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

Compiled by

M.J. Thomson, L.S. MacLeod, H.J. Evans, D.C. Constable and C.G. Jones[1]

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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.

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

Appendix C is a series of maps for northwestern 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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1950-1951	E. O. Clinton
1952-1953	K. C. Hall
1954	E. Davidson
1955-1956	C. Vaillancourt
1957-1960	W. M. Horricks
1961-1966	V. Jansons
1967	K. C. Hall and D. C. Constable
1968	K. C. Hall and C. N. Davis
1969	C. N. Davis
1970-1973	H. R. Foster and J. Hook
1974-1975	H. R. Foster and M. J. Applejohn
1976-1977	H. R. Foster and H. D. Lawrence
1978-1980	H. D. Lawrence and W. D. Biggs

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INTRODUCTION

This is a review of significant forest insects and diseases in the area covered by the Geraldton District from 1950 to 1980, with a brief summary of outbreaks prior to 1950. The Geraldton District underwent a significant boundary change in 1973, when a small portion of the former Kapuskasing District was added to the eastern boundary and a large area of the southern section became the Terrace Bay District and part of the Nipigon District. In the selection of pests for this report, particular attention was paid to the major working groups of host species in the area, namely jack pine, white spruce, black spruce, balsam fir, larch and the tolerant hardwoods (poplar and white birch) as well as some ornamentals 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., frost, hail, wind and winter drying, etc.

SUMMARY

FOREST INSECTS

Eastern Blackheaded Budworm, *Acleris variana* (Fern.) [Major]
page 11

Records dating back to 1936 reveal that, although the insect is widely distributed in the southern half of the District, little damage has occurred thus far.

Birch Skeletonizer, *Bucculatrix canadensisella* Cham. [Major]
pages 12-19

Defoliation by this insect seldom causes mortality of the host but weakened trees are subject to attack by secondary insects and diseases. Outbreaks usually last 3 to 4 years, then decline rapidly. Medium-to-heavy infestations were recorded from 1962 to 1964 and from 1970 to 1973.

Large Aspen Tortrix, *Choristoneura conflictana* (Wlk.) [Major]
pages 20-22

No tree mortality caused by this insect has been recorded thus far, even though high populations can cause almost complete defoliation of host trees, primarily aspen and poplar. Varying degrees of defoliation were recorded in 1956 and 1957 and again in 1972, 1973 and 1974.

Spruce Budworm, *Choristoneura fumiferana* (Clem.) [Major]
pages 23-31

This insect is considered the most destructive pest of numerous coniferous hosts, e.g., balsam fir, white spruce, black spruce and larch. Moderate-to-severe defoliation will cause top killing of balsam fir in 3 years and whole-tree mortality after 5 years. The first instance of a budworm infestation in the District was recorded in 1943. Varying degrees of damage occurred each year thereafter until 1951. Tree mortality caused by repeated defoliation of host species through this period was first reported in 1948. Populations were reported from 1956 to 1958, from 1964 to 1966, and in 1968. The current infestation first reported in 1975 remained at a low level until 1977, when a marked increase in populations caused moderate-to-severe defoliation in a small area in the eastern part of the District. Annual increases in the area infested were recorded each year thereafter until 1980.

Larch Casebearer, *Coleophora laricella* (Hbn.) [Major]
page 32

This serious pest of larch causes reduced tree growth and occasionally tree mortality after 2 successive years of moderate-to-severe defoliation. No serious damage has occurred since it was first recorded in the District in 1964.

American Aspen Beetle, *Gonioctena americana* (Schaef.) [Major]
pages 32-33

This aspen defoliator, though generally common in the District, has rarely caused appreciable defoliation except in 1952, 1974 and 1976, when small pockets of medium-to-heavy infestations were recorded at scattered points.

Forest Tent Caterpillar, *Malacosoma disstria* Hbn. [Major]
pages 34-41

The first recorded infestation in the District was in the Koty Lake area in 1950. Since that time, medium-to-heavy infestations have been recorded in 1952 and 1953, and again from 1973 to 1976. Although this insect rarely causes mortality of aspen, the major host species in the District, the weakened trees are subject to attack by secondary insects and disease pathogens.

Sawyer Beetles, *Monochamus* sp. [Major]
page 42

These insects cause serious damage in sawlog piles stacked through the summer months in cutting areas or in mill yards. When populations reach a high level, the adults occasionally attack and feed on twigs and

branches of healthy living trees along fringes of stands, causing branch and twig mortality and in some instances whole-tree mortality.

Balsam Fir Sawfly, *Neodiprion abietis* complex [Major]
pages 42-43

Mortality of host trees (i.e., balsam fir and white spruce) may occur after repeated moderate-to-severe defoliation by this insect over a period of years. Only low populations were recorded in the District between 1950 and 1980.

Red Pine Sawfly, *Neodiprion nanulus nanulus* Schedl. [Major]
pages 43-44

Prolonged moderate-to-severe defoliation by this insect can cause tree mortality. Surveys from 1950 to 1980 revealed only trace or light defoliation at scattered points in the District.

Jack Pine Sawfly, *Neodiprion pratti banksianae* Roh. [Major]
page 44

Records show that this sawfly has caused serious damage at scattered points in the province; however, no appreciable damage could be found in the District surveys between 1950 and 1980.

Redheaded Jack Pine Sawfly, *Neodiprion virginianus* complex [Major]
pages 45-46

Repeated moderate-to-severe defoliation by this sawfly can cause serious damage in plantation or regeneration trees. Moderate-to-severe defoliation was recorded at scattered points in 1960 and 1968 and from 1976 to 1979.

Northern Pitch Twig Moth, *Petrova albicapitana* (Busck) [Minor]
page 46

Although this insect attacks host trees of all diameters, there is little damage except to small regeneration or plantation trees when attacked at the base of leaders. The insect often girdles the leader when feeding, and causes leader mortality and deformed stems. Moderate-to-severe damage occurred in 1956 and 1957.

Yellowheaded Spruce Sawfly, *Pikonema alaskensis* (Roh.) [Major]
pages 47-48

This insect is a serious pest of young spruce plantations and open-growing ornamentals. Considerable mortality may occur following moderate-to-severe defoliation. Moderate-to-severe defoliation occurred in 1954, 1958 and 1959, from 1967 to 1969, in 1975 and 1976, and from 1978 to 1980.

Aspen Leafblotch Miner, *Phyllonorycter ontario* (Free.) [Major]
pages 49-50

Leaf mining by this insect is not known to cause tree mortality; however, repeated moderate-to-severe leaf mining does weaken trees, leaving them susceptible to attack by secondary insects and diseases. The first recorded infestation in the District occurred in 1949. Moderate-to-severe damage occurred from 1950 to 1952, from 1961 to 1963, in 1968 and in 1971.

White Pine Weevil, *Pissodes strobi* (Peck) [Major]
pages 50-51

This insect attacks and kills the leaders of small pine and spruce trees, causing a reduction in height growth; after repeated attacks, multiple and crooked stems occur. Moderate-to-severe damage was recorded in the District in 1968, 1969, 1971, 1972 and 1975.

Larch Sawfly, *Pristiphora erichsonii* (Htg.) [Major]
pages 51-64

Severe defoliation causes a loss of increment after 4 or 5 years and tree mortality after 6 to 9 years. Moderate-to-severe defoliation was recorded from 1952 to 1956, from 1958 to 1962, from 1965 to 1973, from 1975 to 1978, and in 1980.

Mountain-ash Sawfly, *Pristiphora geniculata* (Htg.) [Major]
page 65

Although mountain-ash trees are not considered merchantable, a great many are utilized as shade and ornamental trees in urban and rural areas. This insect weakens trees when prolonged severe defoliation occurs, leaving them susceptible to attack by secondary insects or diseases. Populations of varying degrees of intensity have been noted each year since 1970 when the insect was first recorded in the District.

Ambermarked Birch Leafminer, *Profenusa thomsoni* (Konow) [Major]
page 66

Damage by this late-season feeder is not considered to be serious; however, repeated attacks weaken host trees, leaving them subject to attack by secondary insects and diseases. Medium-to-heavy populations occurred in 1963, from 1966 to 1968 and in 1980.

Other Noteworthy Insects
pages 67-75

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

FOREST DISEASES

Dwarf Mistletoe, *Arceuthobium pusillum* Peck [Minor]
page 79

Repeated attacks on individual trees over a period of years occasionally cause mortality. Varying degrees of infection were recorded in the District from 1968 to 1975, and tree mortality was evident in 1976.

Armillaria Root Rot, *Armillaria mellea* (Vahl.: Fr.) Kummer [Major]
pages 79-80

This root rot is capable of killing all species of trees, both healthy and weakened. The pathogen is found commonly in regeneration stands and plantations. Varying degrees of damage have been reported periodically in the District from 1958 to 1980.

Scleroderris Canker, *Ascocalyx abietina* (Lagerb.) Schläpfer-Bernhard
pages 81-82 [Major]

This destructive pathogen of young planted or regeneration pines was first recorded in the District in 1966. Damage was reported each year from 1966 to 1979. Tree mortality was recorded in 1973, 1974, 1976 and 1977.

Spruce Needle Rusts, *Chrysomyxa ledi* (Alb. & Schwein.) de Bary var. *ledi* and *C. ledicola* (Peck) Lagerh. [Major]
pages 83-84

Severe infection can cause extensive needle drop and retard tree increment when infection recurs over a period of years. Varying degrees of infection have been recorded in the District since 1958. Pockets of medium-to-heavy infection occurred from 1964 to 1969, and in 1971, 1974 and 1978.

Ink Spot of Aspen, *Ciborinia whetzelii* (Seaver) Seaver [Major]
pages 84-85

Severe defoliation by this disease results in the loss of increment; however, no tree mortality has been reported. Pockets of medium-to-heavy damage have occurred periodically in the District in 1959, from 1963 to 1965, in 1970 and in 1972.

Pine Needle Rust, *Coleosporium asterum* (Dietel) Sydow [Major]
pages 85-86

Repeated medium-to-heavy needle infection weakens trees, causes a loss of increment and predisposes them to secondary insect attack and disease. Moderate-to-severe foliar damage was recorded in the District in 1971, 1973 and 1974.

Sweet Fern Blister Rust, *Cronartium comptoniae* Arthur [Major]
page 86

Cankers caused by this pathogen cause considerable tree mortality in young growth and as much as 10% cull in infected merchantable trees. Varying degrees of infection have been reported in the District since 1969.

White Pine Blister Rust, *Cronartium ribicola* J.C. Fischer [Major]
page 87

This pathogen is a serious pest of white pine and causes extensive tree mortality in all age classes. The disease was first recorded in the District in 1955. Since that time surveys have revealed the presence of small numbers of infected trees throughout the range of white pine.

Tar Spot Needle Cast, *Davisomycella ampla* (J. Davis) Darker [Major]
pages 87-88

Heavy infection by this disease causes severe foliar damage and needle drop of the previous year's foliage. Varying degrees of infection have occurred since it was first reported in the District in 1959.

Western Gall Rust, *Endocronartium harknessii* (J.P. Moore) Y. Hirats. [Major]

pages 88-89

This pathogen infects trees in all age classes; however, serious damage generally occurs only in small-diameter regeneration trees in stands or in plantations. When stems are girdled by the gall, partial or whole-tree mortality results. Varying degrees of infection have been recorded most years since 1961. Light tree mortality was recorded in the District in 1974, 1975, 1976 and 1977.

Hypoxylon Canker, *Hypoxylon mammatum* (Wahlenb.) J. Miller [Major]
page 90

This disease attacks trees of all ages and causes considerable mortality, especially in the 8- to 13-cm diameter class. Infected trees are common in most stands throughout the District.

Shoot Blight, *Venturia macularis* (Fr.) Müller & v. Arx [Major]
pages 90-91

This foliar and shoot disease is particularly damaging to leaders of regeneration aspen, causing retarded height growth and multiple leadering. Varying degrees of damage have been evident most years since 1955.

Shoot Blight, *Venturia populina* (Vuill.) Fabric. [Minor]
page 92

This shoot blight retards the growth of reproduction balsam poplar when leaders are attacked. Little damage has occurred since it was first recorded in the District in 1963.

Other Noteworthy Diseases
pages 93-95

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

ABIOTIC DAMAGE

pages 99-102

This condition is caused by a variety of influences, e.g., frost, hail, wind, etc. Abiotic damage has been reported periodically since 1962.

INSECTS

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

Host(s): spruce, balsam fir [Major]

Year	Remarks
1950	not reported
1951	Small numbers were collected on the west shore of Long Lake and along Hwy 11 near the eastern boundary of the District.
1952	Trace populations were observed at numerous points along Hwy 11 east from Longlac to the District boundary.
1953	trace population
1954-1958	not reported
1959-1960	trace population
1961	Populations increased; larvae were widely distributed.
1962	Populations declined; only occasional larvae were found.
1963-1966	trace population
1967	not reported
1968	trace population
1969	not reported
1970-1972	trace population
1973	not reported
1974	Populations increased and caused moderate-to-severe defoliation of balsam fir in the Kloty Lake area. Small numbers were observed at numerous points elsewhere in the District.
1975	Populations declined and caused light defoliation in the Kloty Lake area and at one point in Clavet Township. Elsewhere, small numbers of larvae were collected at widely scattered points.
1976	A light infestation persisted in Clavet Township; elsewhere, populations were at a trace level.
1978-1980	not reported

Birch Skeletonizer, *Bucculatrix canadensisella* Cham.

Host(s): wB [Major]

Year	Remarks
1950-1961	not reported
1962	Pockets of medium-to-heavy infestation caused premature foliage browning and leaf drop in Ashmore, Fulford and Houck Townships, and near Finlayson and Kotyk Lakes (see map, page 14). Elsewhere, trace populations were observed at scattered points.
1963	A medium-to-heavy infestation extended from the western boundary of the District eastward to Croll Township (see map, page 15). Moderate-to-severe foliar damage was evident in the area.
1964	The area of medium-to-heavy infestation increased markedly and extended across the entire District in the vicinity of Hwy 11 (see map, page 16). Low populations were observed along the Goldfield Road and at a few widely scattered points elsewhere in the District.
1965	The infestation collapsed.
1966-1969	not reported
1970	Small pockets of medium-to-heavy infestation were observed along the Goldfield Road, in the Caramat area and at points east of Longlac to the eastern boundary of the District.
1971	Infestations of this insect increased to outbreak proportions and caused moderate-to-severe defoliation throughout the southern part of the District (see map, page 17).
1972	Populations decreased to light intensity throughout much of the southern half of the District, except in an area near the western boundary where a moderate-to-heavy infestation recurred, extending from the southern boundary of the District, northward to the Albany River area (see map, page 18).
1973	Medium-to-heavy infestations persisted throughout the western part of the District, and extended from the southern boundary northward to the Albany River area. Light damage extended from the heavily infested area, eastward from the Nakina-Longlac area to the eastern boundary of the District (see map, page 19).

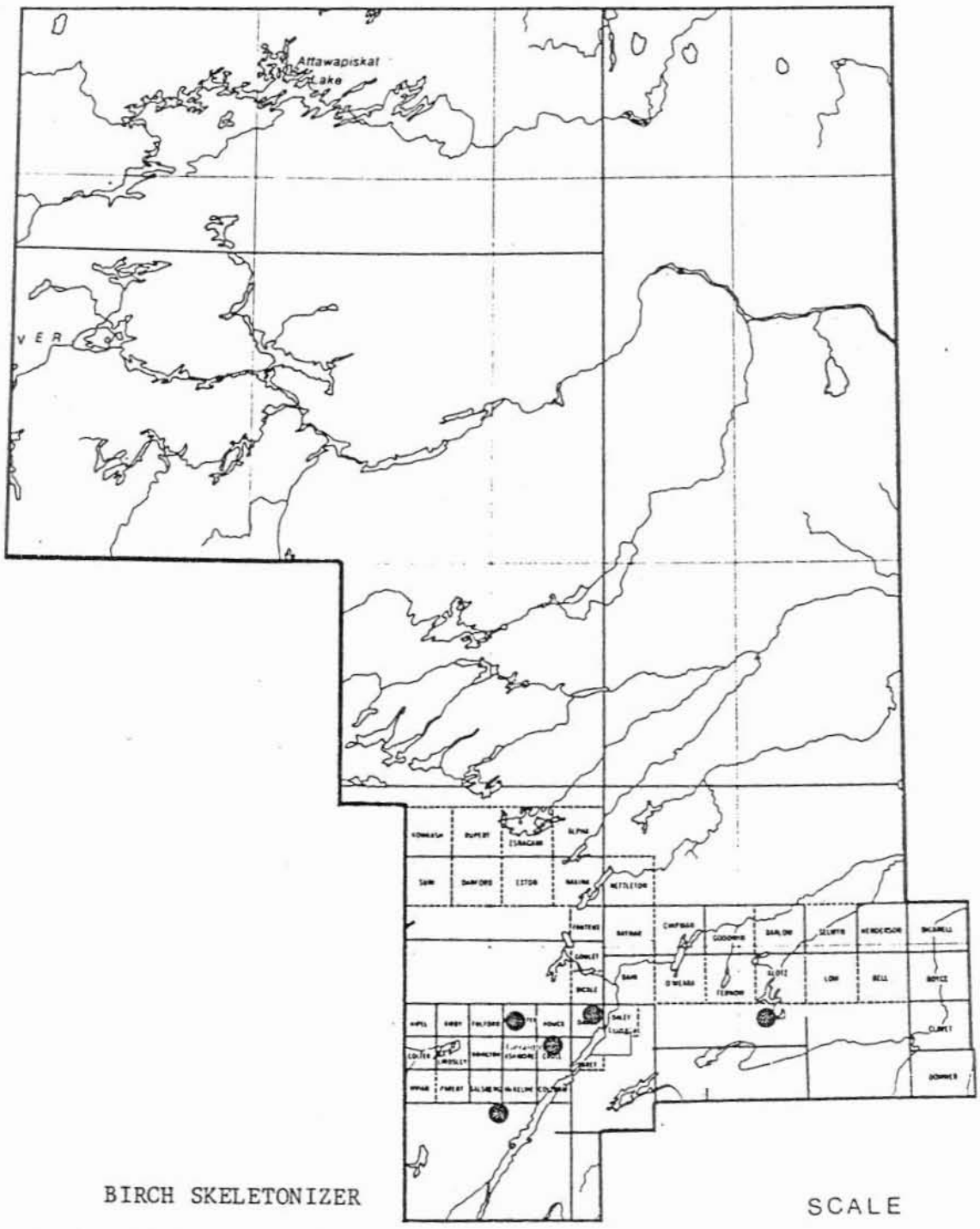
(cont'd)

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

Host(s): wB [Major]

Year	Remarks
1974	Populations decreased to a low level; only small numbers could be found at scattered points.
1975	Populations collapsed.
1976-1980	not reported

GERALDTON DISTRICT



BIRCH SKELETONIZER

Areas within which defoliation occurred in 1962

LEGEND

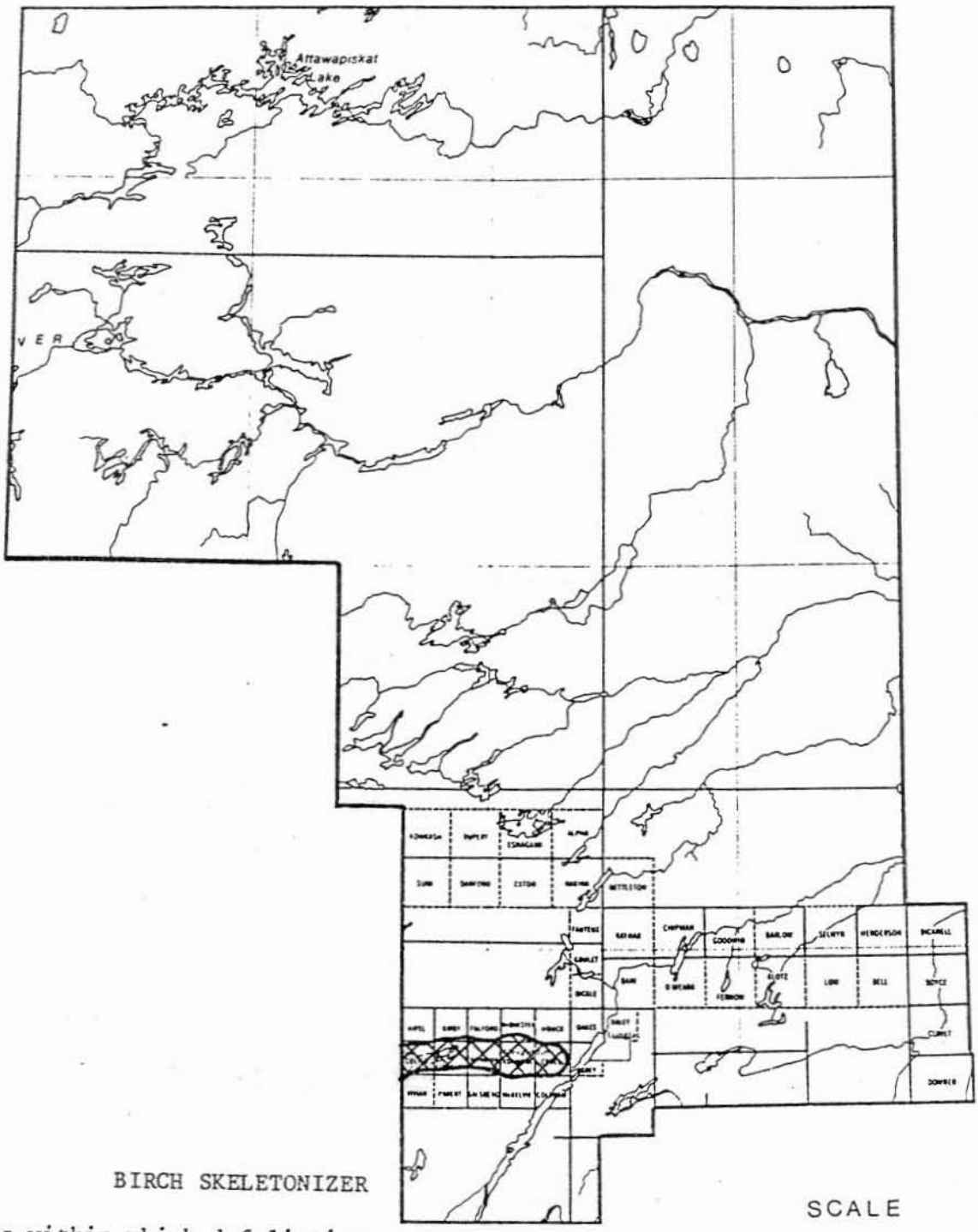
Moderate-to-severe defoliation

SCALE

0 40

Kilometres

GERALDTON DISTRICT



BIRCH SKELETONIZER

Areas within which defoliation occurred in 1963

LEGEND

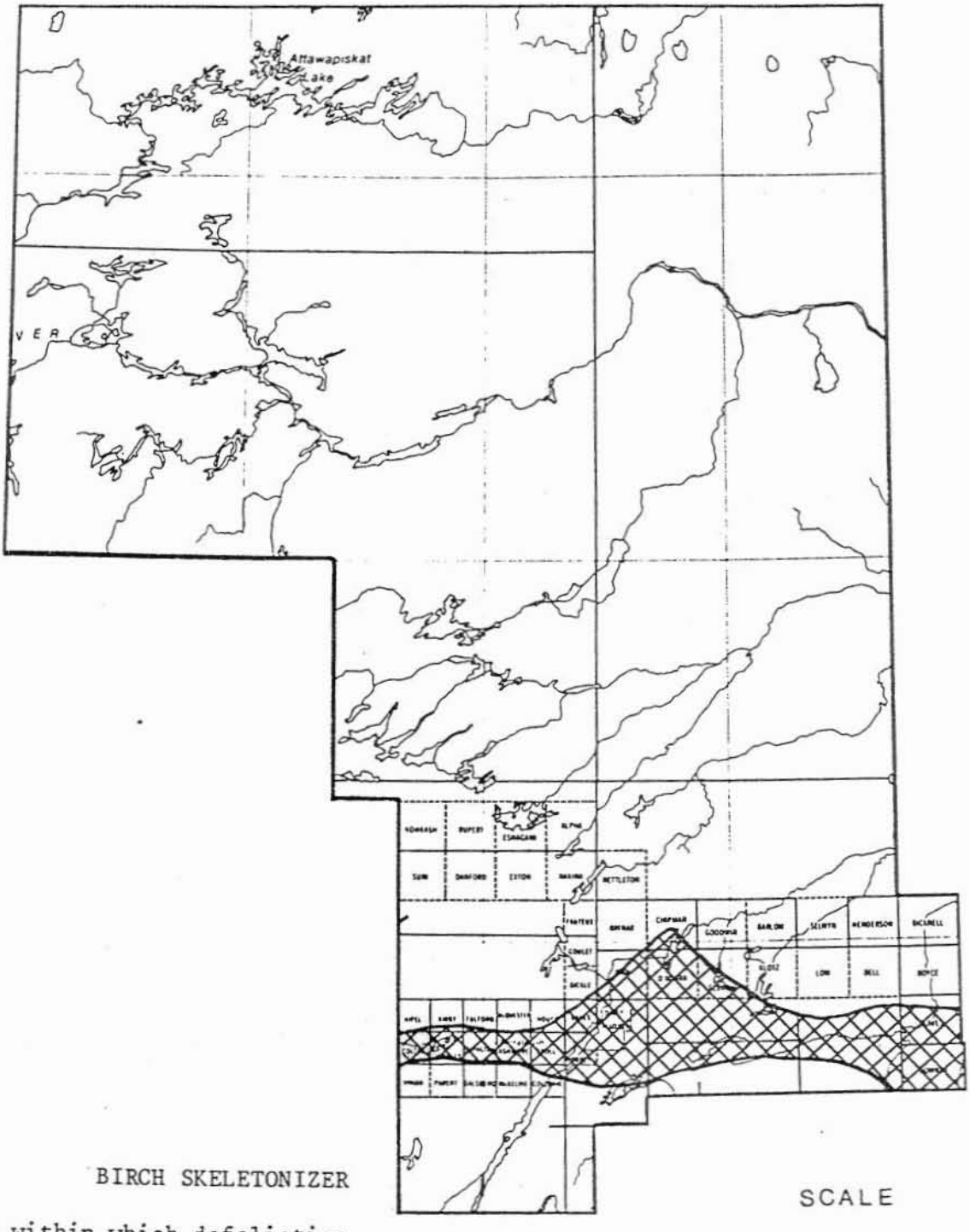
Moderate-to-severe defoliation

SCALE

0 40

Kilometres

GERALDTON DISTRICT



BIRCH SKELETONIZER

Areas within which defoliation occurred in 1964

LEGEND

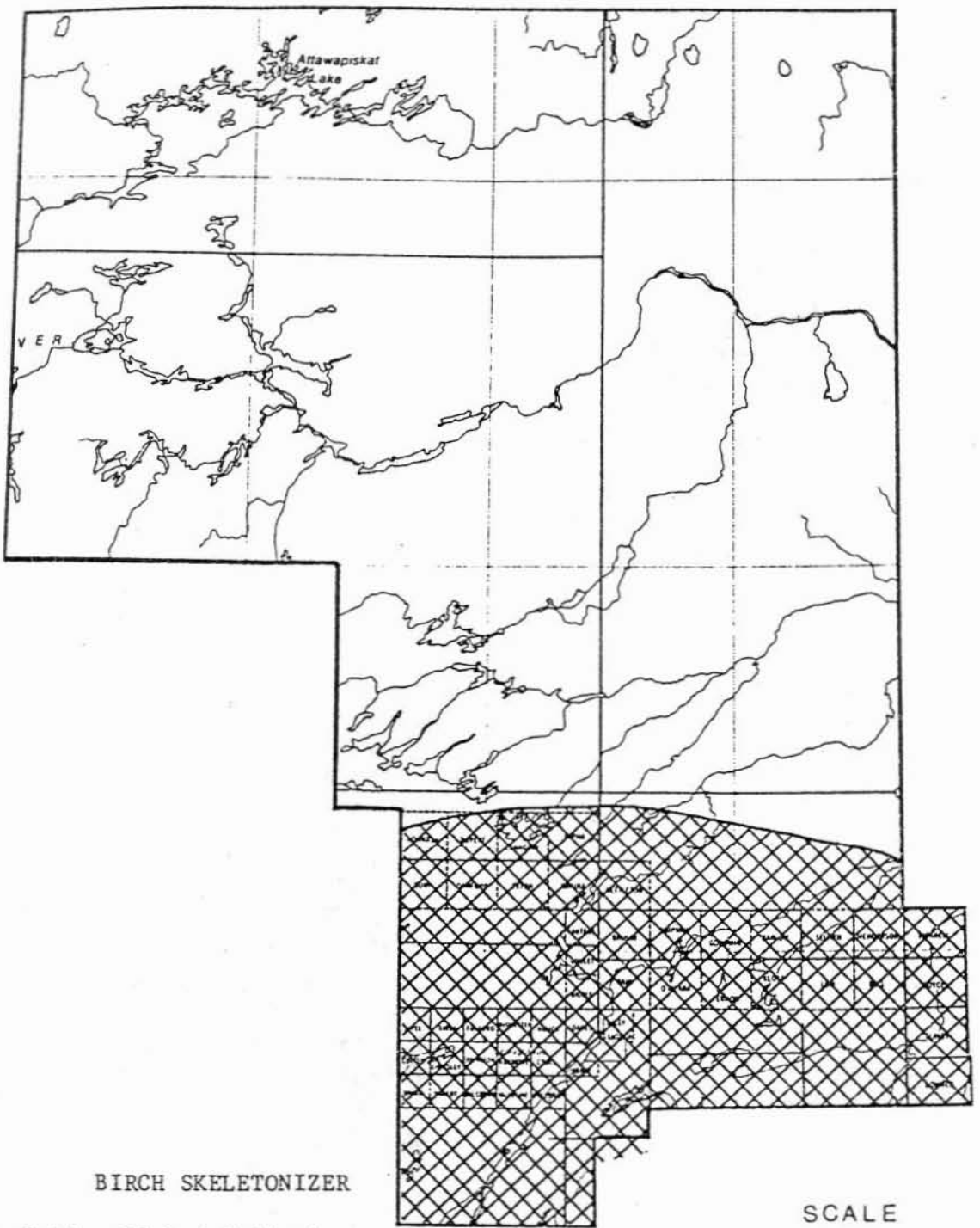
Moderate-to-severe defoliation

SCALE

0 40

Kilometres

GERALDTON DISTRICT



BIRCH SKELETONIZER

Areas within which defoliation occurred in 1971

LEGEND

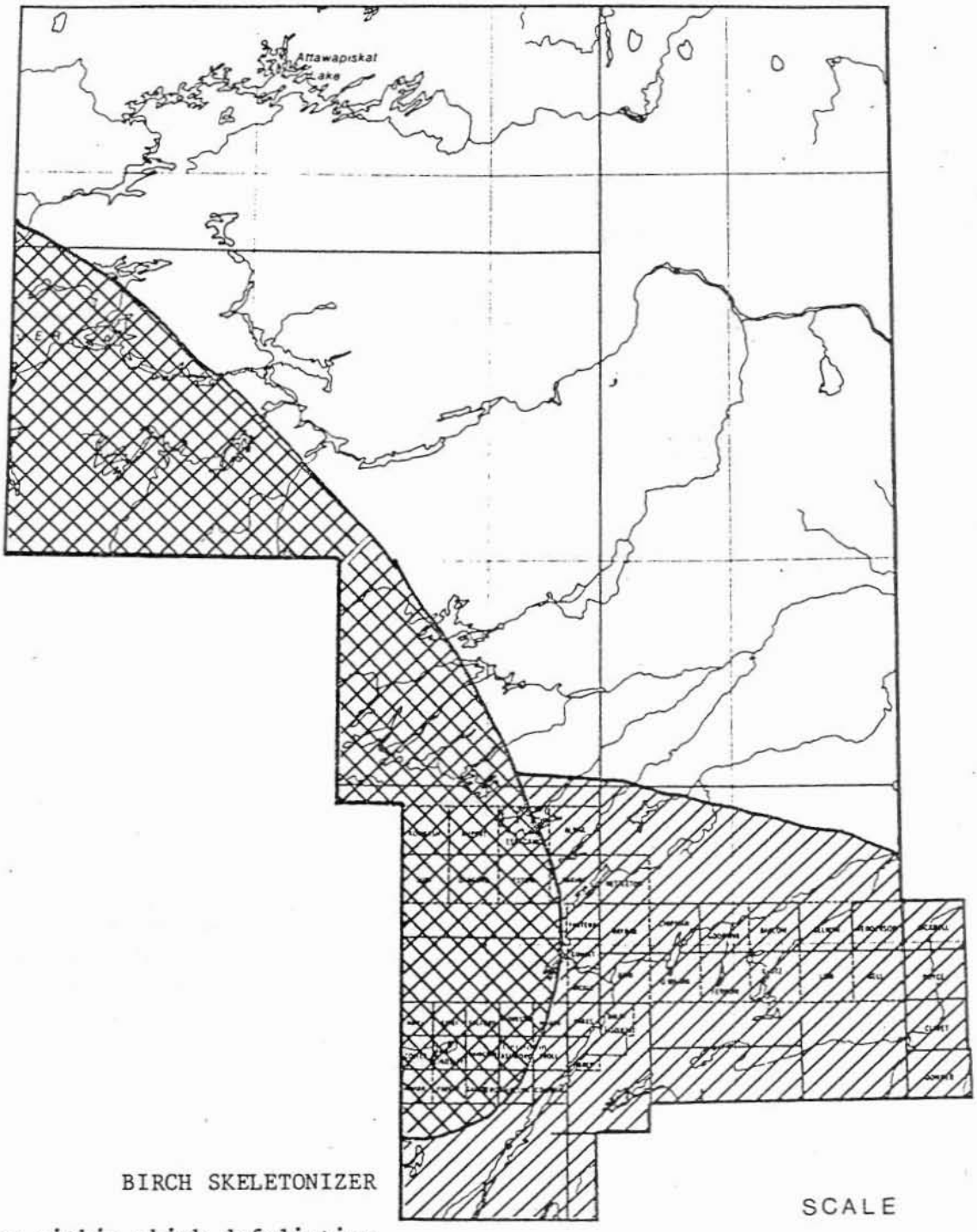
Moderate-to-severe defoliation

SCALE

0 40

Kilometres

GERALDTON DISTRICT



BIRCH SKELETONIZER

Areas within which defoliation occurred in 1972

SCALE

0 40

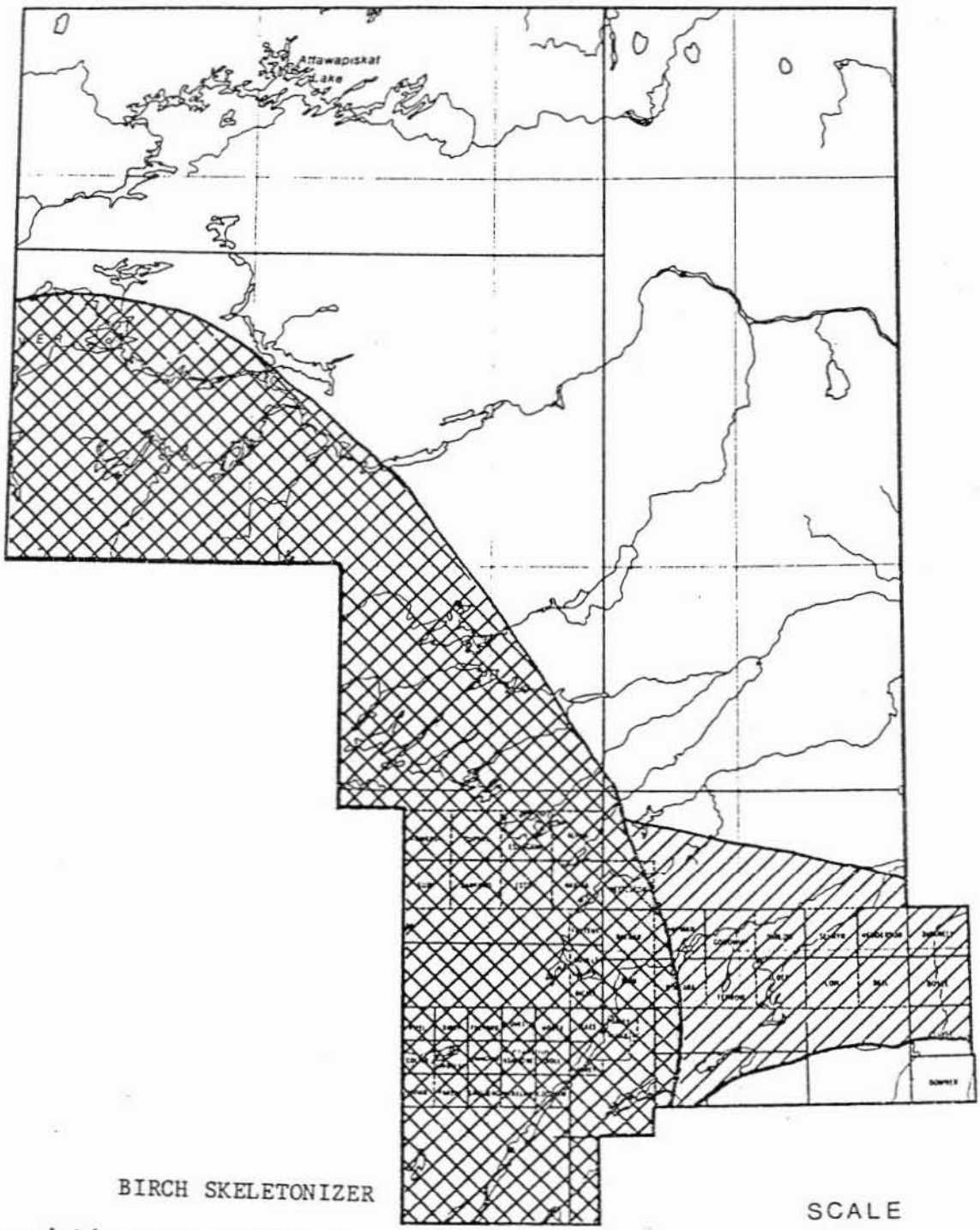
Kilometres

LEGEND

Light defoliation

Moderate-to-severe defoliation

GERALDTON DISTRICT



BIRCH SKELETONIZER

Areas within which defoliation occurred in 1973

SCALE

0 40

Kilometres

LEGEND

Light defoliation

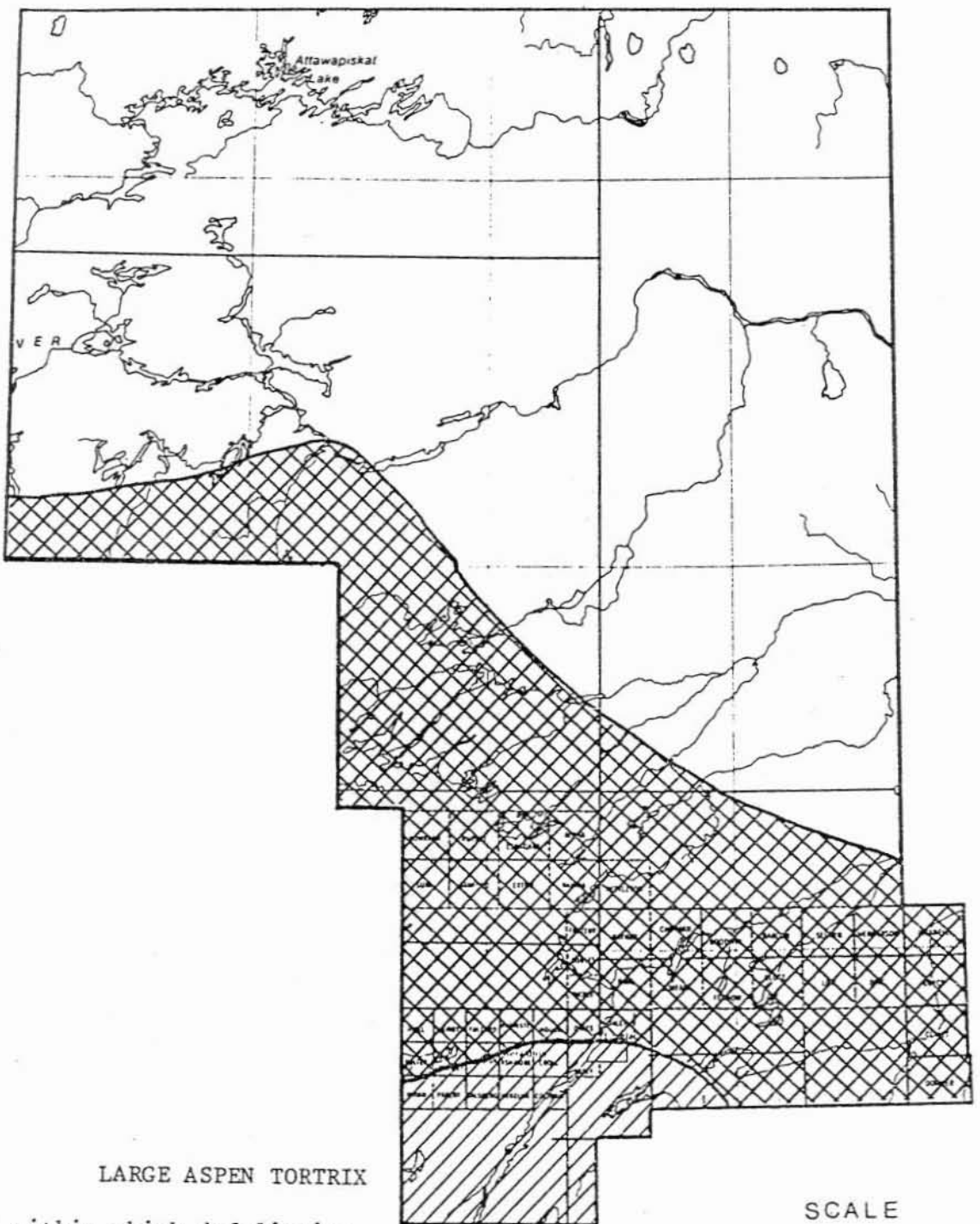
Moderate-to-severe defoliation

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

Host(s): poplar [Major]

