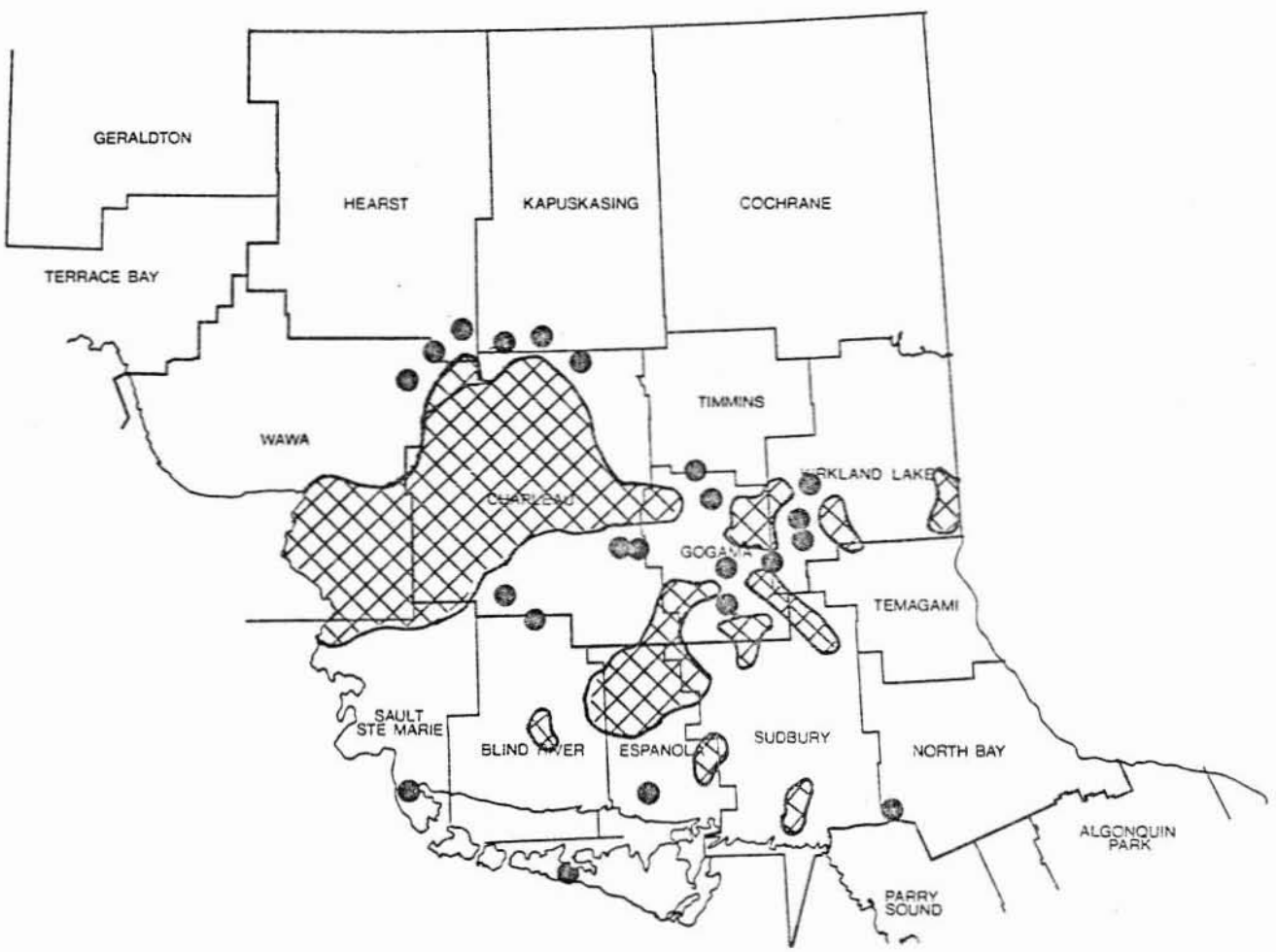
Spruce Budworm

Areas within which defoliation occurred in 1970

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO



0 Miles 60

0 Kilometres 96

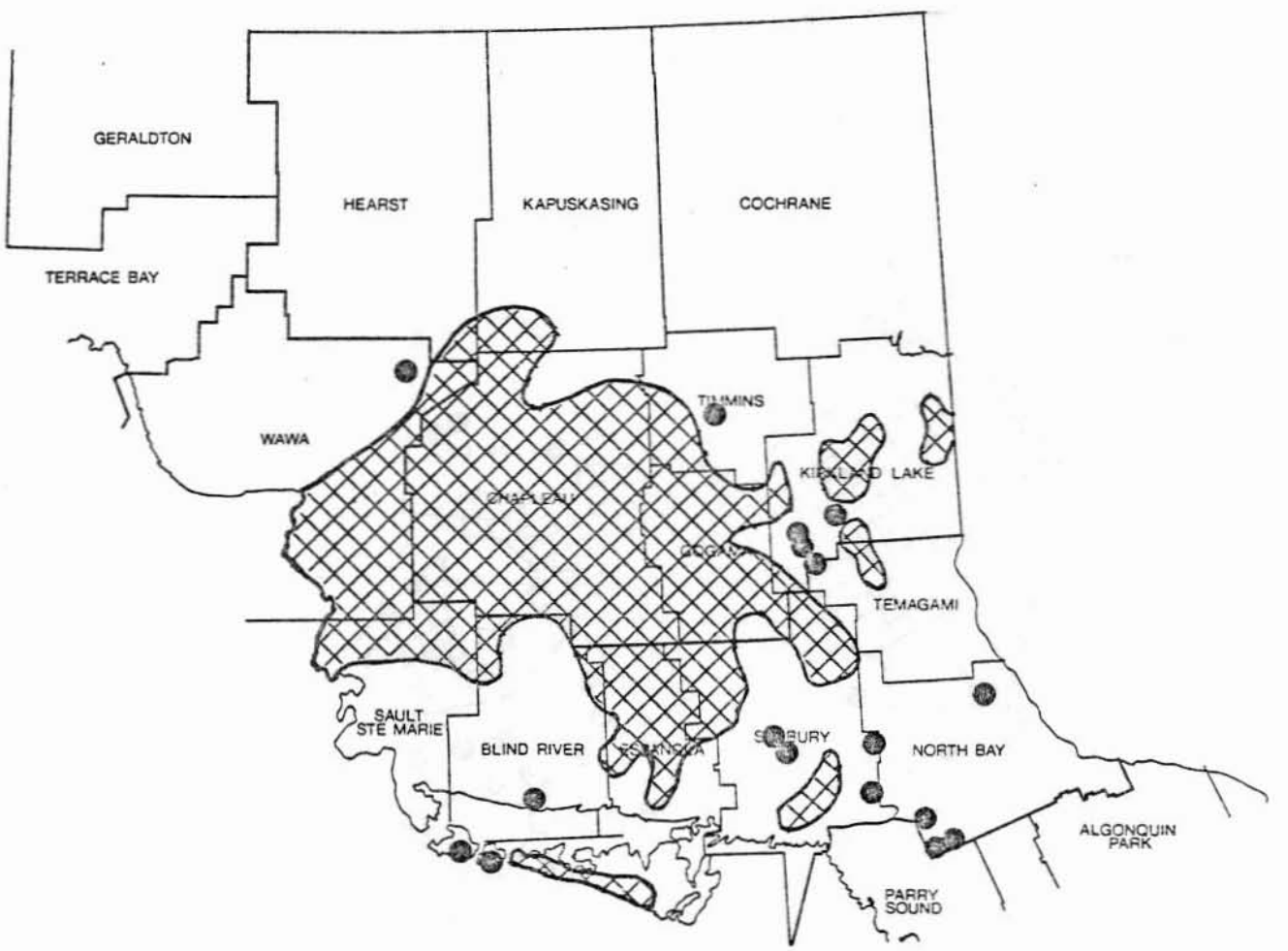
Spruce Budworm

Areas within which defoliation occurred in 1971

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO



0 Miles 60