Year	Remarks
1950-1955	not reported
1956	widespread moderate-to-heavy defoliation, similar in appearance to that caused by the forest tent caterpillar
1957	Although populations declined, light defoliation was evident at several locations.
1958	Populations declined to a trace level.
1959	trace population
1960-1967	not reported
1968	Small numbers occurred in the Goldfield Lake area.
1969-1971	not reported
1972	Populations increased markedly and caused moderate-to-severe defoliation throughout the central and southeastern parts of the District. Light defoliation was mapped in the southwestern part as well (see map, page 21).
1973	The area of infestation declined. Moderate-to-severe defoliation was generally confined to the western part of the District (see map, page 22).
1974	Populations collapsed, except in the extreme southwest corner of the District, where moderate-to-severe defoliation was evident.
1975	not reported
1976	trace population
1977-1980	not reported

GERALDTON DISTRICT



LARGE ASPEN TORTRIX

Areas within which defoliation occurred in 1972

SCALE

0 40

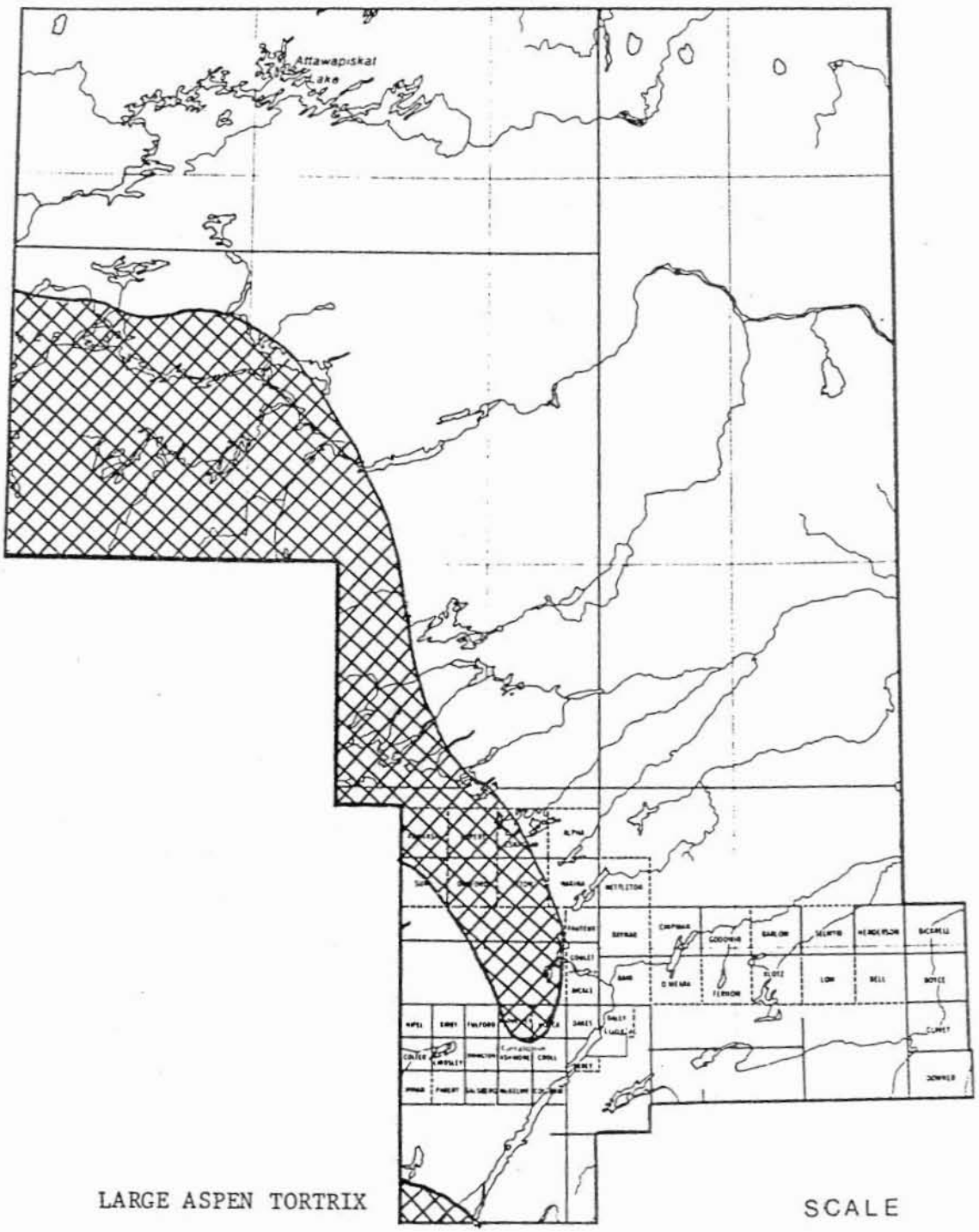
Kilometres

LEGEND

Light defoliation

Moderate-to-severe defoliation

GERALDTON DISTRICT



LARGE ASPEN TORTRIX

Areas within which defoliation occurred in 1973

LEGEND

Moderate-to-severe defoliation

SCALE

0 40

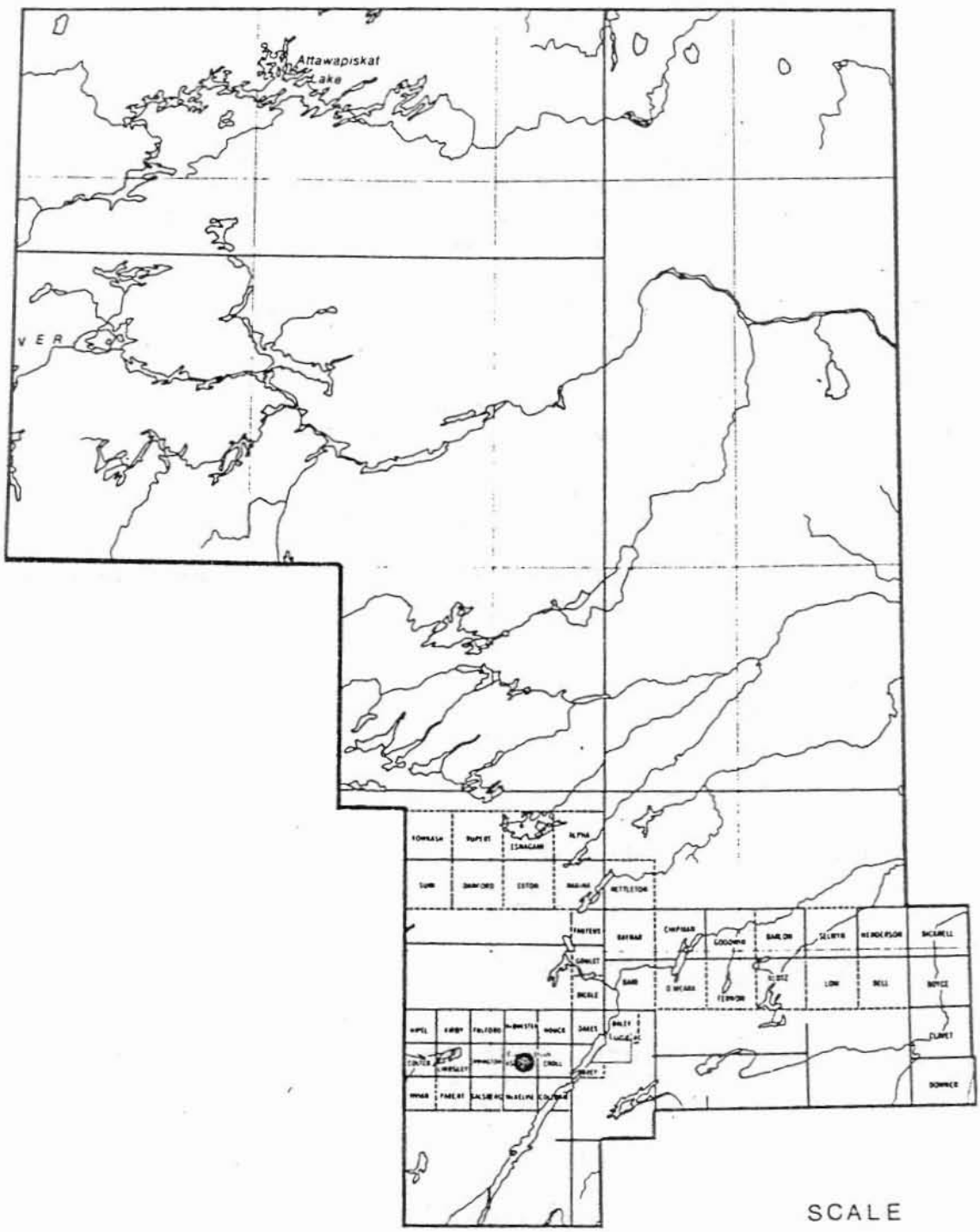
Kilometres

Spruce Budworm, *Choristoneura fumiferana* (Clem.)

Host(s): bF, spruce [Major]

Year	Remarks
1950	After several years of declining populations, only small numbers of larvae were observed; however, a small area of moderate-to-severe tree mortality was evident in Ashmore Township (see map, page 24).
1951	trace population
1952-1955	not reported
1956	Light defoliation was evident in a small area in the southwest corner of the District (see map, page 25).
1957	Light defoliation recurred in the southwest corner of the District (see map, page 26).
1958	Populations increased and caused moderate-to-severe defoliation in a small area in the southwest corner of the District (see map, page 27).
1959-1963	not reported
1964-1966	trace populations at scattered locations
1967	not reported
1968	small numbers observed 16 km east of Longlac
1969-1974	not reported
1975-1976	trace population at scattered points
1977	Populations remained at a low level except in parts of Clavet, Boyce and Downer townships where white spruce trees through 20,000 ha of forest suffered moderate-to-severe defoliation (see map, page 28).
1978	The area of infestation reported in the eastern part of the District more than doubled in size and caused moderate-to-severe defoliation through approximately 45,340 ha of forest (see map, page 29). Elsewhere in the District populations remained low.
1979	The area of infestation continued to increase (see map, page 30).
1980	The area of infestation continued to increase (see map, page 31).

GERALDTON DISTRICT



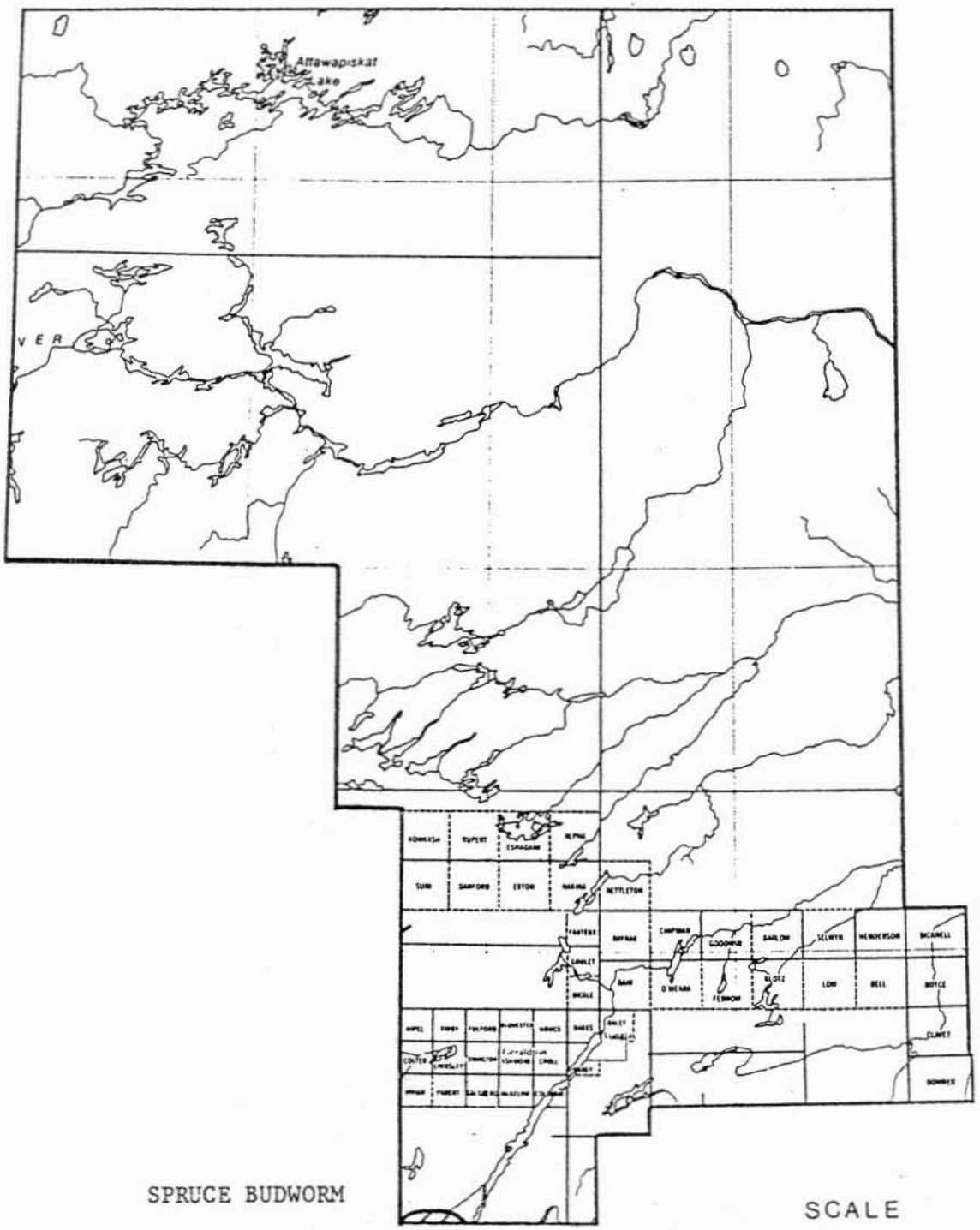
SPRUCE BUDWORM

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

LEGEND

Mortality ●

GERALDTON DISTRICT



SPRUCE BUDWORM

Areas within which defoliation occurred in 1956

LEGEND

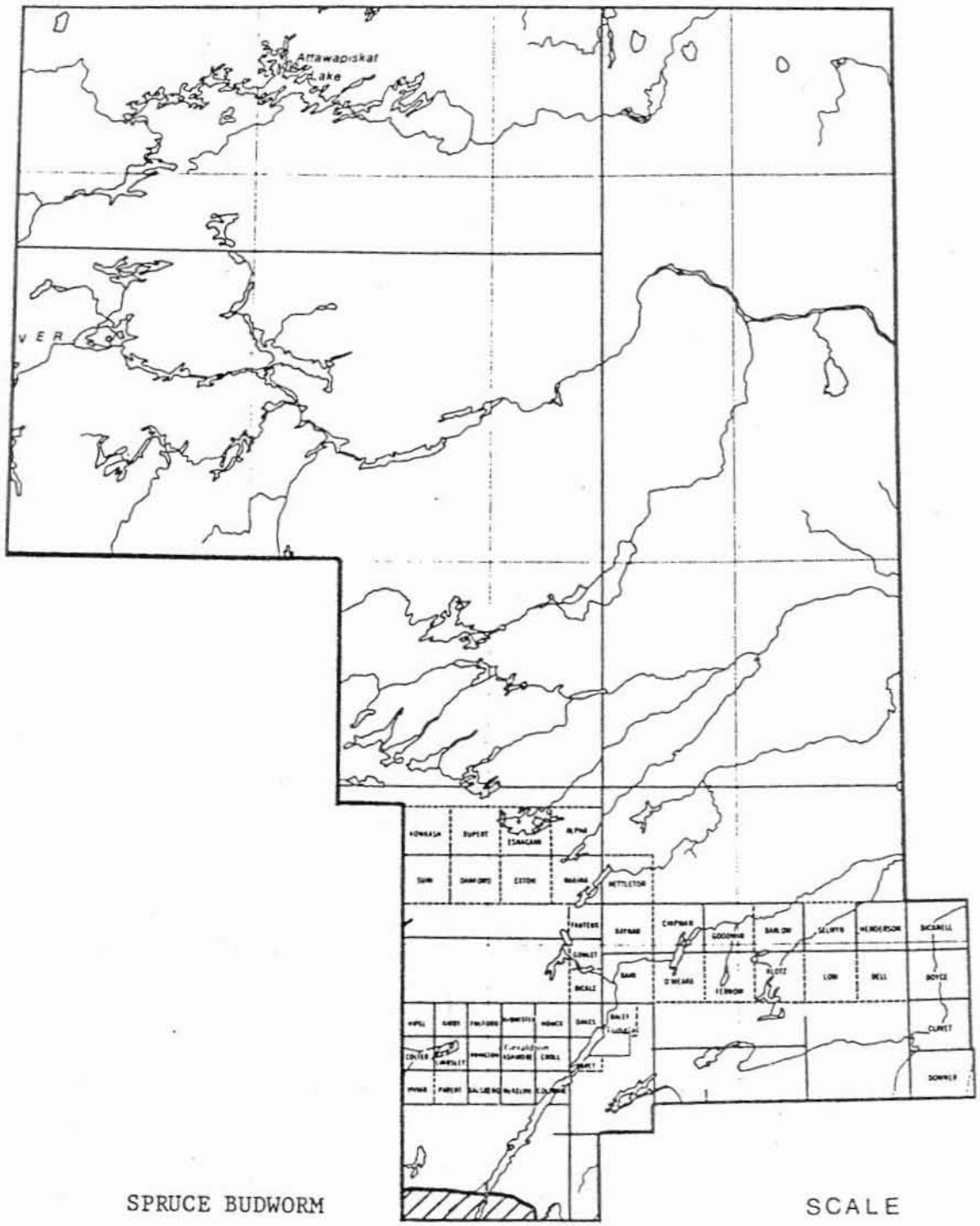
Light defoliation

SCALE

0 40

Kilometres

GERALDTON DISTRICT



SPRUCE BUDWORM

Areas within which defoliation occurred in 1957

LEGEND

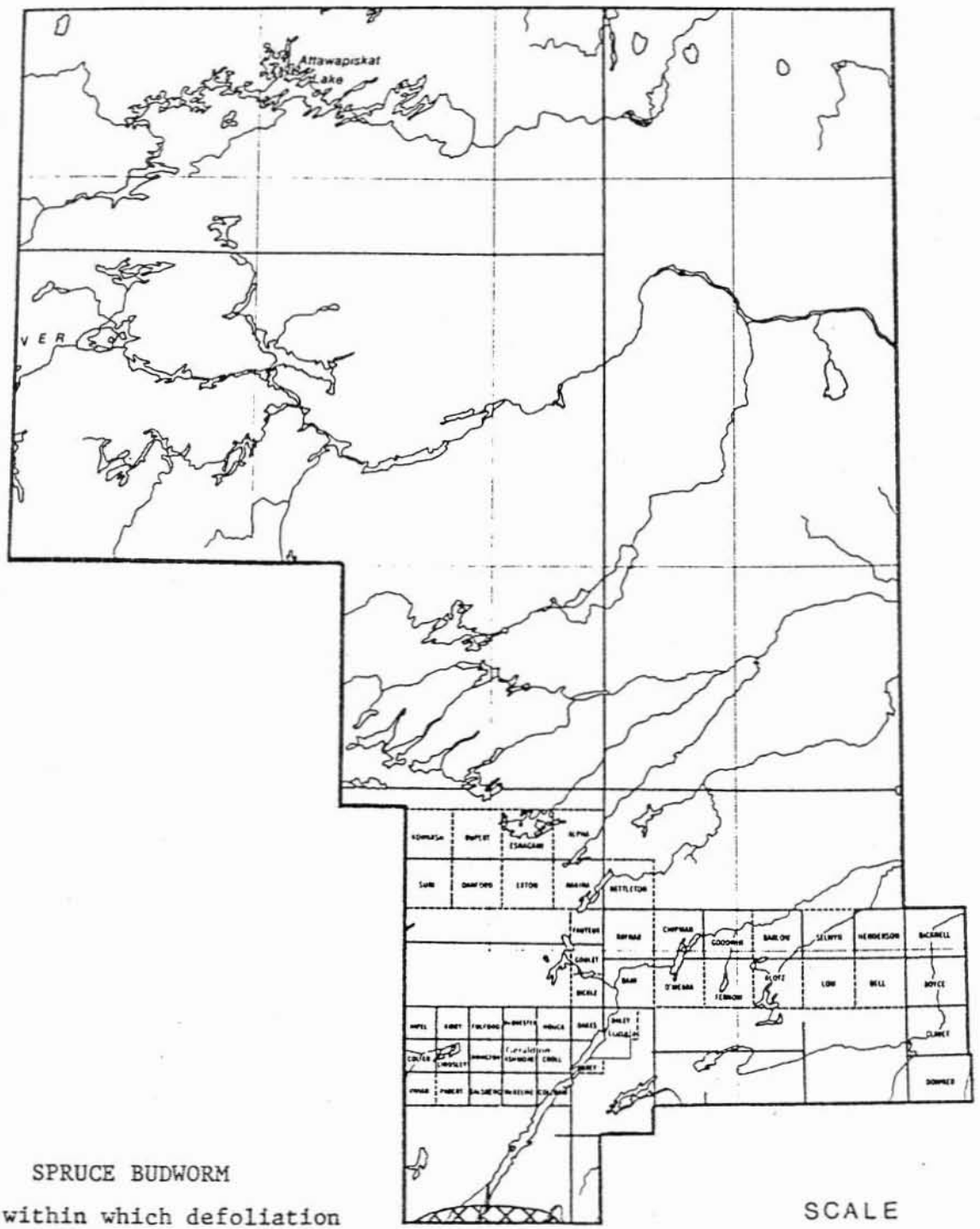
Light defoliation

SCALE

0 40

Kilometres

GERALDTON DISTRICT



SPRUCE BUDWORM

Areas within which defoliation occurred in 1958

LEGEND

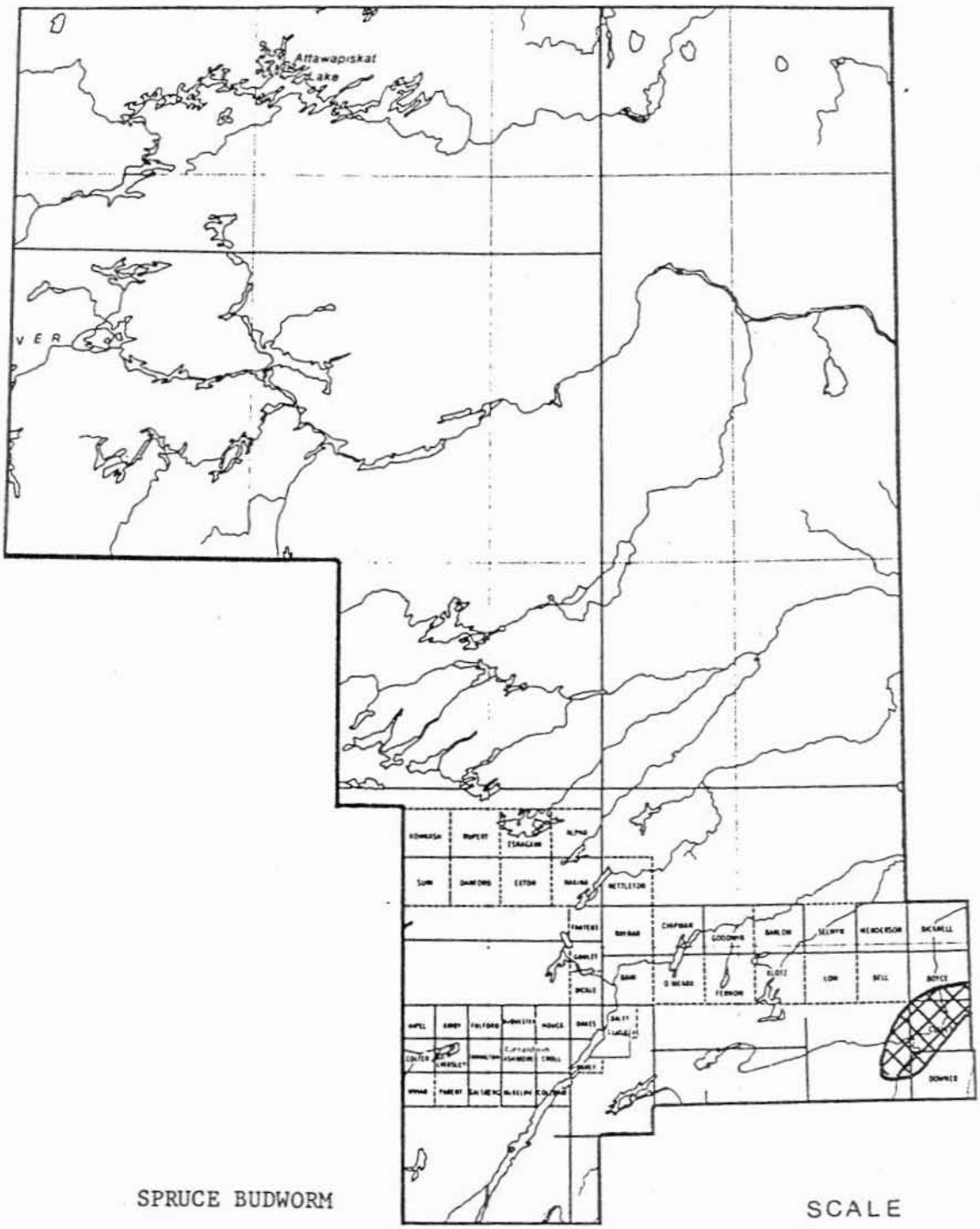
Moderate-to-severe defoliation

SCALE

0 40

Kilometres

GERALDTON DISTRICT



SPRUCE BUDWORM

Areas within which defoliation occurred in 1977

LEGEND

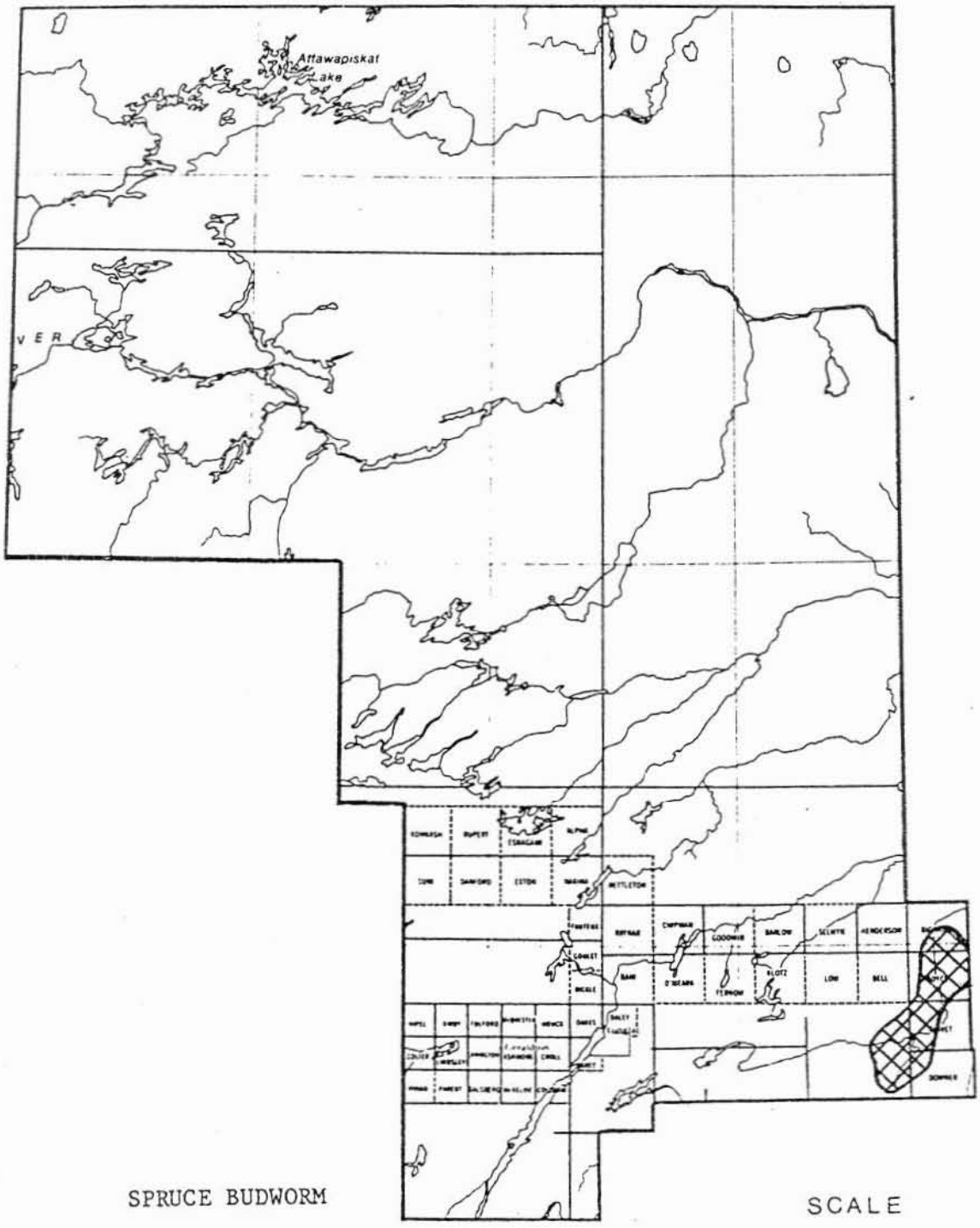
Moderate-to-severe defoliation

SCALE

0 40

Kilometres

GERALDTON DISTRICT



SPRUCE BUDWORM

Areas within which defoliation occurred in 1978

LEGEND

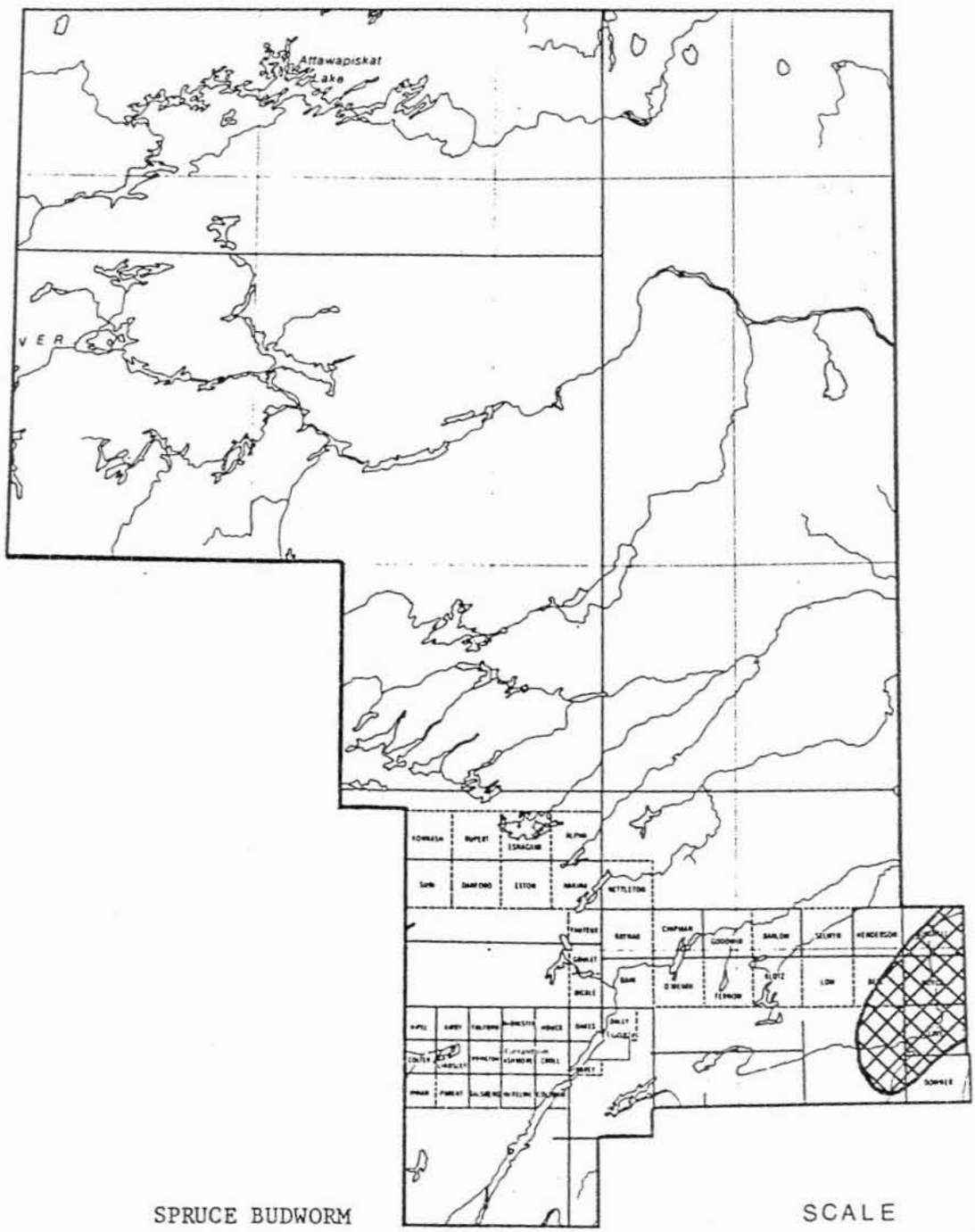
Moderate-to-severe defoliation

SCALE

0 40

Kilometres

GERALDTON DISTRICT



SPRUCE BUDWORM

Areas within which defoliation occurred in 1979

LEGEND

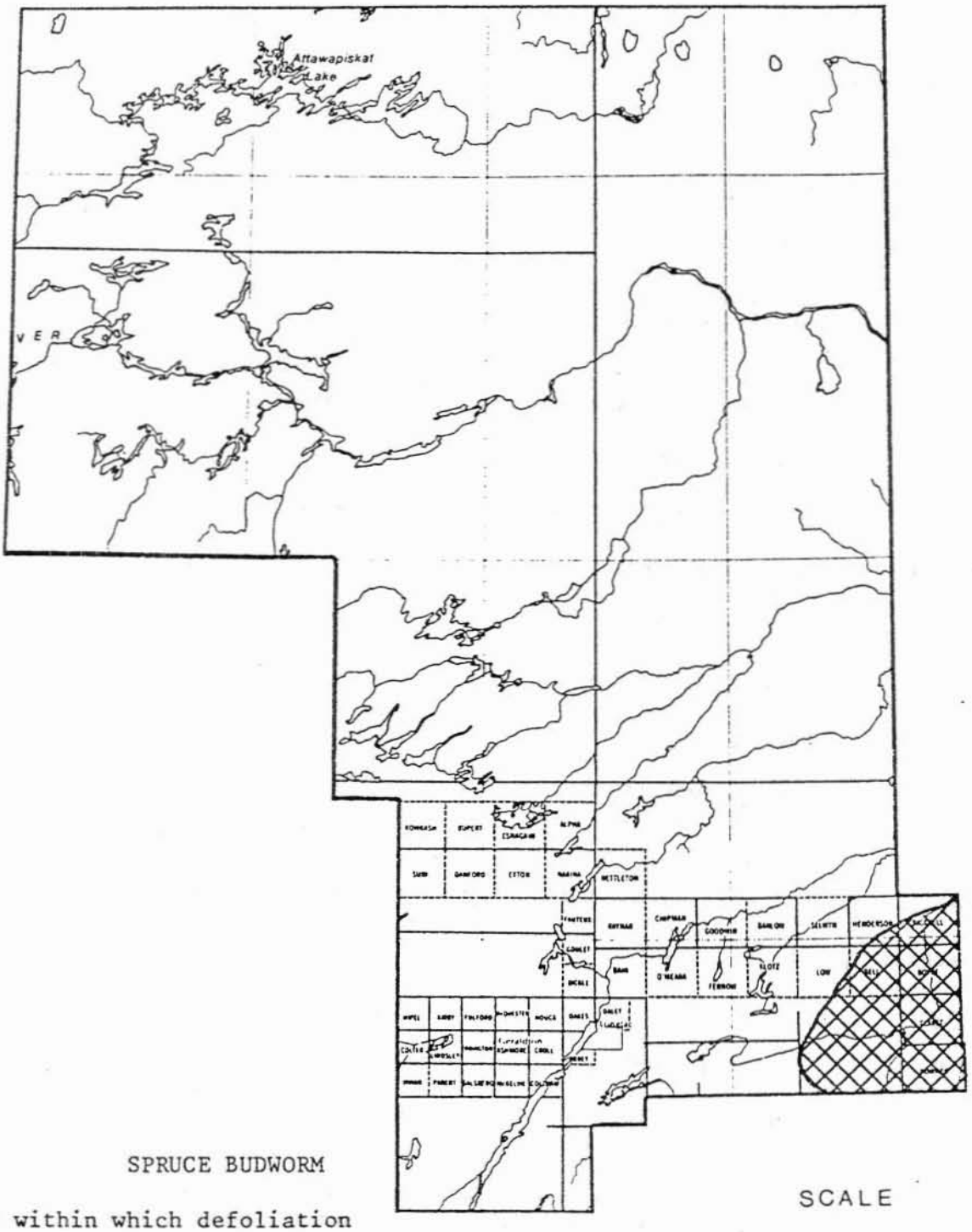
Moderate-to-severe defoliation

SCALE

0 40

Kilometres

GERALDTON DISTRICT



SPRUCE BUDWORM

Areas within which defoliation occurred in 1980

LEGEND

Moderate-to-severe defoliation

Larch Casebearer, *Coleophora laricella* (Hbn.)

Host(s): larch [Major]

Year	Remarks
1950-1963	not reported
1964	Small numbers were collected in Croll Township, marking a northward extension in distribution.
1965	An increase in distribution was recorded when larvae were collected in Ashmore and Oakes townships.
1967	low populations
1968	Populations increased in Croll Township.
1969-1971	small numbers
1972	not reported
1973	trace population
1974-1979	not reported
1980	small pockets of light infestation occurred in Ashmore and Oakes townships.

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

Host(s): poplar, willow [Major]

Year	Remarks
1950	not reported
1951	Trace populations were evident in Exton and Ashton townships and at Kloty Lake.
1952	Medium-to-high populations occurred in the Nakina area and trace populations recurred in Ashton Township and at Kloty Lake.
1953-1955	not reported
1956	trace population
1957	not reported
1958	Trace populations were observed in the Nakina area.

(cont'd)

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

Host(s): poplar, willow [Major]

Year	Remarks
1959	Light defoliation was evident in the Nakina area.
1960	trace population
1961	Trace populations occurred along the Canadian National Railway between Nakina and Pagwa and on Hwy 11 west of the town of Geraldton.
1962	Trace populations were observed at widely scattered points.
1963	Pockets of light defoliation occurred in the Caramat area.
1964	Trace populations were evident in Exton and Nakina townships.
1965	Light defoliation occurred in the Nakina area.
1966	Light defoliation was evident in O'Meara Township.
1967	Populations declined in O'Meara Township.
1968	trace populations observed at scattered points
1969-1970	not reported
1971	trace populations
1972	Light defoliation occurred in Rupert Township.
1973	not reported
1974	Moderate-to-severe defoliation was evident in Kowkash, Nakina, Bain and O'Meara townships.
1975	Populations declined to light intensity in Kowkash, Nakina Bain and O'Meara townships.
1976	Small pockets of medium-to-heavy infestation occurred in Kowkash and Nakina townships and light defoliation was evident in Bain and O'Meara townships.
1977-1980	Low populations were observed at widely separated points.

Forest Tent Caterpillar, *Malacosoma disstria* Hbn.

Host(s): aspen, deciduous [Major]

Year	Remarks
1950	A small pocket of infestation caused moderate-to-severe defoliation along Hwy 11 in the Kloty Lake area.
1951	A sharp decline in the population was evident.
1952	Populations increased and caused moderate-to-severe defoliation in the vicinity of Low, Bell, Bicknell, Boyce, Clavet and Downer townships and in Barlow and Selwyn townships, northwest of the above area (see map, page 36).
1953	The infestation spread westward, marking a slight increase in the overall area within which moderate-to-severe defoliation occurred (see map, page 37).
1954	Populations collapsed; no caterpillars were observed.
1955	trace numbers in Ashmore Township
1956	trace population
1957-1958	not reported
1959-1960	trace population
1961-1962	not reported
1963	trace population in Ashmore Township
1964	trace population at Kloty Lake
1965-1971	not reported
1972	Light infestations occurred in Suni and Rupert townships.
1973	Populations increased and caused moderate-to-severe defoliation in parts of Bicknell and Boyce townships in the eastern part of the District. Light defoliation was mapped in this area as well, and in eight townships along and north of Hwy 11 in the western part of the District (see map, page 39).
1974	Moderate-to-severe defoliation recurred in parts of Bicknell, Boyce and Bell townships and in Clavet and Low townships in the eastern part of the District (see map, page 40).The light infestation previously reported in the western part of the District collapsed.

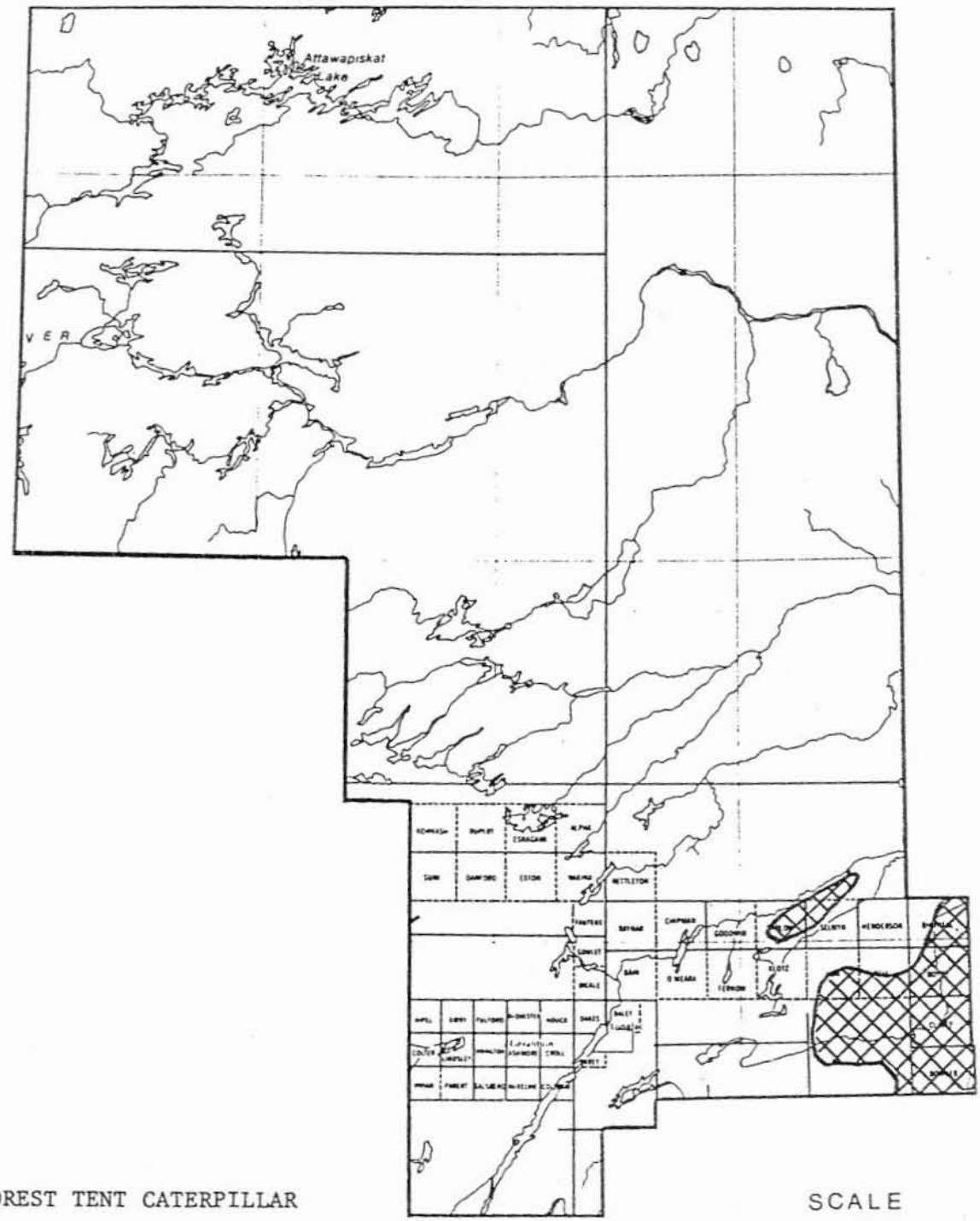
(cont'd)

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

Host(s): aspen, deciduous [Major]

Year	Remarks
1975	Moderate-to-severe defoliation recurred for the third consecutive year in Bicknell, Boyce, Bell, Low and Clavet townships (see map, page 41).
1976	There was little change in the previously mentioned infestation except in Bell Township, where populations decreased and defoliation was light (see map, page 42).
1977-1978	Small areas of medium-to-heavy infestation persisted in Boyce and Clavet townships.
1979-1980	not reported

GERALDTON DISTRICT



FOREST TENT CATERPILLAR

Areas within which defoliation occurred in 1952

LEGEND

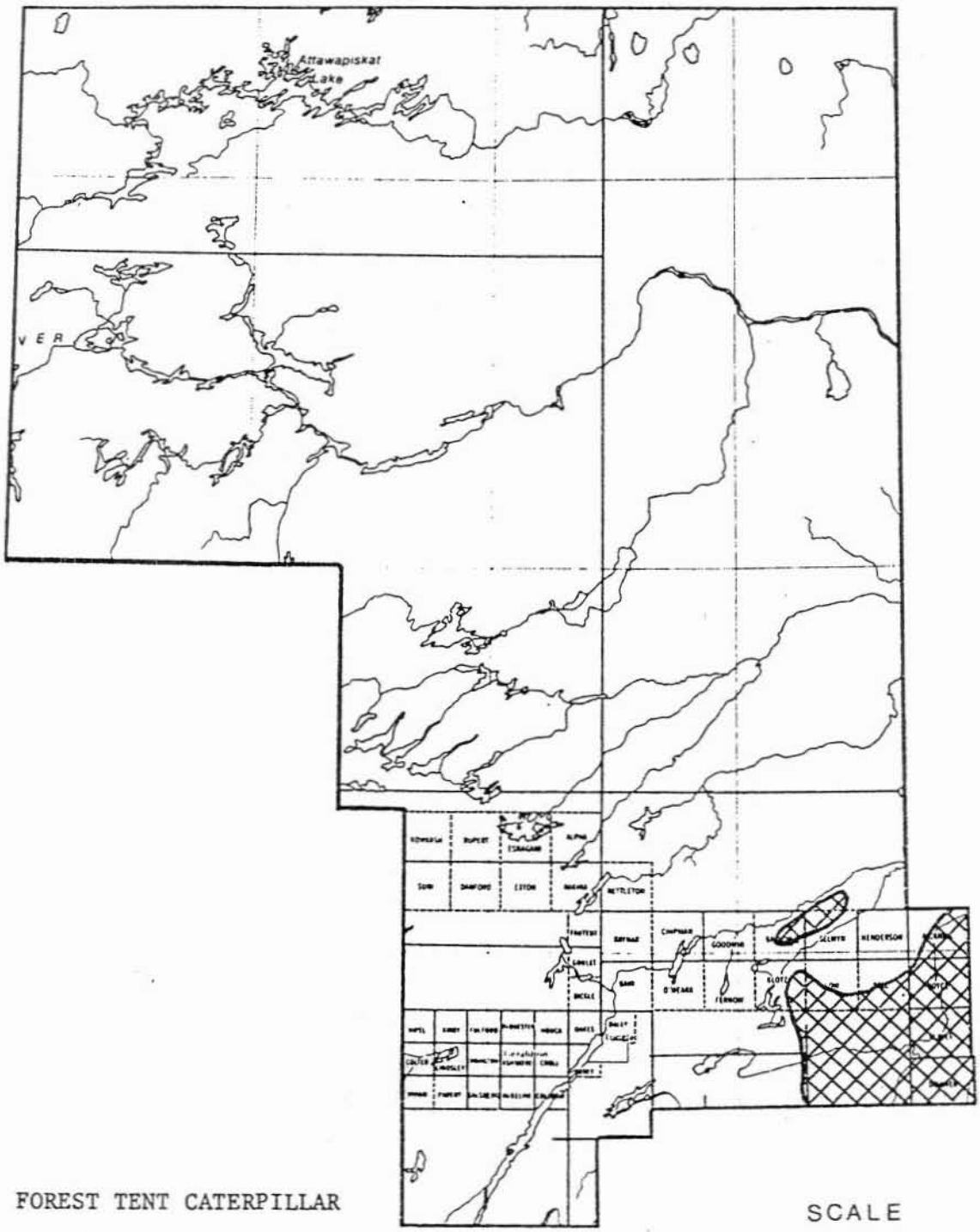
Moderate-to-severe defoliation

SCALE

0 40

Kilometres

GERALDTON DISTRICT



FOREST TENT CATERPILLAR

Areas within which defoliation occurred in 1953

LEGEND

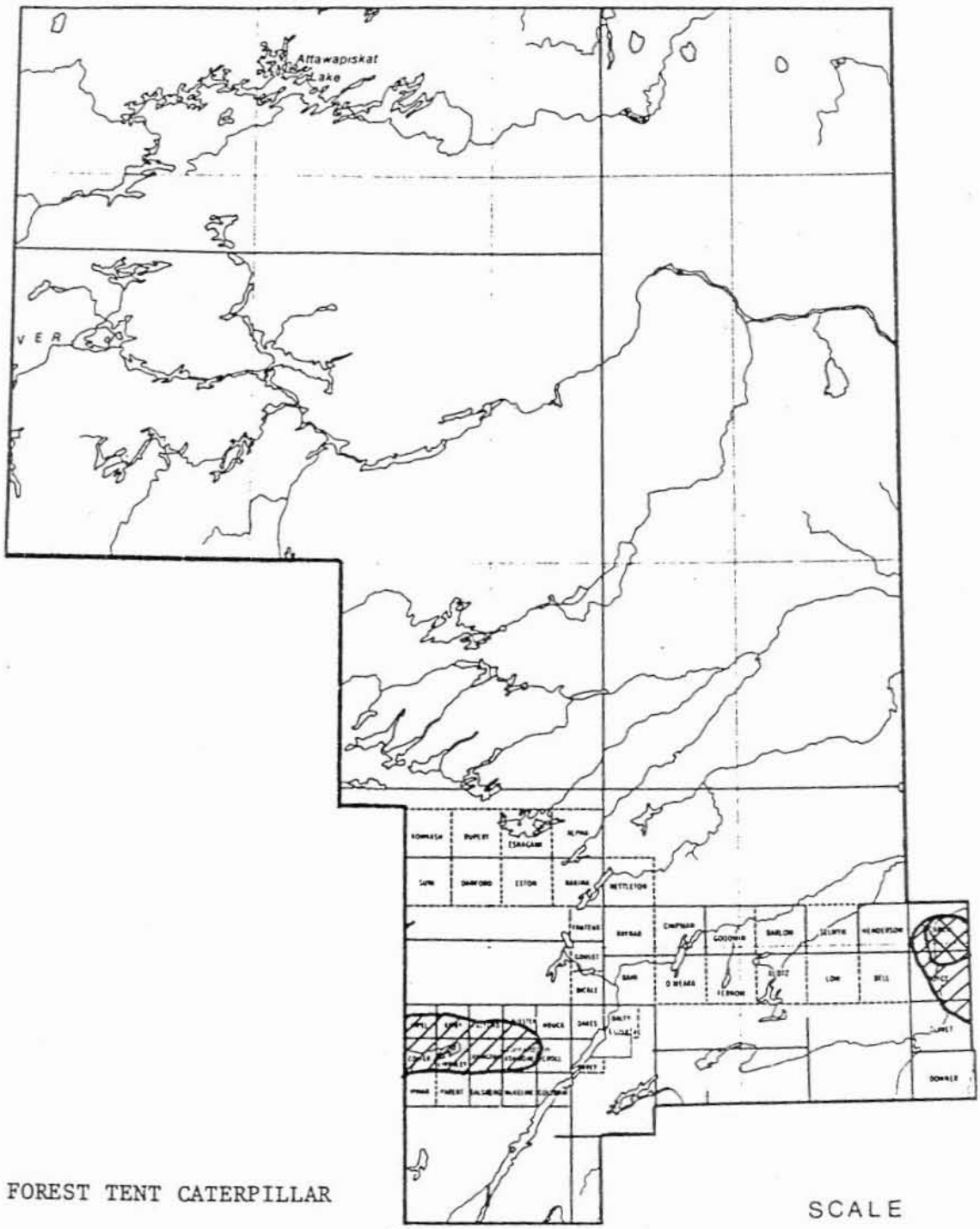
Moderate-to-severe defoliation

SCALE

0 40

Kilometres

GERALDTON DISTRICT



FOREST TENT CATERPILLAR

Areas within which defoliation occurred in 1973

LEGEND

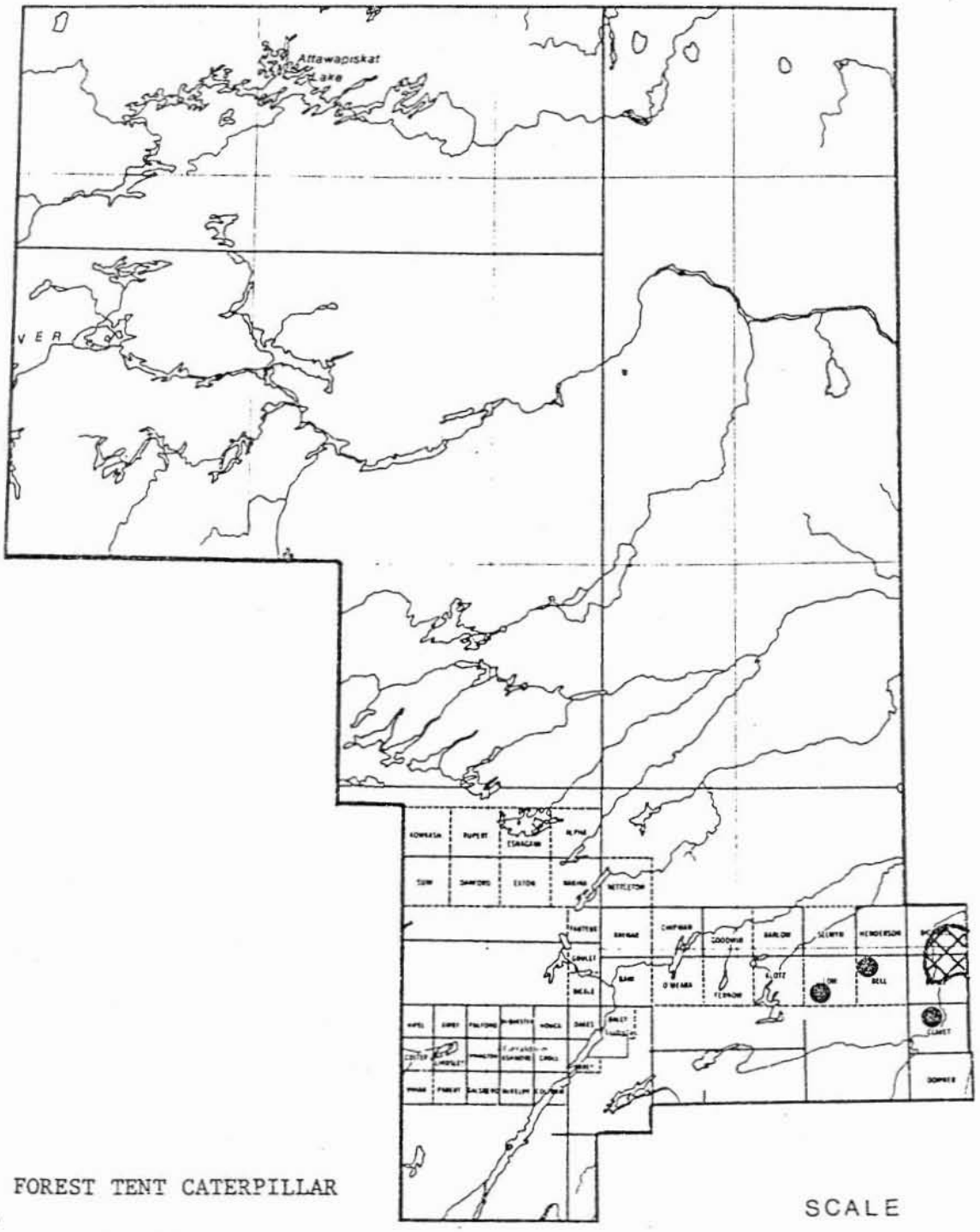
Moderate-to-severe defoliation

SCALE

0 40

Kilometres

GERALDTON DISTRICT



FOREST TENT CATERPILLAR

Areas within which defoliation occurred in 1974

LEGEND

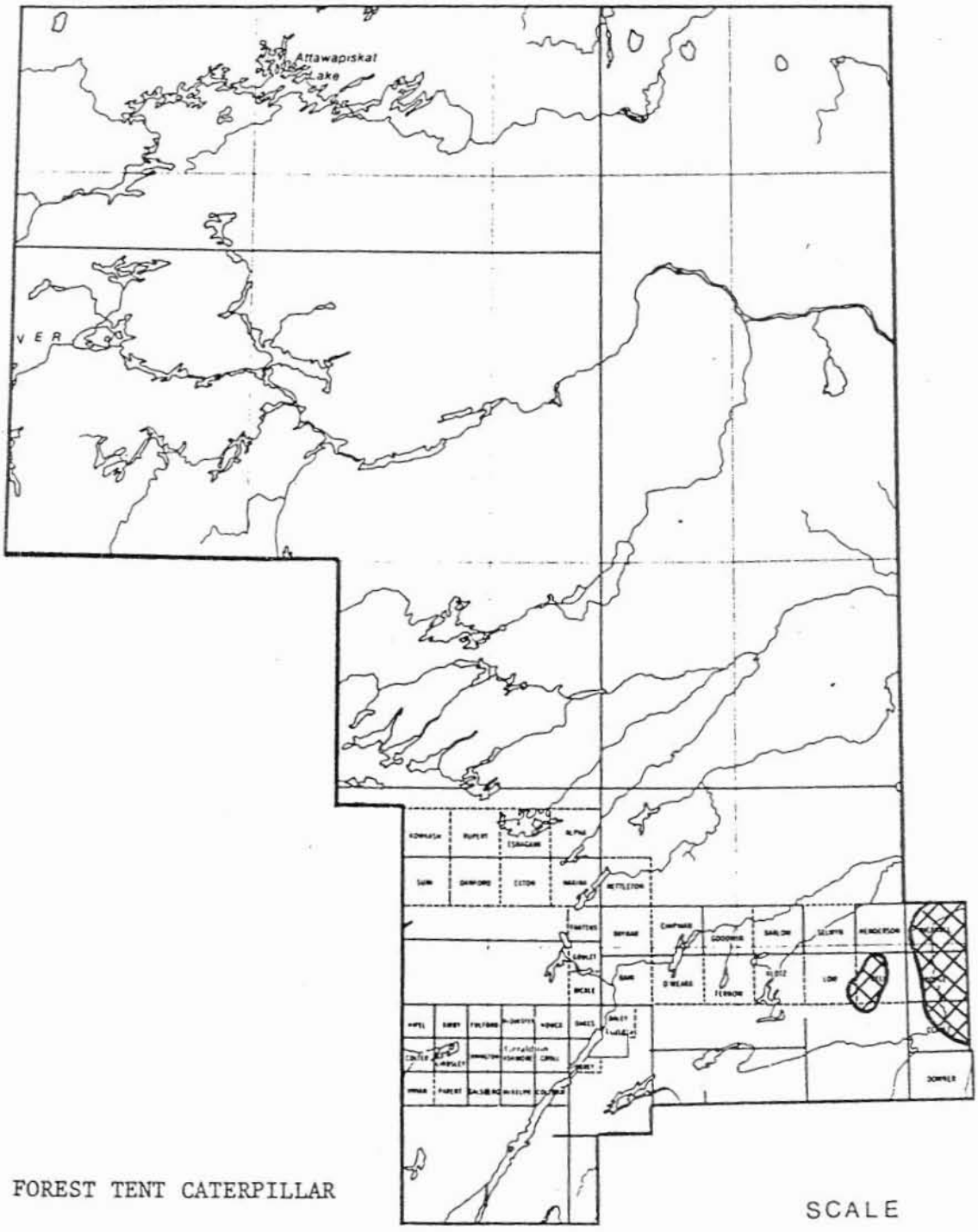
Moderate-to-severe defoliation or

SCALE

0 40

Kilometres

GERALDTON DISTRICT



FOREST TENT CATERPILLAR

Areas within which defoliation occurred in 1975

SCALE

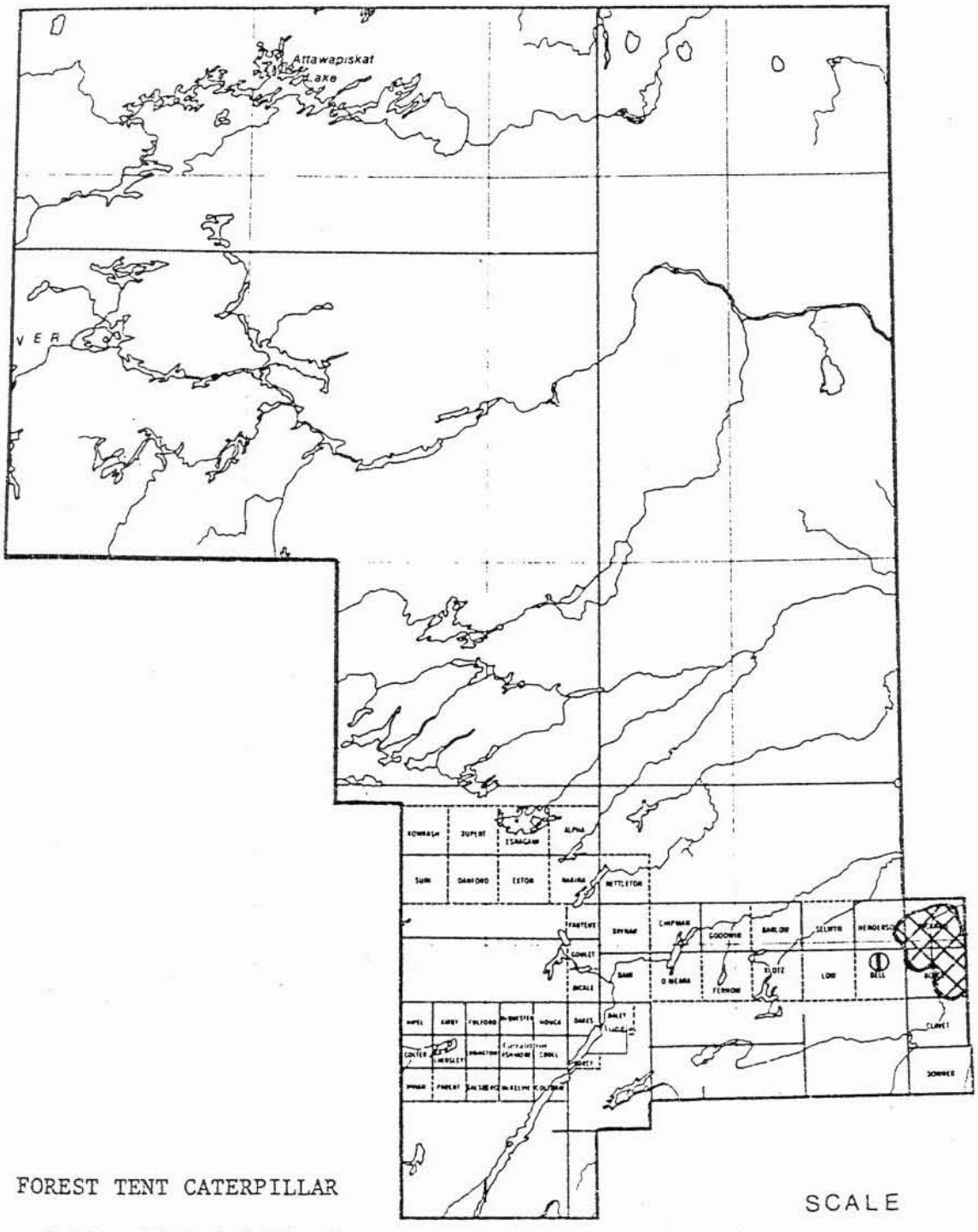
0 40

Kilometres

LEGEND

Moderate-to-severe defoliation

GERALDTON DISTRICT



FOREST TENT CATERPILLAR

Areas within which defoliation occurred in 1976

LEGEND

Light defoliation

Moderate-to-severe defoliation

SCALE

0 40

Kilometres

Sawyer Beetles, *Monochamus* sp.

Host(s): coniferous [Major]

Year	Remarks
1950-1954	not reported
1955	heavy in log skidways east of Geraldton
1956	not reported
1957	trace population
1958	not reported
1959-1960	trace population in Ashmore Township
1961-1975	not reported
1976	adult beetles observed in jack pine and spruce stands at numerous points in the District
1977	Adult feeding caused twig and small branch mortality at scattered points from the western District boundary eastward to the Longlac area.
1978	light adult feeding damage observed at scattered points
1979	Small numbers of adults were observed in the Springwater Lake area and in Fernow Township, where adult feeding caused light twig mortality.
1980	Light twig and branch mortality was evident in the Springwater and Castlebar Lakes area.

Balsam Fir Sawfly, *Neodiprion abietis* complex

Host(s): bF spruce [Major]

Year	Remarks
1950-1953	not reported
1954	Small numbers occurred in the Nakina area.
1955	A light population was observed in Errington Township.
1956-1960	not reported
1961	Small numbers occurred at widely separated points.

(cont'd)

Balsam Fir Sawfly, *Neodiprion abietis* complex (concl.)

Host(s): bF, spruce [Major]

Year	Remarks
1962	Light defoliation occurred on ornamental spruce in Geraldton.
1963-1967	trace population
1968-1971	not reported
1972-1973	Small numbers were observed at scattered points.
1974-1975	A pocket of light infestation was evident in Clavet Township.
1976-1977	trace population
1978-1980	not reported

Red Pine Sawfly, *Neodiprion nanulus nanulus* Schedl.

Host(s): rP jP [Major]

Year	Remarks
1950-1954	not reported
1955	Small numbers of larval colonies were observed in the Castlebar and Kloty lakes area.
1956	Light defoliation occurred on small, open-grown jack pine in the Geraldton-Longlac and McKay Lake area.
1957	Light populations were observed at widely separated points.
1958-1960	not reported
1961	trace population
1962-1963	not reported
1964-1965	trace population
1966	not reported
1967	Small numbers were observed in Ashmore, McQuesten and Croll townships.

(cont'd)

Red Pine Sawfly, *Neodiprion nanulus nanulus* Schedl. (concl.)

Host(s): rP jP [Major]

Year	Remarks
1968	trace population near Nakina
1969	trace population
1970	not reported
1971	Small numbers were observed in the Geraldton-Longlac area.
1972-1979	not reported
1980	trace population

Jack Pine Sawfly, *Neodiprion pratti banksianae* Roh.

Host(s): jP [Major]

Year	Remarks
1950-1954	not reported
1955	Small numbers of larval colonies occurred at scattered locations along Hwy 11 from Colter Township eastward to the vicinity of Kloty Lake.
1956	Larval colonies were observed in the Geraldton-Longlac area and near Seagram on the Canadian National Railway.
1957	Populations collapsed.
1958-1965	not reported
1966	trace population
1967	not reported
1968	trace population in Errington Township
1969-1970	not reported
1971	small numbers in Rupert and Ashmore townships
1972	not reported
1973-1975	light defoliation evident in Ashmore Township
1976-1977	small numbers observed at widely separated points
1978-1980	not reported

Redheaded Jack Pine Sawfly, *Neodiprion virginianus* complex

Host(s): jP [Major]

Year	Remarks
1950-1953	not reported
1954	Small numbers of larval colonies were observed at Ara Lake and in the Nakina area, and along Hwy 11 between the towns of Jellicoe and Longlac.
1955	The distribution of this sawfly increased markedly. Larval colonies were observed at several points along the Canadian National Railway from the western boundary of the District eastward to Barlow Township and along Hwy 11 west of Longlac as far as Colter Township.
1956	Small numbers of larval colonies were evident in the Geraldton-Longlac area.
1957-1958	trace population
1959	Populations increased. Small numbers of larval colonies were observed at widely scattered points.
1960	There was little change in population levels except in Ashmore Township, where moderate-to-severe defoliation was evident on a small number of trees.
1961-1962	Light populations were observed at widely scattered points.
1963-1964	small numbers observed in Colter Township
1965	not reported
1966	small numbers observed at scattered locations
1967	not reported
1968	Moderate-to-severe defoliation occurred on a small number of trees in McQuesten Township. Trace populations were observed in the Geraldton, Longlac and Nakina areas.
1969-1973	not reported
1974	Small numbers occurred in O'Meara Township.
1975	not reported

(cont'd)

Redheaded Jack Pine Sawfly, *Neodiprion virginianus* complex (concl.)

Host(s): jP [Major]

Year	Remarks
1976-1977	Moderate-to-severe defoliation occurred in a small area in Raynar Township.
1978-1979	Moderate-to-severe defoliation was observed at scattered points along Hwy 11 east of Longlac.
1980	Populations declined to a low level.

Northern Pitch Twig Moth, *Petrova albicapitana* (Busck)

Host(s): jP [Minor]

Year	Remarks
1950-1954	not reported
1955	trace population in Errington Township
1956	Populations increased and caused moderate-to-severe damage in a small area of jack pine regeneration in Errington Township.
1957	little change in population levels
1958	Although population levels declined, small numbers were widespread throughout the District.
1959-1962	trace population
1963-1964	not reported
1965	trace population
1966-1967	not reported
1968	Light populations were recorded in the Longlac area and at scattered points north of Geraldton.
1969-1970	not reported
1971	Medium-to-high populations were observed in a lodgepole pine plantation in O'Meara Township.
1972	Populations declined to a light level in O'Meara Township and at scattered points elsewhere in the District.
1977-1980	not reported

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

Host(s): spruce [Major]

Year	Remarks
1950	not reported
1951	trace populations in the central and southern part of the District
1952	Small numbers were commonly observed in O'Meara Township and trace populations were evident at widely scattered points elsewhere in the District.
1953	trace population
1954	Moderate-to-severe defoliation occurred in 0.60 ha of a black spruce plantation in the Seagram Lake area. Trace populations were observed at scattered locations elsewhere.
1955	not reported
1956	Light infestations occurred in a black spruce plantation in the Seagram Lake area and on reproduction spruce along Hwy 11 in Colter, Errington and Ashmore townships.
1957	A light infestation occurred on scattered clumps of white spruce trees in Fulford Township; elsewhere, populations declined sharply.
1958	Moderate-to-severe defoliation occurred on a white spruce hedgerow in the town of Longlac and at one point in the vicinity of the town of Geraldton. Small areas of light infestation were observed near Seagram Lake and on Hwy 11 at Pagwachan River.
1959	Moderate-to-severe defoliation occurred in the town of Longlac, at Ogoki Lake and at scattered locations along Hwy 625. Light populations were observed at a few points elsewhere in the District.
1960	Little change in population levels could be determined.
1961	trace populations
1962	Light defoliation occurred on ornamental white spruce trees in Ashmore Township. Elsewhere, only a trace of defoliation could be found.

(cont'd)

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

Host(s): spruce [Major]

Year	Remarks
1963	not reported
1964	trace population
1965	light populations evident in the Nakina area; trace elsewhere
1966	Populations increased and caused moderate-to-severe defoliation in the town of Geraldton. Light defoliation was observed at scattered points in Ashmore Township.
1967	Moderate-to-severe defoliation occurred on small, scattered white spruce in the Nakina area and in Ashmore Township; elsewhere only light defoliation could be found.
1968	Moderate-to-severe defoliation was recorded on scattered pockets of white spruce in Rupert and Ashmore townships and at Kloty Lake. Elsewhere, light defoliation was observed at widely scattered points.
1969	Moderate-to-severe defoliation occurred on ornamental spruce in the town of Geraldton. Elsewhere, defoliation was negligible.
1970-1973	Varying degrees of defoliation occurred in towns and villages in the District.
1974	Varying degrees of defoliation were observed at scattered points.
1975-1976	Moderate-to-severe defoliation occurred on small numbers of ornamentals in the towns of Geraldton and Longlac.
1977	Populations declined, causing only light defoliation in the towns of Geraldton and Longlac.
1978-1979	Moderate-to-severe defoliation occurred on small-diameter white spruce in Kloty Lake Provincial Park. Elsewhere, defoliation was negligible.
1980	Medium-to-heavy infestation persisted in Kloty Lake Provincial Park. Heavy damage was also recorded on ornamentals in the town of Geraldton. Small numbers were observed at widely scattered locations elsewhere in the District.

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

Host(s): aspen [Major]

Year	Remarks
1950	Moderate-to-severe defoliation occurred in immature aspen stands in Ashmore Township, along the shoreline of Long Lake, and along the Canadian National Railway between Nakina and the Pagwachuan River.
1951	Medium-to-heavy infestations occurred in immature aspen stands throughout the District.
1952	Populations remained high in many areas. Pockets of light defoliation were also observed at numerous points.
1953	Populations declined to a low level.
1954-1955	not reported
1956	trace population
1957	Light infestations were observed at numerous points east of Longlac; light populations occurred at scattered points elsewhere.
1958-1960	trace population
1961	Small pockets of moderate-to-severe defoliation occurred at Ogoki, Castlebar and Superb lakes and along the Auden Road. Trace populations were observed at scattered points elsewhere.
1962	Medium-to-heavy infestations occurred in the Nakina area and in the southwestern part of the District. Small numbers were observed at numerous points elsewhere.
1963	Populations increased and caused moderate-to-severe leafmining throughout the central and northern parts of the District.
1964	Populations collapsed.
1965-1966	trace population
1967	not reported
1968	Populations increased and caused moderate-to-severe leafmining at O'Sullivan Lake. Trace populations were observed at scattered points elsewhere.

(cont'd)

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

Host(s): aspen [Major]

Year	Remarks
1969-1970	not reported
1971	Populations caused moderate-to-severe leafmining along Hwy 11 and at numerous points north of this area.
1972-1980	Pockets of light and medium-to-heavy infestations were observed at many points.

White Pine Weevil, *Pissodes strobi* (Peck)

Host(s): pine, spruce [Major]

Year	Remarks
1950	not reported
1951	Light damage occurred on jack pine regeneration along Hwy 11 between the town of Geraldton and the western boundary of the District
1952-1954	not reported
1955	Trace populations occurred on jack pine regeneration in McQuesten and Croll townships and on black spruce in Croll Township as well.
1956	trace population
1957-1958	not reported
1959	trace population
1960-1963	small numbers widely distributed throughout the District
1966	Populations declined to trace levels at widely scattered points.
1967	Small numbers were observed at Flynne Lake.
1968	A sharp increase in populations occurred at Flynne Lake.
1969	Moderate-to-severe damage occurred in the Flynne Lake area.

(cont'd)

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

Host(s): pine, spruce [Major]

Year	Remarks
1970	trace population
1971	Moderate-to-severe damage occurred to lodgepole pine and black and white spruce in O'Meara Township.
1972	Moderate-to-severe damage recurred in O'Meara Township. Trace populations were evident at numerous locations elsewhere.
1973	Populations declined; however, moderate-to-severe damage occurred for the third consecutive year in O'Meara Township.
1974	Light infestations were evident on white spruce regeneration at scattered locations.
1975	Moderate-to-severe damage occurred on white spruce in O'Meara Township.
1976-1977	Small lodgepole pines were damaged in O'Meara Township.
1978-1979	Light damage was evident at scattered locations.
1980	Populations declined to a light level.

Larch Sawfly, *Pristiphora erichsonii* (Htg.)

Host(s): tL [Major]

Year	Remarks
1950	Pockets of light infestation occurred at several locations along the Canadian National Railway eastward from Nakina and along Hwy 11 eastward from Longlac and in the southwest corner of the District (see map, page 54).
1951	The distribution of this insect increased when light infestations were reported at numerous points along the Canadian National Railway eastward from Nakina, along Hwy 11 across the District and at scattered points south of Hwy 11 (see map, page 55).

(cont'd)

Larch Sawfly, *Pristiphora erichsonii* (Htg.) (cont'd)

Host(s): tL [Major]

Year	Remarks
1952	Populations increased and caused moderate-to-severe defoliation at several points in the Nakina and Kloty Lake areas and at one point near Longlac. Light defoliation was observed at numerous points along Hwy 11 as well (see map, page 56).
1953	Populations increased and caused moderate-to-severe defoliation through most of the area where infestations were previously reported (see map, page 57).
1954-1955	Little change in population levels occurred.
1956	Populations declined markedly. Although medium-to-heavy infestations persisted, the pockets decreased considerably in number from the previous year, and were generally replaced by pockets of light infestations (see map, page 58).
1957	Populations declined for the second consecutive year, and although numerous pockets of light infestation persisted, only two pockets of medium-to-heavy infestation could be found.
1958	Populations increased and caused pockets of moderate-to-severe defoliation at four points. Light defoliation was observed at several points elsewhere in the District (see map, page 59).
1959	Populations remained at much the same level as in the previous year (see map, page 60).
1960	Little change in population levels could be determined.
1961	Populations increased and caused moderate-to-severe defoliation at several points. Pockets of light infestation were widely distributed through the District (see map, page 61).
1962	Populations declined, leaving one pocket of medium-to-heavy infestation in Ashmore Township and several pockets of light infestation east of this area.
1963-1964	trace population

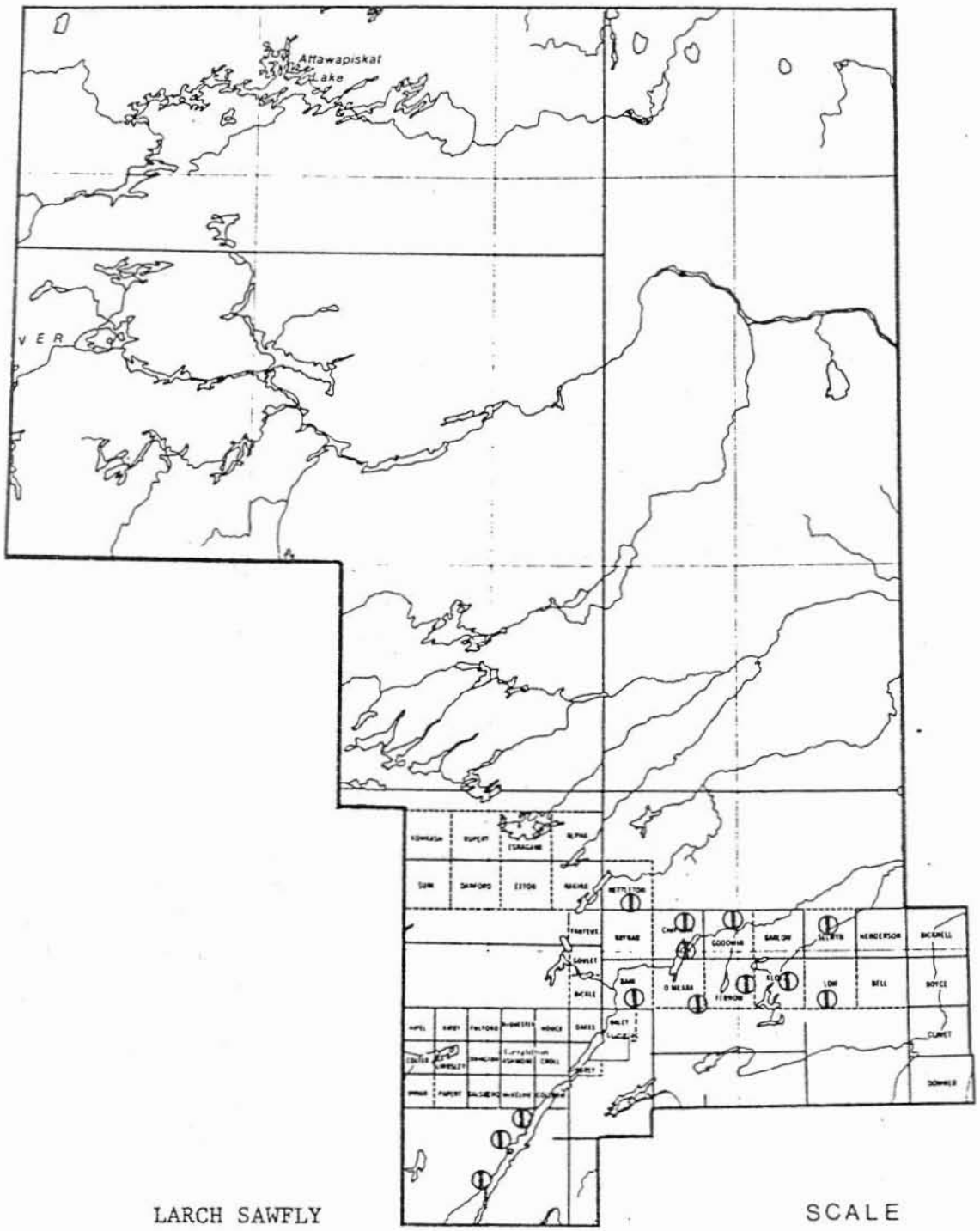
(cont'd)

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

Host(s): tL [Major

Year	Remarks
1965	Populations increased and caused moderate-to-severe defoliation at three points. A pocket of light infestation was recorded as well (see map, page 62).
1966	Populations increased for the second consecutive year and caused pockets of moderate-to-severe defoliation along Hwy 11 in the Geraldton area. A small number of lightly infested stands was observed as well (see map, page 63).
1967-1969	Little change in population levels occurred.
1970	Pockets of medium-to-heavy infestation occurred in Errington Township and at scattered locations elsewhere in the southern part of the District.
1971	Populations increased appreciably and caused moderate-to-severe defoliation at scattered points in the central part of the District.
1972-1973	Moderate-to-severe defoliation was observed commonly along Hwy 11 near the eastern boundary of the District. Elsewhere, populations declined to trace intensity.
1974	Populations collapsed.
1975	Populations increased and caused moderate-to-severe defoliation at two points north of Nakina. Light defoliation was also observed at scattered points along Hwy 11 east of Geraldton (see map, page 64)
1976	High populations recurred and caused moderate-to-severe defoliation at scattered points in the Nakina area.
1977	Moderate-to-severe defoliation recurred in the Nakina area and at several points along Hwy 11 east of Longlac. Pockets of light defoliation were observed at numerous points elsewhere.
1978	Generally, populations declined, except along Hwy 11 east of Longlac, where moderate-to-severe defoliation was observed.
1979	Populations declined to a light intensity.
1980	Populations increased and caused moderate-to-severe defoliation along Hwy 11 west of Geraldton and east of Longlac. Elsewhere, light defoliation was observed at widely scattered points.