0 Kilometres 96

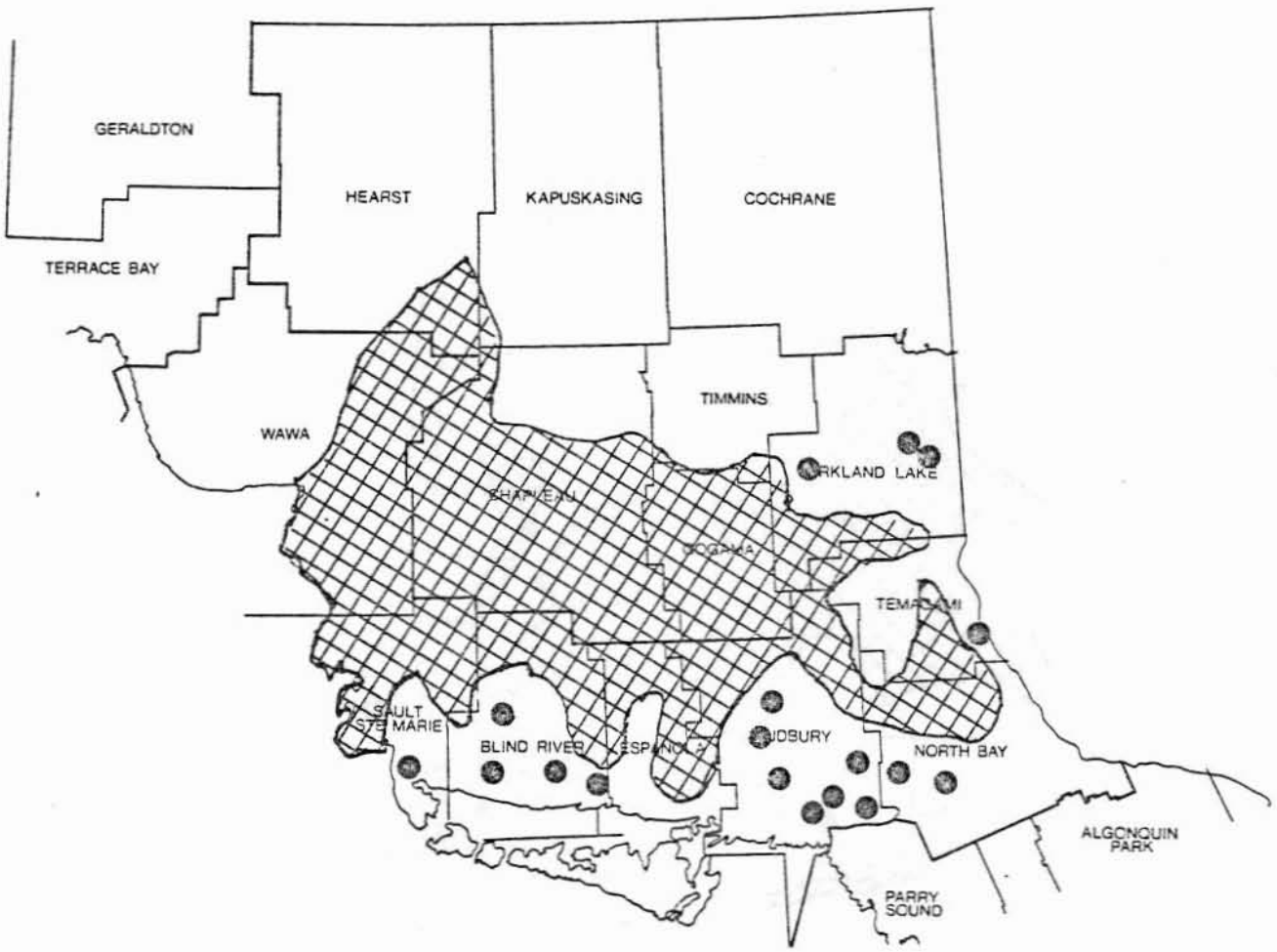
Spruce Budworm

Areas within which defoliation occurred in 1972

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO



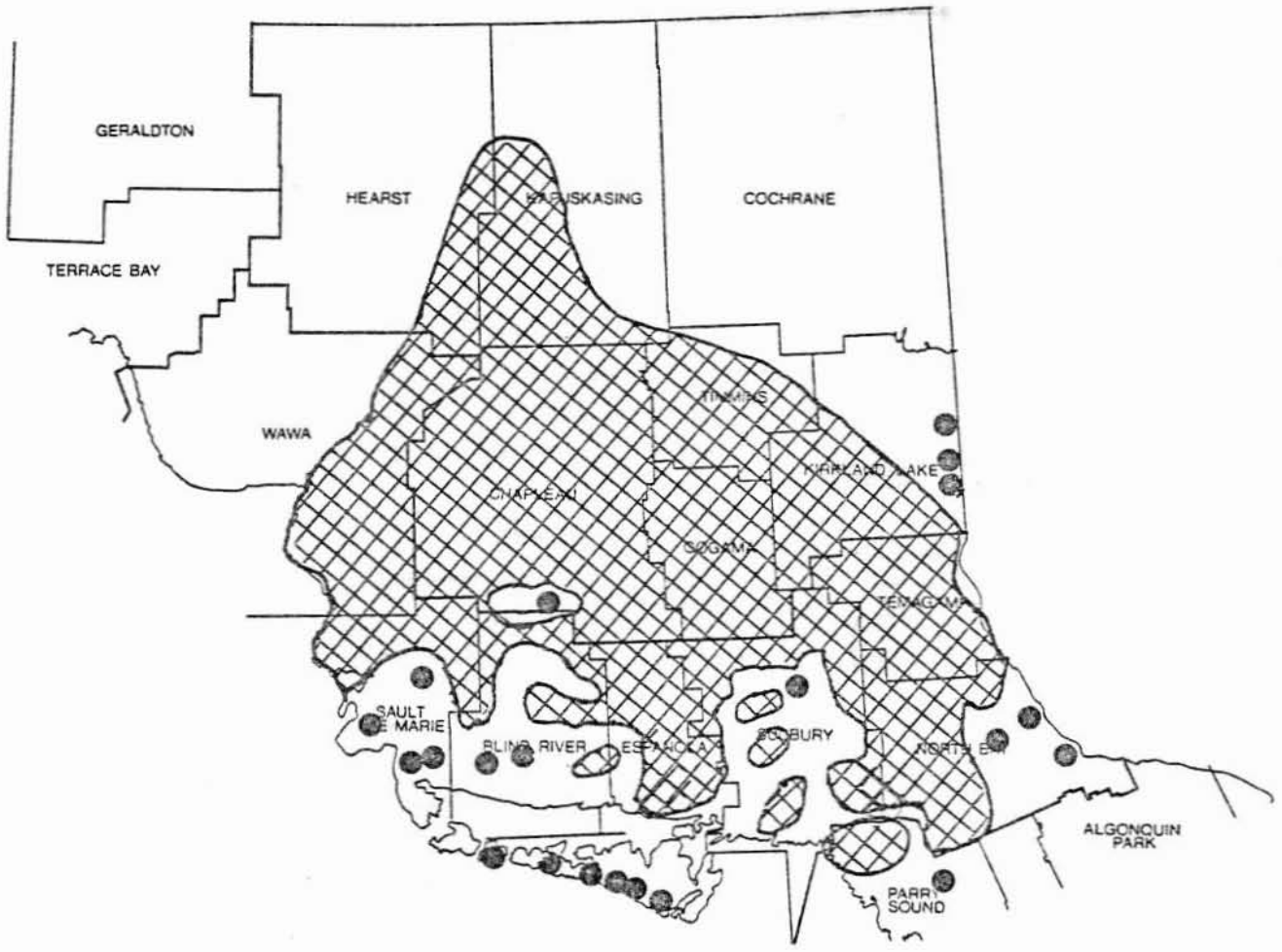
Spruce Budworm

Areas within which defoliation occurred in 1973

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO



Spruce Budworm