GERALDTON DISTRICT



LARCH SAWFLY

Areas within which defoliation occurred in 1950

LEGEND

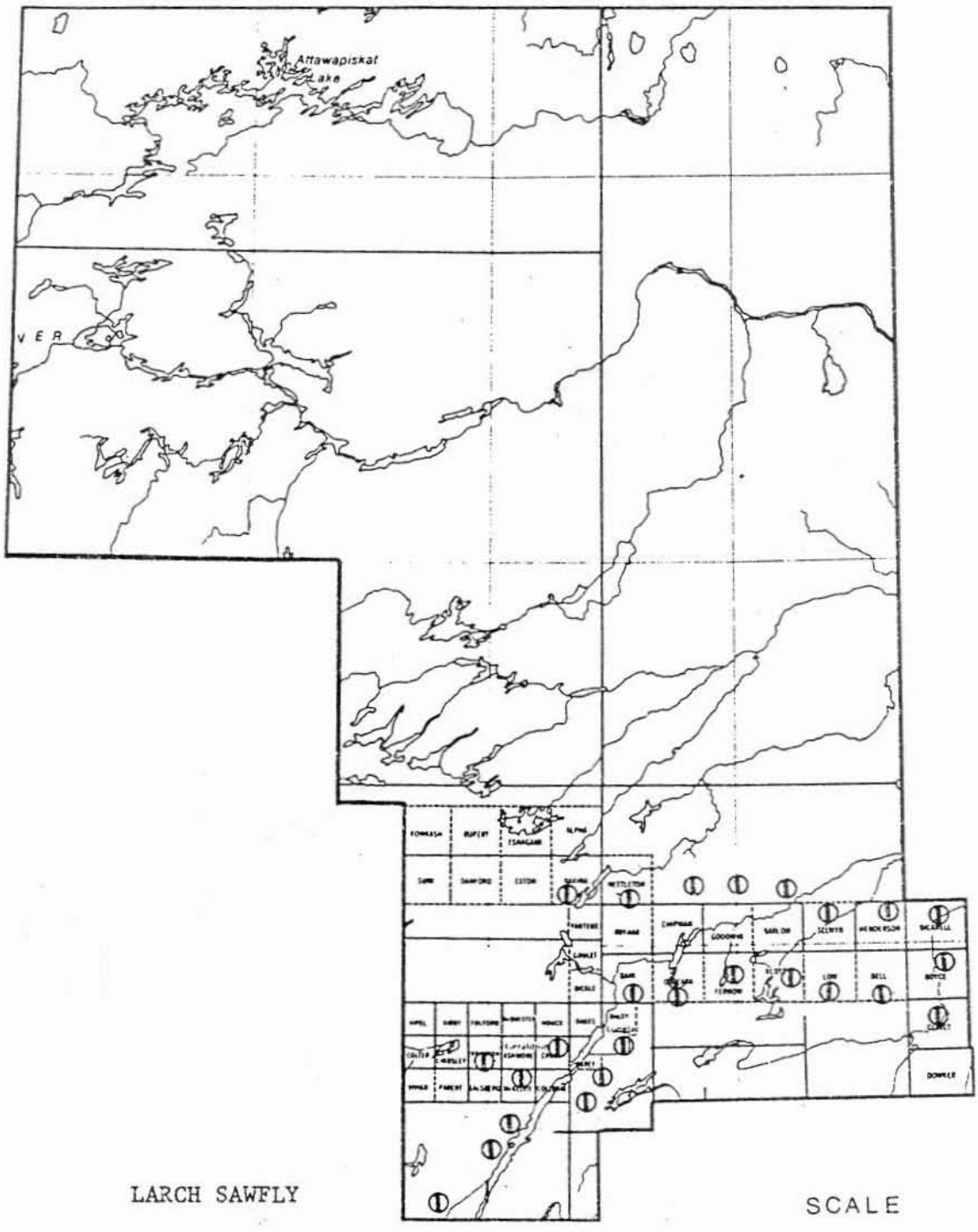
Light defoliation ◐

SCALE

0 40

Kilometres

GERALDTON DISTRICT



LARCH SAWFLY

SCALE

0 40

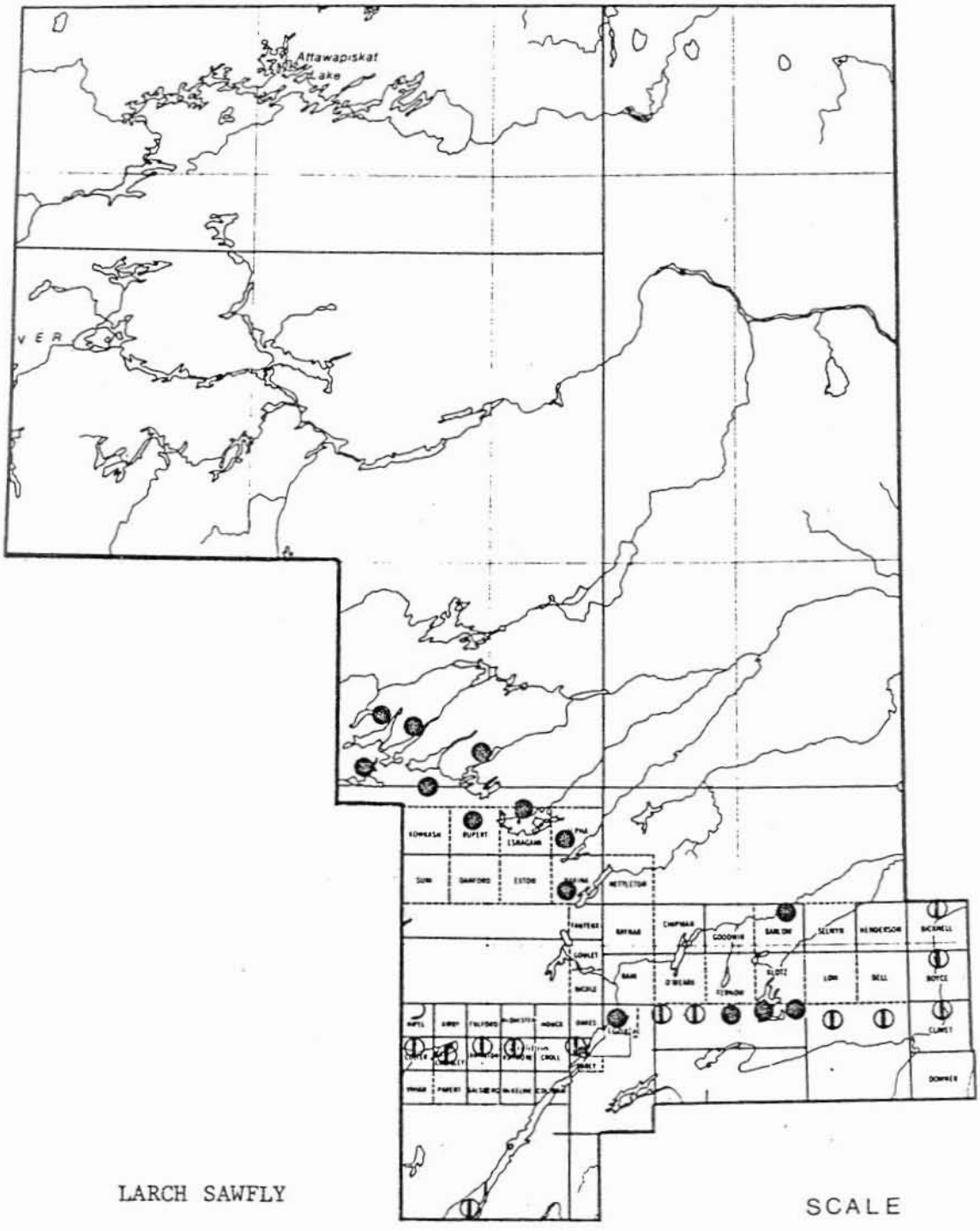
Kilometres

Areas within which defoliation occurred in 1951

LEGEND

Light defoliation ①

GERALDTON DISTRICT



LARCH SAWFLY

Areas within which defoliation occurred in 1952

SCALE

0 40

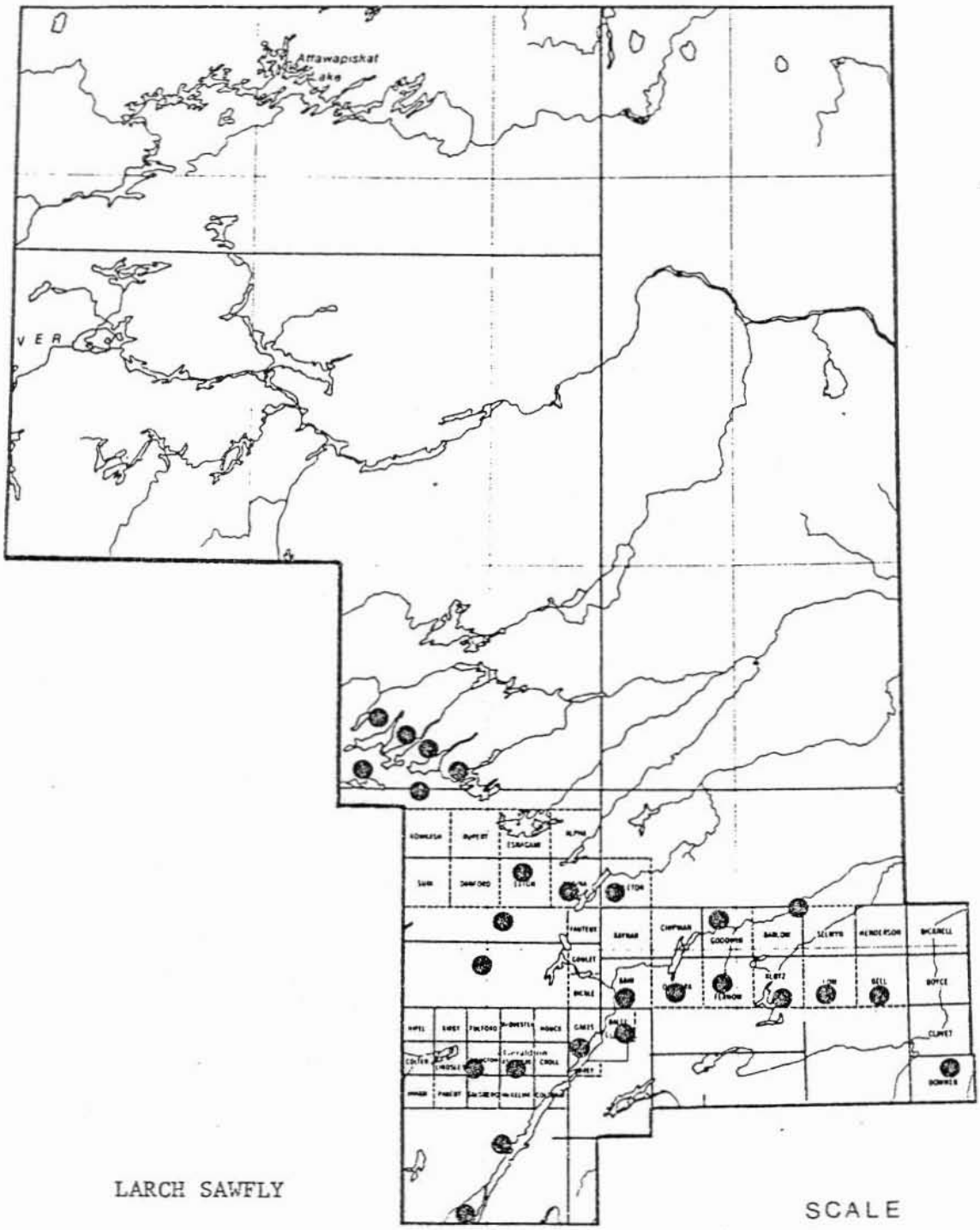
Kilometres

LEGEND

Light defoliation ◑

Moderate-to-severe defoliation ●

GERALDTON DISTRICT



LARCH SAWFLY

Areas within which defoliation occurred in 1953

LEGEND

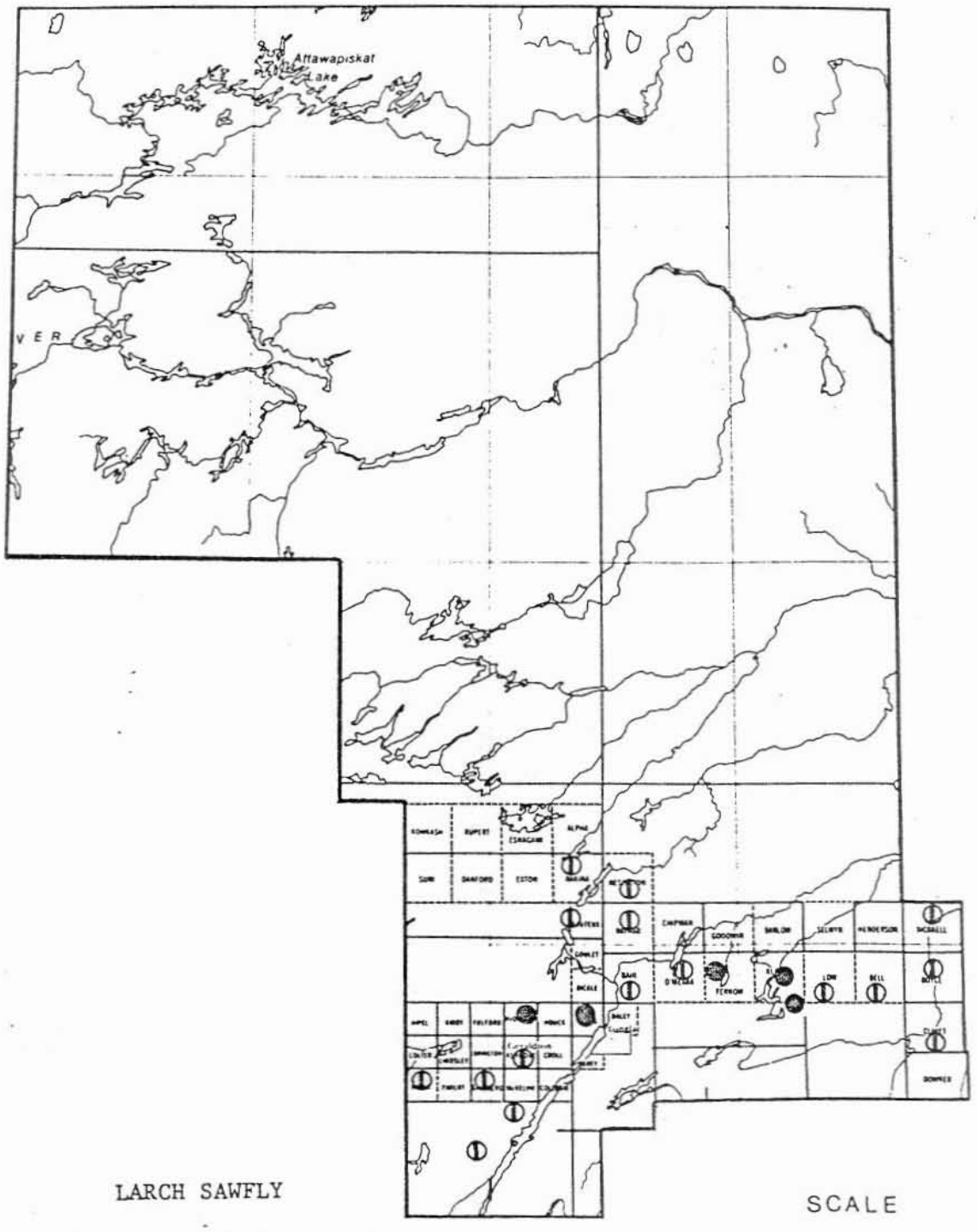
Moderate-to-severe defoliation

SCALE

0 40

Kilometres

GERALDTON DISTRICT



LARCH SAWFLY

Areas within which defoliation occurred in 1956

SCALE

0 40

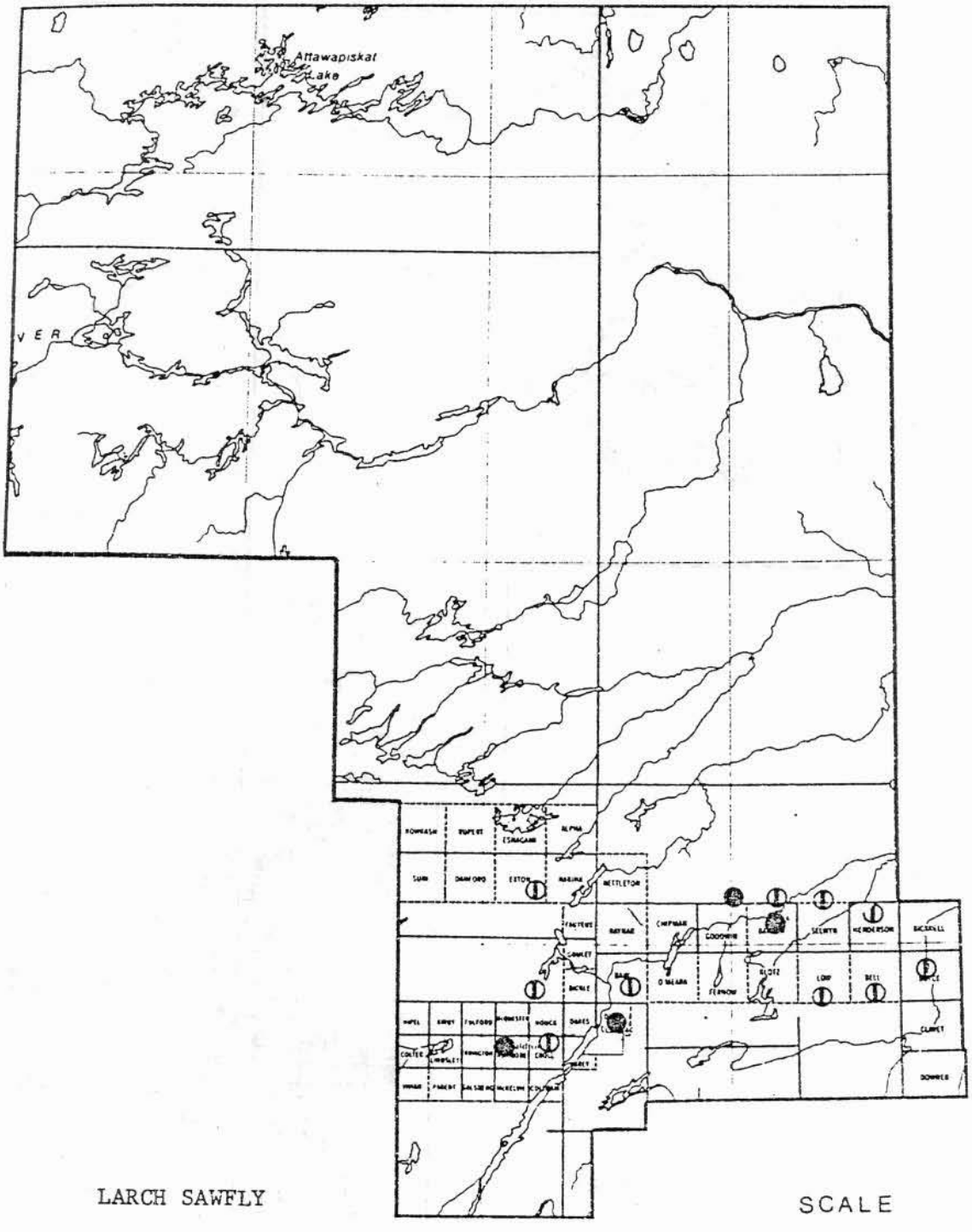
Kilometres

LEGEND

Light defoliation ①

Moderate-to-severe defoliation ⑤

GERALDTON DISTRICT



LARCH SAWFLY

Areas within which defoliation occurred in 1958

LEGEND

Light defoliation ①

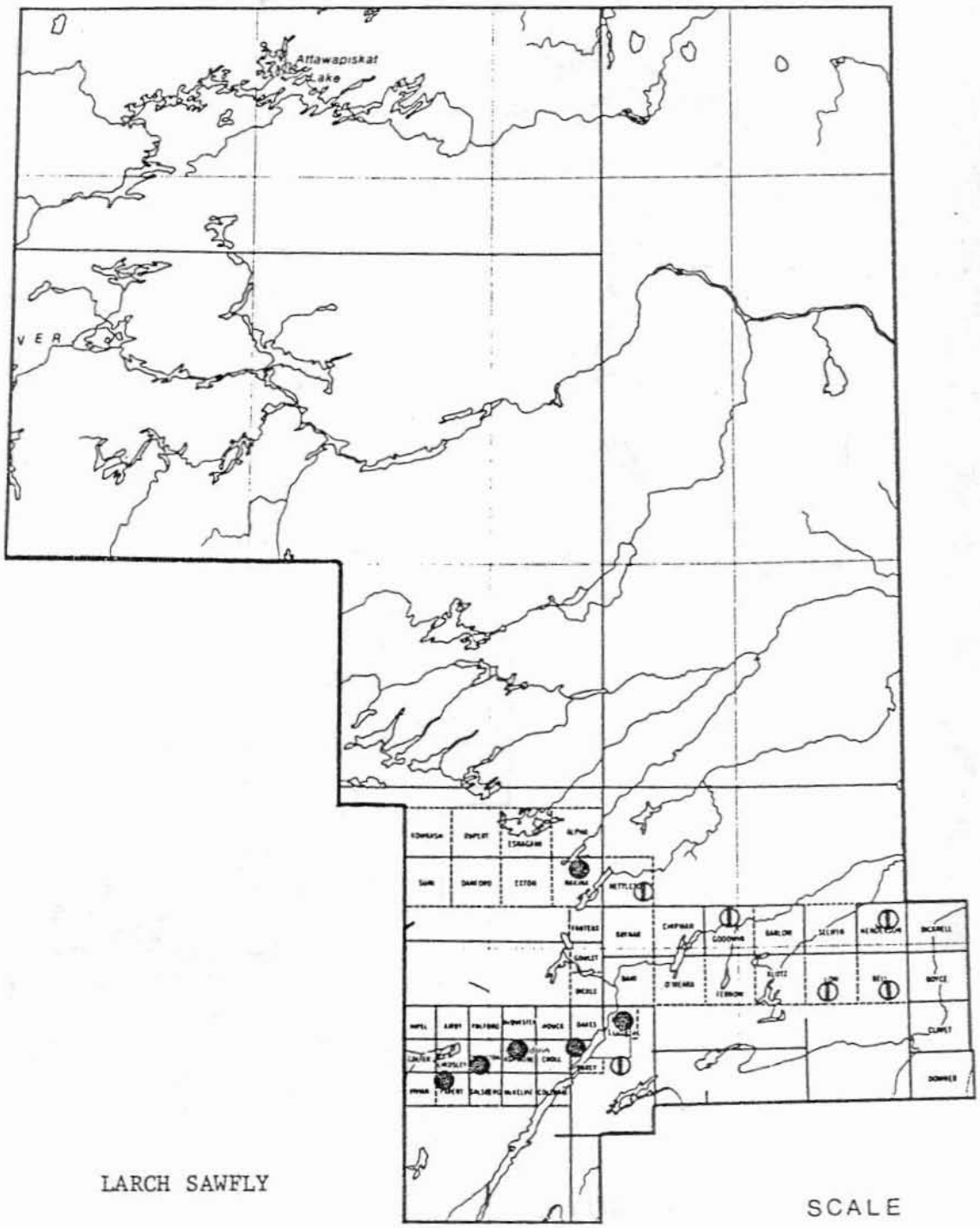
Moderate-to-severe defoliation ●

SCALE

0 40

Kilometres

GERALDTON DISTRICT



LARCH SAWFLY

Areas within which defoliation occurred in 1959

SCALE

0 40

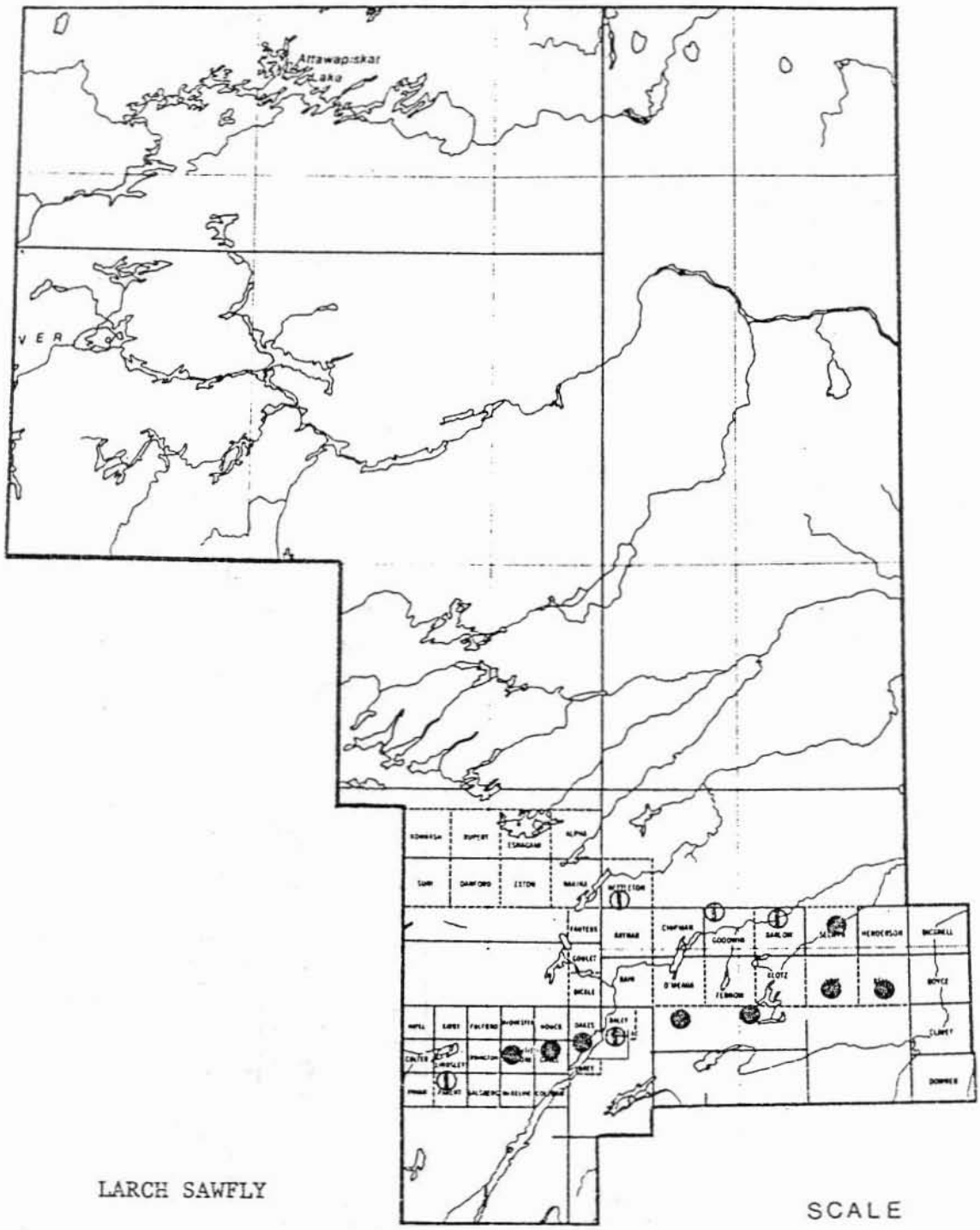
Kilometres

LEGEND

Light defoliation ◑

Moderate-to-severe defoliation ●

GERALDTON DISTRICT



LARCH SAWFLY

Areas within which defoliation occurred in 1961

SCALE

0 40

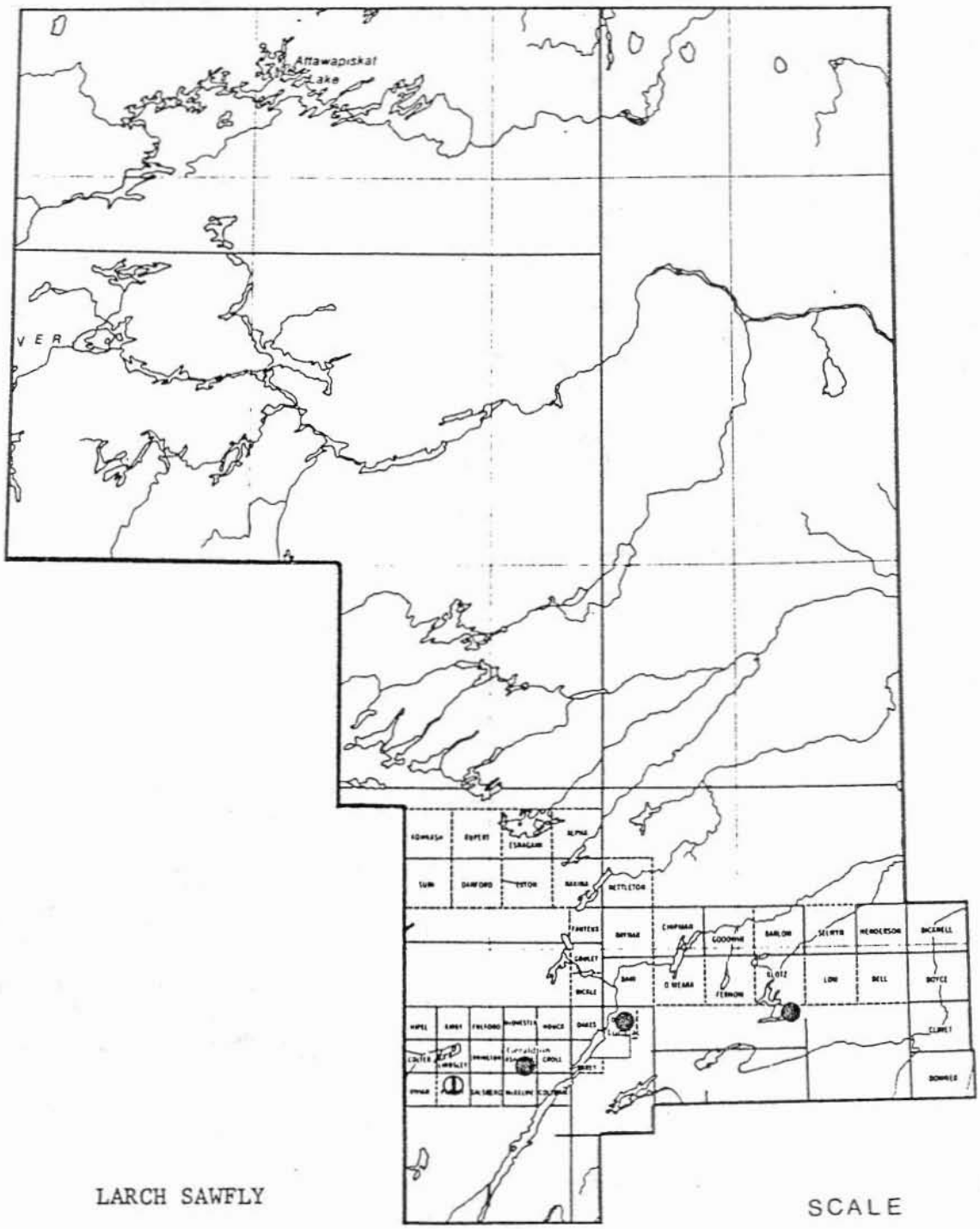
Kilometres

LEGEND

Light defoliation ①

Moderate-to-severe defoliation ⑤

GERALDTON DISTRICT



LARCH SAWFLY

Areas within which defoliation occurred in 1965

SCALE

0 40

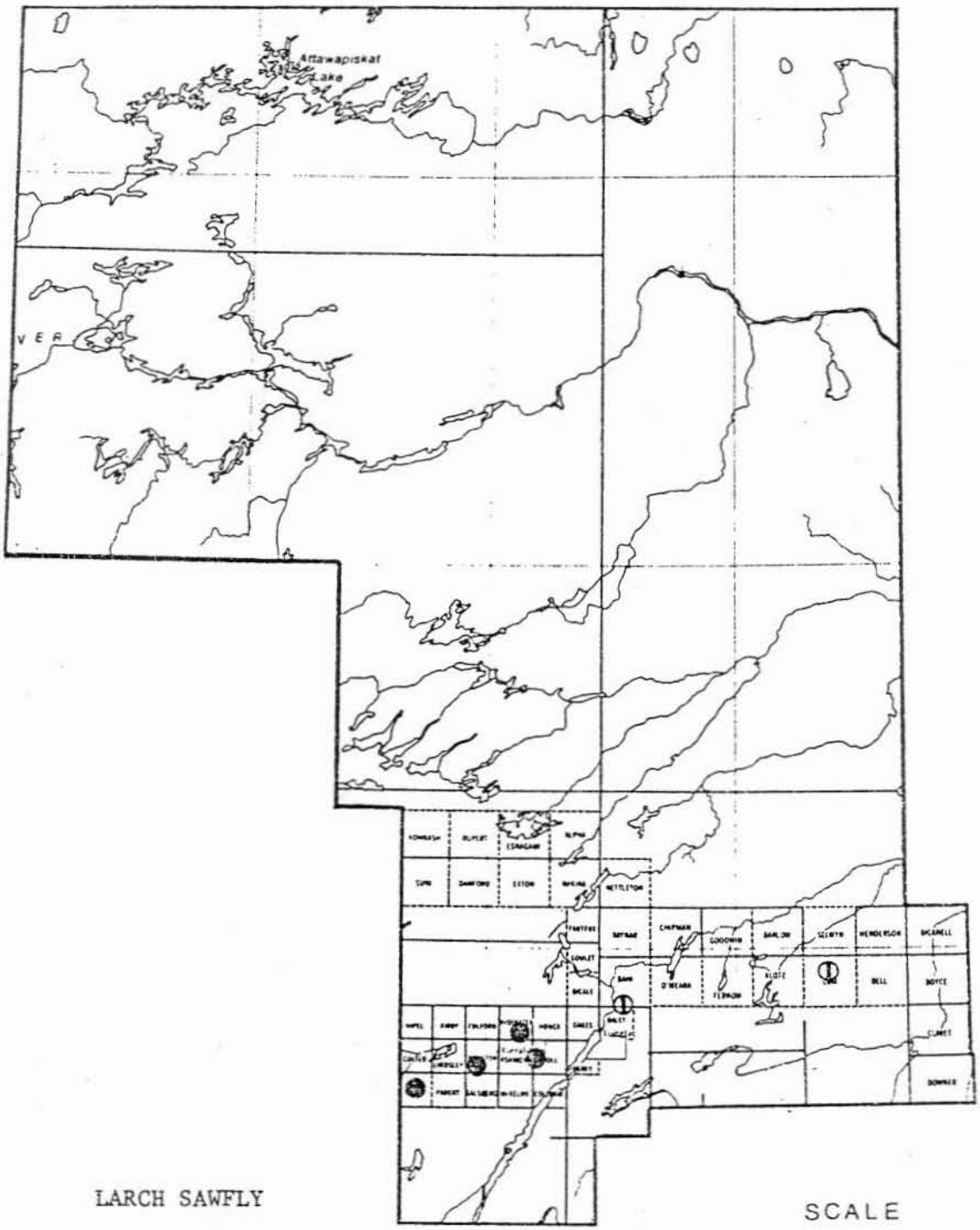
Kilometres

LEGEND

Light defoliation ◑

Moderate-to-severe defoliation ●

GERALDTON DISTRICT



LARCH SAWFLY

Areas within which defoliation occurred in 1966

SCALE

0 40

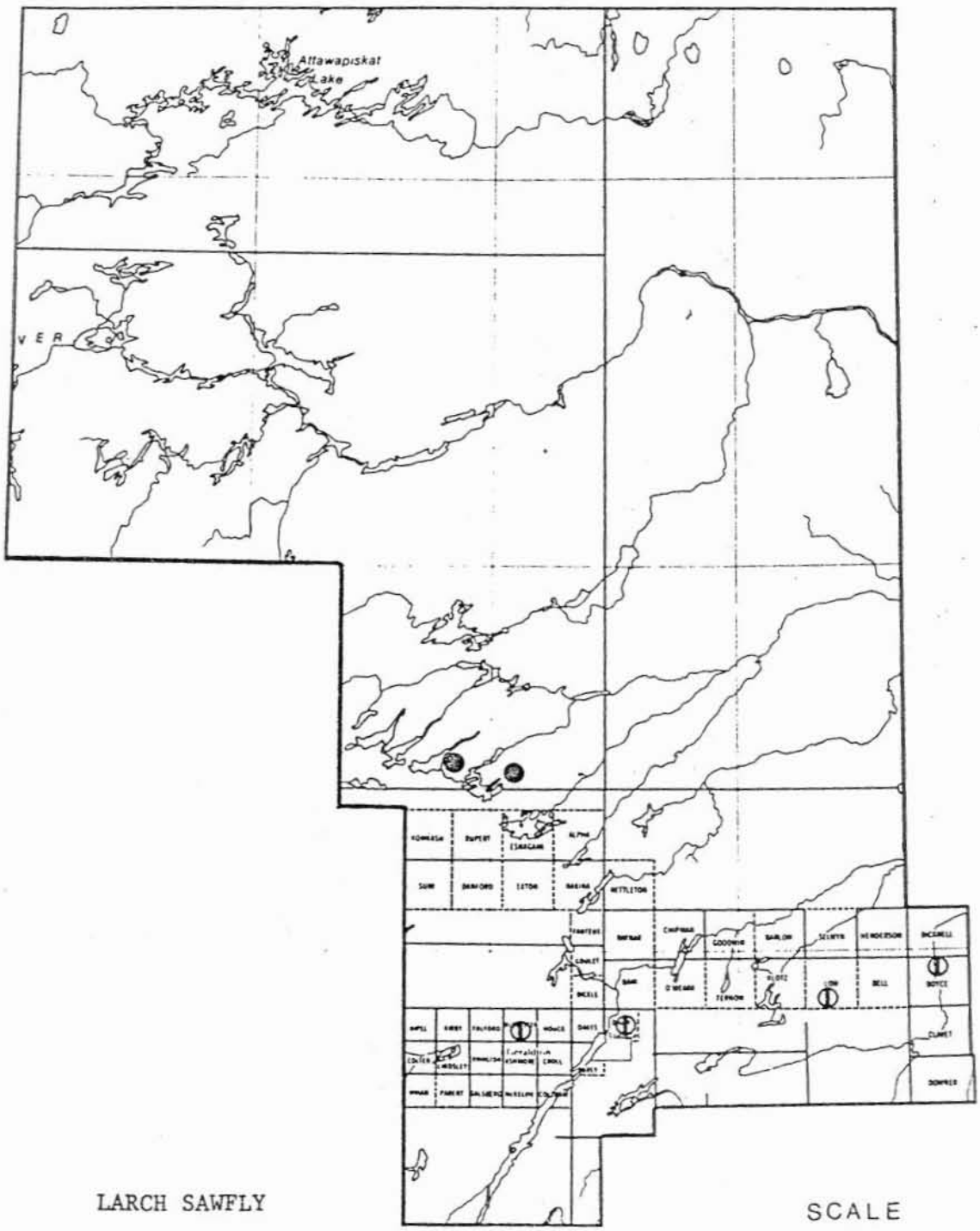
Kilometres

LEGEND

Light defoliation ◐

Moderate-to-severe defoliation ●

GERALDTON DISTRICT



LARCH SAWFLY

Areas within which defoliation occurred in 1975

LEGEND

Light defoliation ◐

Moderate-to-severe defoliation ●

SCALE

0 40

Kilometres

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

Host(s): mountain-ash [Major]

Year	Remarks
1950-1969	not reported
1970	recorded for the first time in the District, when larval colonies were found in Clavet Township and in the Kloty Lake area
1971	An increase in the distribution of this sawfly was evident when larval colonies were observed at several locations in the southeastern part of the District.
1972	The insect continued to spread across the District, and populations increased in some areas. Scattered colonies were observed along Hwy 11 from the Longlac area westward to the western boundary of the District. Moderate-to-severe defoliation was evident at several points east of Longlac.
1973	Moderate-to-severe defoliation occurred east of Longlac in the Lukinto and Pagwachuan lakes area.
1974	Populations declined to light intensity in the Lukinto and Pagwachuan Lakes area.
1975	Populations continued to decline, and only small numbers could be found.
1976	trace population
1977	Populations increased and caused moderate-to-severe defoliation at scattered points east of Longlac.
1978	Populations declined to light intensity east of Longlac.
1979	Small numbers recurred east of Longlac.
1980	Light defoliation was observed at numerous points.

Ambermarked Birch Leafminer, *Profenusa thomsoni* (Konow)

Host(s): birch [Major]

Year	Remarks
1950-1962	not reported
1963	In a small pocket of medium-to-heavy infestation, 90% of the foliage was mined on small, open-grown white birch in the Longlac area.
1964	The population declined to a low level in the Longlac area.
1965	trace population in the Longlac area and in Ashmore Township
1966	Populations increased and caused moderate-to-severe defoliation in small pockets of understory white birch in the Longlac, Caramat and Lukinto Lake areas.
1967	Pockets of medium-to-heavy infestation recurred in the Longlac and Caramat areas.
1968	The medium-to-heavy infestation persisted in the Caramat area and a new pocket of medium-to-heavy infestation was recorded in Ashmore Township.
1969	Populations declined to a low level.
1970	Light populations persisted.
1971	light populations observed at scattered points
1972-1974	trace population
1975	not reported
1976-1977	trace population
1978-1979	not reported
1980	Pockets of medium-to-heavy infestation were observed in Bicknell and Boyce townships.

Other Noteworthy Insects

Pine Spittlebug, *Aphrophora parallela* (Say)

Host(s): conifers [Minor]

Year	Remarks
1950-1955	not reported
1956	small numbers at scattered points
1957-1958	not reported
1959	small numbers observed in Errington Township
1960-1961	common and widely distributed in the District
1962	Small numbers occurred in Ashmore Township.
1963-1967	not reported
1968	small numbers present on open-grown trees
1969-1975	not reported
1976	small numbers at scattered points
1977	common in the northern half of the District
1978-1980	not reported

Uglynest Caterpillar, *Archips cerasivorana* (Fitch)

Host(s): cherry [Major]

Year	Remarks
1950-1953	not reported
1954-1957	trace population
1958	A medium-to-heavy infestation occurred south of Longlac. Light defoliation was observed elsewhere in the southeastern part of the District.
1959	high populations observed 18 km east of Longlac

(cont'd)

Uglynest Caterpillar, *Archips cerasivorana* (Fitch) (concl.)

Host(s): cherry [Major]

Year	Remarks
1960	High populations persisted 18 km east of Longlac. Light defoliation occurred along Hwy 11 near the eastern District boundary.
1961	High populations recurred east of Longlac.
1962	Populations declined sharply.
1963-1966	Populations were at a low ebb.
1967	not reported
1968	Small numbers occurred in the Caramat area.
1969	not reported
1970-1971	small numbers observed
1972	high populations observed at scattered points
1973	Populations declined to a low level.
1974	not reported
1975-1977	small numbers at scattered points
1979-1980	not reported

Jack Pine Tip Beetle, *Conophthorus banksianae* McPherson

Host(s): jP [Minor]

Year	Remarks
1950-1954	not reported
1955-1957	small numbers at scattered points
1958	commonly observed along Hwy 11 from the western boundary of the District eastward to Longlac
1959	High populations occurred in Ashmore Township.

(cont'd)

Jack Pine Tip Beetle, *Conophthorus banksianae* McPherson (concl.)

Host(s): jP [Minor]

Year	Remarks
1960-1961	Small numbers occurred in Errington Township. Elsewhere, populations declined.
1962	Small numbers recurred in Errington Township.
1963	Light damage occurred in Croll Township.
1964-1980	not reported

Fir Coneworm, *Dioryctria abietivorella* (Grt.)

Host(s): coniferous [Minor]

Year	Remarks
1950-1954	not reported
1955	trace population in McQuesten Township
1956-1958	not reported
1959-1960	trace population
1961-1970	not reported
1971	small numbers near Longlac
1972-1980	not reported

Spruce Coneworm, *Dioryctria reniculelloides* Mut. & Mun.

Host(s): spruce, balsam fir [Minor]

Year	Remarks
1950-1954	not reported
1955	trace population in Errington Township
1956	not reported
1957	trace population

(cont'd)

Spruce Coneworm, *Dioryctria reniculelloides* Mut. & Mun. (concl.)

Host(s): spruce, balsam fir [Minor]

Year	Remarks
1958	not reported
1959-1961	small numbers of larvae observed at scattered points
1962	trace population
1963-1964	not reported
1965-1966	small numbers observed at widely scattered points
1967	small numbers observed in the Caramat area
1968	trace population
1969-1970	not reported
1971-1972	common at scattered points
1973	Light defoliation was observed at scattered locations.
1974	not reported
1975	trace population widely distributed
1976-1980	not reported

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

Host(s): poplar [Major]

Year	Remarks
1950-1959	not reported
1960-1962	trace populations
1963-1969	not reported
1970	Light defoliation was observed in Bricknell Township.
1971-1980	not reported

Birch-aspen Leafroller, *Epinotia solandriana* L.

Host(s): birch, poplar [Major]

Year	Remarks
1950-1959	not reported
1960	commonly observed at numerous points
1961	Trace populations were observed at numerous points.
1962	not reported
1963	Light defoliation was evident in Ashmore Township and in the Caramat area.
1964	trace population
1965-1967	not reported
1968-1969	Small numbers were observed at widely scattered points.
1970-1975	not reported
1976	trace population
1977-1980	not reported

Birch Leafminer, *Fenusa pusilla* (Lep.)

Host(s): birch [Major]

Year	Remarks
1950-1970	not reported
1971	trace population
1972	Light defoliation was observed along Hwy 11 east of Geraldton.
1973	not reported
1974	light population widely distributed as far north as Terrier Lake 48 km northwest of Nakina
1975	trace population
1976	Small numbers occurred in Raynar Township.
1977-1979	Small numbers were observed at widely scattered points.
1980	trace population

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

Host(s): spruce [Minor]

Year	Remarks
1950-1955	not reported
1956	trace population
1957-1963	not reported
1964	trace population
1965-1969	not reported
1970-1971	Trace populations occurred in the southern part of the District.
1972-1973	not reported
1974-1975	trace population
1976-1980	not reported

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

Host(s): coniferous, deciduous [Major]

Year	Remarks
1950	small numbers observed at Bashi Lake on the Albany River and in the Caramat area
1951-1960	not reported
1961-1962	trace population
1964	not reported
1965	trace population
1966-1971	not reported
1972	trace population
1973-1980	not reported

Northern Tent Caterpillar, *Malacosoma californicum pluviale* Dyar

Host(s): cherry, deciduous [Major]

Year	Remarks
1950-1952	not reported
1953-1954	trace population
1955	not reported
1956	trace population
1957-1967	not reported
1968	Small numbers were observed in the Pagwachuan Lake area.
1969	not reported
1970-1971	Small numbers were observed at widely scattered points.
1972	not reported
1973	Small numbers of larval tents were observed in a small area south and west of Longlac.
1974-1977	trace population
1978-1980	not reported

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

Host(s): deciduous [Minor]

Year	Remarks
1950-1953	not reported
1954	trace population in Ashmore Township
1955	light defoliation at one point in Colter Township
1956	not reported
1957	trace population
1958-1960	not reported

(cont'd)

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

Host(s): deciduous [Minor]

Year	Remarks
1961	trace population in Errington Township
1962	not reported
1963	trace population
1964	Pockets of moderate-to-severe defoliation were observed in Coltham and Vivian townships.
1965	trace population
1966-1967	not reported
1968	trace population
1969-1978	not reported
1979-1980	small numbers observed at numerous points

Greenheaded Spruce Sawfly, *Pikonema dimmockii* (Cress.)

Host(s): spruce [Minor]

Year	Remarks
1950-1951	not reported
1952	trace population widespread in the District
1953-1954	not reported
1955	trace population in Ashmore Township
1956	trace population
1957-1958	not reported
1959	Small numbers were found at Ogoki Lake.
1960	not reported
1961	trace population in the southwestern part of the District
1962-1966	trace population

(cont'd)

Greenheaded Spruce Sawfly, *Pikonema dimmockii* (Cress.) (concl.)

Host(s): spruce [Minor]

Year	Remarks
1967	Small numbers were observed in the Nakina area.
1968-1969	not reported
1970	Small numbers occurred at numerous points.
1971	not reported
1972-1975	trace population
1976	not reported
1977	trace population
1979-1980	not reported

Spruce Bud Midge, *Rhabdophaga swainei* Felt

Host(s): spruce [Minor]

Year	Remarks
1950-1958	not reported
1959	Small numbers were observed in Croll and Colter townships.
1960-1962	trace population widespread through much of the District
1963	not reported
1964-1965	trace population
1966	not reported
1967	Populations increased and caused light damage in the southwestern part of the District.
1968	Populations continued to increase and caused 16% terminal bud mortality at one point in Croll Township.
1969-1970	not reported
1971-1975	trace population
1976-1980	not reported

DISEASES

Dwarf Mistletoe, *Arceuthobium pusillum* Peck

Host(s): bS, wS [Minor]

Year	Remarks
1950-1967	not reported
1968	Light damage occurred in small pockets of black spruce in the Kloty Lake area.
1969	not reported
1970	Light infection was observed at scattered points along Hwy 11 east of Longlac.
1971-1975	A moderate-to-high incidence of infection was observed in the Flynne Lake area. Elsewhere, light damage was recorded at scattered points.
1976	Light tree mortality was evident in the Flynne Lake area.
1977-1980	not reported

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

Host(s): coniferous, deciduous [Major]

Year	Remarks
1950-1957	not reported
1958	Light infection levels were observed in immature stands at widely scattered points.
1959	not reported
1960	Light tree mortality occurred in jack pine regeneration in Colter Township.
1961	not reported
1962	Light tree mortality occurred in jack pine regeneration in O'Meara Township.
1963	trace infection observed in the southwestern part of the District
1964	trace mortality observed at widely scattered points

(cont'd)

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

Host(s): coniferous, deciduous [Major]

Year	Remarks
1965	Eight percent mortality caused by this pathogen was recorded in one stand in Errington Township. Trace damage was observed commonly elsewhere.
1966	not reported
1967	trace infection observed commonly throughout the District
1968-1969	not reported
1970	Light tree mortality was observed in regeneration and plantation jack pine trees at numerous locations.
1971	Light tree mortality occurred in a lodgepole pine plantation in O'Meara Township, and in two jack pine stands in the Caramat area.
1972	Light mortality occurred at numerous points.
1973	Moderate-to-severe damage occurred in a lodgepole pine plantation in O'Meara Township, and in scattered pole-sized black and white spruce along Hwy 11 south of Castlebar Lake.
1974-1976	Light mortality observed commonly in second-growth stands and in plantations at numerous points in the District.
1977	There was 39% tree mortality in a 50-ha jack pine stand at one point on the Goldfield Road in the southwestern part of the District. Light damage was evident at numerous points elsewhere.
1978	Light tree mortality was evident in small-diameter regeneration stands at scattered points; however, mortality did not exceed more than 4% in stands evaluated.
1979-1980	Little change in the incidence of damage could be determined.

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

Host(s): pine [Major]

Year	Remarks
1950-1965	not reported
1966	This destructive pathogen was recorded for the first time in the District when infected trees were found in small diameter hosts in plantations and natural regeneration. The highest incidence of infection was recorded in Scots and jack pine plantations in O'Meara Township, in jack pine plantations in Kowkash and Exton townships, and at one point on the Goldfield Road. The incidence of infection ranged from 62% to 88% in the latter three areas. Light damage was observed at scattered points elsewhere in the District.
1967	No important change in the distribution of this pathogen could be determined even though extensive surveys were carried out. The highest incidence of infection was recorded in Kowkash Township and at one point in the eastern part of the District. An evaluation in Kowkash Township revealed that 31% of the trees examined in a jack pine plantation were infected.
1968	No important change in the distribution of this disease occurred; however, the incidence of infection in the jack pine plantation in Kowkash Township increased 50%.
1969	not reported
1970	Little change was evident in the incidence of infection except in Kowkash Township, where infection declined 30% from the previous high recorded in 1968.
1971	Medium-to-high levels of infection persisted in Exton Township and an increase in the incidence of infection was noted in Kowkash Township and in the vicinity of Caramat. Several pockets of light infection persisted at scattered points elsewhere.
1972	Medium-to-high levels of infection were recorded south of Longlac in the McKay Lake area Moderate-to-severe damage was recorded in Kowkash and Bain townships. Light damage recurred at several points elsewhere.

(cont'd)

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

Host(s): pine [Major]

Year	Remarks
1973	Infection increased to a medium-to-high level in plantation and jack pine regeneration stands in Bain Township and appreciable tree mortality was evident in the area. Varying degrees of infection were observed over large areas in Kowkash Township and in the vicinity of the Longlac tree nursery.
1974	Serious damage recurred in Bain Township through approximately 405 ha of plantations and regeneration. On the average, 40% of the trees were infected and 11% mortality was recorded. A medium-to-high incidence of infection was evident in Kowkash and Rupert townships in the Nakina area. In the McKay Lake area varying degrees of infection were recorded.
1975	Moderate-to-severe damage occurred in Bain Township; however, current infections and associated damage were greatly reduced in Kowkash and Rupert townships and in the area south of Caramat.
1976	Current infection and tree mortality declined in Bain Township and in the Longlac nursery area.
1977	Generally, current infection continued to decline except in Bain Township, where infection levels remained moderate to high and considerable tree mortality was evident.
1978	The incidence of infection declined to light intensity in Bain Township. Light damage persisted in the Longlac nursery area.
1979	light infection and damage levels
1980	not reported

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

Host(s): spruce [Major]

Year	Remarks
1950-1957	not reported
1958	trace infections at scattered points
1959	Infection increased and caused light damage in the Caramat area and in the southwestern part of the District.
1960	Infection decreased to a trace level.
1961-1962	trace infection
1963	not reported
1964	Medium-to-heavy infection occurred on open-grown black spruce in the Flynne Lake area east of Longlac.
1965	Pockets of medium-to-heavy infection were observed at scattered points.
1966	not reported
1967	A pocket of medium-to-heavy infection occurred in Colter Township. Light damage was evident at numerous points elsewhere.
1968	Infection decreased to a trace level.
1969	The incidence of infection and level of damage increased. Moderate-to-severe needle damage was noted at several points in the southern half of the District. Light damage was evident at scattered points as well.
1970	Infection decreased to a trace level at widely scattered points.
1971	Moderate-to-severe damage occurred in a white spruce stand in the Murky Creek area south of Nakina and in a plantation near Longlac.
1972	Medium-to-heavy pockets of infection were observed at numerous points.
1973	Infection decreased to a trace level throughout the District.

(cont'd)

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

Host(s): spruce [Major]

Year	Remarks
1974	Moderate-to-severe damage occurred in black spruce stands in Oaks Township and at scattered points in the northern half of the District.
1975	Infection declined to a trace level.
1976-1977	trace infection
1978	Light infection was observed at numerous points.
1979-1980	trace infection

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

Host(s): tA [Major]

Year	Remarks
1950-1958	not reported
1959	Moderate-to-severe foliar damage occurred in the southwestern part of the District. Light damage was observed at scattered points elsewhere.
1960	The incidence of infection declined sharply to reach a trace level.
1961	Pockets of light foliar damage were evident in Colter Township.
1962	Light damage was observed in the southwestern part of the District.
1963	Moderate-to-severe damage occurred in the southwestern part of the District. Small pockets of light damage were observed in the Caramat area as well.
1964	Moderate-to-severe foliar damage occurred in the Caramat area. Light damage was noted at scattered points in Errington and Croll townships as well.
1965	Moderate-to-severe foliar damage occurred in Fulford Township. Pockets of light infection were observed at numerous points elsewhere.

(cont'd)

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

Host(s): tA [Major]

Year	Remarks
1966	Trace damage was observed in Exton Township.
1967	not reported
1968	Light infection occurred at widely distributed points.
1969	not reported
1970	Moderate-to-severe damage occurred at one point near Longlac.
1971	Infection levels declined to light intensity in the Longlac area.
1972	Moderate-to-severe foliar damage occurred in the Caramat area.
1973-1975	Pockets of light damage were observed at widely separated points.
1976	not reported
1977	Light damage was observed in the Geraldton area.
1978	Light damage occurred in O'Meara Township.
1979-1980	trace infection

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

Host(s): pine [Major]

Year	Remarks
1950-1960	not reported
1969	trace foliar damage observed at scattered points
1970	not reported
1971	Moderate-to-severe foliar damage was observed near Caramat in the southeastern part of the District.

(cont'd)

Pine Needle Rust, *Coleosporium asterum* (Dietel) Sydow (concl.)

Host(s): pine [Major]

Year	Remarks
1972	Foliage infection decreased to a trace level in the Caramat area.
1973-1974	Moderate-to-severe foliar damage was evident in a lodgepole pine plantation in O'Meara Township.
1975-1976	not reported
1976	light damage on lodgepole pine in O'Meara Township
1977-1980	not reported

Sweet Fern Blister Rust, *Cronartium comptoniae* Arthur

Host(s): hard pines [Major]

Year	Remarks
1950-1968	not reported
1969-1970	Light stem cankering was observed in Errington Township and along the Pagwachuan Lake road.
1971	Light infection occurred in Errington Township and at one point east of Caramat.
1972	Light infection recurred in Errington Township.
1973	Moderate-to-severe infection occurred at one point on the Goldfield Road in the southwestern part of the District.
1974	not reported
1975	A special survey was carried out to determine the status of this pathogen in the District. The results of this survey revealed that, generally, little tree mortality is occurring in infected stands.
1976-1980	not reported

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

Host(s): wP [Major]

Year	Remarks
1950-1954	not reported
1955	trace infection
1956-1961	not reported
1962-1963	common throughout the range of white pine in the District
1964-1974	not reported
1975	trace infection throughout the range of white pine in the District
1976-1980	not reported

Tar Spot Needle Cast, *Davisomycella ampla* (J. Davis) Darker

Host(s): jP [Major]

Year	Remarks
1950-1958	not reported
1959	light foliar damage observed in Errington Township and at scattered points in the Longlac area
1960	trace infection in the Nakina area
1961	not reported
1962	trace infection
1963	Light damage occurred in Errington Township.
1964	Light damage was evident in jack pine regeneration in Kowkash Township.
1965	trace infection
1966	light infection observed on scattered trees in O'Meara Township
1967	light damage at scattered points

(cont'd)

Tar Spot Needle Cast, *Davisomycella ampla* (J. Davis) Darker (concl.)

Host(s): jP [Major]

Year	Remarks
1968	not reported
1969	Light infection occurred at scattered points.
1970	not reported
1971	Moderate-to-severe foliar damage occurred east of Caramat in the southeastern part of the District.
1972-1974	light damage in the southeastern part of the District
1975	not reported
1976-1980	light damage

Western Gall Rust, *Endocronartium harknessii* (J.P. Moore) Y. Hirats.

Host(s): jP, scP [Major]

Year	Remarks
1950-1960	not reported
1961	Light infection was recorded on small-diameter jack pine trees in Ashmore, Fulford and Nakina townships.
1962-1965	Light infection occurred at several points.
1966-1967	not reported
1968	Moderate-to-severe twig mortality occurred in 200-ha and 120-ha jack pine stands in Fulford and Exton townships, respectively. Light damage was observed elsewhere.
1969	not reported
1970	Moderate-to-severe twig damage occurred through 800 ha of pole-sized jack pine in Exton Township. Elsewhere, light infection was observed at many points.
1971	The incidence of infection declined to a low level in Exton Township. Light damage was evident in several stands in the Longlac area as well.

(cont'd)

Western Gall Rust, *Endocronartium harknessii* (J.P. Moore) Y. Hirats. (concl.)

Host(s): jP, scP [Major]

Year	Remarks
1972	Little change in the incidence of infection could be determined.
1973	Moderate-to-severe levels of infection were observed in Exton and Bain townships. Light tree mortality was evident in small-diameter jack pine trees at scattered points in Bain Township.
1974	Moderate-to-severe levels of infection recurred in Bain Township and light tree mortality was evident at scattered points in the area. The incidence of infection decreased to light intensity in Exton Township and at numerous points elsewhere in the District.
1975	Moderate-to-severe damage and light tree mortality recurred in Bain Township. Elsewhere, the level of infection remained light.
1976	This pathogen continued to kill small trees in Bain Township. An evaluation at one point revealed an incidence of 4% current mortality in the stand.
1977	Some tree mortality recurred in Bain Township, but there was little change in the incidence of infection elsewhere.
1978	Light infection levels persisted.
1979	not reported
1980	No change in the status of this disease was evident.

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

Host(s): poplar, maples, yellow birch [Major]

Year	Remarks
1950-1952	not reported
1953-1955	Light damage and occasional tree mortality were observed at scattered points.
1956-1958	not reported
1959	Light damage was recorded in Errington Township, and at scattered points elsewhere.
1960	light damage widely distributed
1961-1963	not reported
1964	light damage widely distributed
1965-1966	not reported
1967	light damage evident at numerous points
1968-1969	not reported
1970-1973	observed commonly; light tree mortality evident at scattered locations
1974-1975	light damage widely distributed, especially on poor sites
1976-1980	not reported

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

Host(s): tA [Major]

Year	Remarks
1950-1954	not reported
1955	Moderate-to-severe infection occurred on small-diameter trees in Ashmore Township and along Hwy 11 east of Longlac. Elsewhere, light infections were easily found at numerous locations.
1956-1960	not reported

(cont'd)

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

Host(s): tA [Major]

Year	Remarks
1961	light infection observed at scattered points
1962	Moderate-to-severe damage occurred at scattered points in the southwestern part of the District.
1963	The incidence of infection declined to a low level in the southwestern part of the District.
1964	light infection widely distributed
1965	trace damage
1966	Light shoot mortality occurred in O'Meara Township near the Caramat area in the southwestern part of the District.
1967-1968	light infection widely distributed
1969	not reported
1970-1971	light infection widely distributed
1972	not reported
1973	trace infection
1974	Moderate-to-severe damage was evident in the Caramat area. Pockets of light infection were observed at several points elsewhere.
1975	light infection
1976	Light infection occurred on 75% of the trees in a small area in Houck Township, and at scattered points elsewhere.
1977	not reported
1978	Pockets of light infection were observed in Clavet and O'Meara townships.
1979-1980	light infection at scattered points

Shoot Blight, *Venturia populina* (Vuill.) Fabric.

Host(s): bPo [Minor]

Year	Remarks
1950-1962	not reported
1963	light damage in the Caramat area
1964-1965	light damage
1966-1967	not reported
1968	light damage
1969-1970	not reported
1971-1972	light infection observed commonly on young host trees at several points in the District
1973-1975	trace damage
1976-1980	not reported

Other Noteworthy Diseases

Orange Stalactiform Blister Rust, *Cronartium coleosporioides* Arthur

Host(s): pines [Major]

Year	Remarks
1950-1969	not reported
1970	A medium-to-heavy level of infection occurred in a 400-ha jack pine stand in Exton Township.
1971	Surveys revealed that this pathogen is well established in the Longlac, Nakina and Caramat areas. An infection was also observed west of Geraldton.
1972	light infection only
1973	light infection in Exton Township
1974-1980	not reported

Comandra Blister Rust, *Cronartium comandrae* Peck

Host(s): pines [Major]

Year	Remarks
1950-1969	not reported
1970	A medium-to-heavy level of infection was recorded in Exton Township and light infection was evident in the Longlac area.
1971	A medium-to-heavy incidence and infection occurred in the McKay-McLeod lakes area. Light infection was observed at O'Meara and David lakes and in Exton Township.
1972	The infection centre previously reported in the McKay-McLeod lakes area decreased to a low level. The pathogen was also observed in Bain Township.
1973-1980	not reported

White Trunk Rot, *Phellinus igniarius* (L. : Fr.) Quélet

Host(s): [Major]

Year	Remarks
1950-1952	not reported
1953	Infected trees were observed commonly in the eastern part of the District.
1954	Fruiting bodies of this fungus were observed in numerous stands in the eastern part of the District. Elsewhere, light damage was evident at scattered points.
1955	Extensive surveys for this pathogen revealed damage in many stands in the District.
1956-1962	not reported
1963	infected trees observed commonly at numerous points
1964	not reported
1965	fruiting bodies of this disease observed at many points
1966	damage caused by this wood-rotting fungus observed at numerous locations
1967-1980	not reported

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

Host(s): conifers [Major]

Year	Remarks
1950-1953	not reported
1954	light infection level in the eastern part of the District
1955	trace infection
1956-1980	not reported

Fireweed Rust, *Pucciniastrum epilobii* Otth

Host(s): bF [Minor]

Year	Remarks
1950-1962	not reported
1963	light infection at widely scattered locations
1964	A medium-to-heavy incidence of infection occurred on small-diameter host trees at Marshall Lake.
1965	Pockets of light needle rust damage were observed at numerous points in the central and northern parts of the District.
1966	light infection at Marshall Lake
1967	A pocket of medium-to-heavy infection was recorded in the southwestern part of the District.
1968	The incidence of infection declined to a light level in the southwestern part of the District.
1969	not reported
1970	Light infection was observed at scattered points in the Longlac and Nakina areas.
1971-1972	Light infection recurred in the Nakina area.
1973	trace infection
1974	Light infection was observed at scattered locations.
1975-1980	not reported

ABIOTIC DAMAGE

Frost

Year	Remarks
1950-1962	not reported
1963	An estimated 50% and 75% of current shoots on balsam fir were damaged in the Caramat area and in O'Meara Township, respectively.
1964	Late spring frosts caused severe damage to current shoots of balsam fir along the Goldfield Road and in the Caramat area. Shoot mortality ranged from 54% to approximately 90%.
1965	Late spring frosts caused widespread damage to current shoots of balsam fir throughout the central and northern parts of the District. Moderate-to-severe damage was also evident on open-grown fir regeneration in the McLeod and Lukinto lakes area in the southern part of the District.
1966-1967	not reported
1968	Light damage to balsam fir and spruce occurred commonly throughout the District.
1969	Late spring frosts caused moderate-to-severe shoot mortality on black and white spruce in the Caramat area. Tamarack was also damaged at scattered points.
1970-1971	not reported
1972	Severe damage caused by late spring frosts occurred in black and white spruce regeneration stands and in pockets of white birch in the Nakina, Longlac and Caramat areas.
1973	not reported
1974	trace damage evident at widely scattered points
1975	Light damage occurred in pockets of balsam fir and white spruce in the Nakina area and in Bain Township.
1976	light damage in Bain Township
1977	Moderate-to-severe damage to current shoots or foliage occurred on trees of most species along the Goldfield Road in O'Meara and Bain townships and in the Pagwachuan River area. Light damage was evident at many points elsewhere in the District.

(cont'd)

Frost (concl.)

Year	Remarks
1978	June frosts caused moderate-to-severe current shoot mortality at scattered points in the District. Immature balsam fir and white spruce were the most seriously affected.
1979	not reported
1980	Light current shoot damage on balsam fir, black spruce and white spruce was evident in the eastern half of the District.

Hail

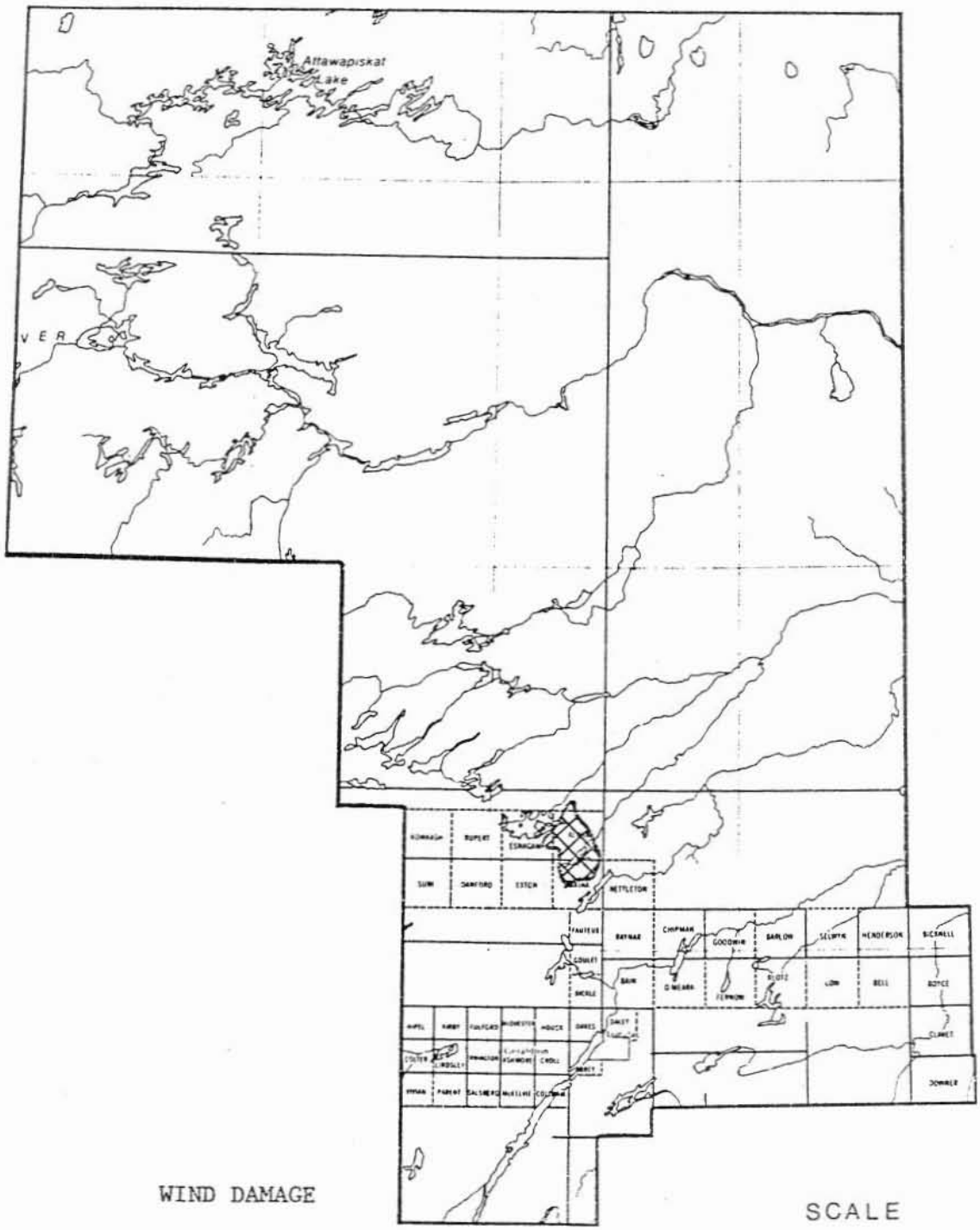
Year	Remarks
1950-1961	not reported
1962	A hail storm on 8 September caused moderate-to-severe injury to most tree species in a band approximately 6.4 km wide and 24 km long extending from near Hwy 11 at Creelman Creek southeasterly to McKelvie Lake. Considerable branch mortality and some windthrow occurred as a result of this storm. Small pockets of damage were also observed in the Caramat area.
1965-1969	not reported
1970	Light hail damage was evident in the Fillet Lake area north of Nakina.
1971-1980	not reported

Wind

Year	Remarks
1950-1965	not reported
1966	In early July, a windstorm caused heavy damage to all tree species in an area of approximately 130 km^2 in parts of Esnagami, Alpha and Nakina townships (see map, page 101).
1967-1972	not reported

(cont'd)

GERALDTON DISTRICT



WIND DAMAGE

Areas within which wind damage occurred in 1966

LEGEND

Moderate-to-severe damage

SCALE

0 40

Kilometres

Wind (concl.)

Year	Remarks
1973	A windstorm in June caused varying degrees of damage to trees of most species. Sporadic damage extended entirely across the central portion of the District. The heaviest damage was noted in Boyce and Bell townships.
1974-1980	not reported

Winter Drying

Year	Remarks
1950-1966	not reported
1967	Moderate-to-severe foliar damage occurred on shelterbelt red pine trees in the vicinity of Longlac.
1968	Ornamental white pine trees were seriously discolored at scattered points in Ashmore Township.
1969-1970	light damage
1971	Moderate-to-severe foliage browning caused by winter drying was observed on pine in the Longlac and Caramat areas.
1972-1973	not reported
1974	Moderate-to-severe foliar damage occurred and occasional top mortality was evident in a lodgepole pine plantation in O'Meara Township.
1975	Moderate-to-severe foliar damage recurred in a lodgepole pine plantation in O'Meara Township.
1976	Up to 25% of the foliage was damaged on lodgepole pine in O'Meara Township and on red pine at scattered points elsewhere.
1977	Light foliar damage recurred in the lodgepole pine plantation in O'Meara Township.
1978-1980	not reported

APPENDICES

APPENDIX A

DECIDUOUS HOST

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

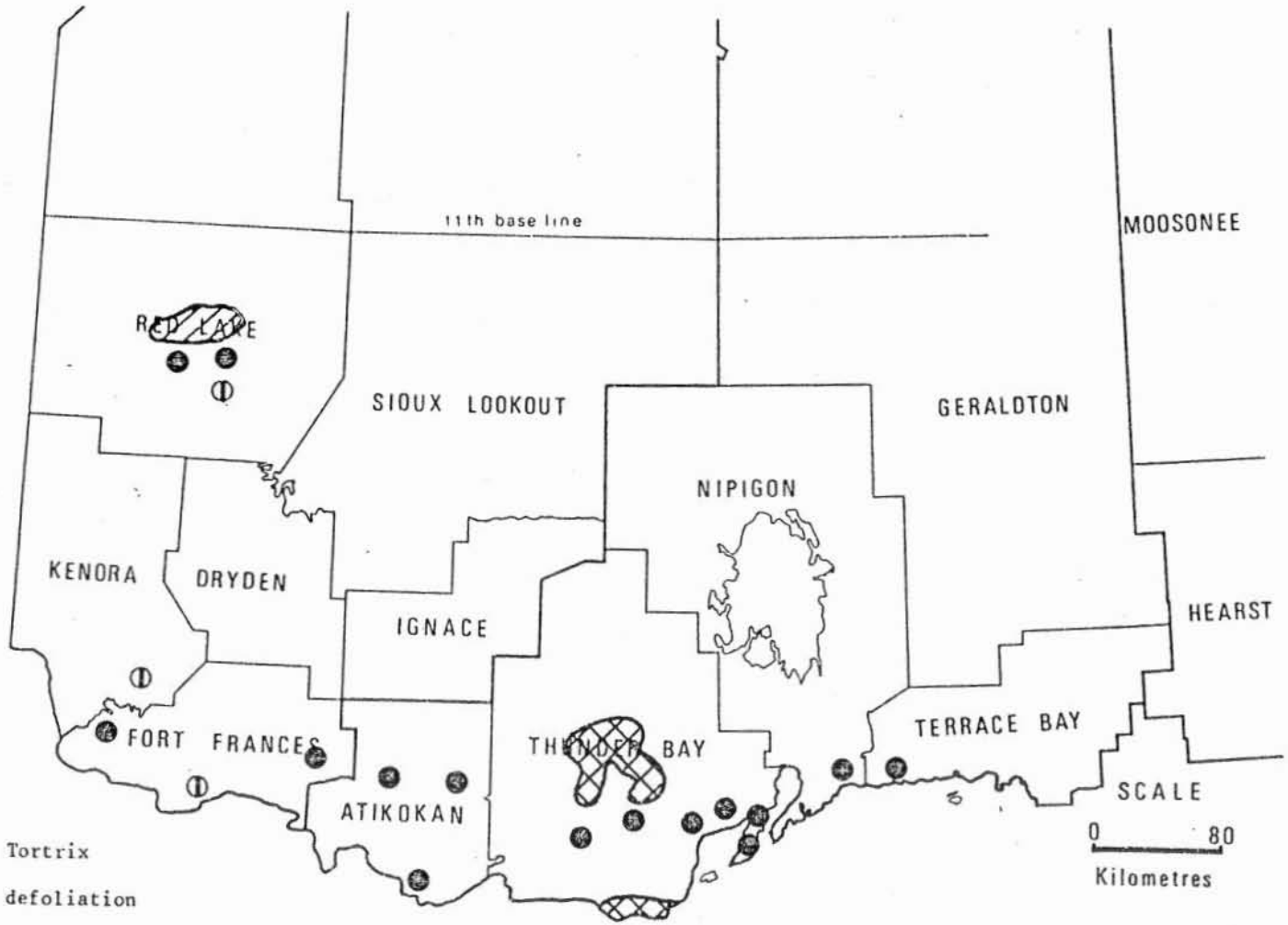
CONIFEROUS HOST

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 - NORTHWESTERN ONTARIO

NORTHWESTERN ONTARIO



Large Aspen Tortrix

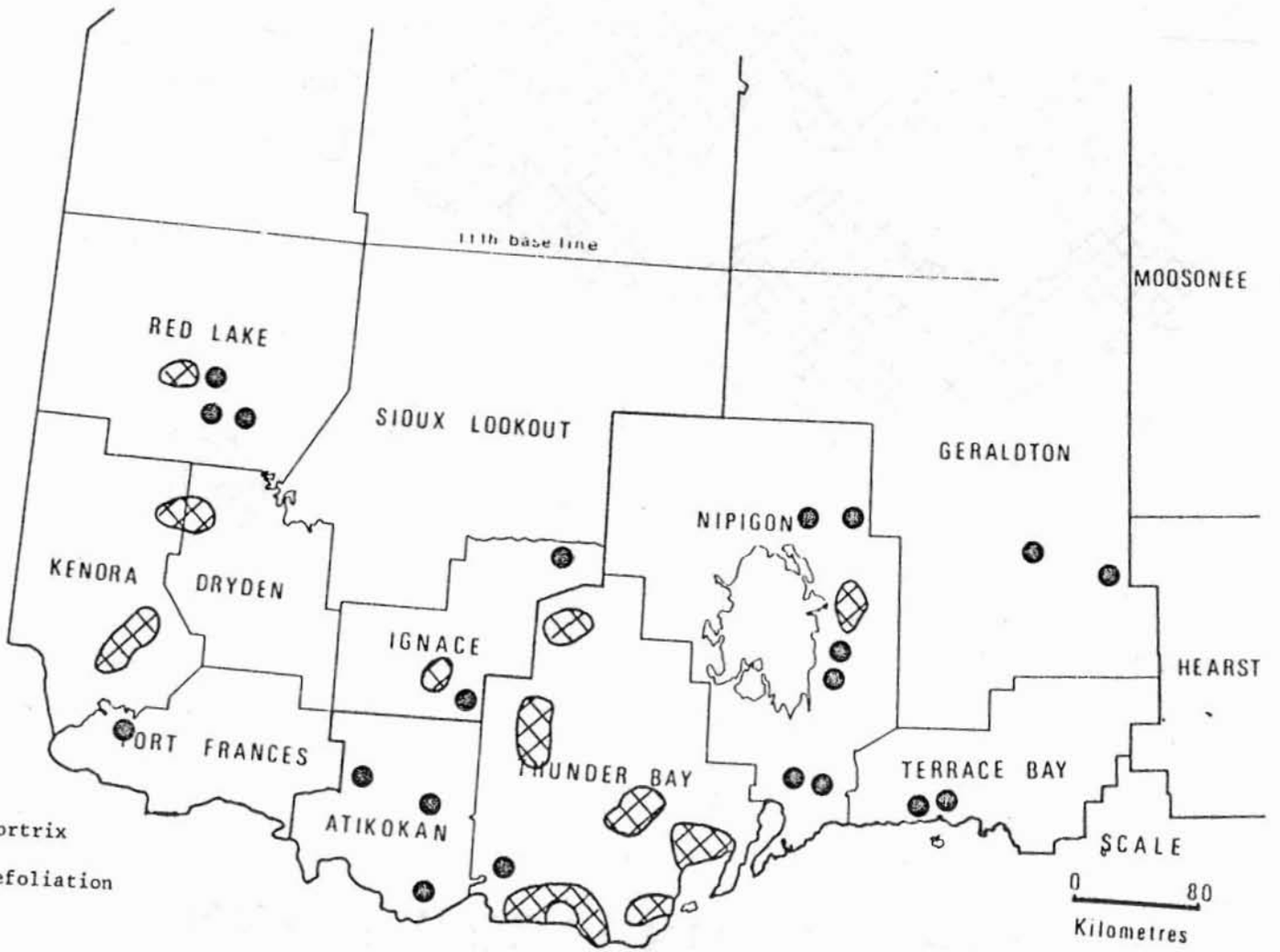
Areas within which defoliation occurred in 1970