Areas within which defoliation occurred in 1974

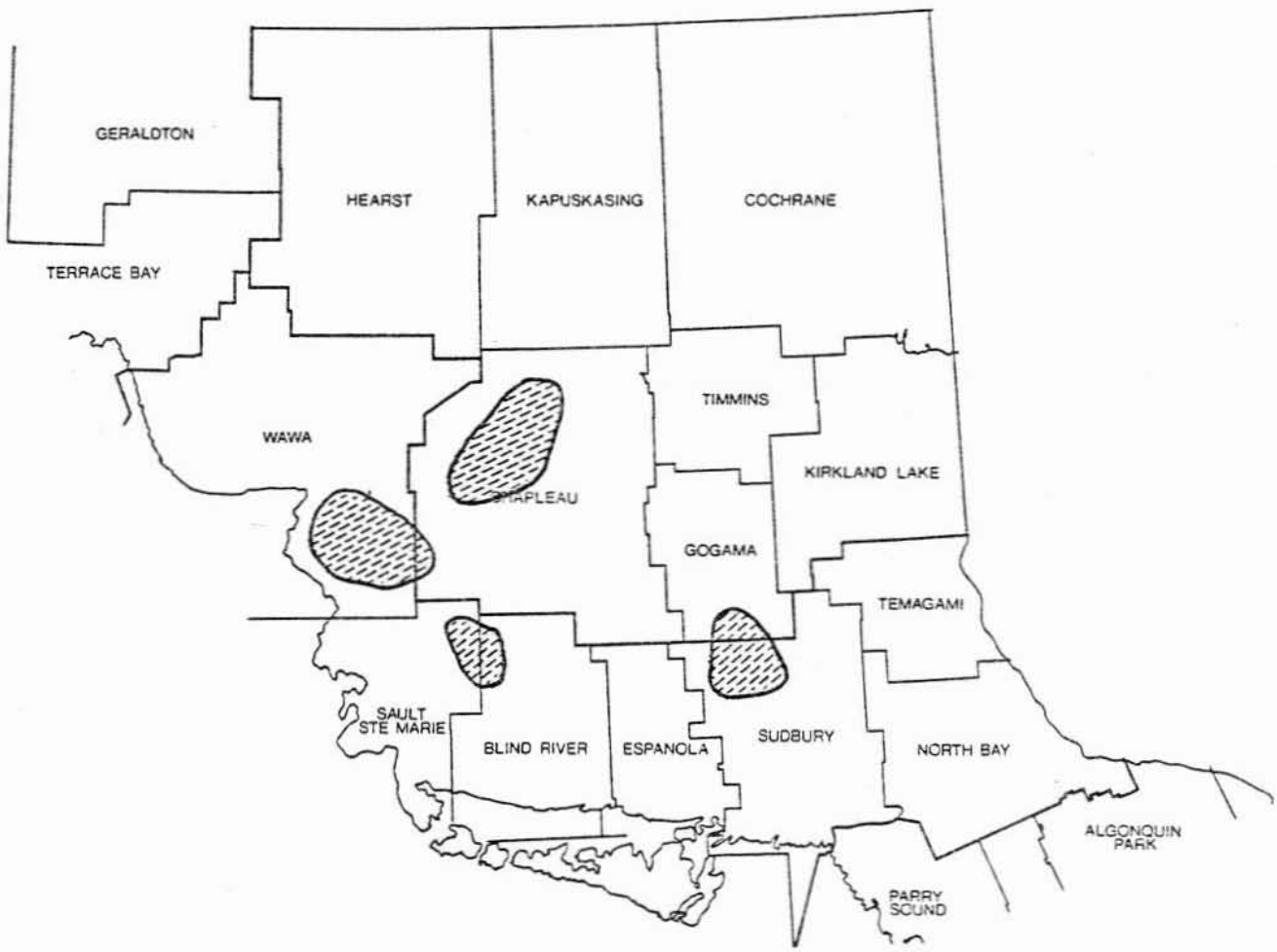
0 Miles 60

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

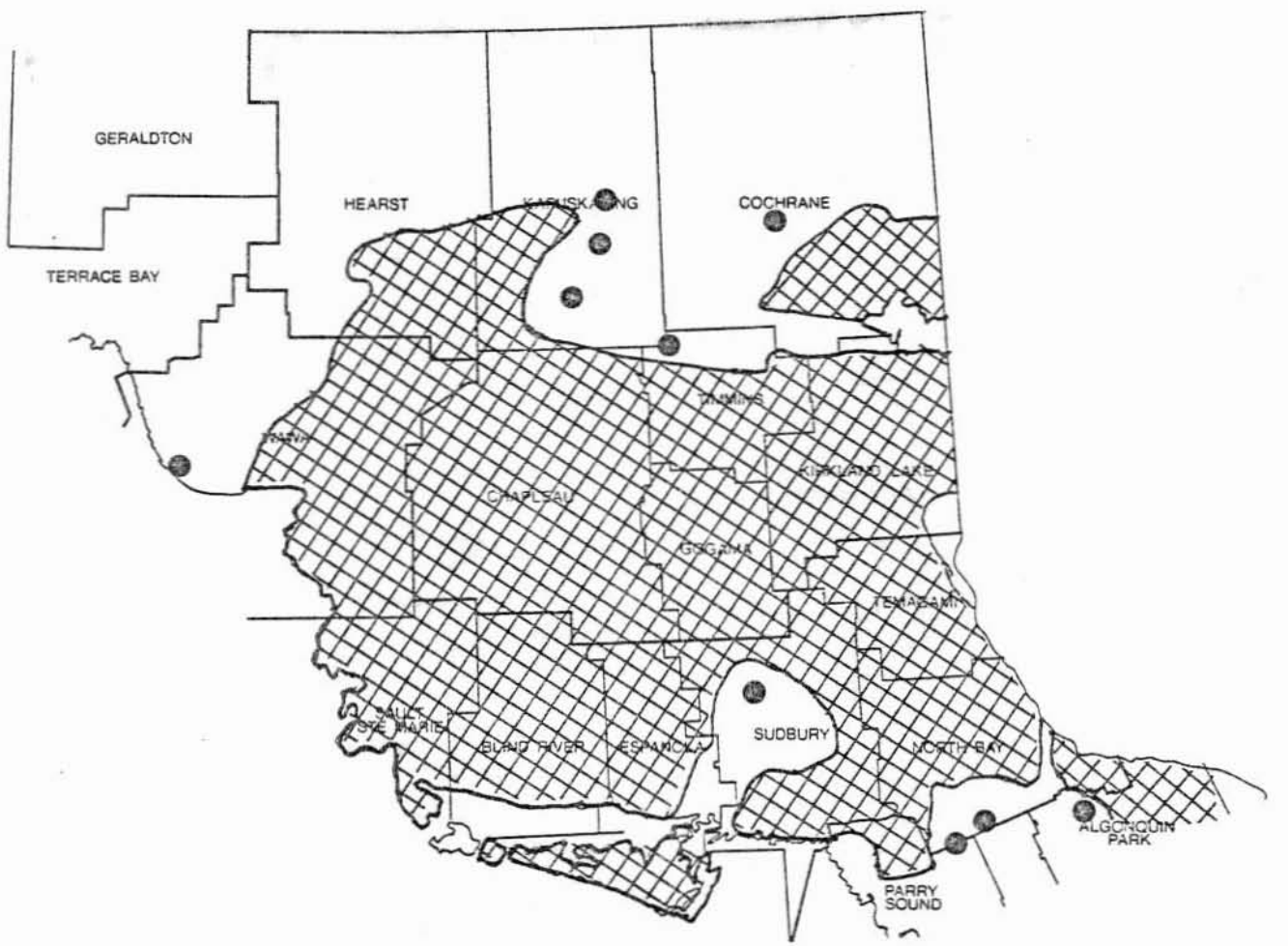
0 Miles 60

0 Kilometres 96

LEGEND

Mortality

NORTHEASTERN ONTARIO



0 Miles 60

0 Kilometres 96

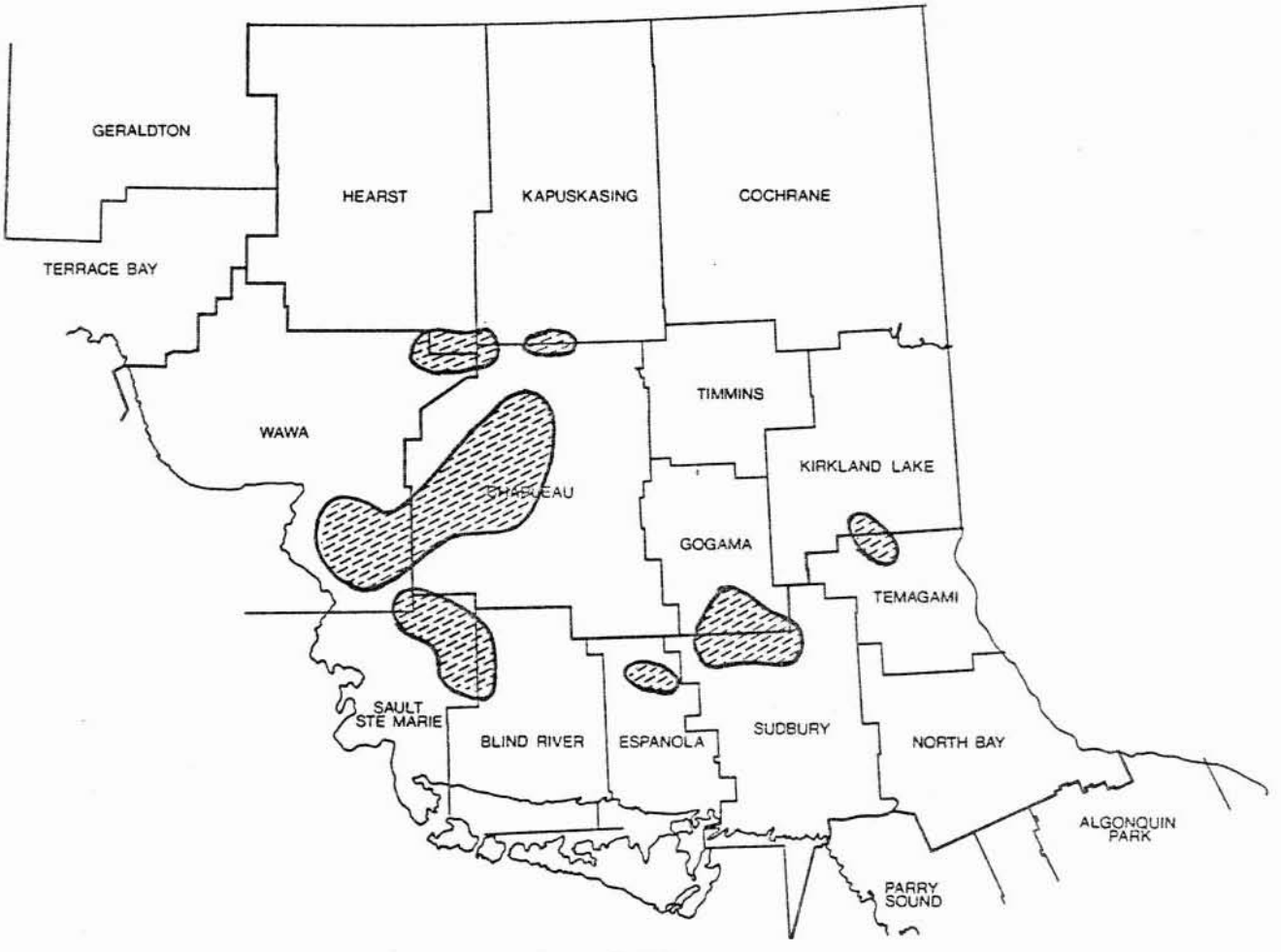
Spruce Budworm

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

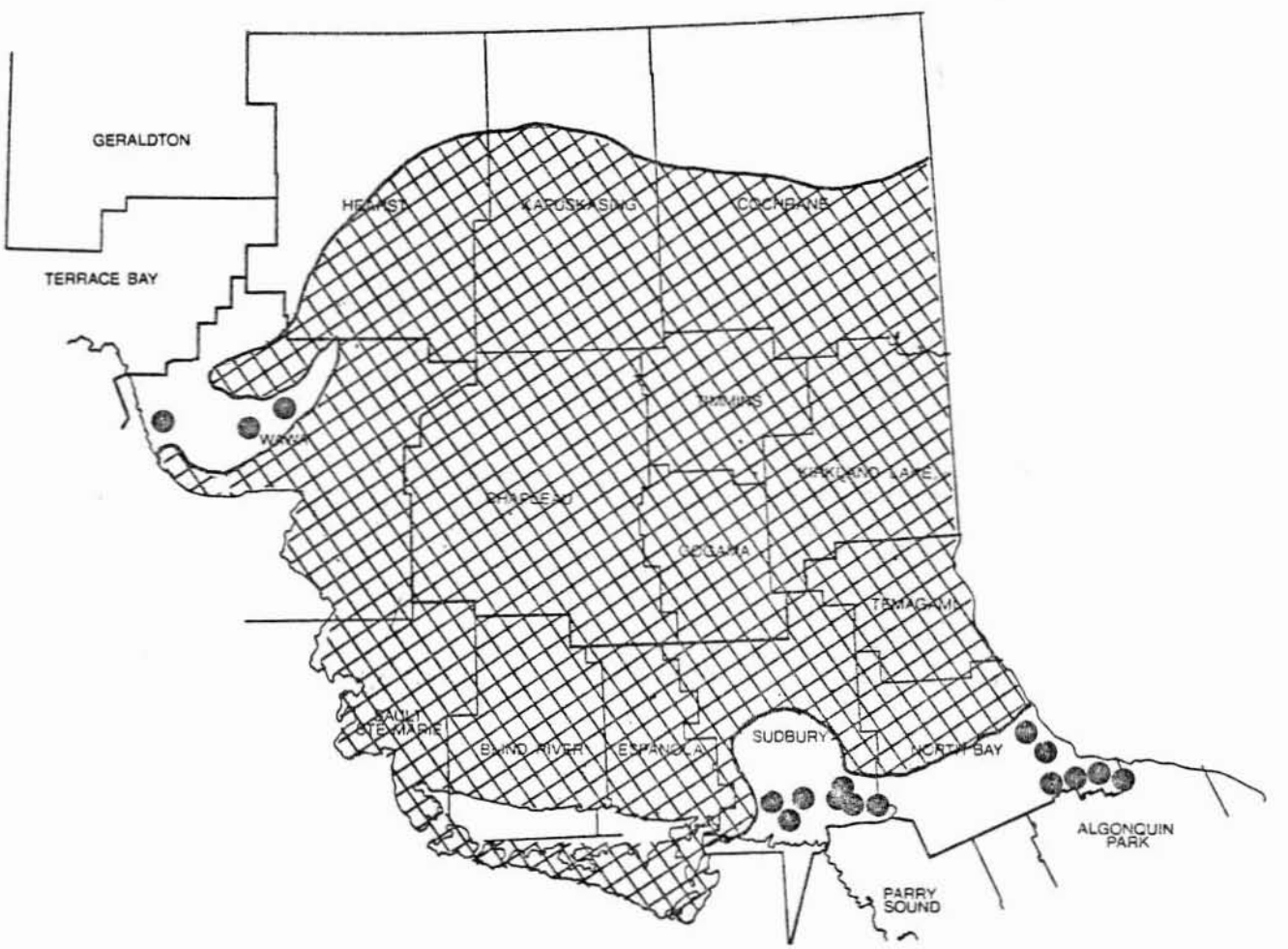
0 Miles 60

0 Kilometres 96

LEGEND

Mortality

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

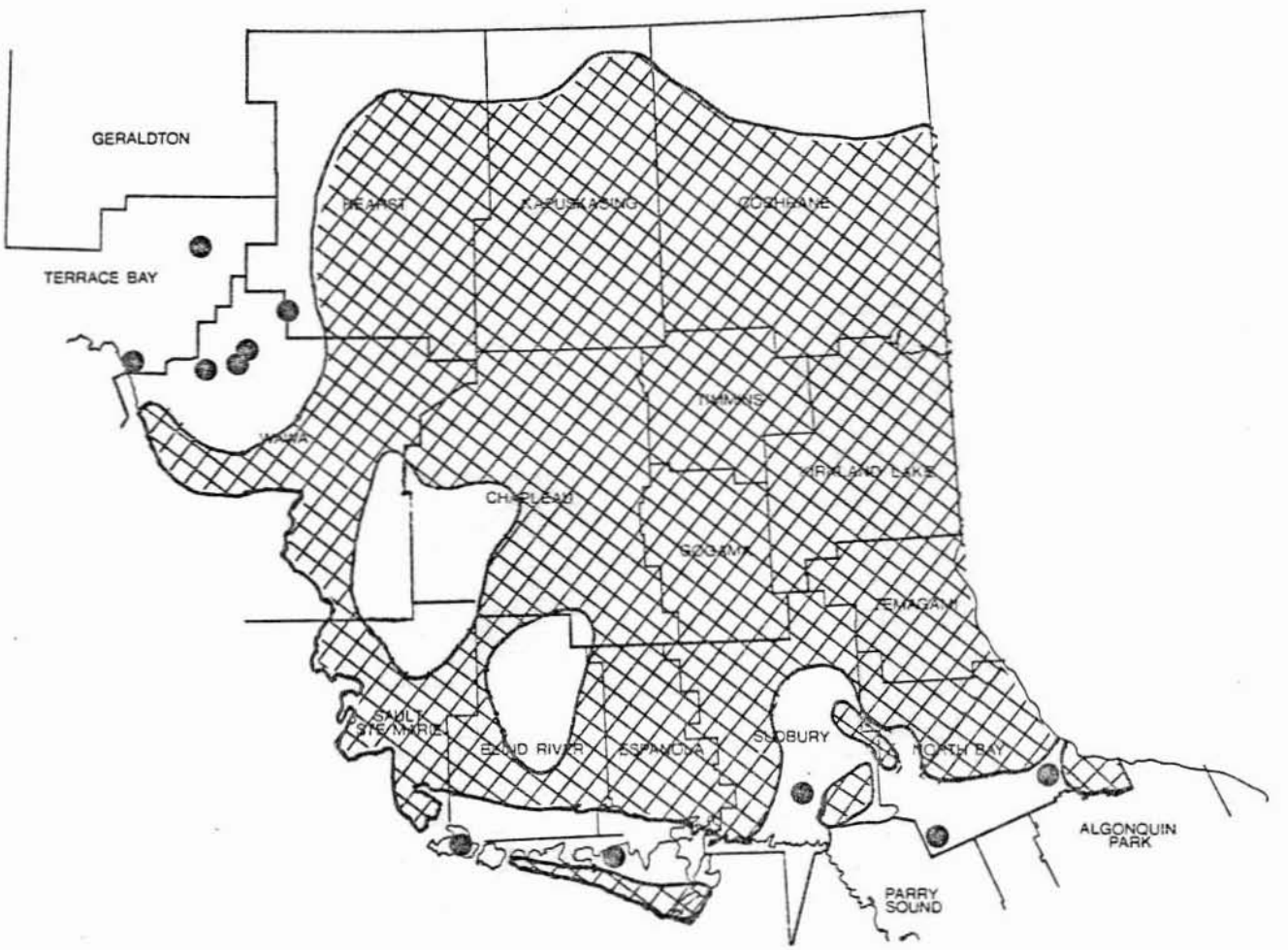
0 Miles 60

0 Kilometres 96

LEGEND

Mortality

NORTHEASTERN ONTARIO



0 Miles 60

0 Kilometres 96

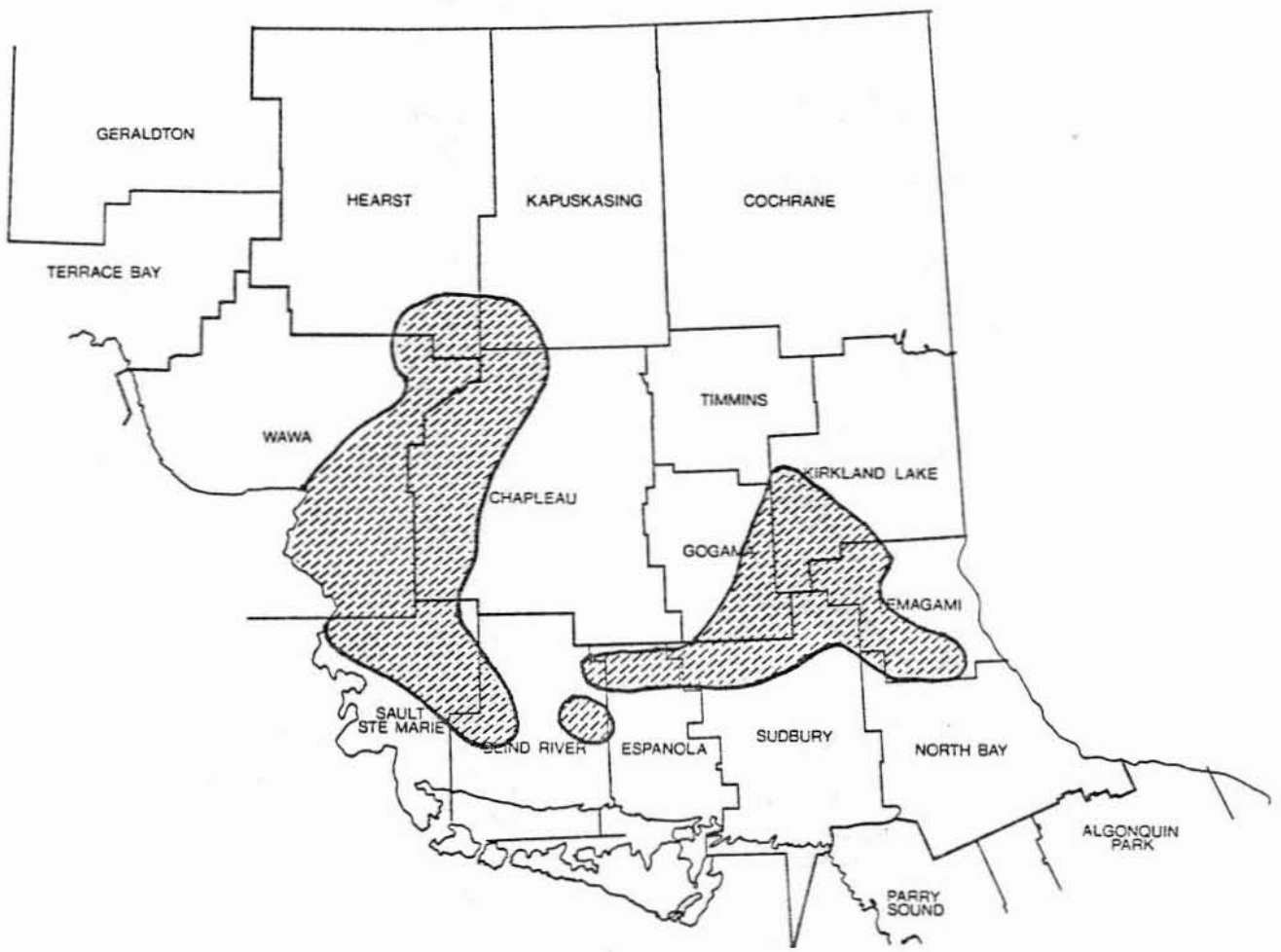