LEGEND

Light defoliation ◐ or ▨

Moderate-to-severe defoliation ● or ▩

NORTHWESTERN ONTARIO



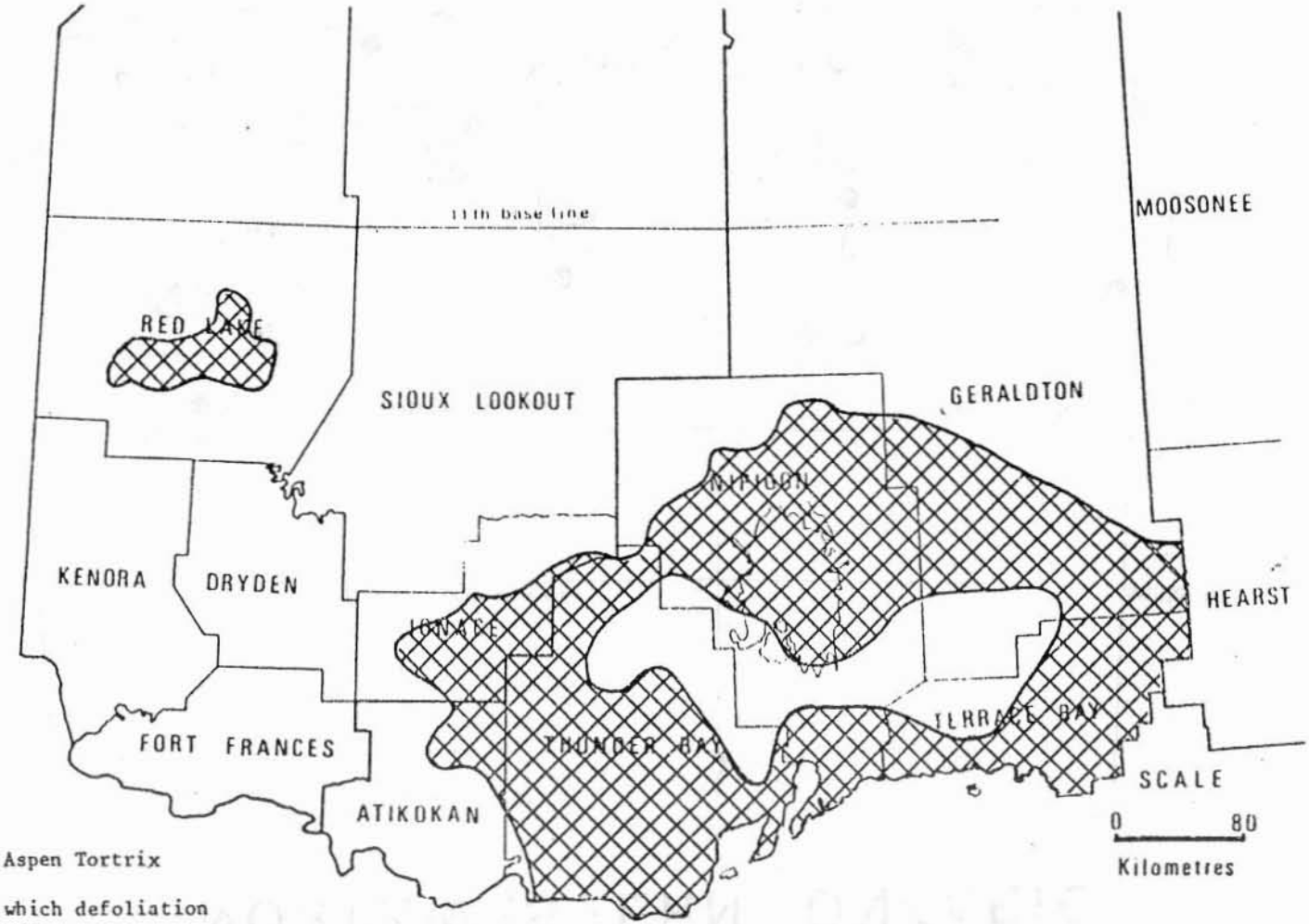
Large Aspen Tortrix

Areas within which defoliation occurred in 1971

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHWESTERN ONTARIO



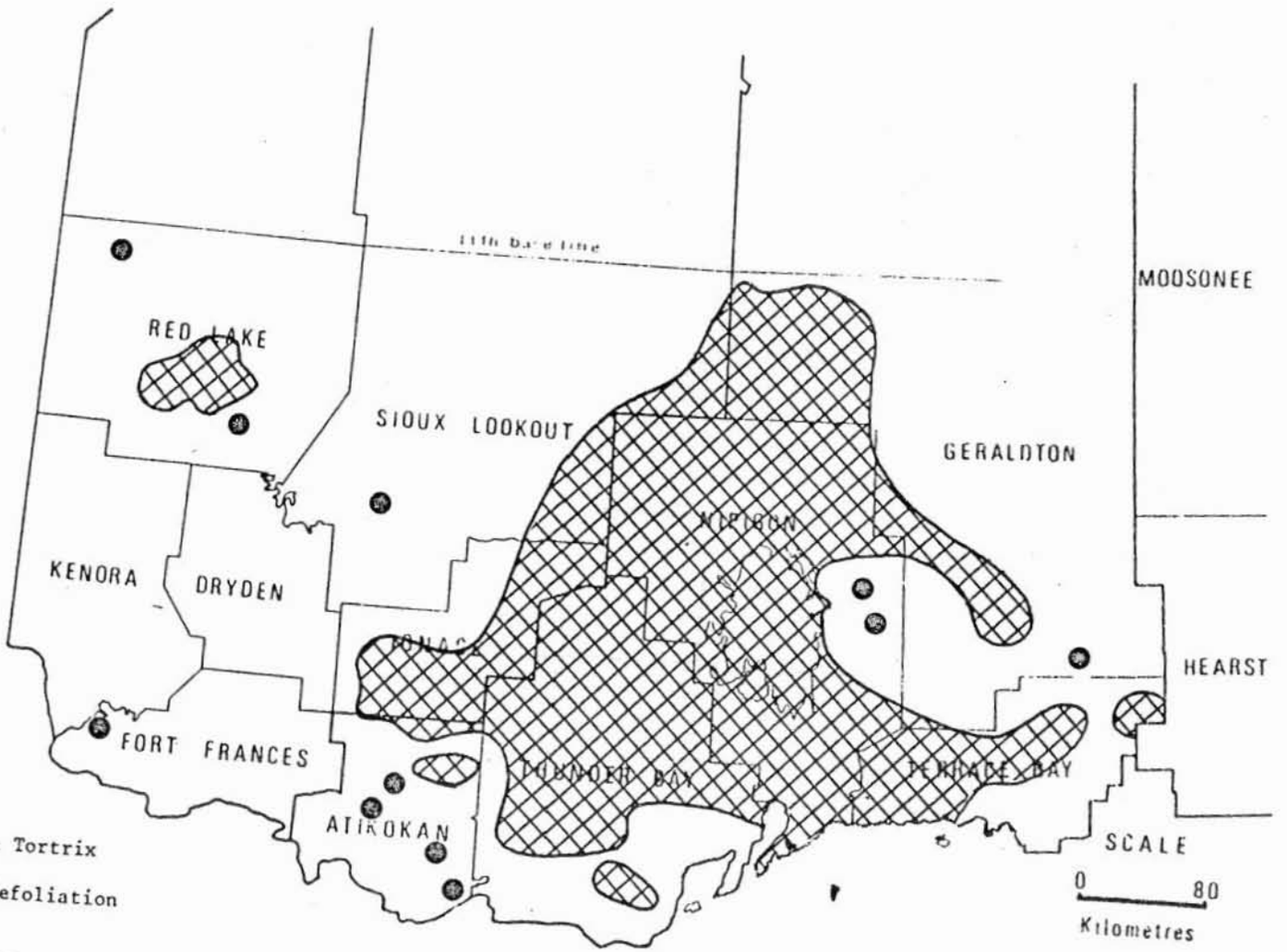
Large Aspen Tortrix

Areas within which defoliation occurred in 1972

LEGEND

Moderate-to-severe defoliation

NORTHWESTERN ONTARIO



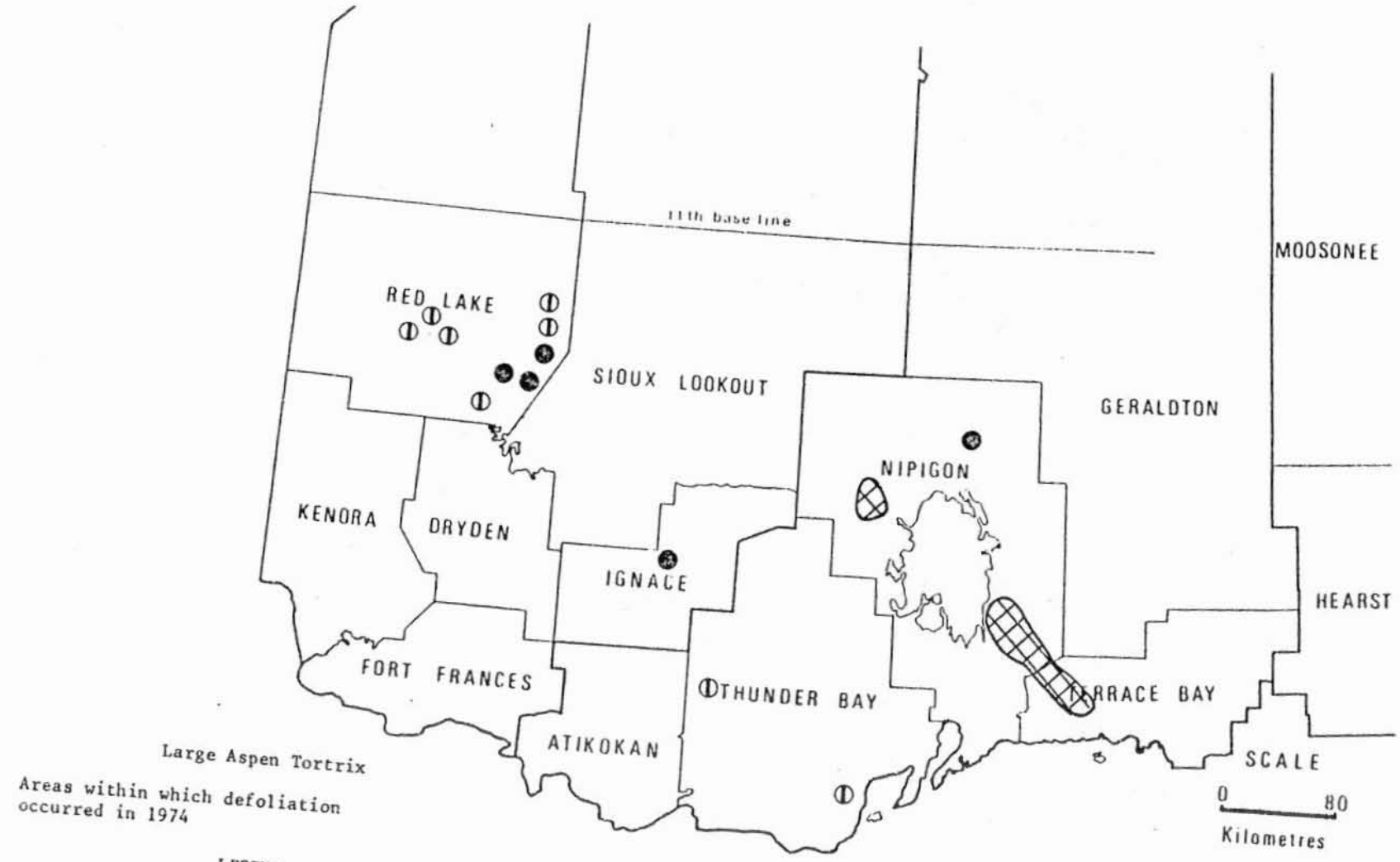
Large Aspen Tortrix

Areas within which defoliation occurred in 1973

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHWESTERN ONTARIO



Large Aspen Tortrix

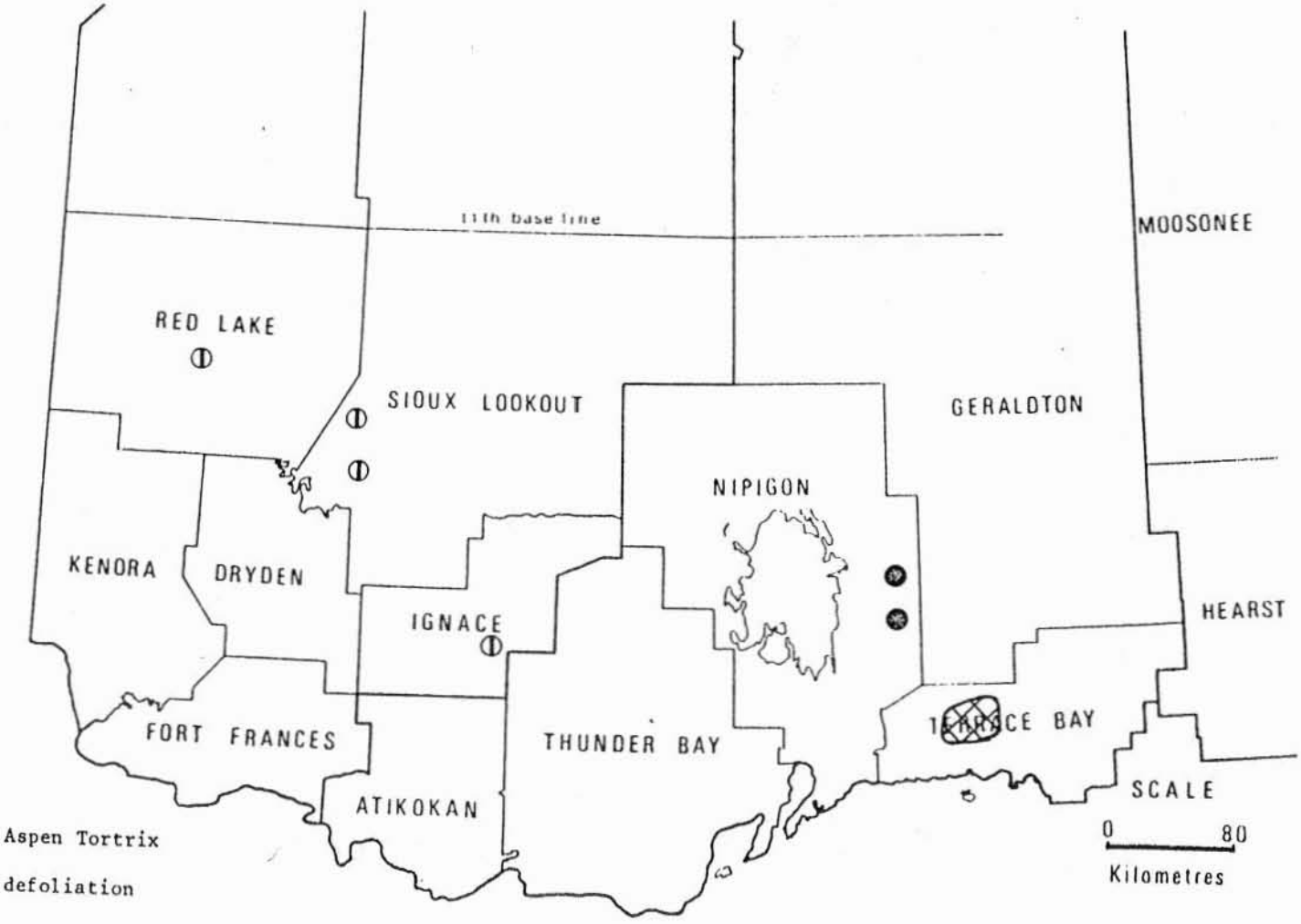
Areas within which defoliation occurred in 1974

LEGEND

Light defoliation ◐

Moderate-to-severe defoliation ● or ▨

NORTHWESTERN ONTARIO



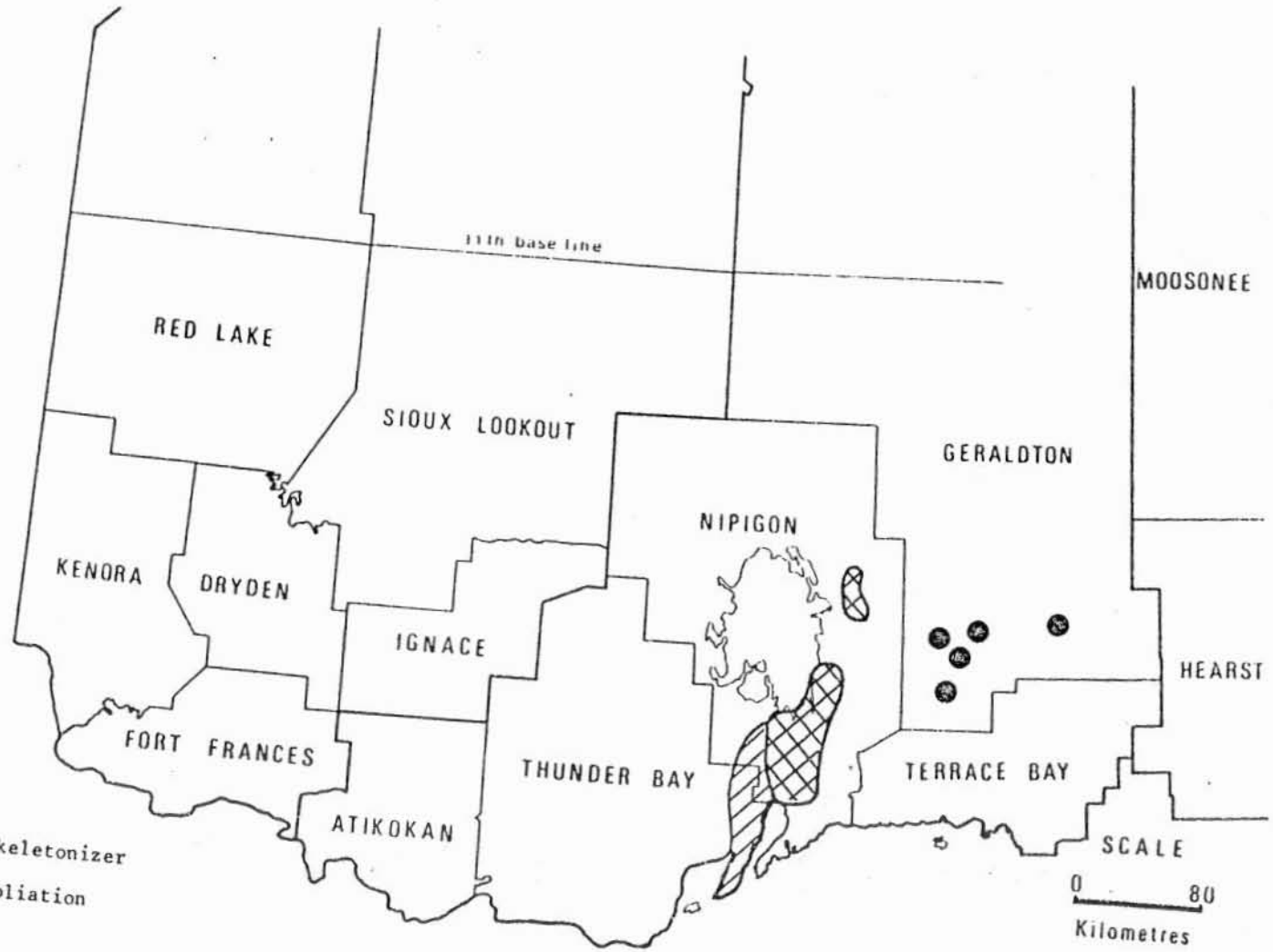
Large Aspen Tortrix

Areas within which defoliation occurred in 1975

LEGEND

Light defoliation ◑

NORTHWESTERN ONTARIO



Birch Skeletonizer

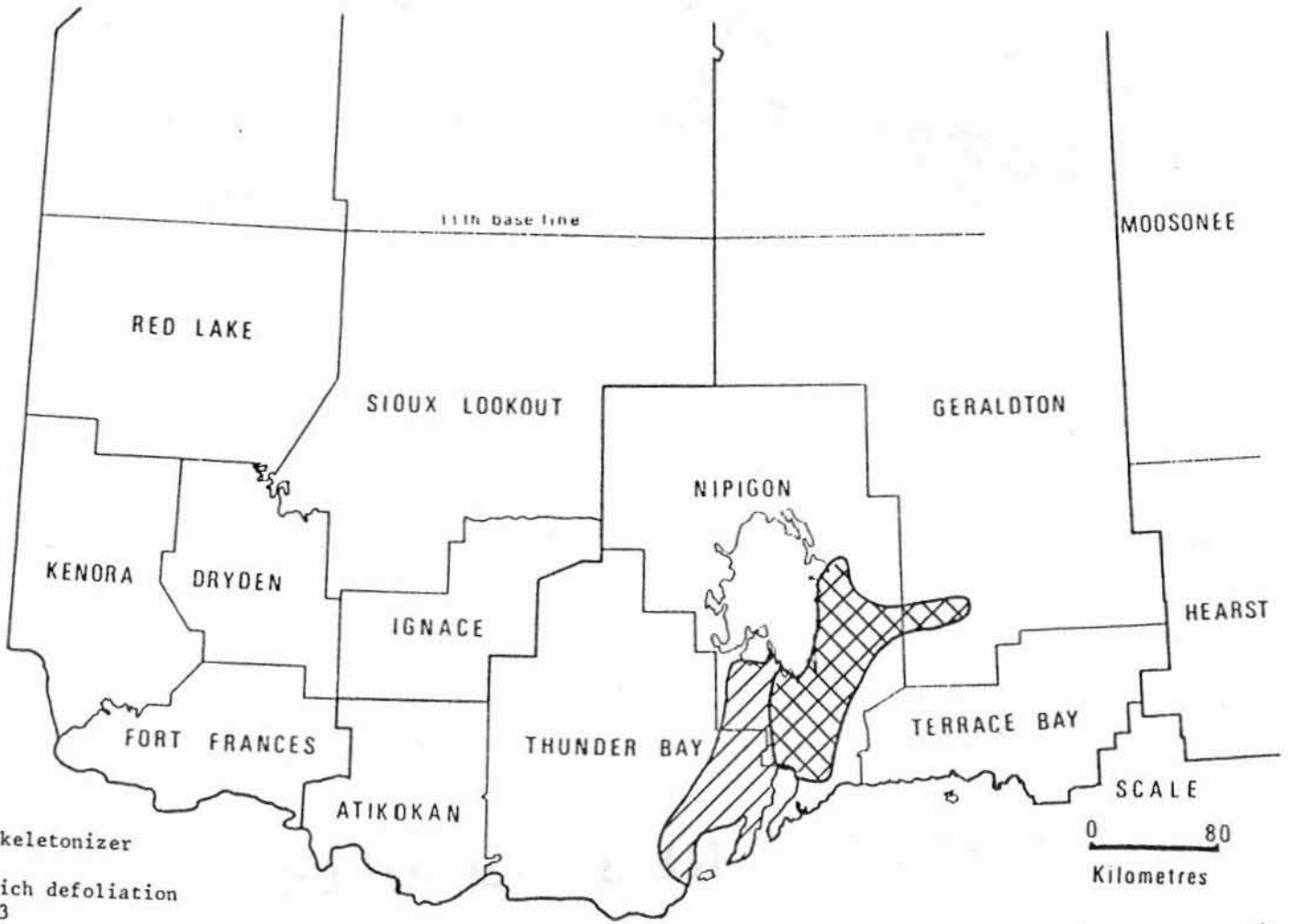
Areas within which defoliation occurred in 1962

LEGEND

Light defoliation

Moderate-to-severe defoliation or

NORTHWESTERN ONTARIO



Birch Skeletonizer

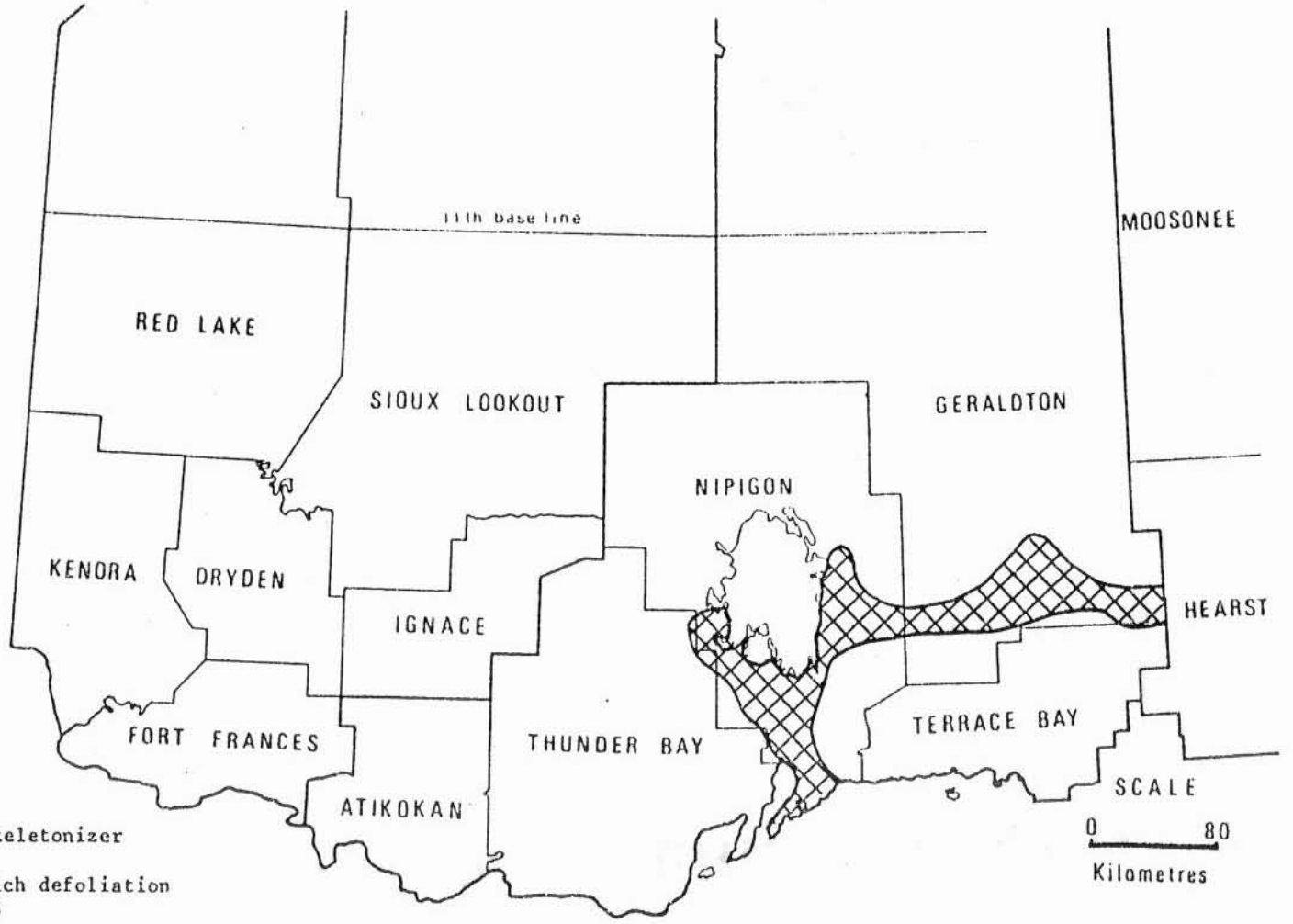
Areas within which defoliation occurred in 1963

LEGEND

Light defoliation

Moderate-to-severe defoliation

NORTHWESTERN ONTARIO



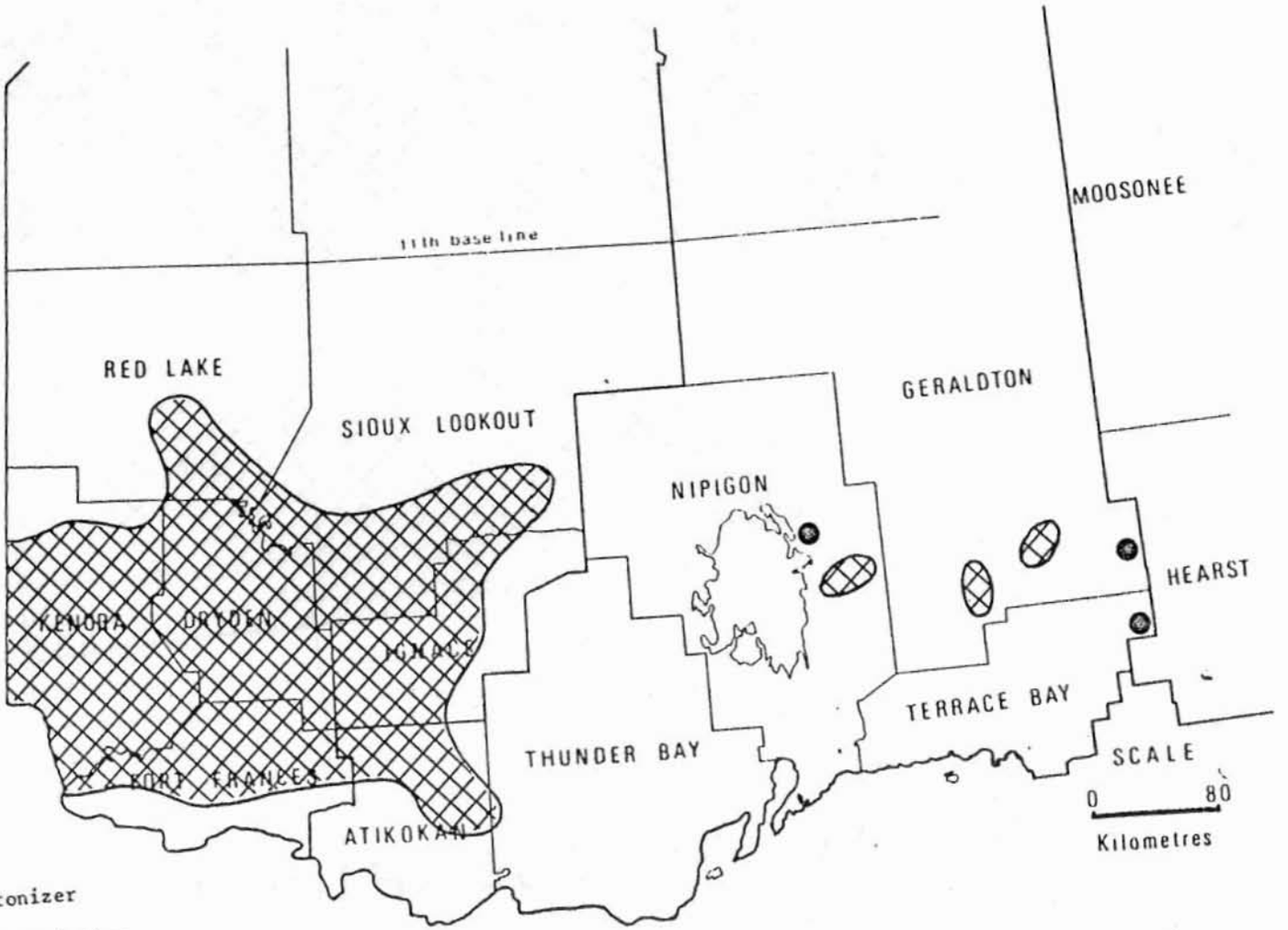
Birch Skeletonizer

Areas within which defoliation occurred in 1964

LEGEND

Moderate-to-severe defoliation

NORTHWESTERN ONTARIO



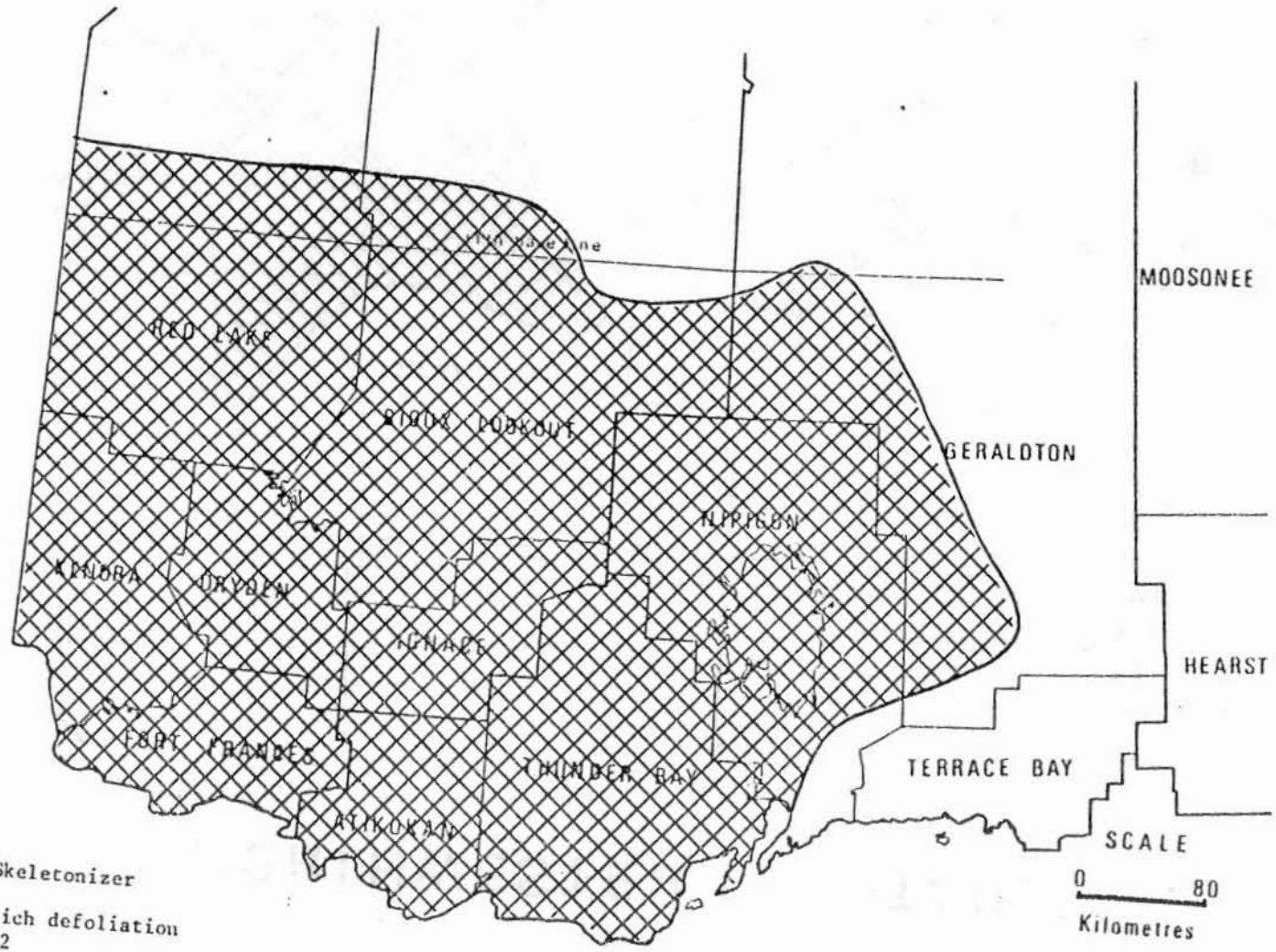
Birch Skeletonizer

Areas within which defoliation occurred in 1970

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHWESTERN ONTARIO



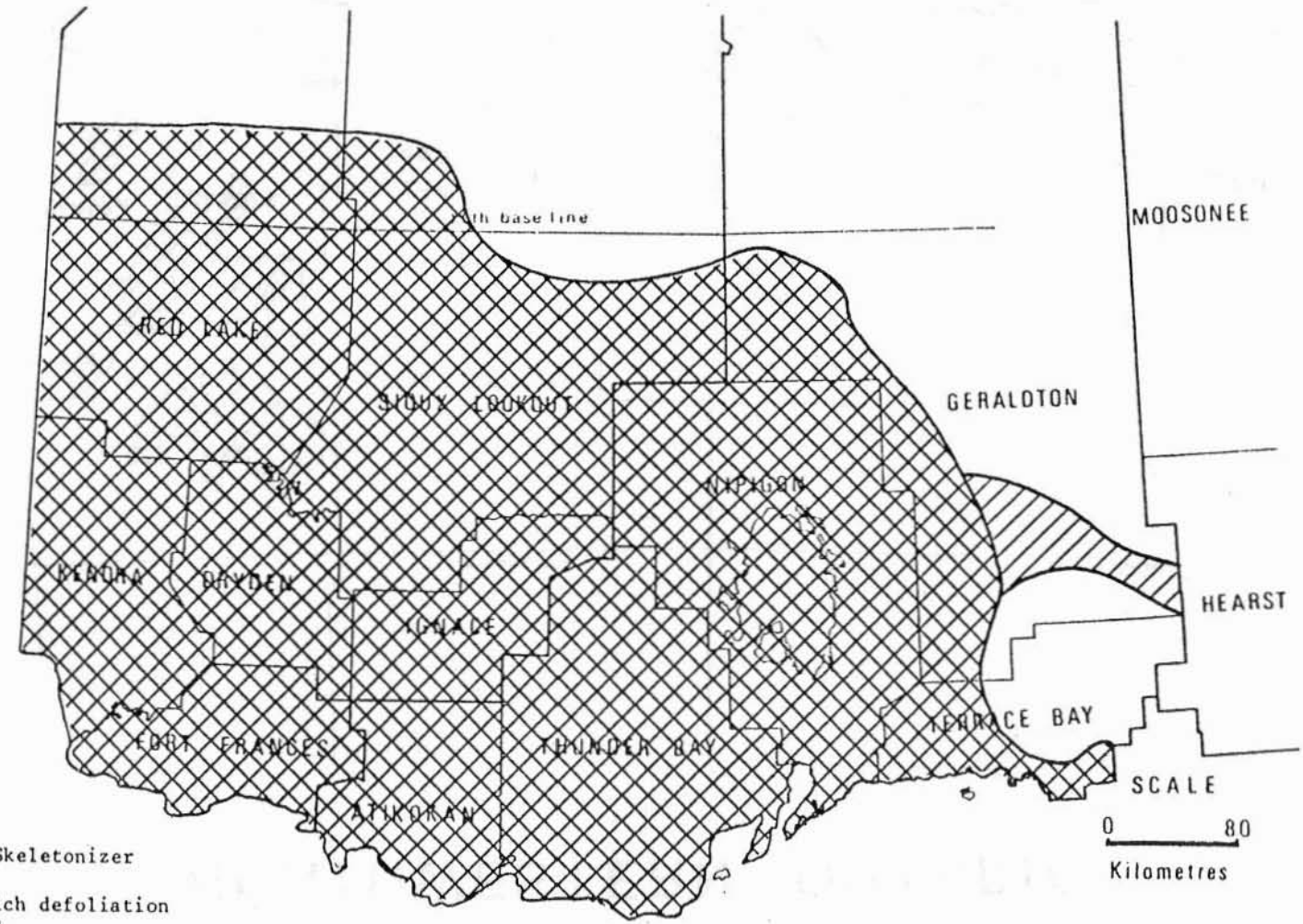
Birch Skeletonizer

Areas within which defoliation occurred in 1972

LEGEND

Moderate-to-severe defoliation

NORTHWESTERN ONTARIO



Birch Skeletonizer

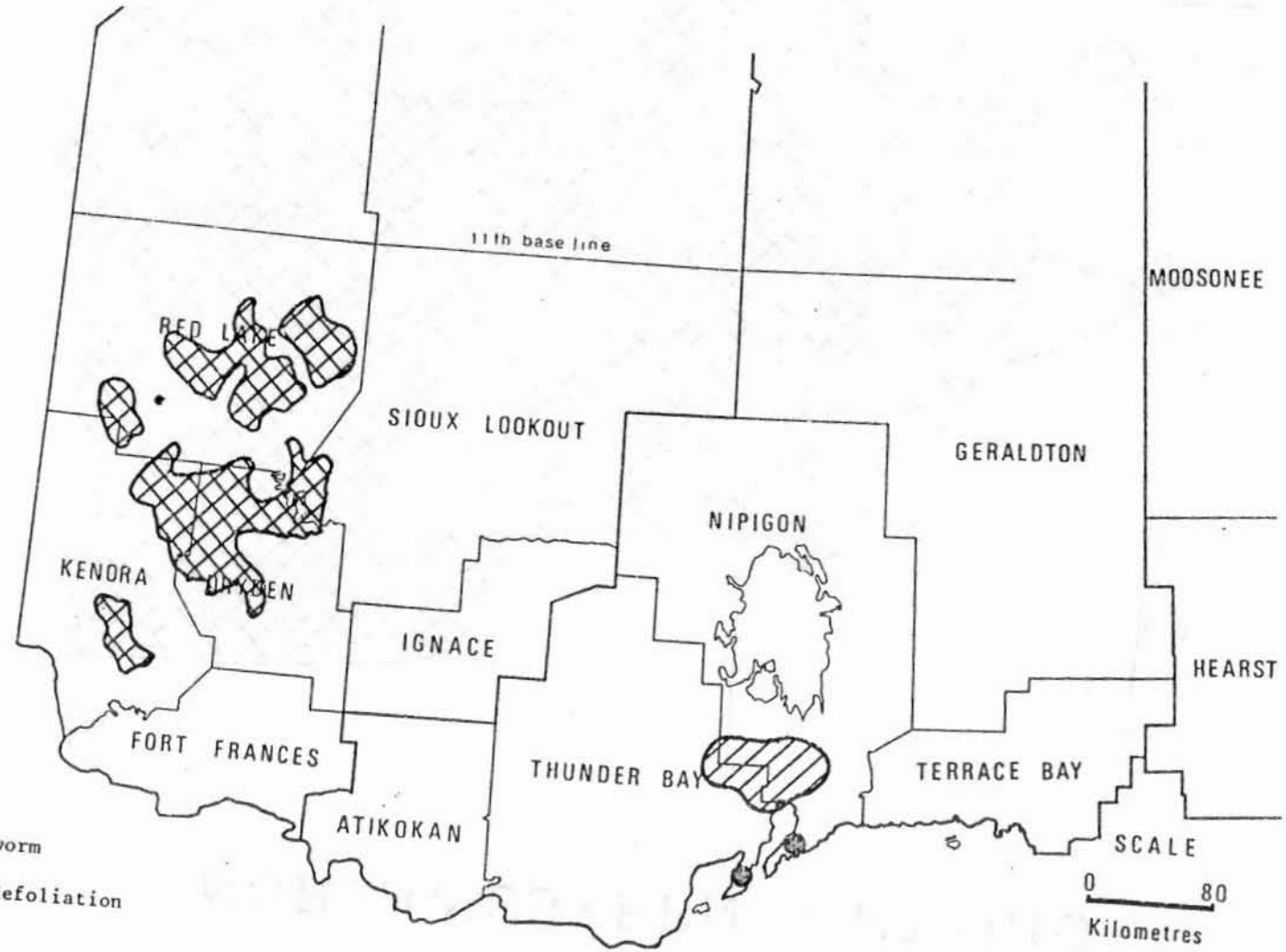
Areas within which defoliation occurred in 1973

LEGEND

Light defoliation

Moderate-to-severe defoliation

NORTHWESTERN ONTARIO



Spruce Budworm

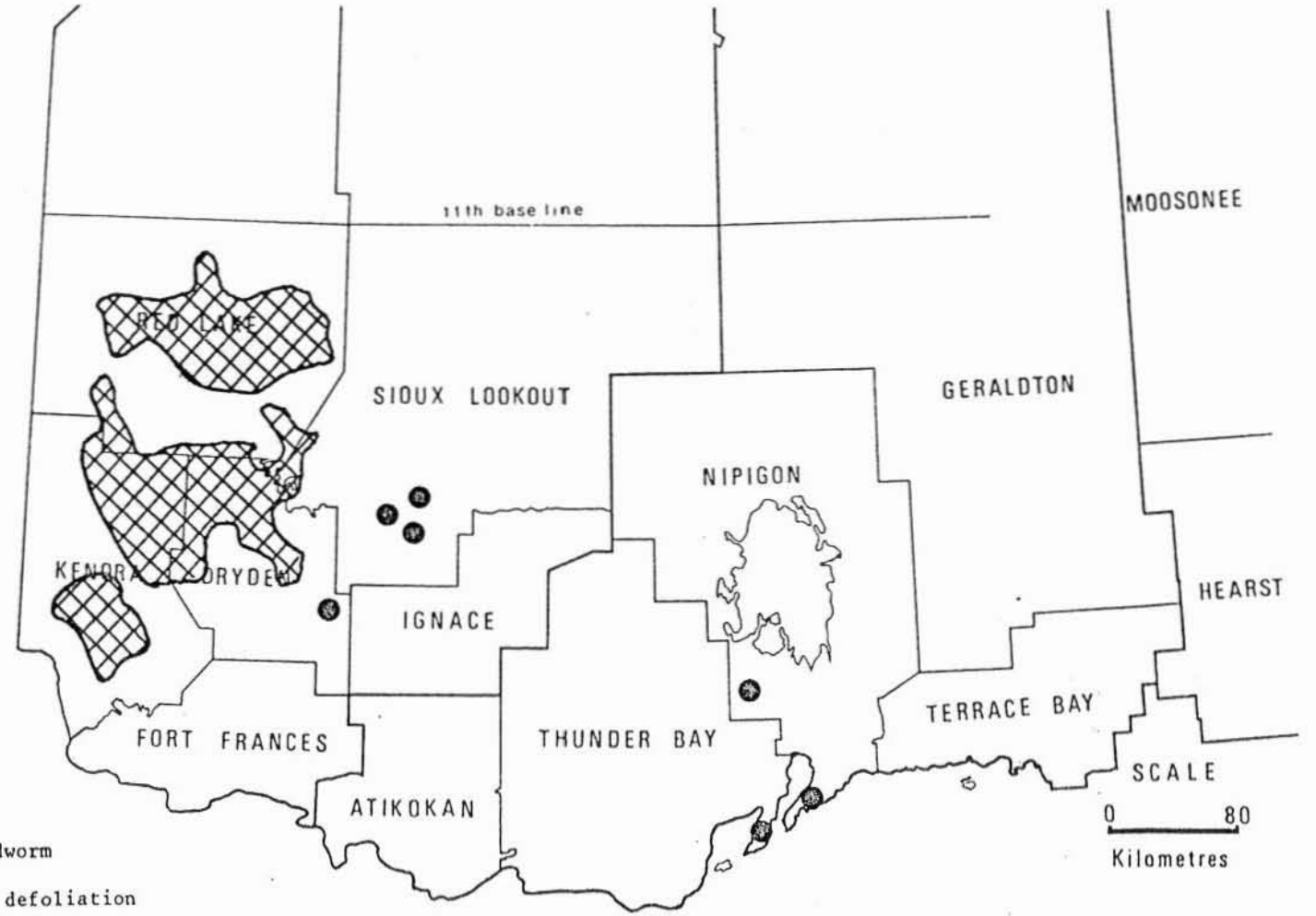
Areas within which defoliation occurred in 1950