Spruce Budworm

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

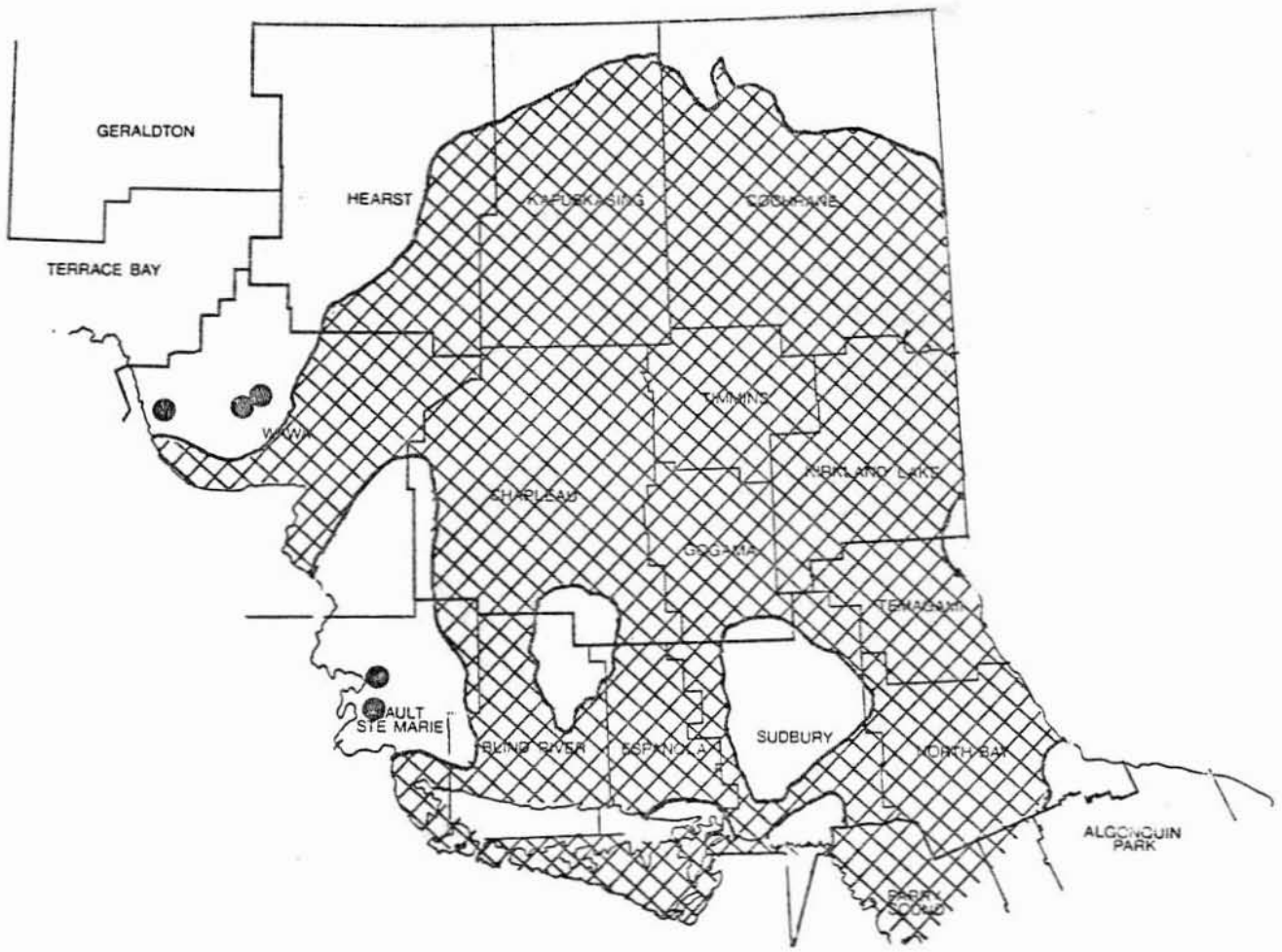
LEGEND

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

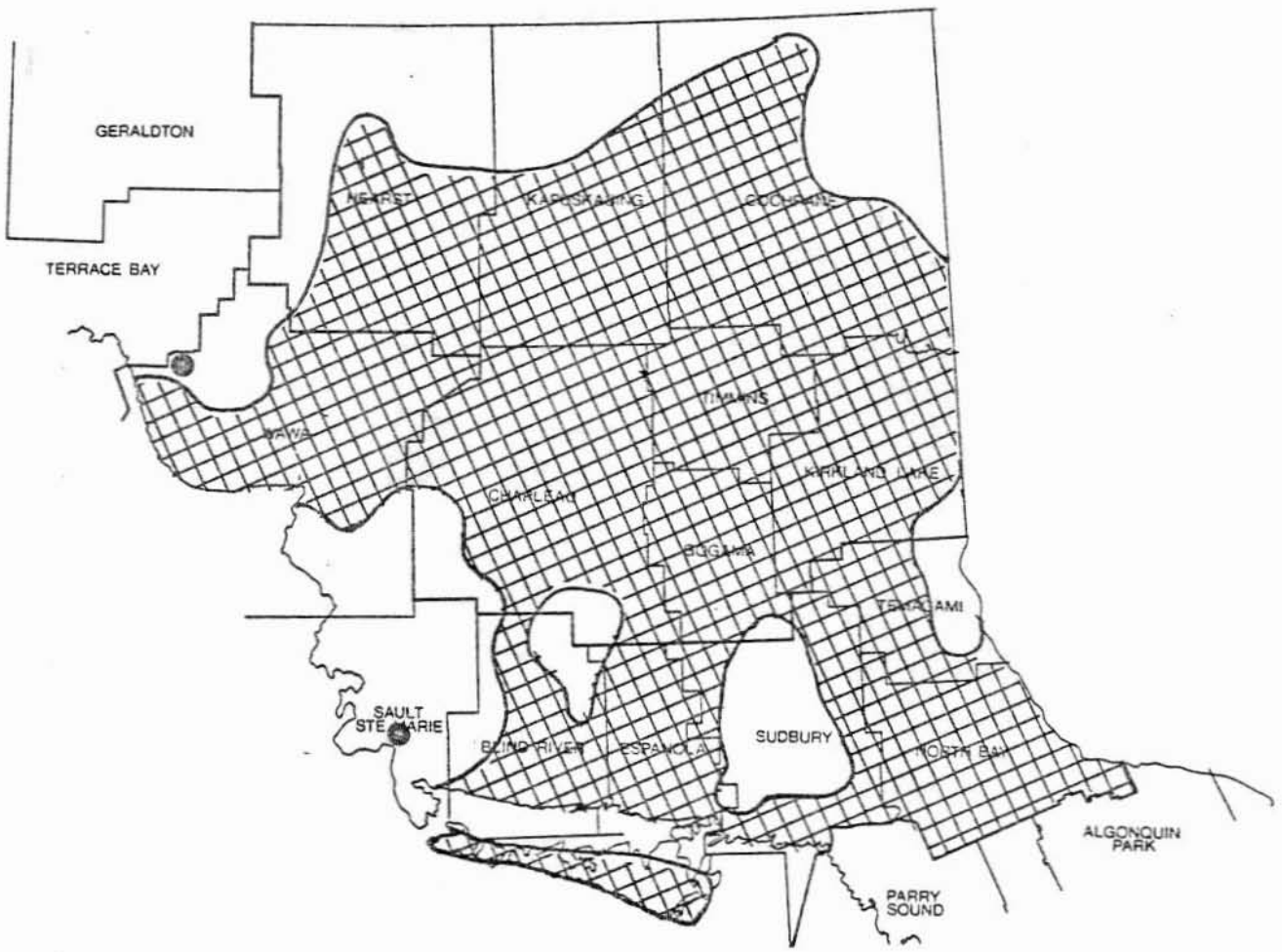
0 Miles 60

0 Kilometres 96

LEGEND

Mortality

NORTHEASTERN ONTARIO



0 Miles 60

0 Kilometres 96

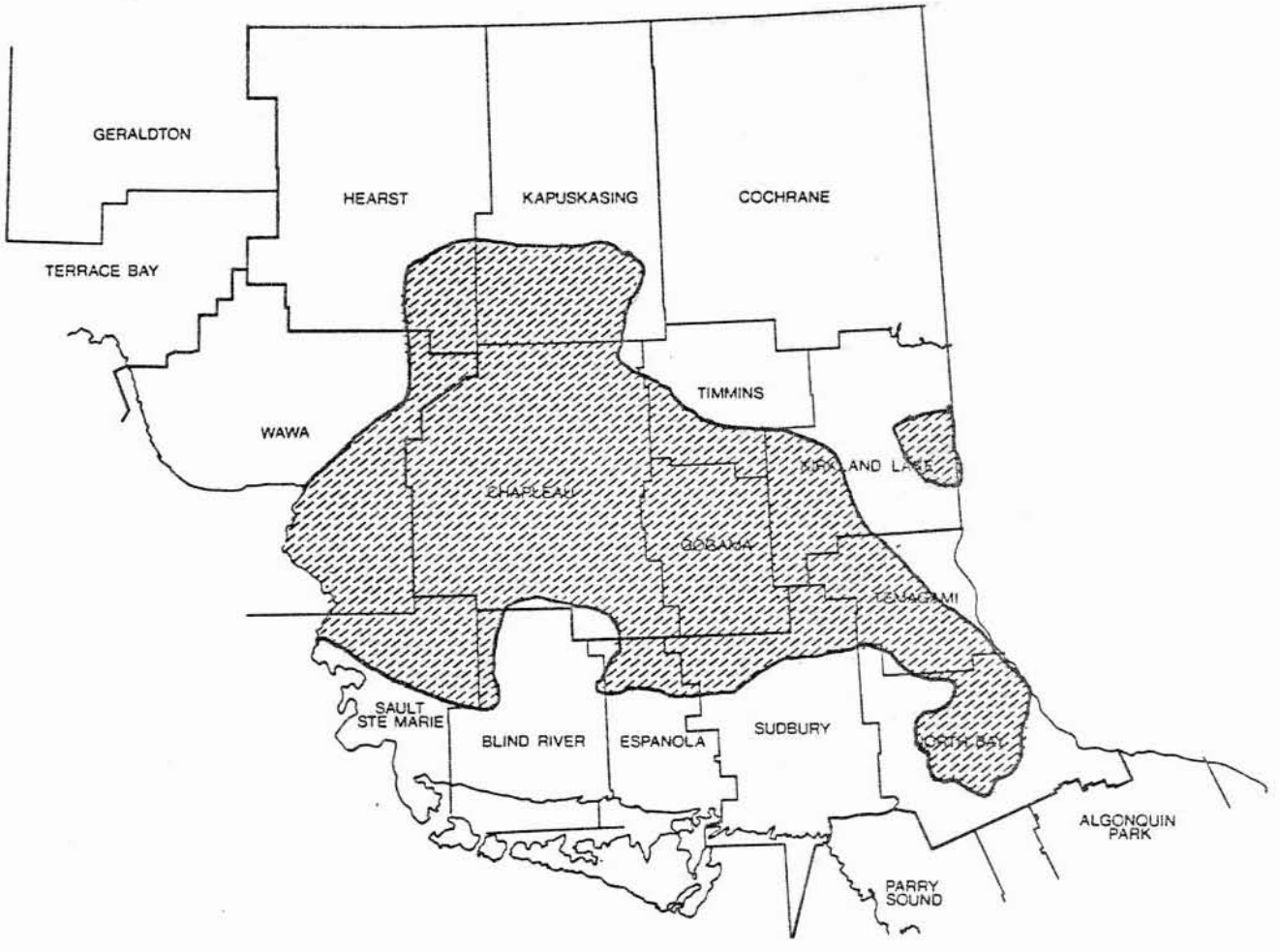
Spruce Budworm

Areas within which defoliation occurred in 1979

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHEASTERN ONTARIO



0 Miles 60

0 Kilometres 96

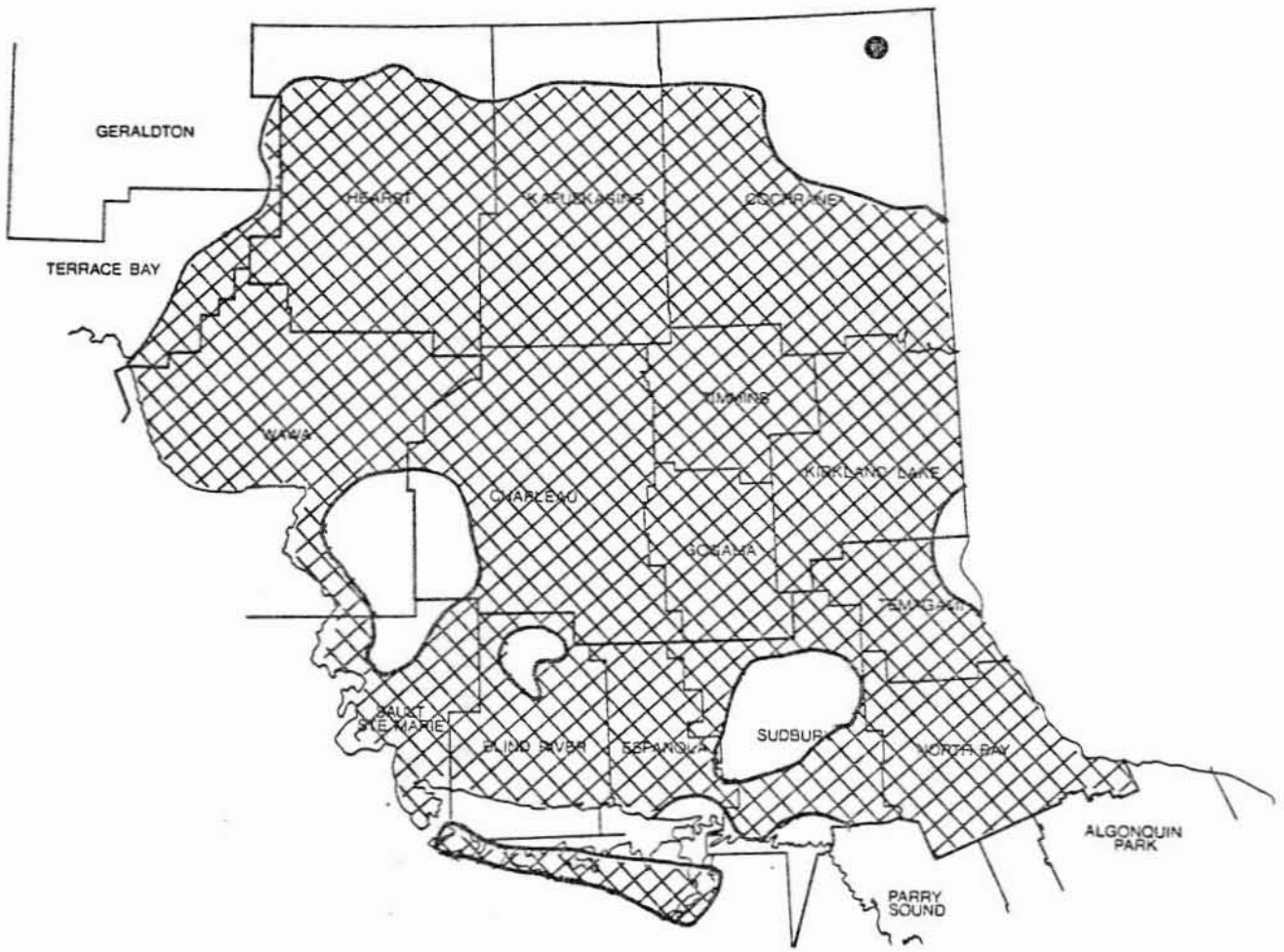
Spruce Budworm

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

LEGEND

Mortality

NORTHEASTERN ONTARIO



0 Miles 60

0 Kilometres 96