LEGEND

Light defoliation

Moderate-to-severe defoliation or

NORTHWESTERN ONTARIO



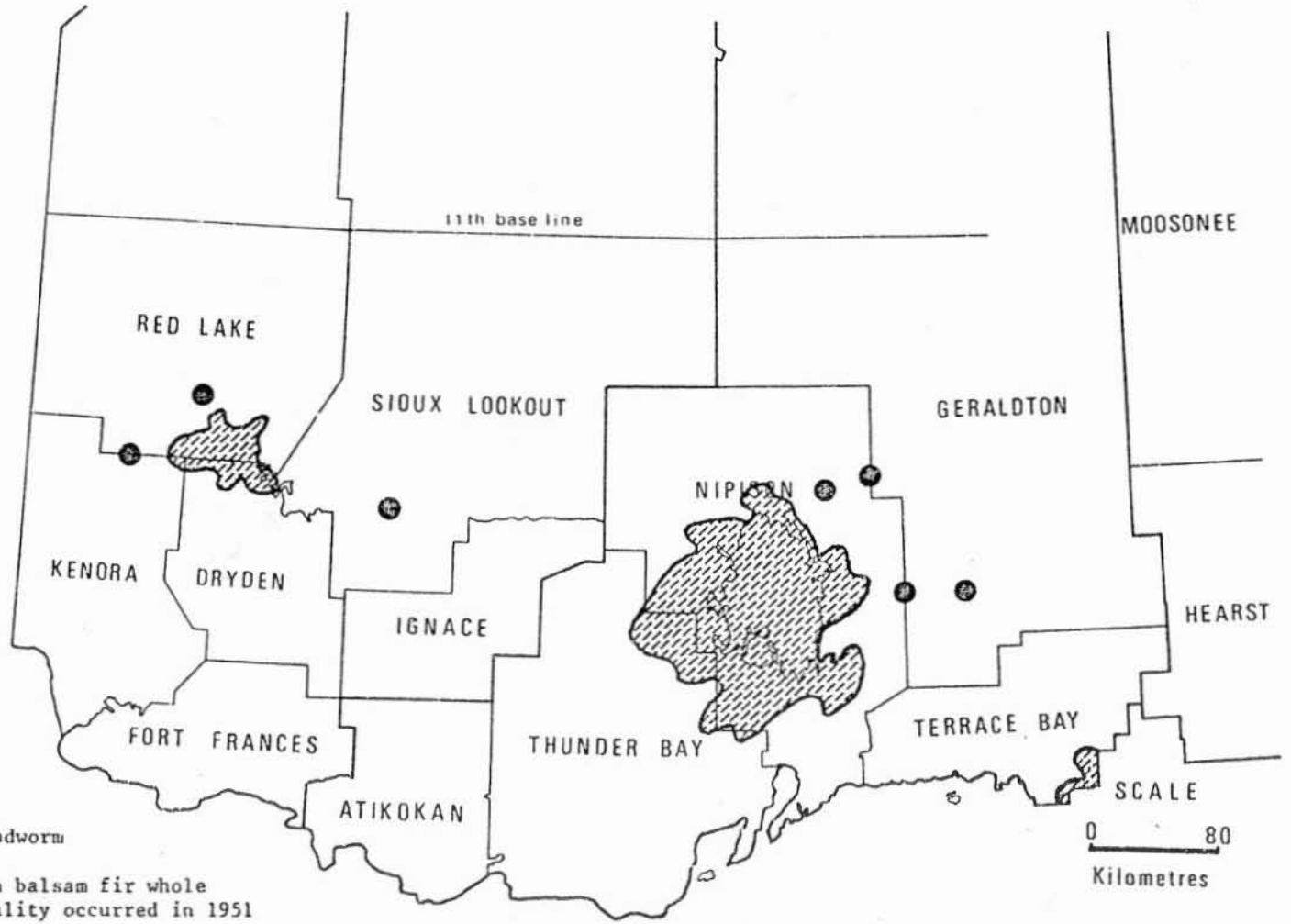
Spruce Budworm

Areas within which defoliation occurred in 1951

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHWESTERN ONTARIO



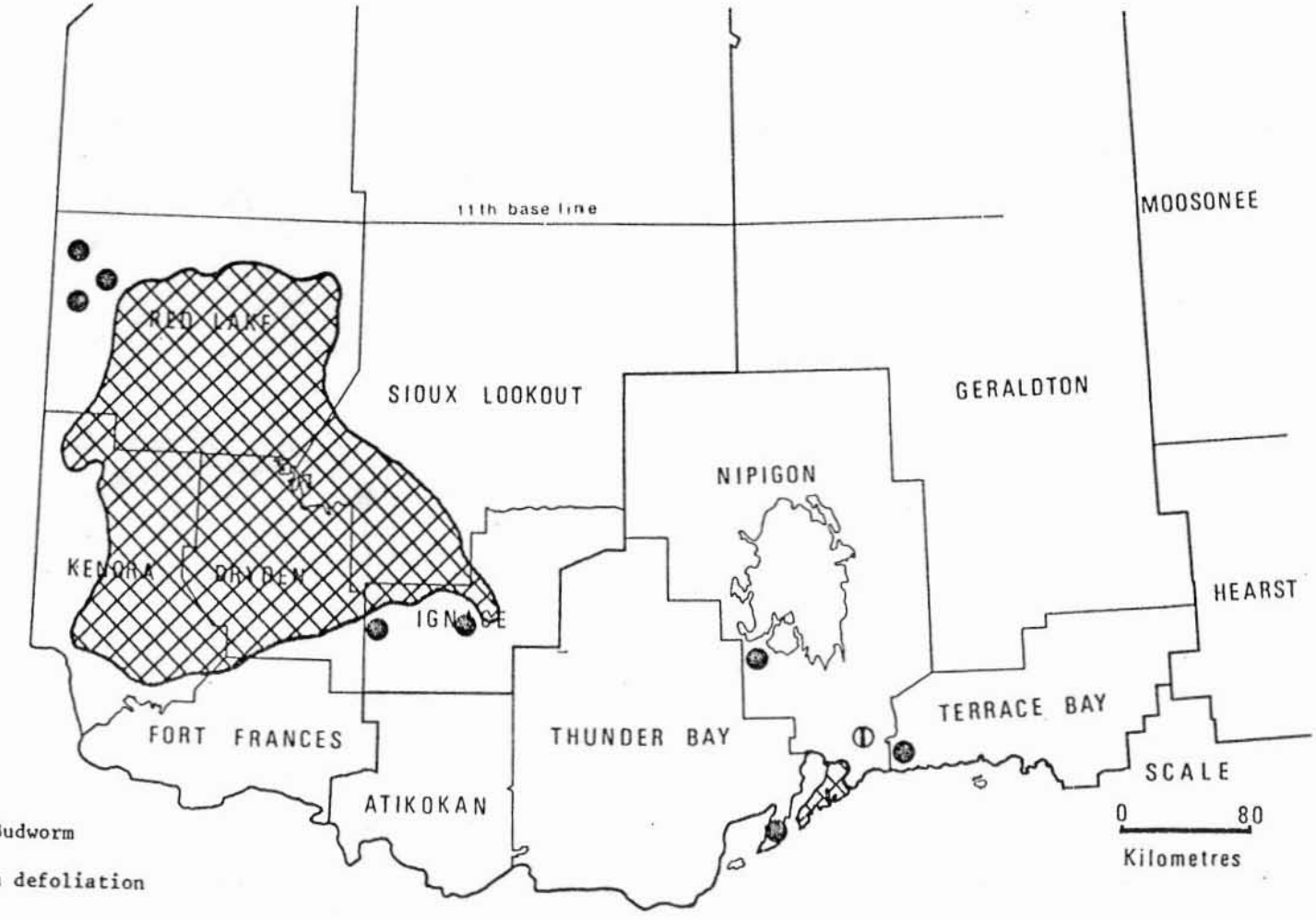
Spruce Budworm

Areas within which balsam fir whole tree and top mortality occurred in 1951

LEGEND

Mortality ● or ▨

NORTHWESTERN ONTARIO



Spruce Budworm

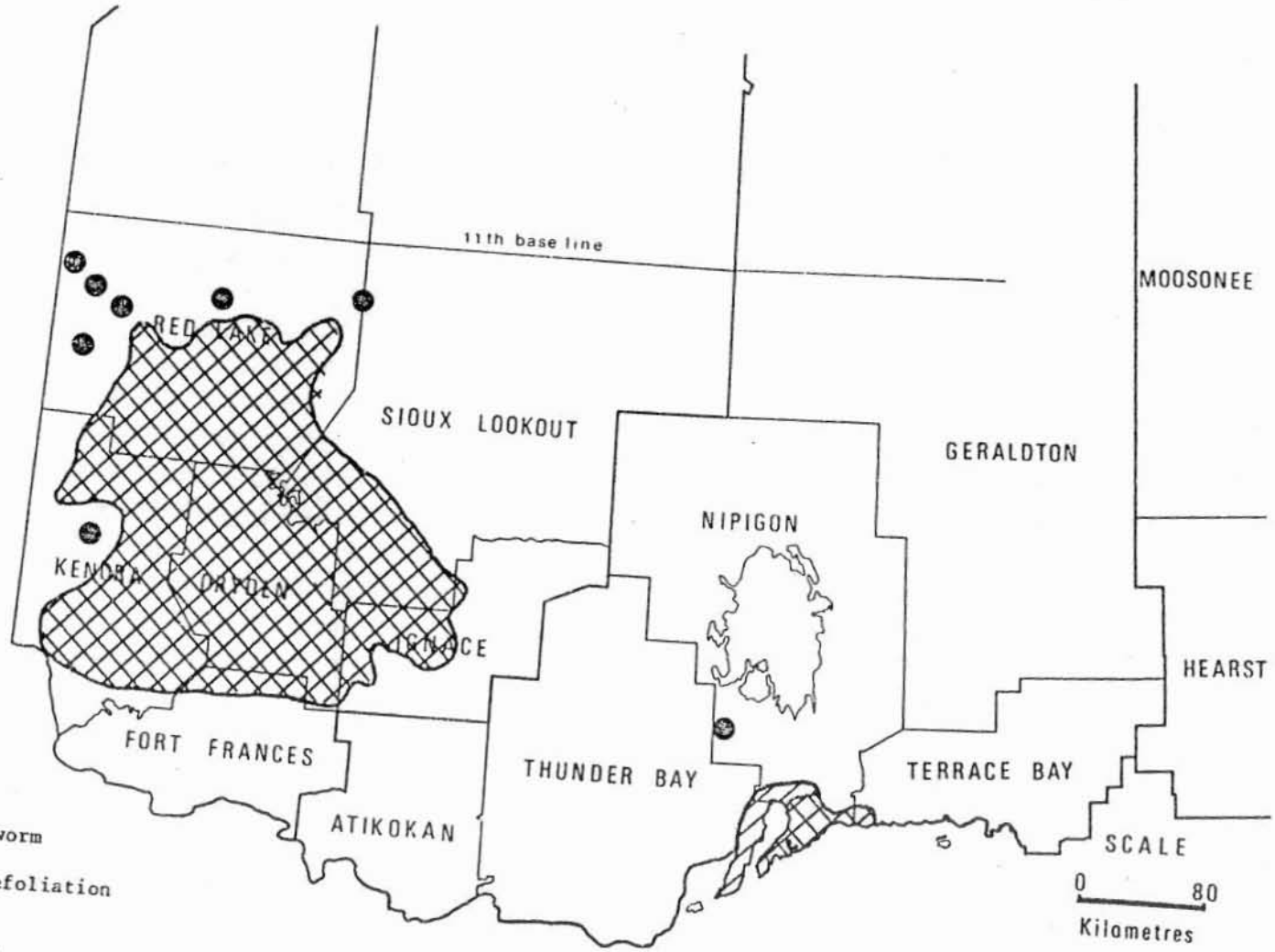
Areas within which defoliation occurred in 1952

LEGEND

Light defoliation ◐

Moderate-to-severe defoliation ▬ or ▩

NORTHWESTERN ONTARIO



Spruce Budworm

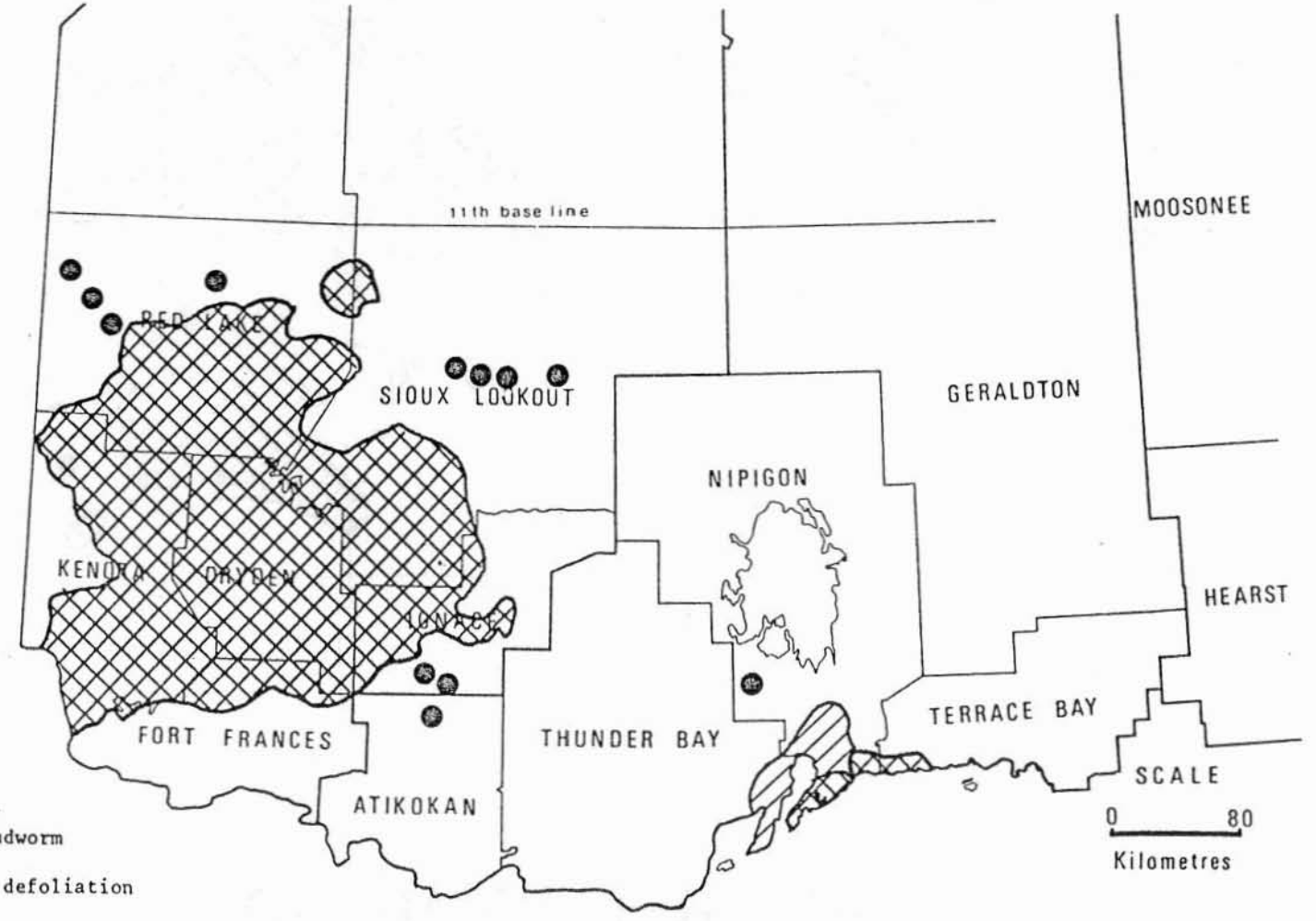
Areas within which defoliation occurred in 1953

LEGEND

Light defoliation

Moderate-to-severe defoliation or

NORTHWESTERN ONTARIO



Spruce Budworm

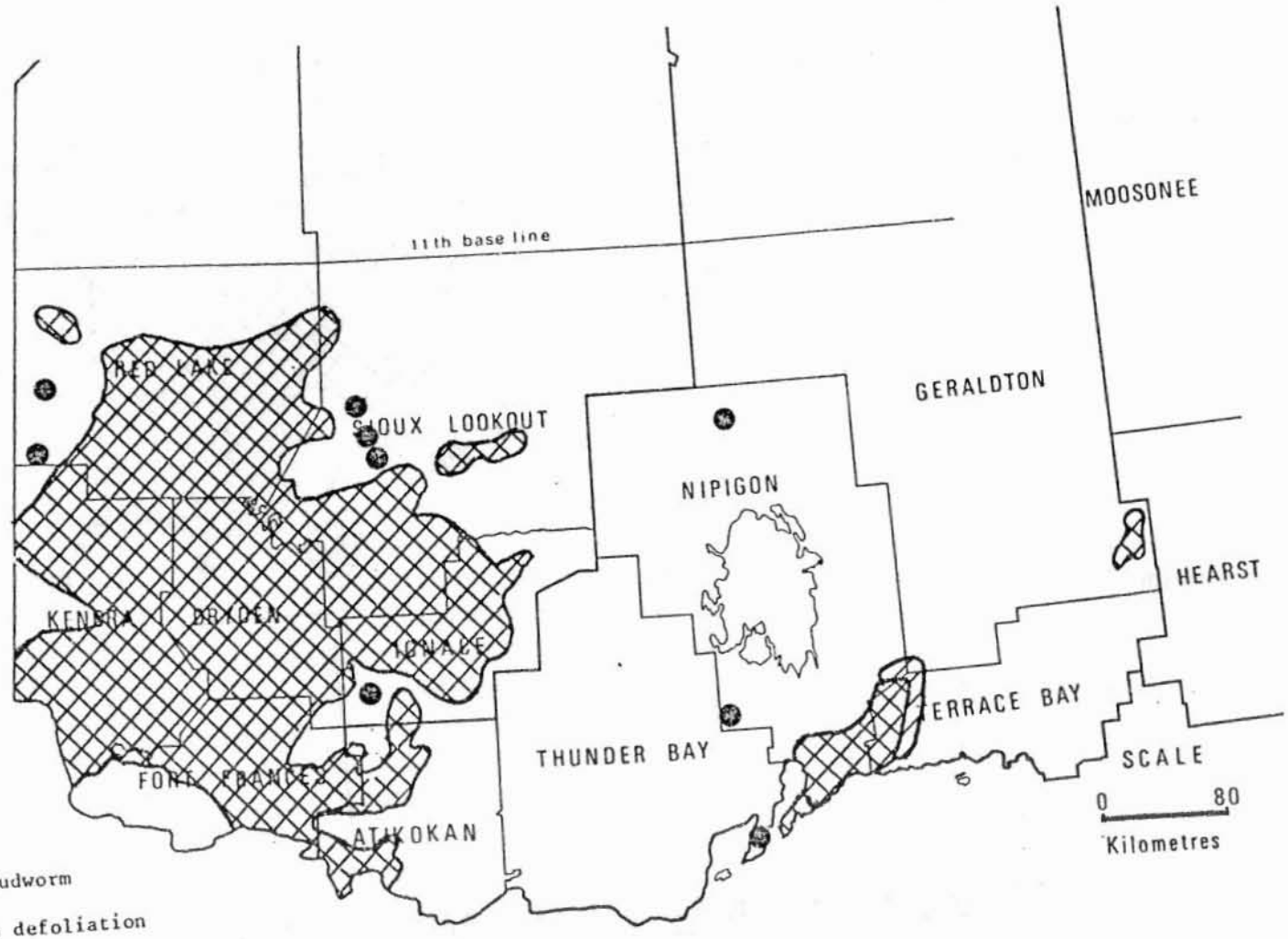
Areas within which defoliation occurred in 1954

LEGEND

Light defoliation

Moderate-to-severe defoliation ● or

NORTHWESTERN ONTARIO



Spruce Budworm

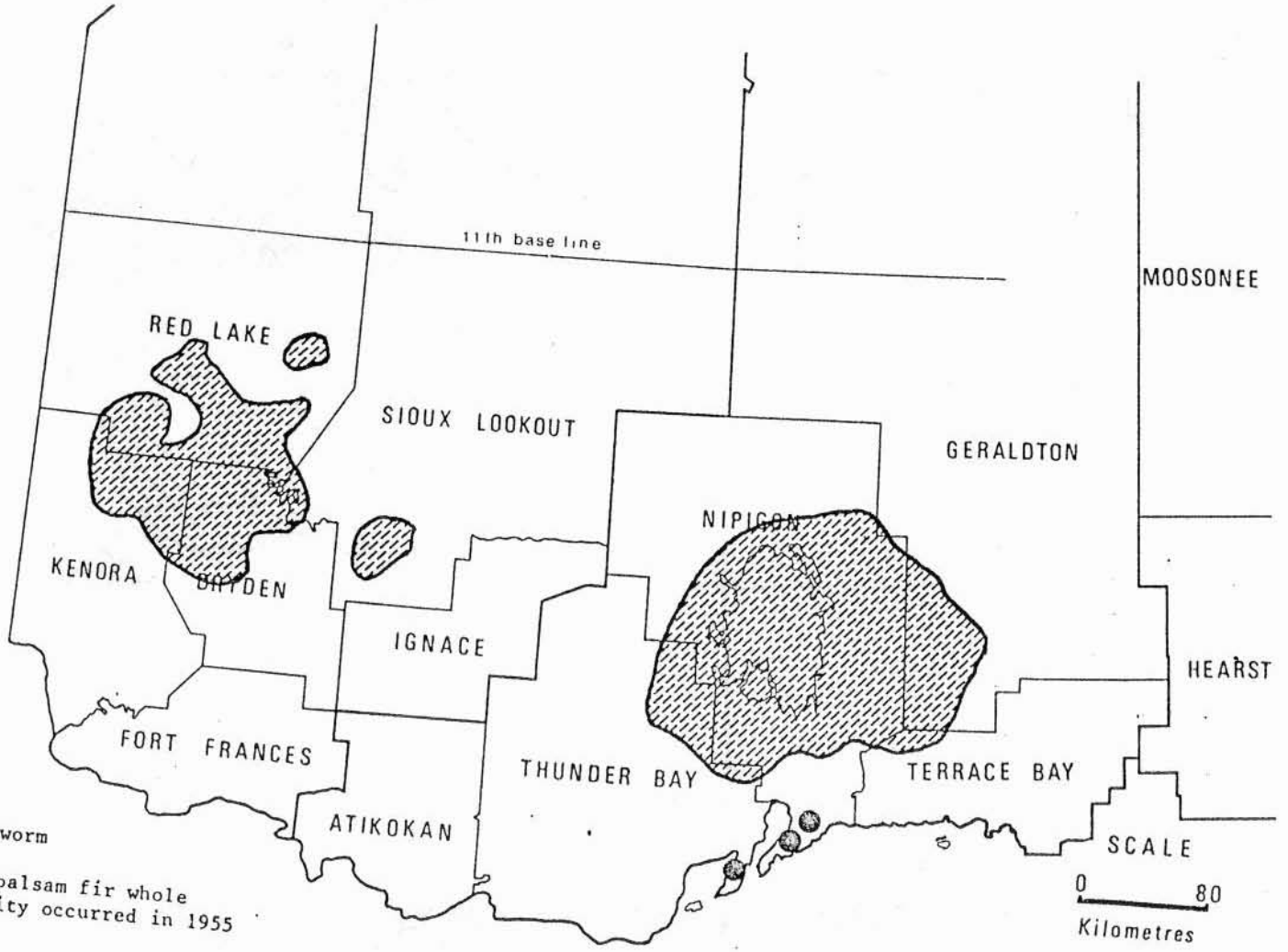
Areas within which defoliation occurred in 1955

LEGEND

Light defoliation

Moderate-to-severe defoliation or

NORTHWESTERN ONTARIO



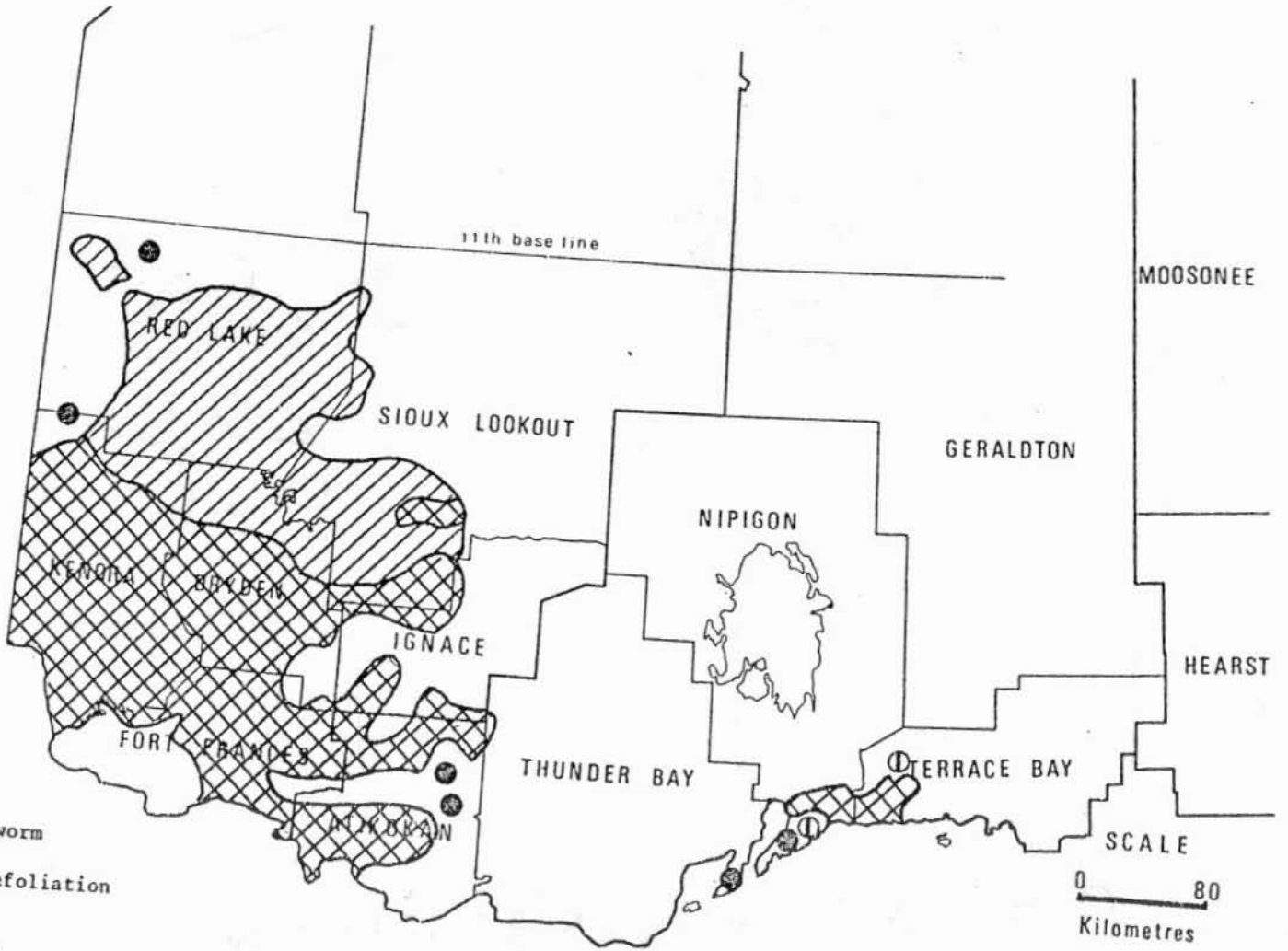
Spruce Budworm

Areas within which balsam fir whole tree and top mortality occurred in 1955

LEGEND

Mortality ● or ▨

NORTHWESTERN ONTARIO



Spruce Budworm

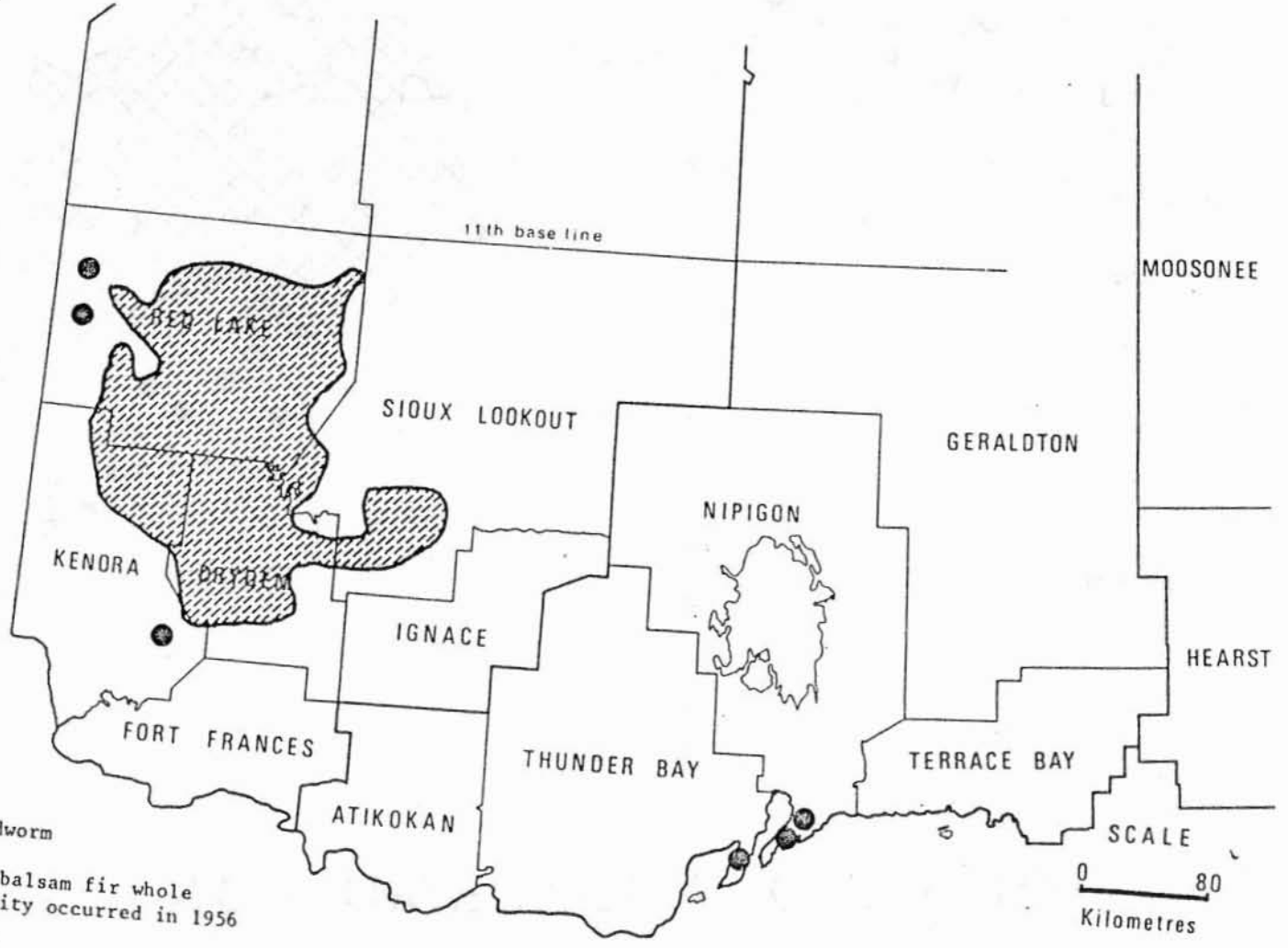
Areas within which defoliation occurred in 1956

LEGEND

Light defoliation ◐ or ▨

Moderate-to-severe defoliation ● or ▩

NORTHWESTERN ONTARIO



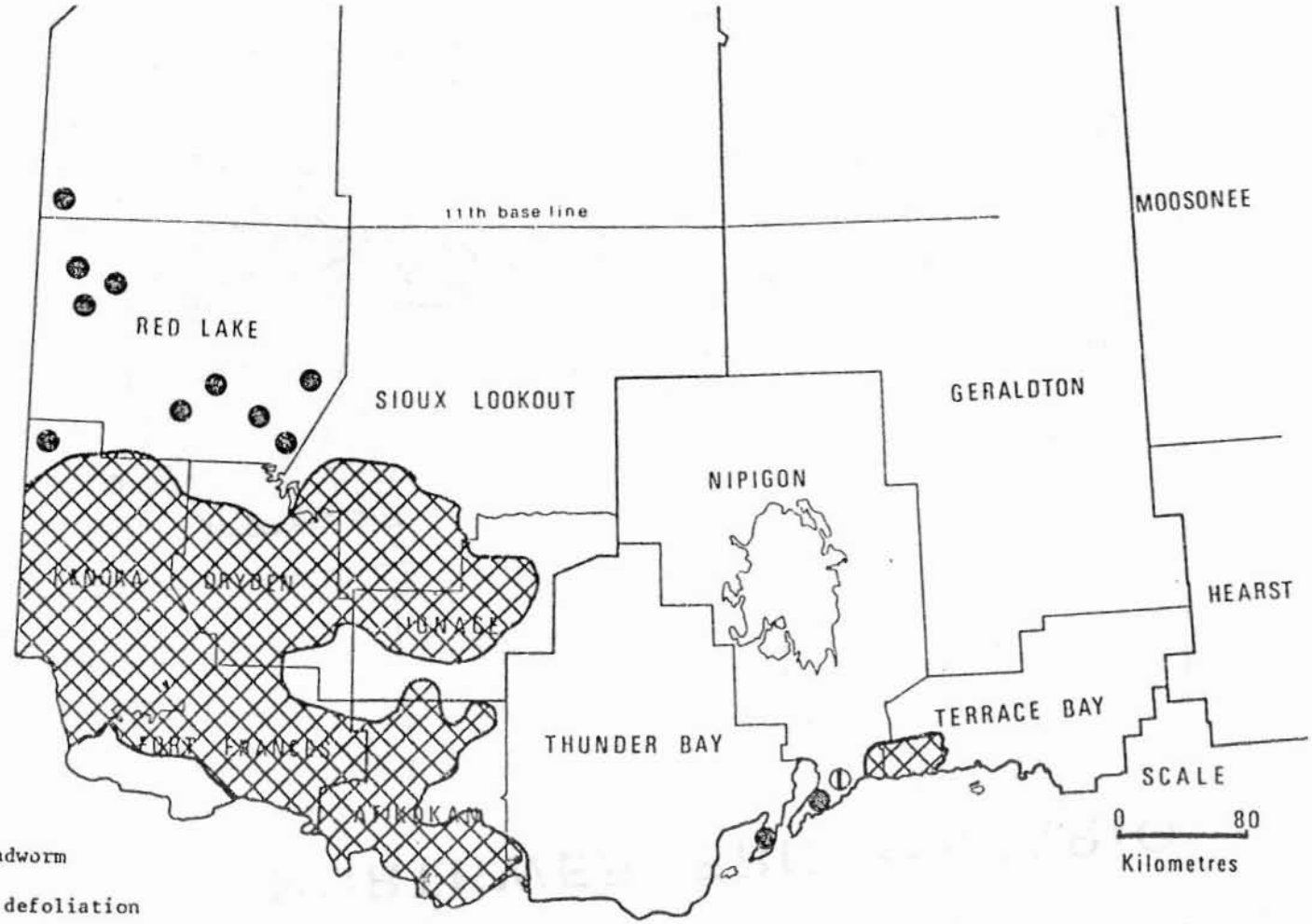
Spruce Budworm

Areas within which balsam fir whole tree and top mortality occurred in 1956

LEGEND

Mortality or

NORTHWESTERN ONTARIO



Spruce Budworm

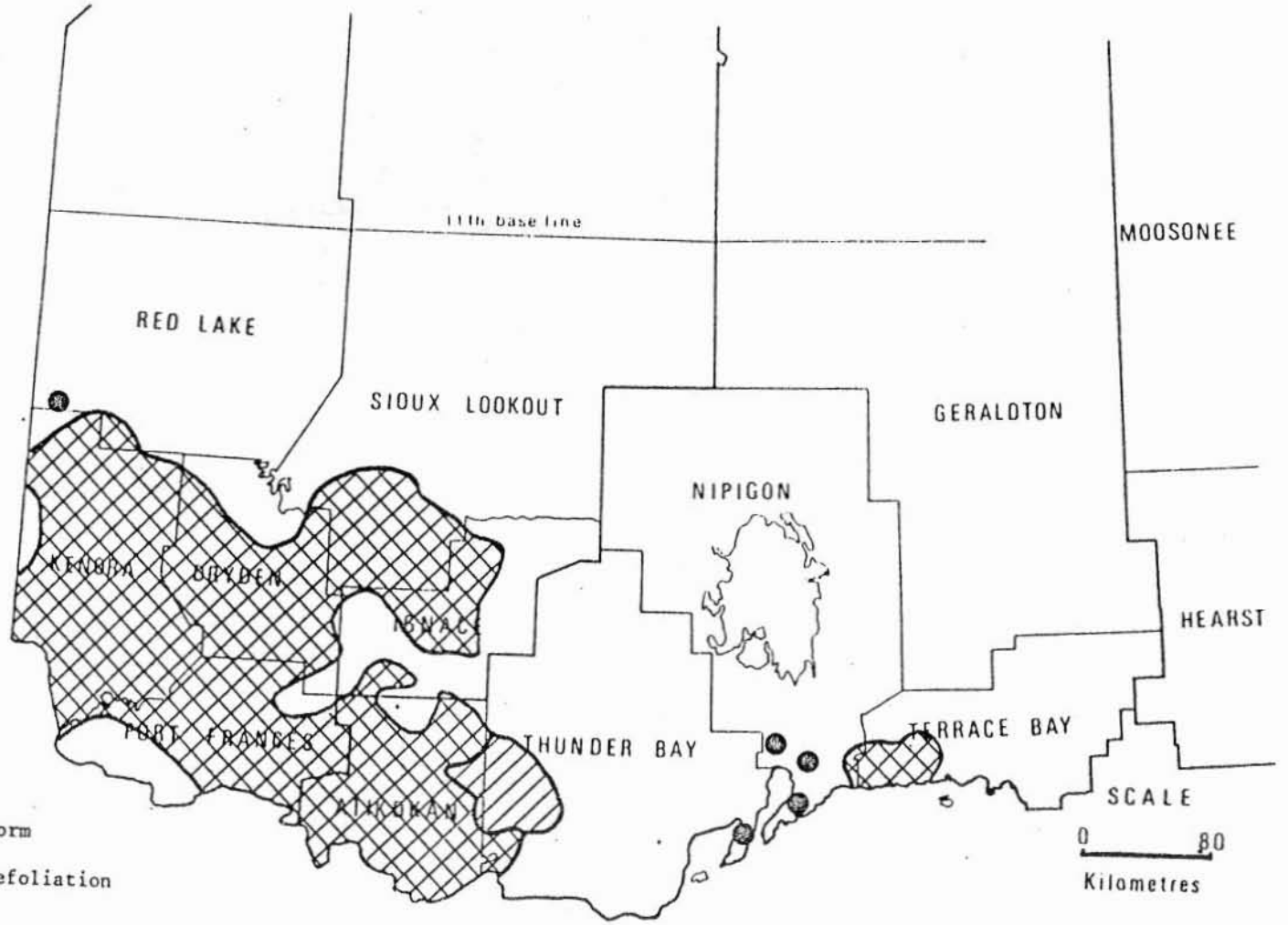
Areas within which defoliation occurred in 1957

LEGEND

Light defoliation ◐

Moderate-to-severe defoliation ● or ▨

NORTHWESTERN ONTARIO



Spruce Budworm

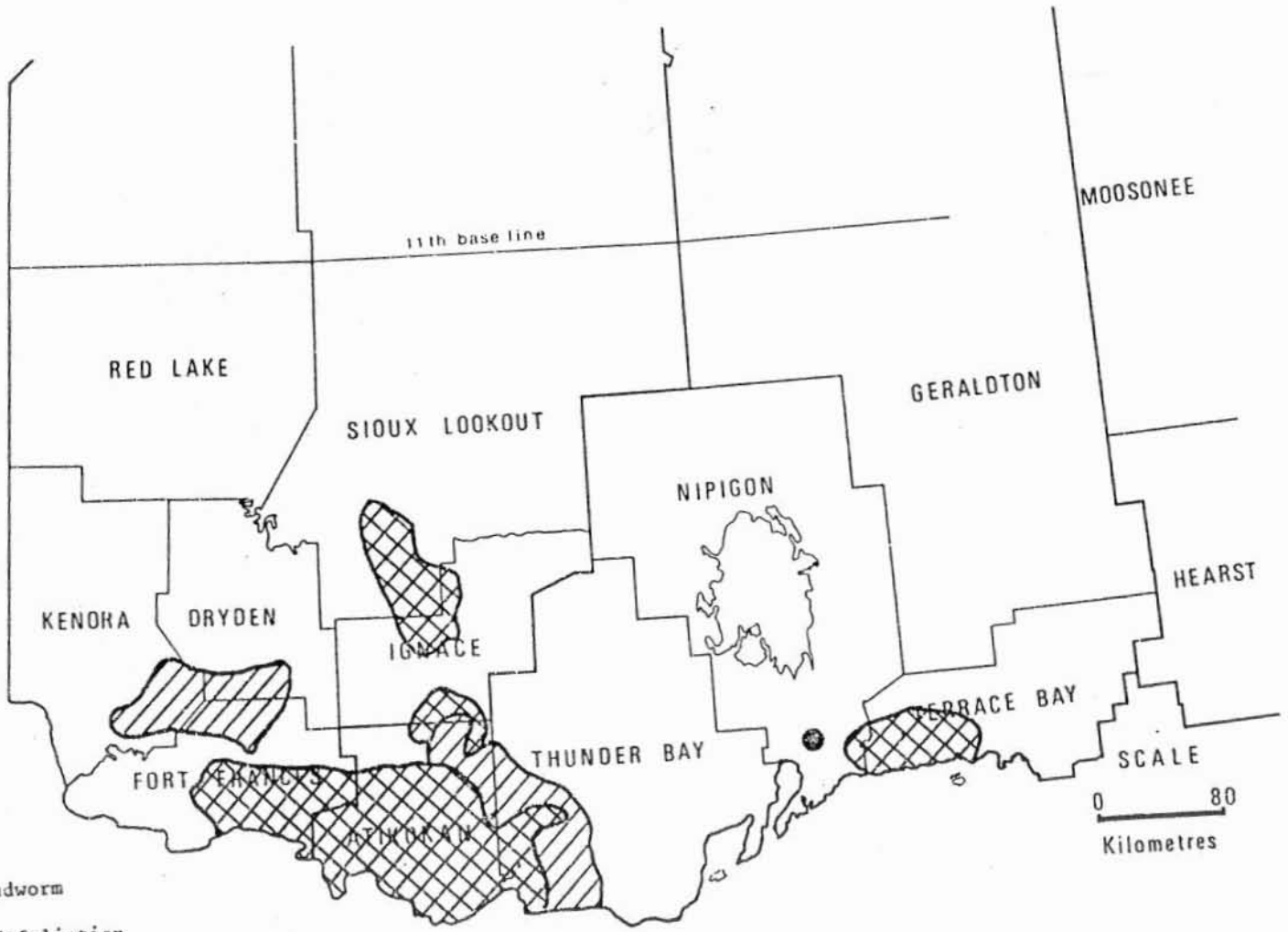
Areas within which defoliation occurred in 1958