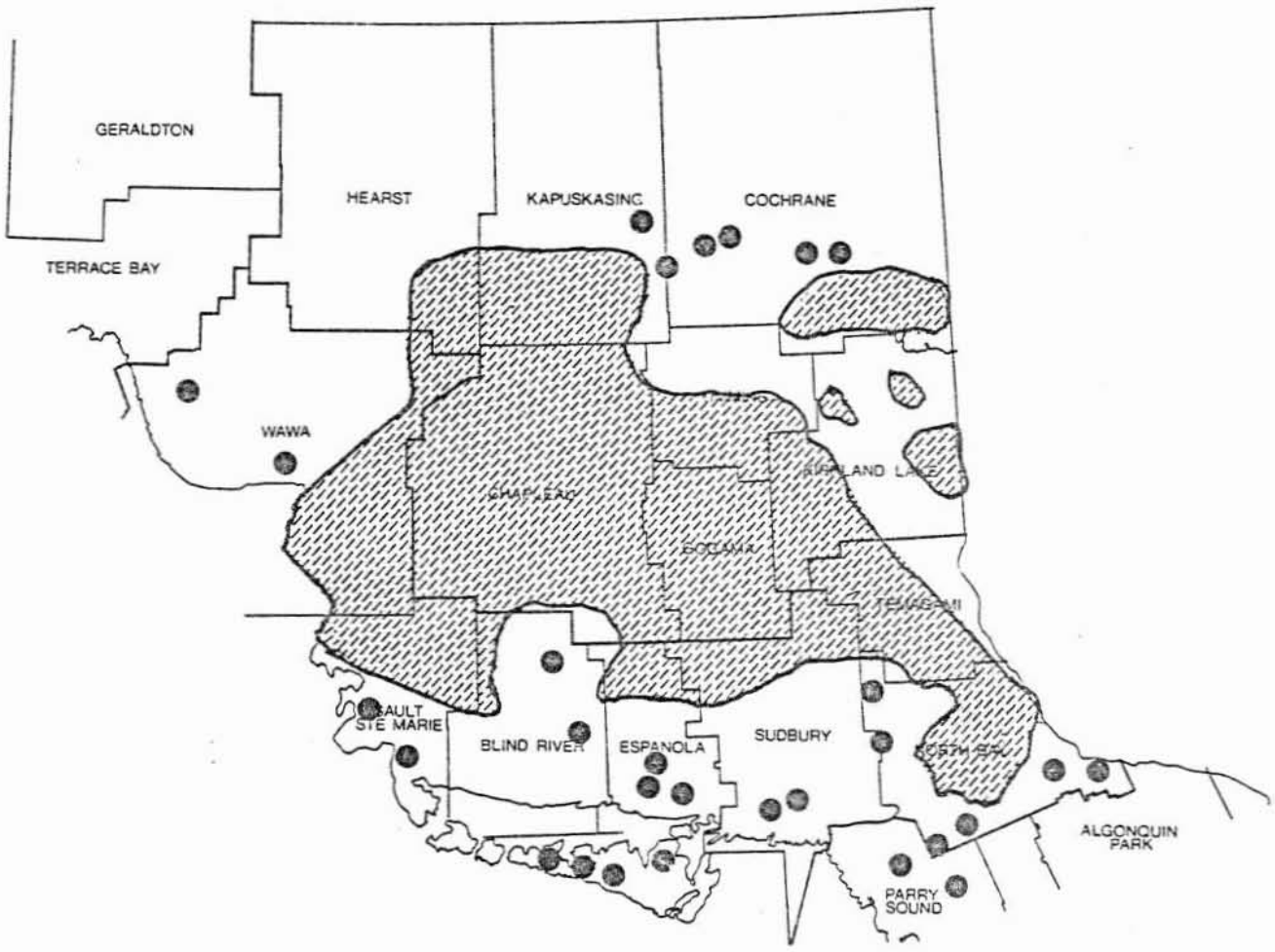
Spruce Budworm

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

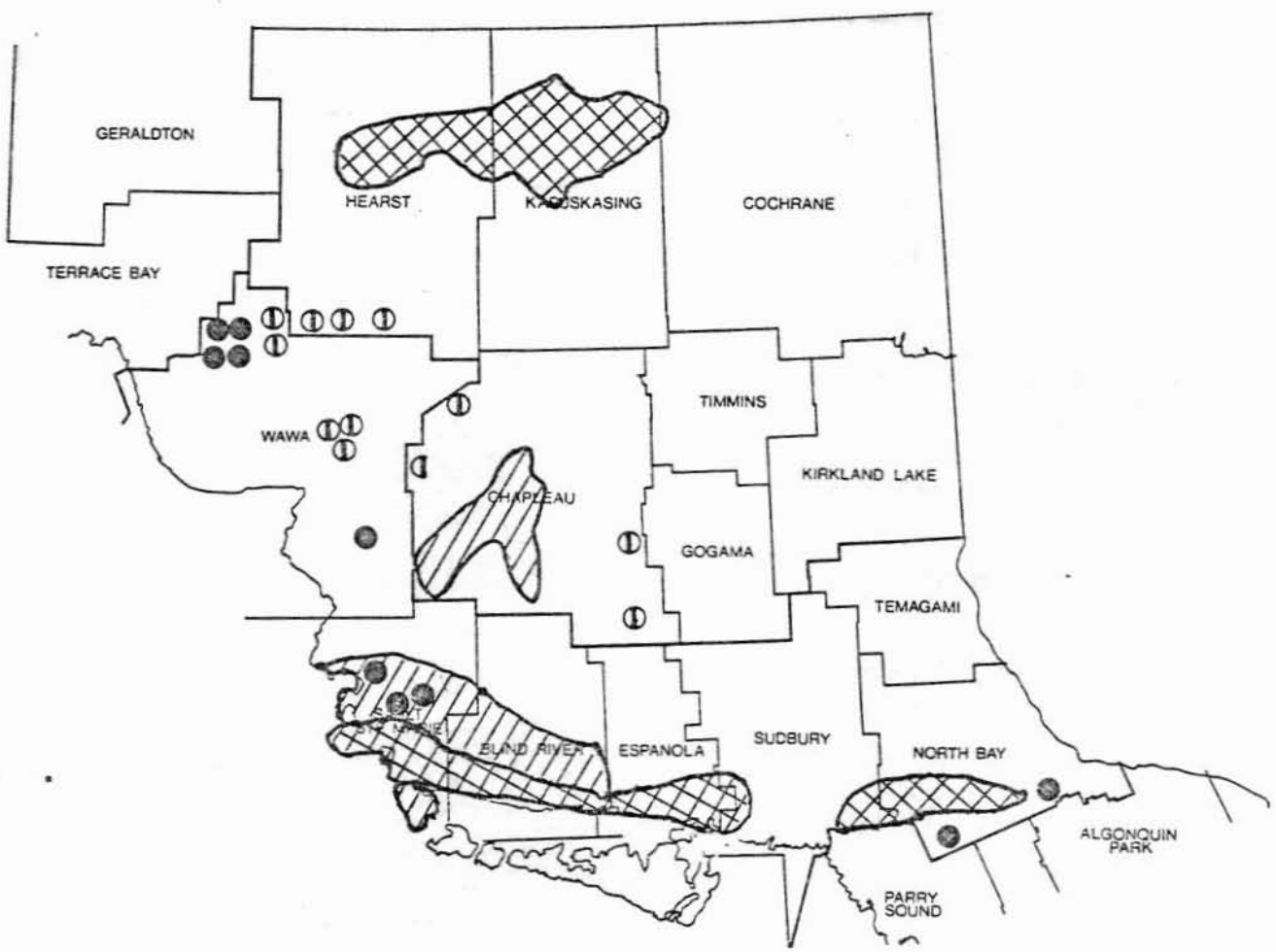
LEGEND

Mortality ▨ or ●

0 Miles 60

0 Kilometres 96

NORTHEASTERN ONTARIO



0 Miles 60

0 Kilometres 96

Forest Tent Caterpillar

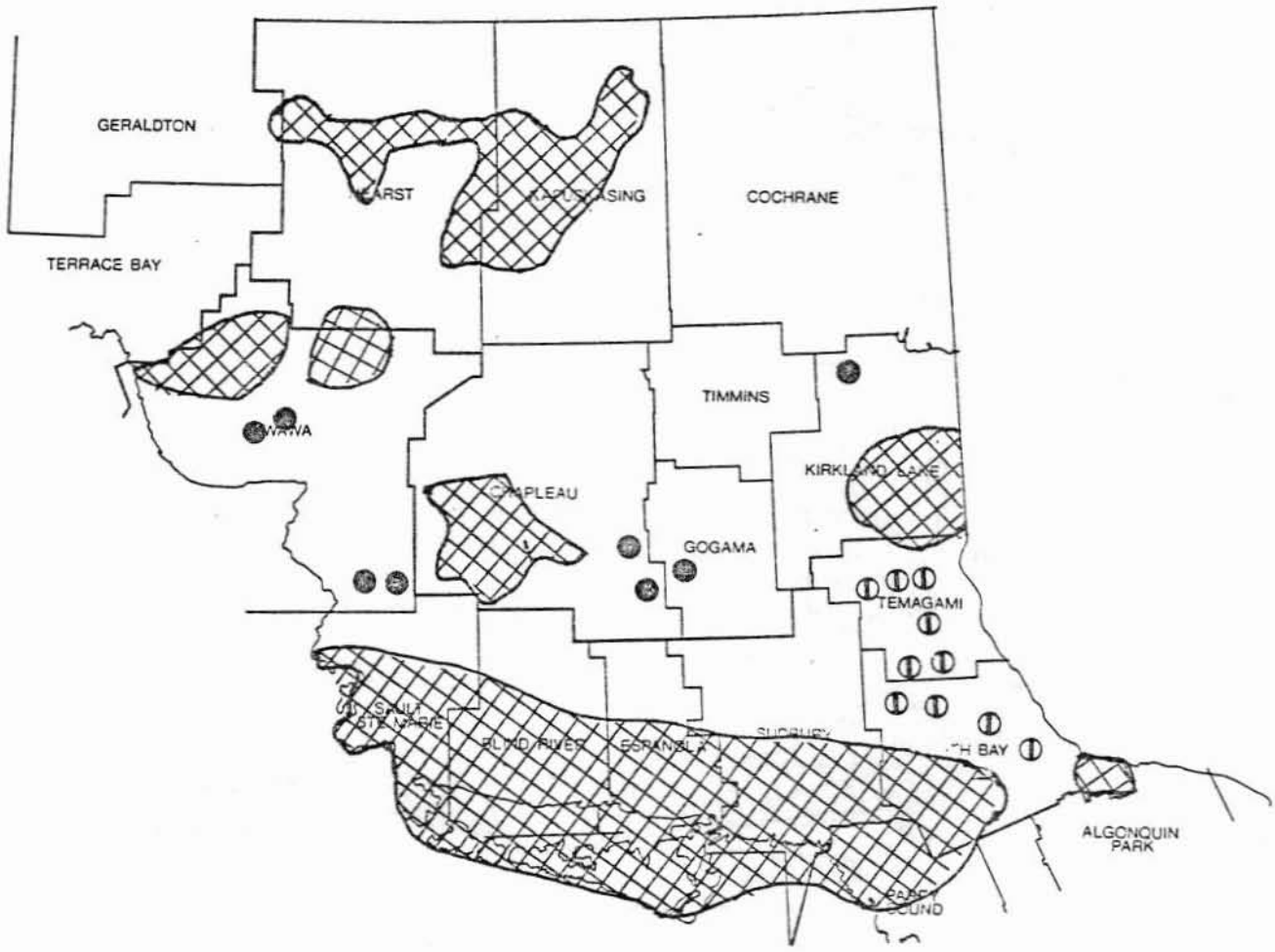
Areas within which defoliation occurred in 1950

LEGEND

Light defoliation ◐ or ▨

Moderate-to-severe defoliation ● or ▩

NORTHEASTERN ONTARIO



Forest Tent Caterpillar

Areas within which defoliation occurred in 1951

LEGEND

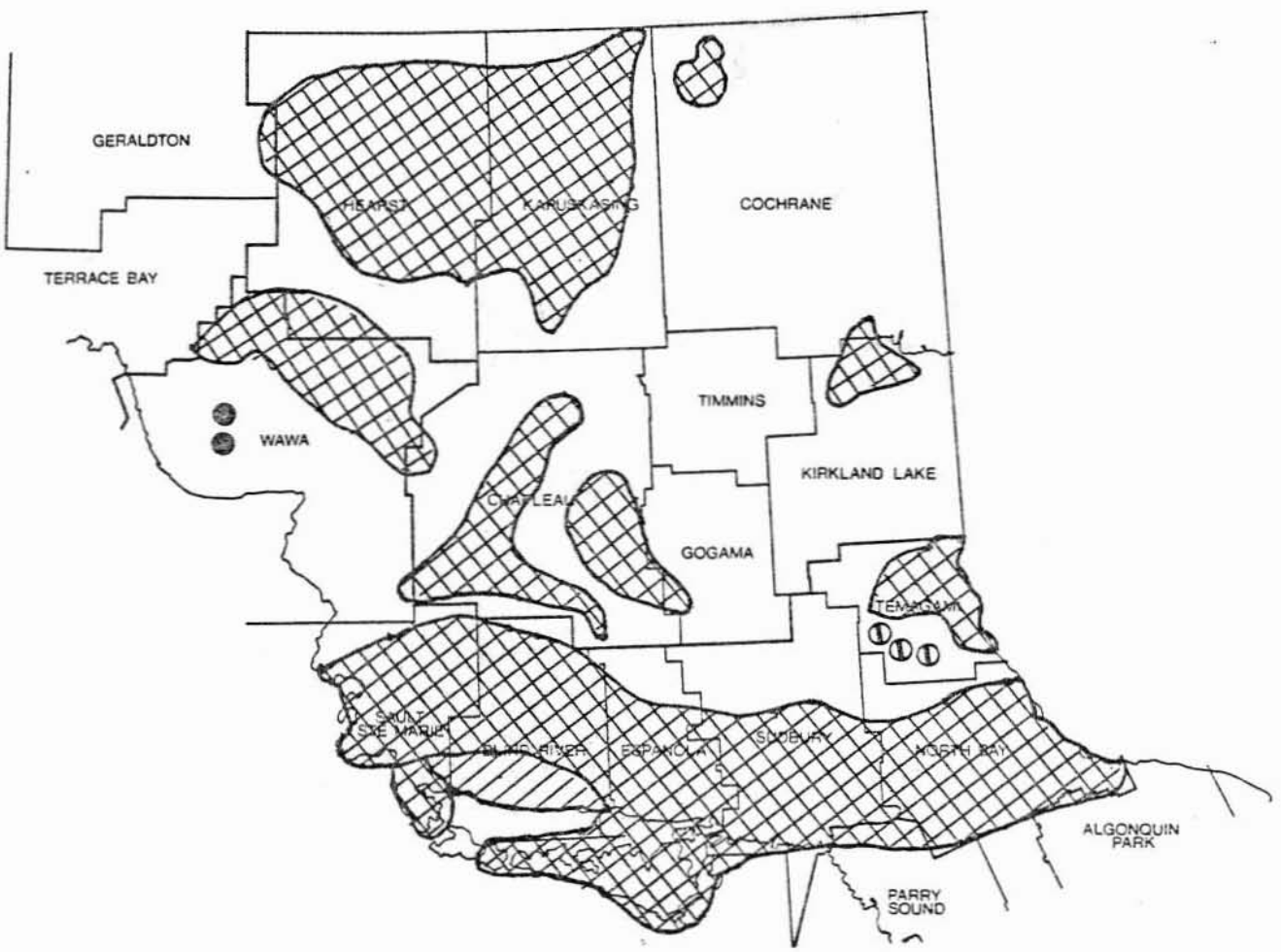
Light defoliation ◐

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

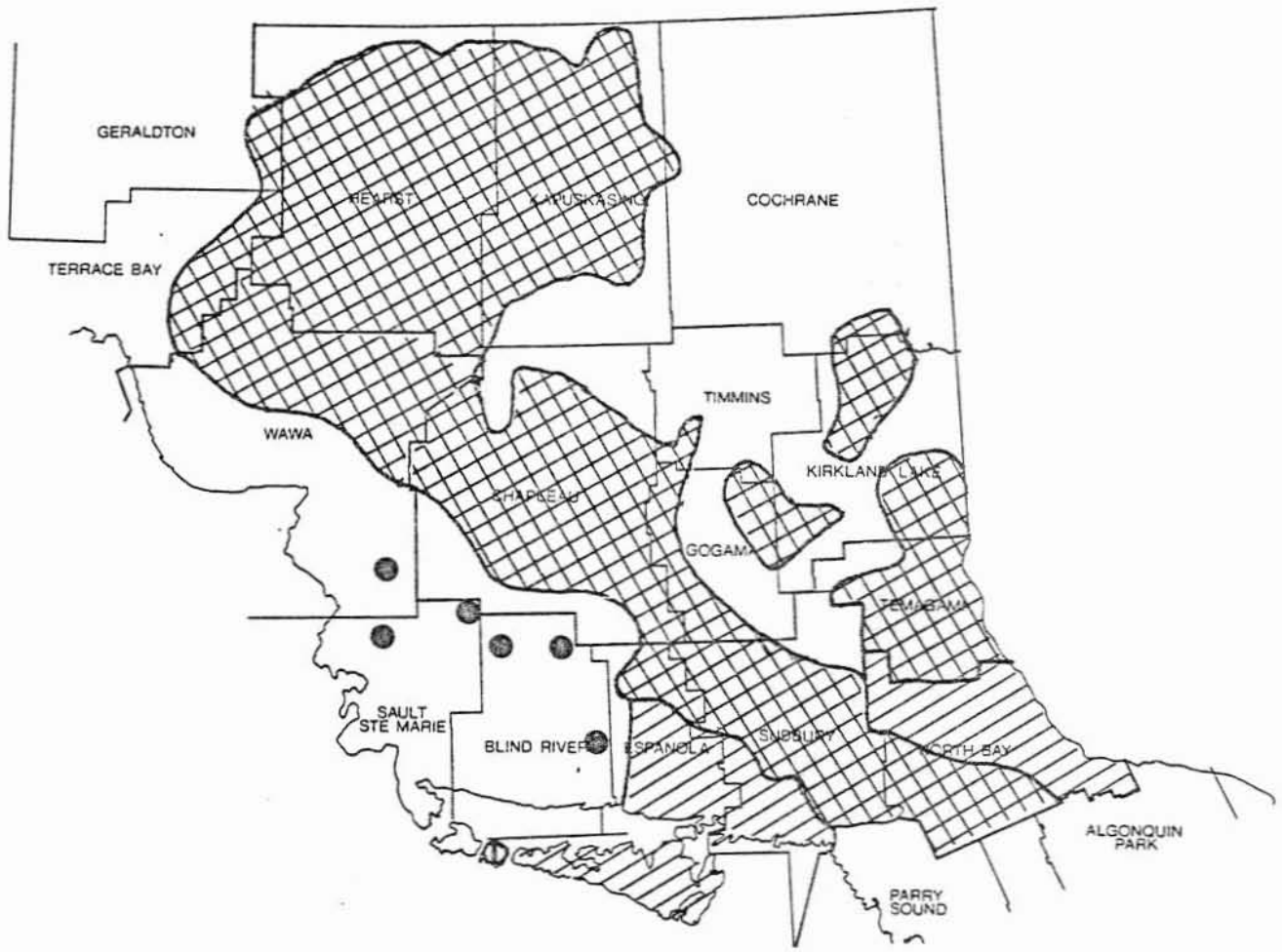
0 Kilometres 96

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

0 Miles 60

0 Kilometres 96

LEGEND

Light defoliation ◐ or

Moderate-to-severe defoliation

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 defoliaiton 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

Moderate-to-severe defoliation

NORTHEASTERN ONTARIO

Forest Tent Caterpillar

Areas within which defoliation occurred in 1969

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 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