LEGEND

Light defoliation

Moderate-to-severe defoliation or

NORTHWESTERN ONTARIO



Spruce Budworm

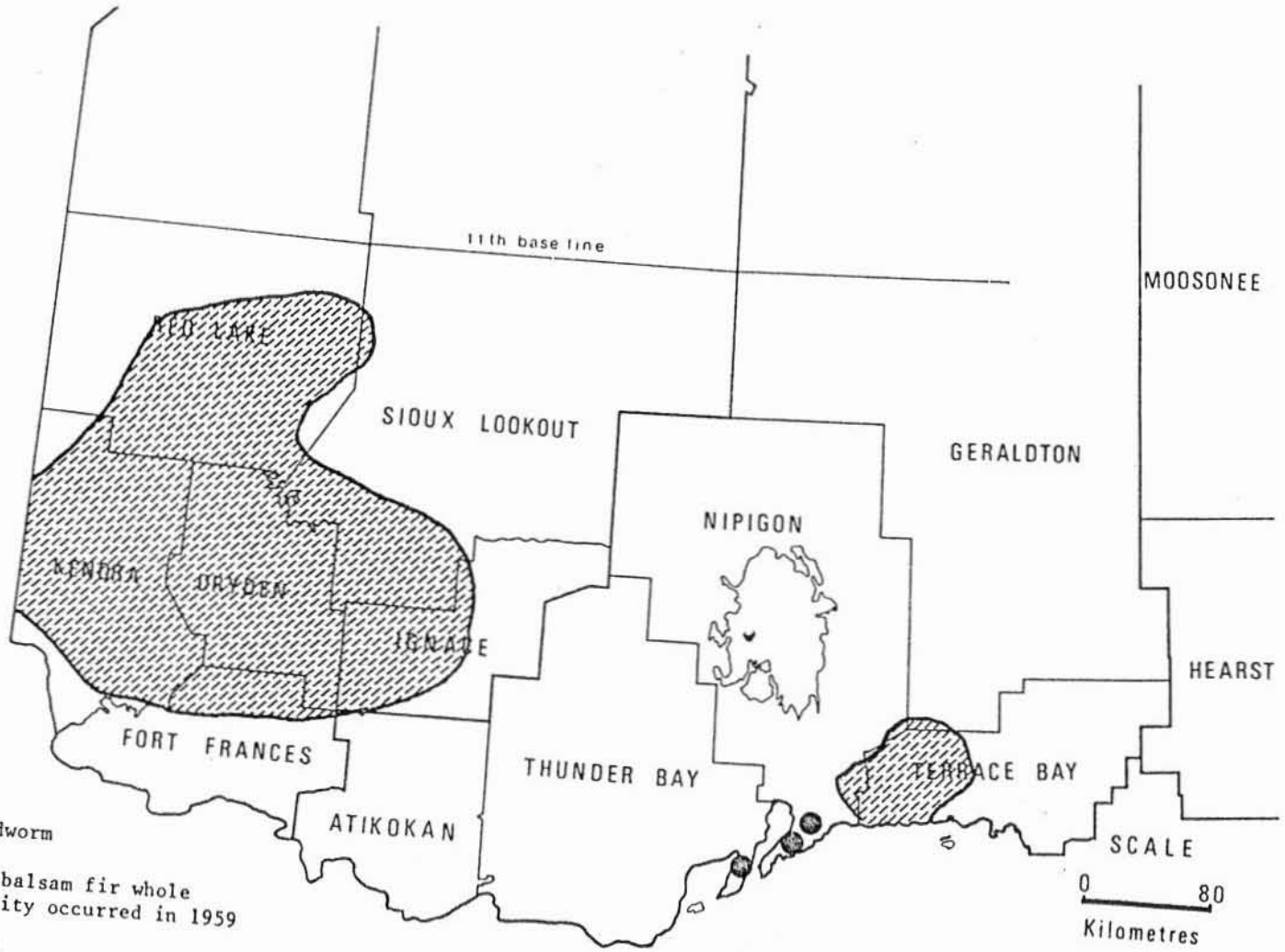
Areas with which defoliation occurred in 1959

LEGEND

Light defoliation

Moderate-to-severe defoliation or

NORTHWESTERN ONTARIO



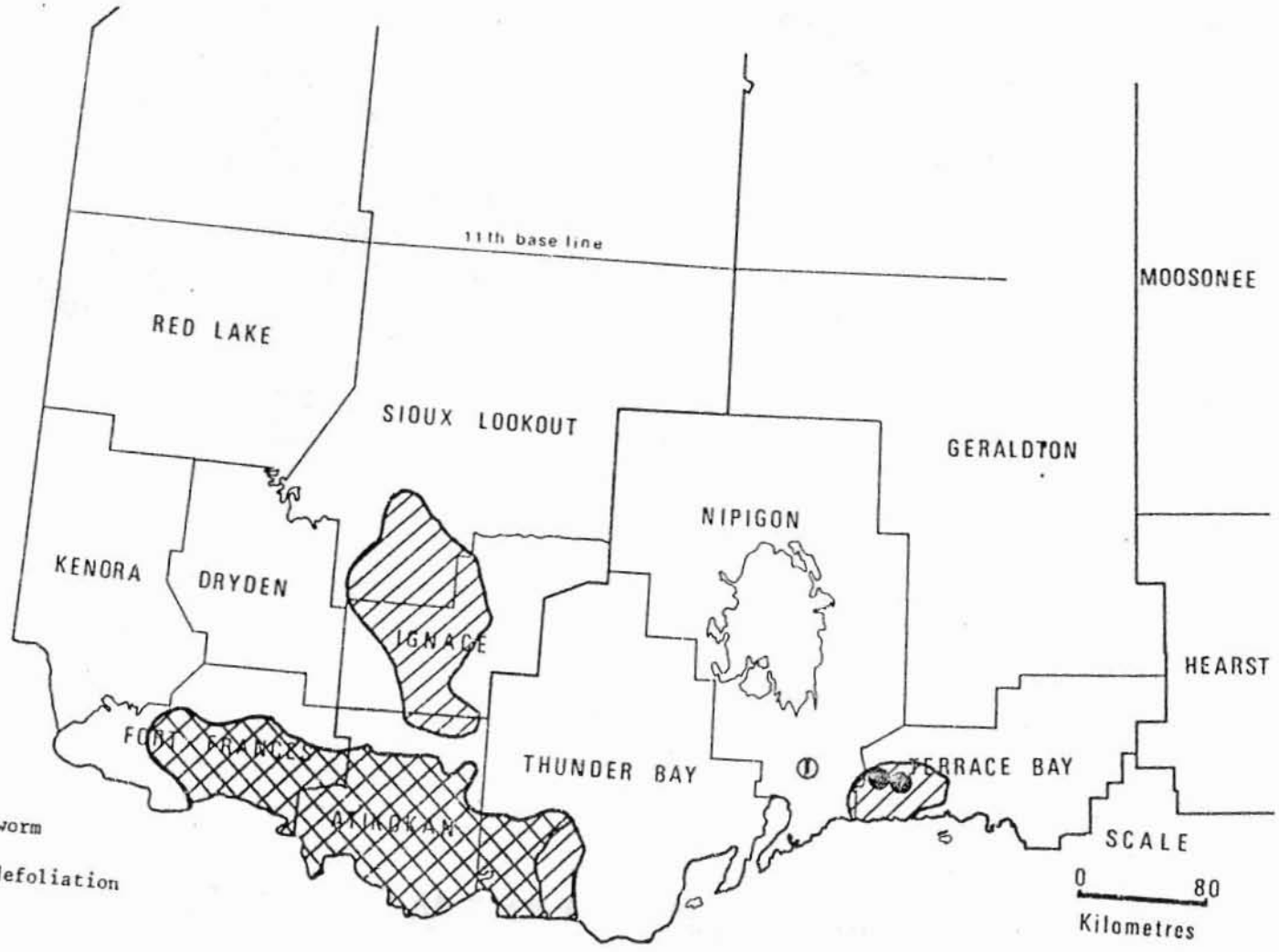
Spruce Budworm

Areas within which balsam fir whole tree and top mortality occurred in 1959

LEGEND

Mortality ● or ▨

NORTHWESTERN ONTARIO



Spruce Budworm

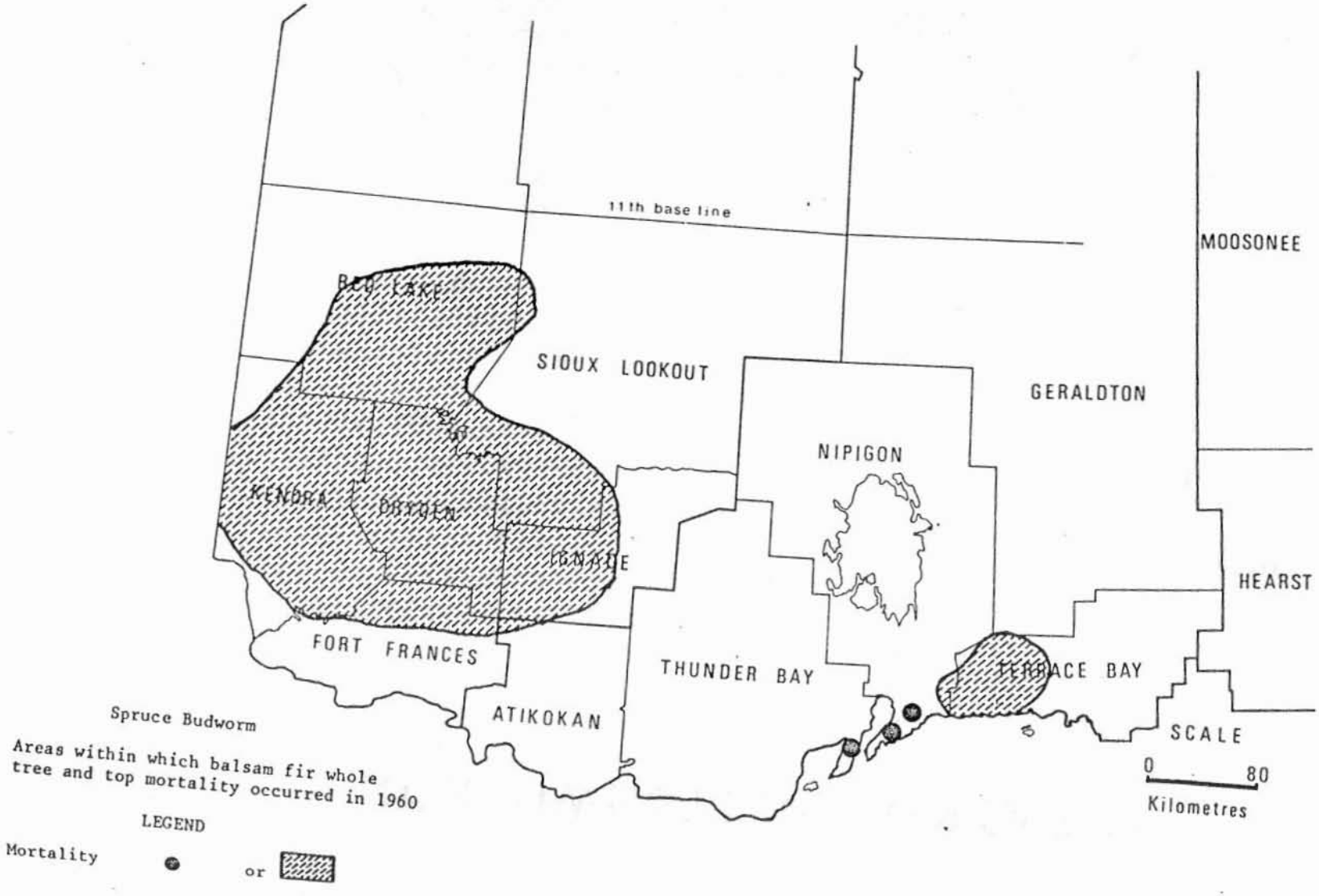
Areas within which defoliation occurred in 1960

LEGEND

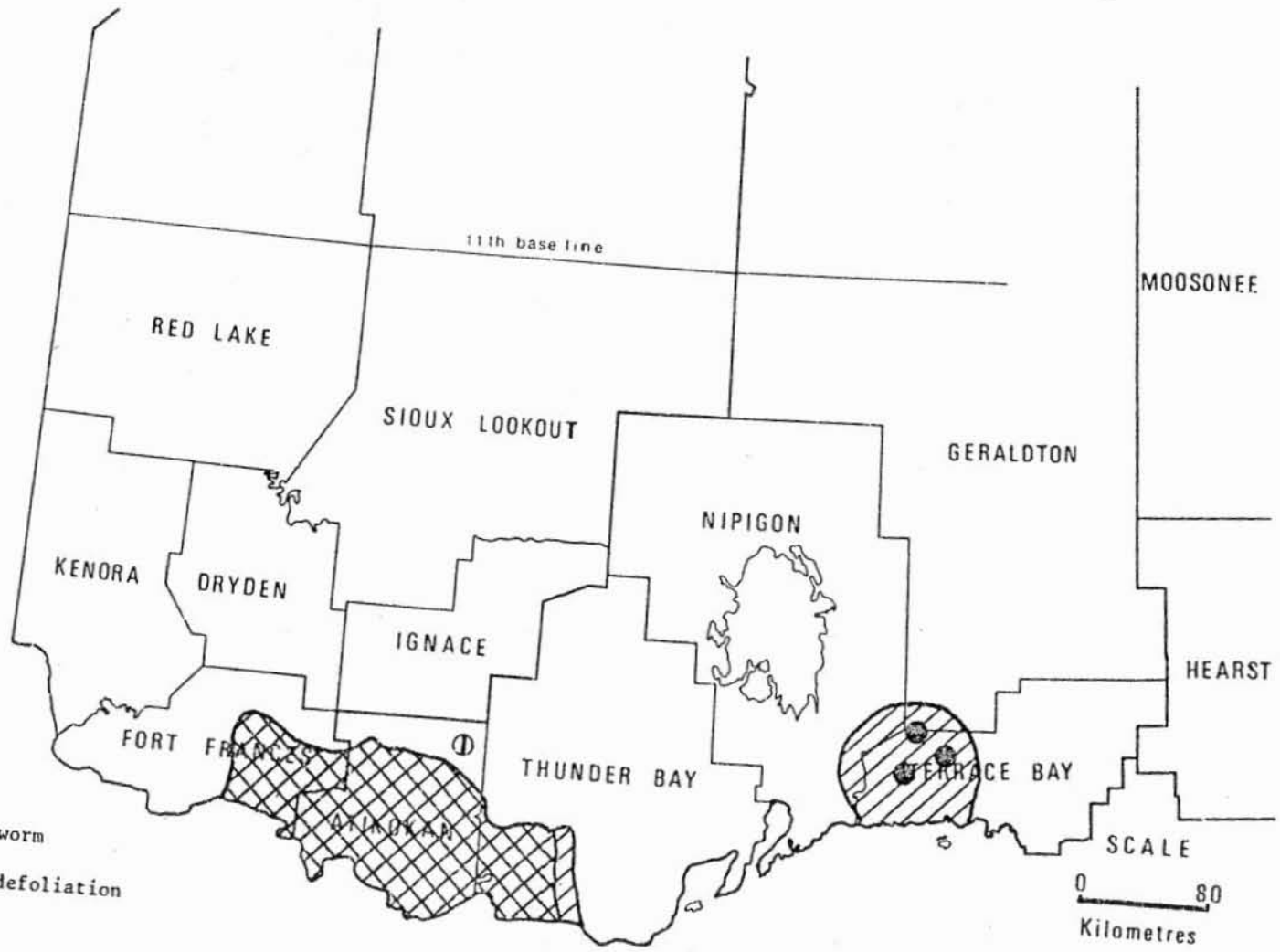
Light defoliation ◐ or ▨

Moderate-to-severe defoliation ● or ▩

NORTHWESTERN ONTARIO



NORTHWESTERN ONTARIO



Spruce Budworm

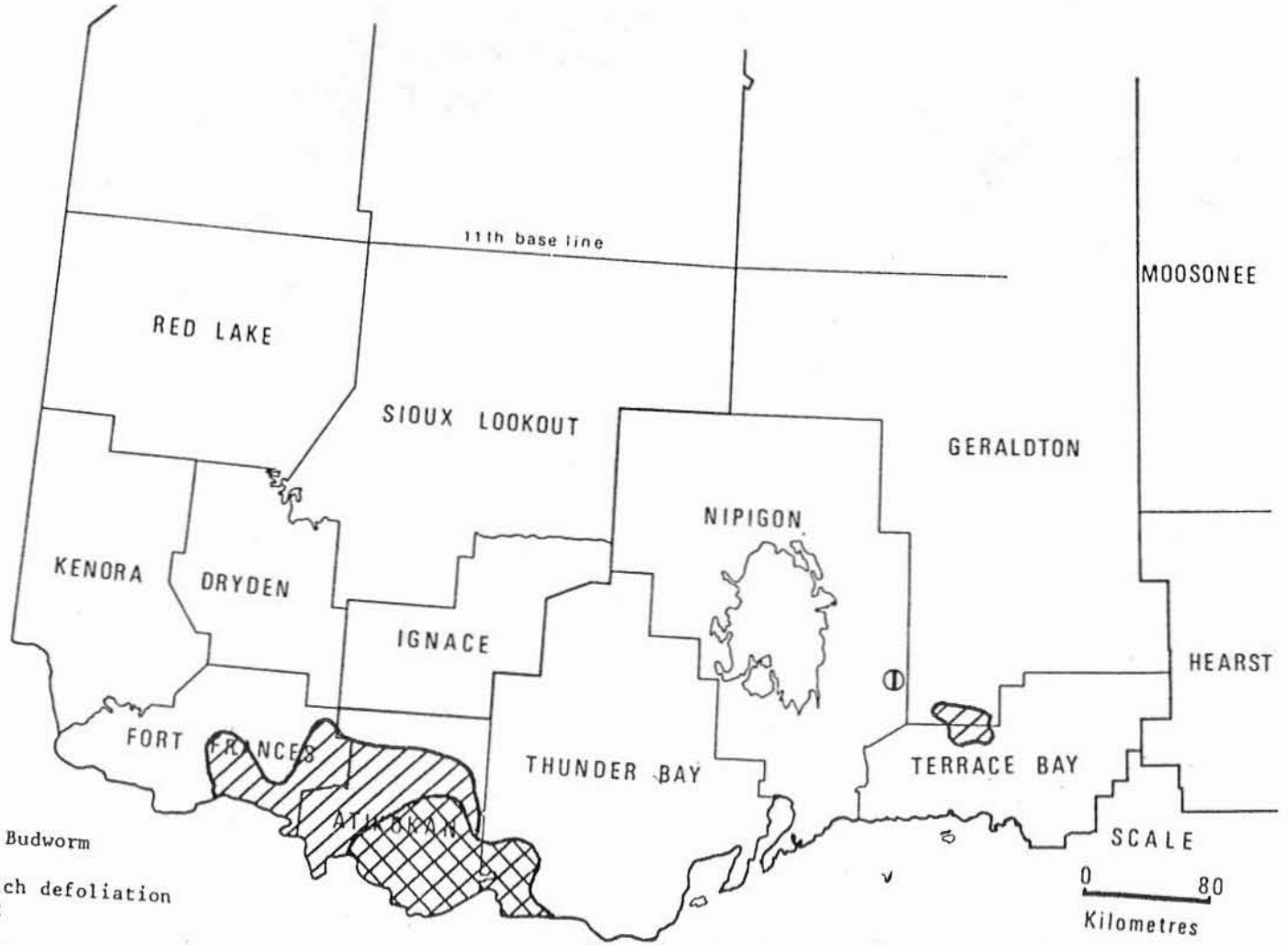
Areas within which defoliation occurred in 1961

LEGEND

Light defoliation ◐ or ▨

Moderate-to-severe defoliation ● or ▩

NORTHWESTERN ONTARIO



Spruce Budworm

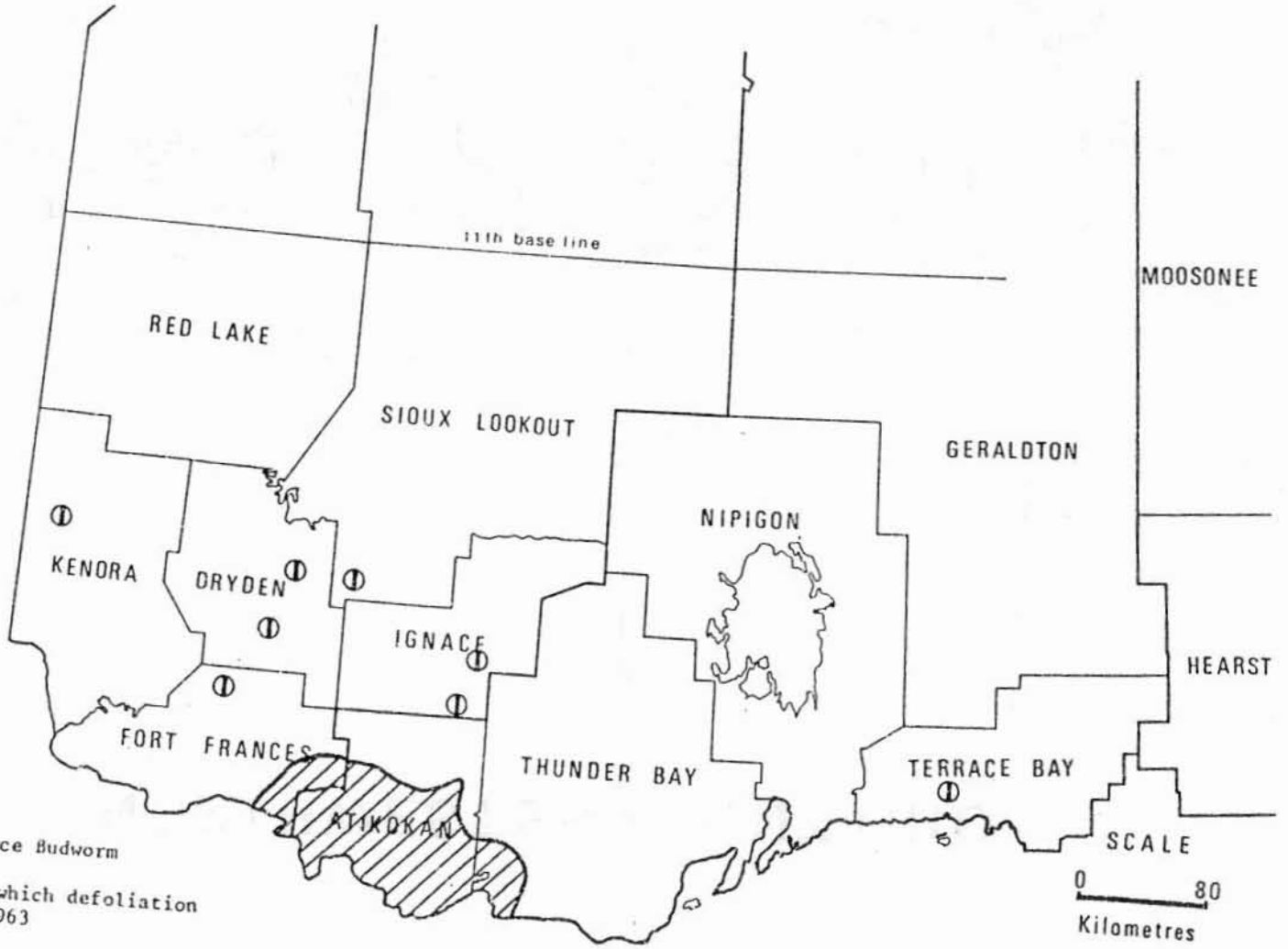
Areas within which defoliation occurred in 1962

LEGEND

Light defoliation ◑ or ▨

Moderate-to-severe defoliation ▩

NORTHWESTERN ONTARIO



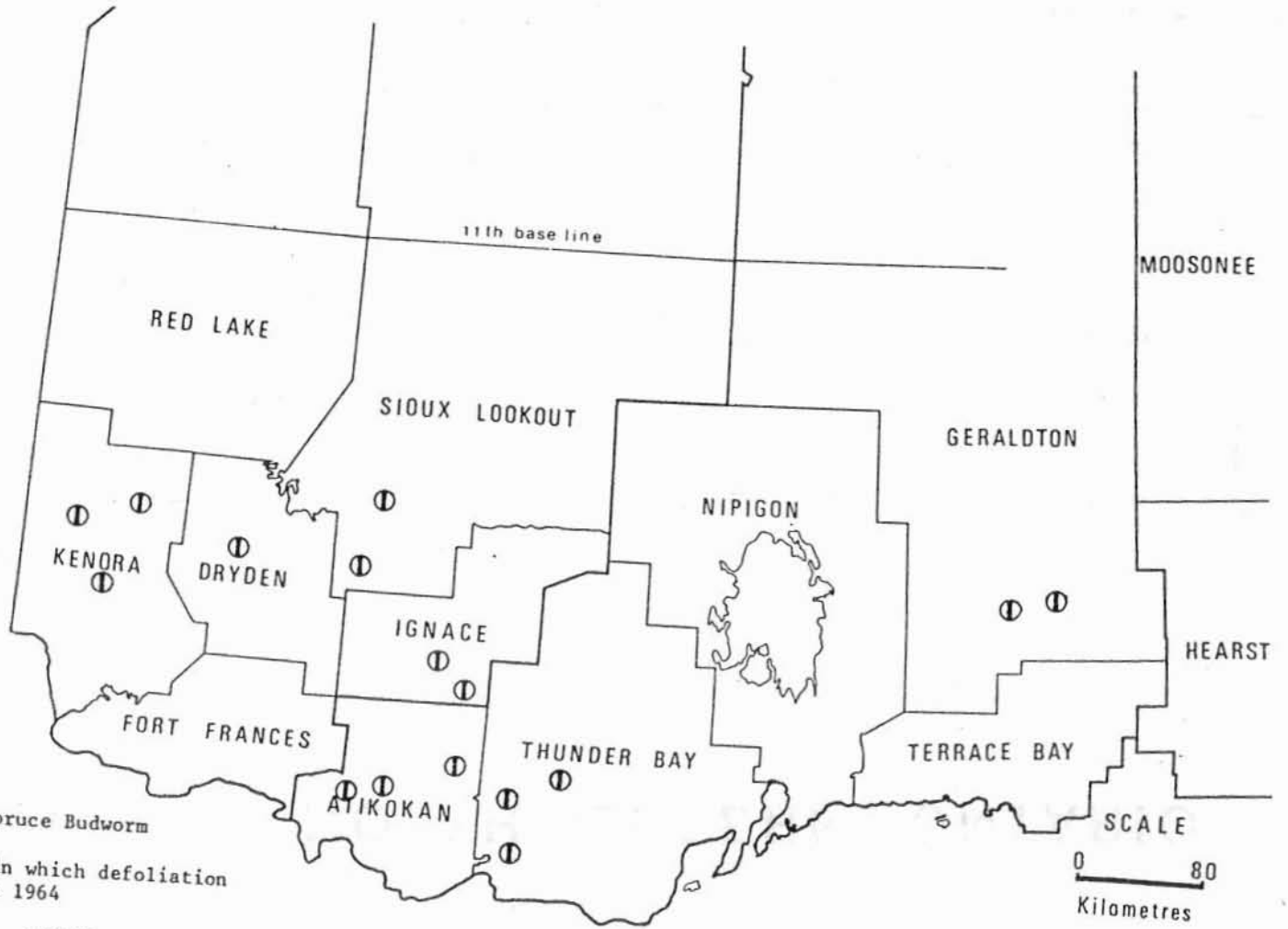
Spruce Budworm

Areas within which defoliation occurred in 1963

LEGEND

Light defoliation ◐ or ▨

NORTHWESTERN ONTARIO



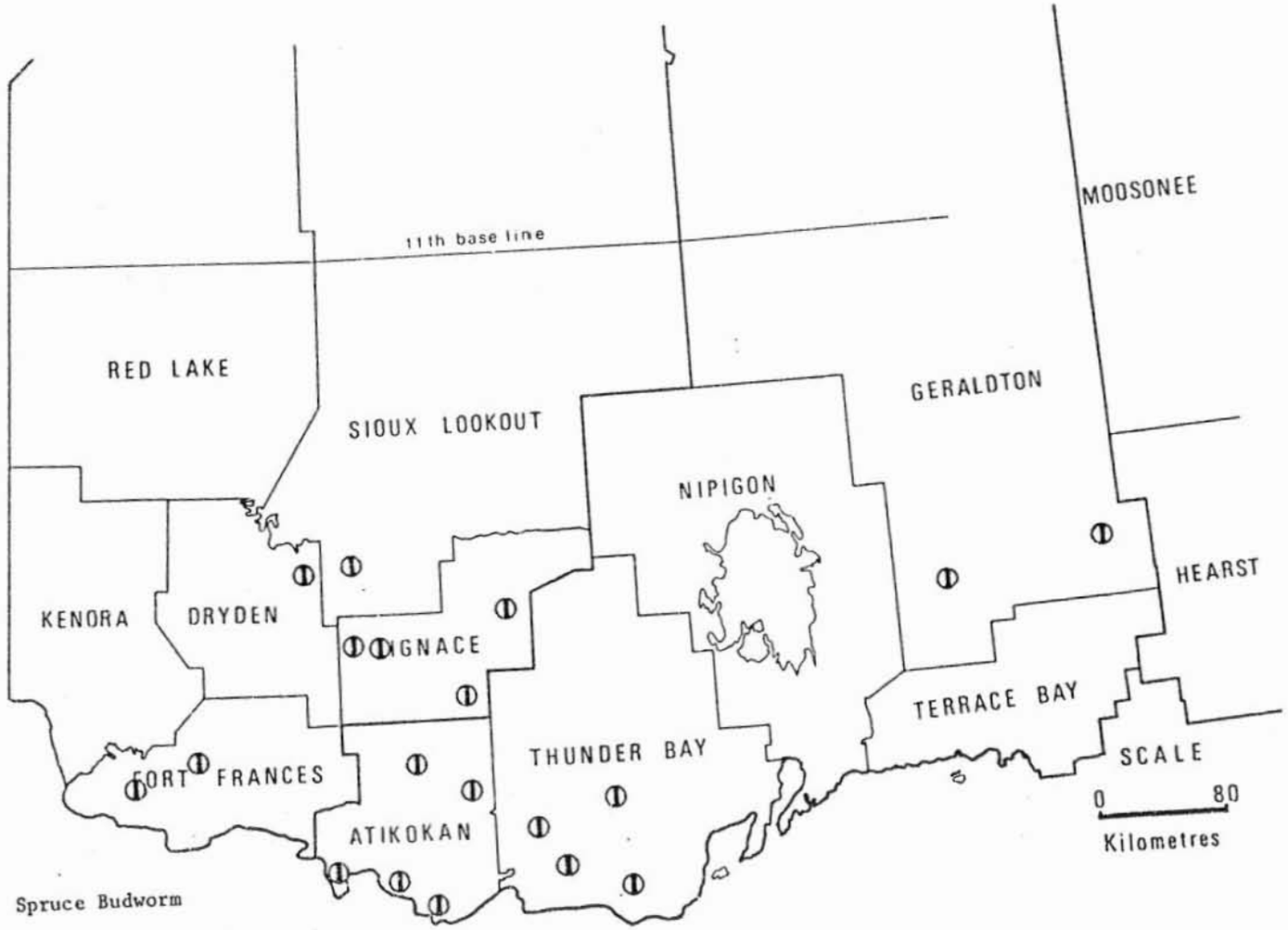
Spruce Budworm

Areas within which defoliation occurred in 1964

LEGEND

Light defoliation ◐

NORTHWESTERN ONTARIO



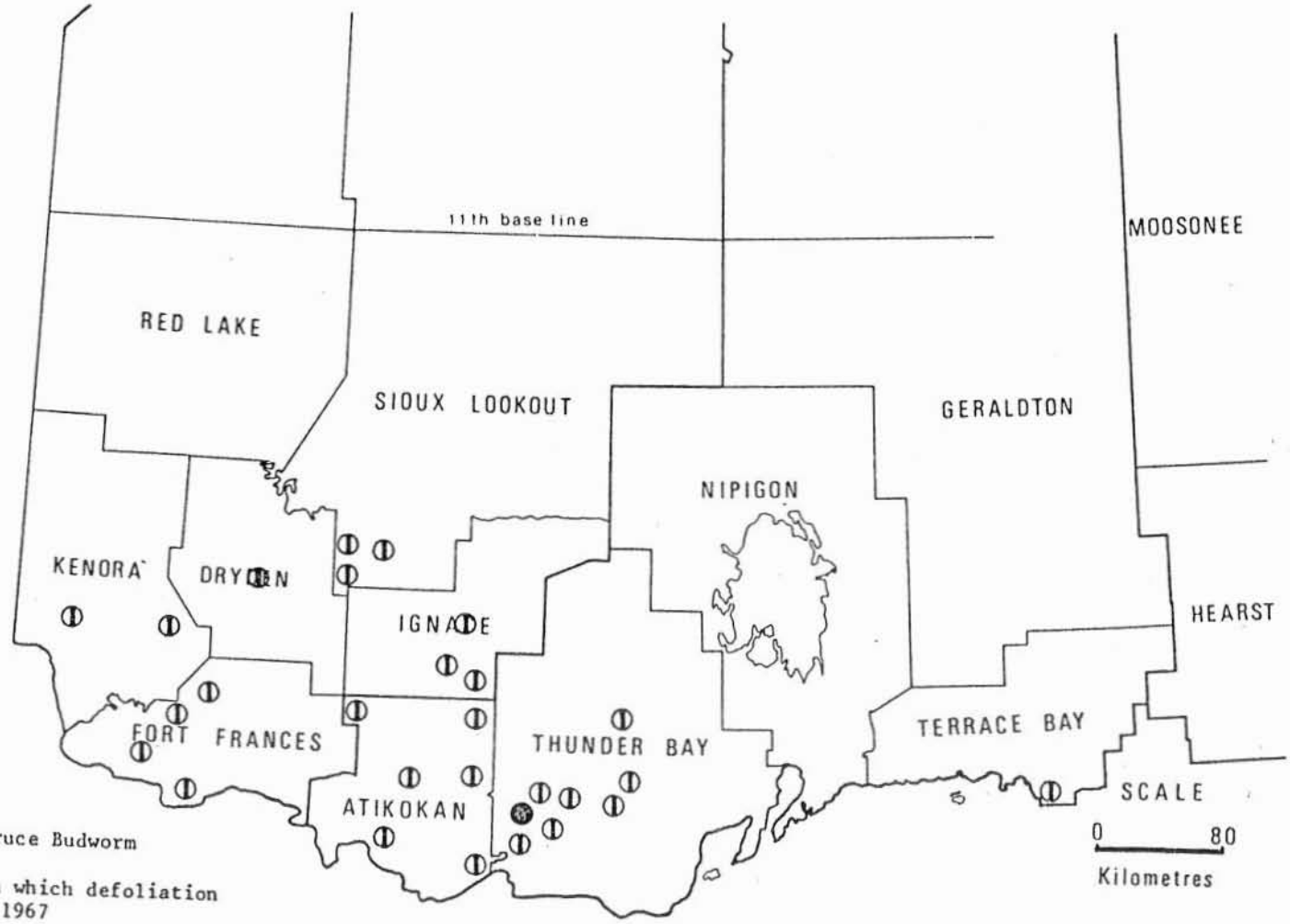
Spruce Budworm

Areas within which defoliation occurred in 1965

LEGEND

Light defoliation ◐

NORTHWESTERN ONTARIO



Spruce Budworm

Areas within which defoliation occurred in 1967

LEGEND

Light defoliation ◐

Moderate-to-severe defoliation ●

NORTHWESTERN ONTARIO

NORTHWESTERN ONTARIO

Spruce Budworm

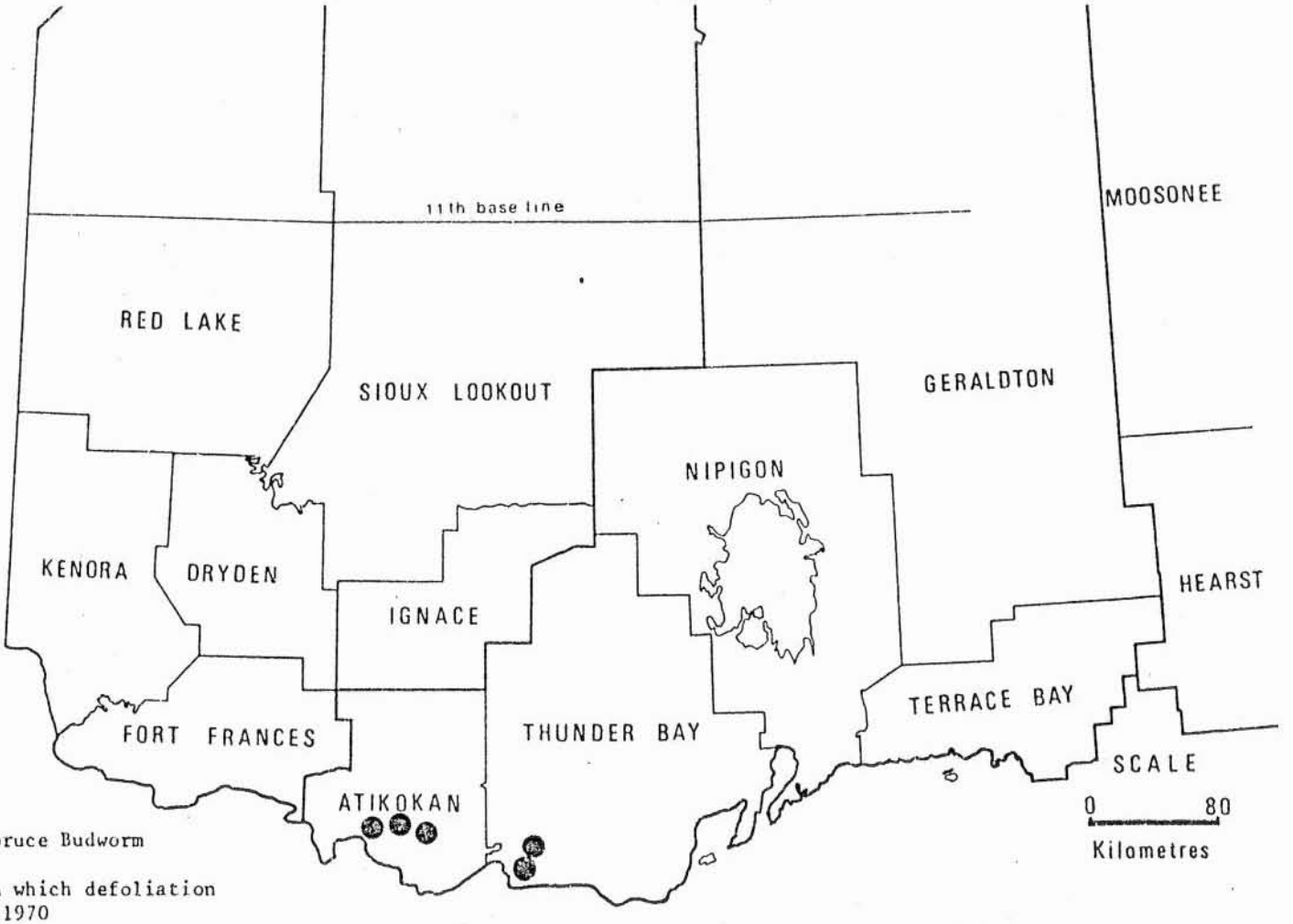
Areas within which defoliation occurred in 1969

LEGEND

Light defoliation ◐

Moderate-to-severe defoliation ●

NORTHWESTERN ONTARIO



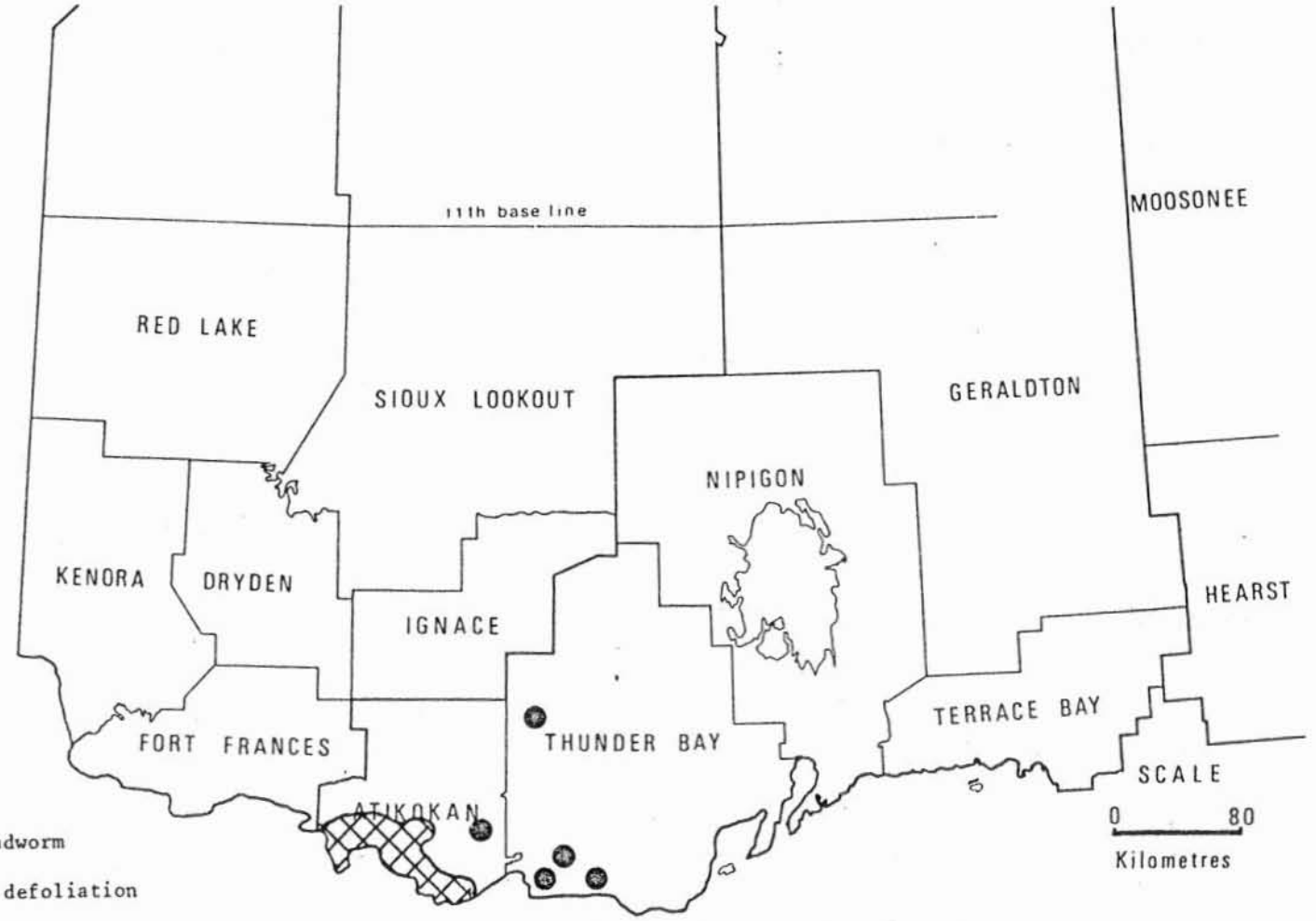
Spruce Budworm

Areas within which defoliation occurred in 1970

LEGEND

Moderate-to-severe defoliation

NORTHWESTERN ONTARIO



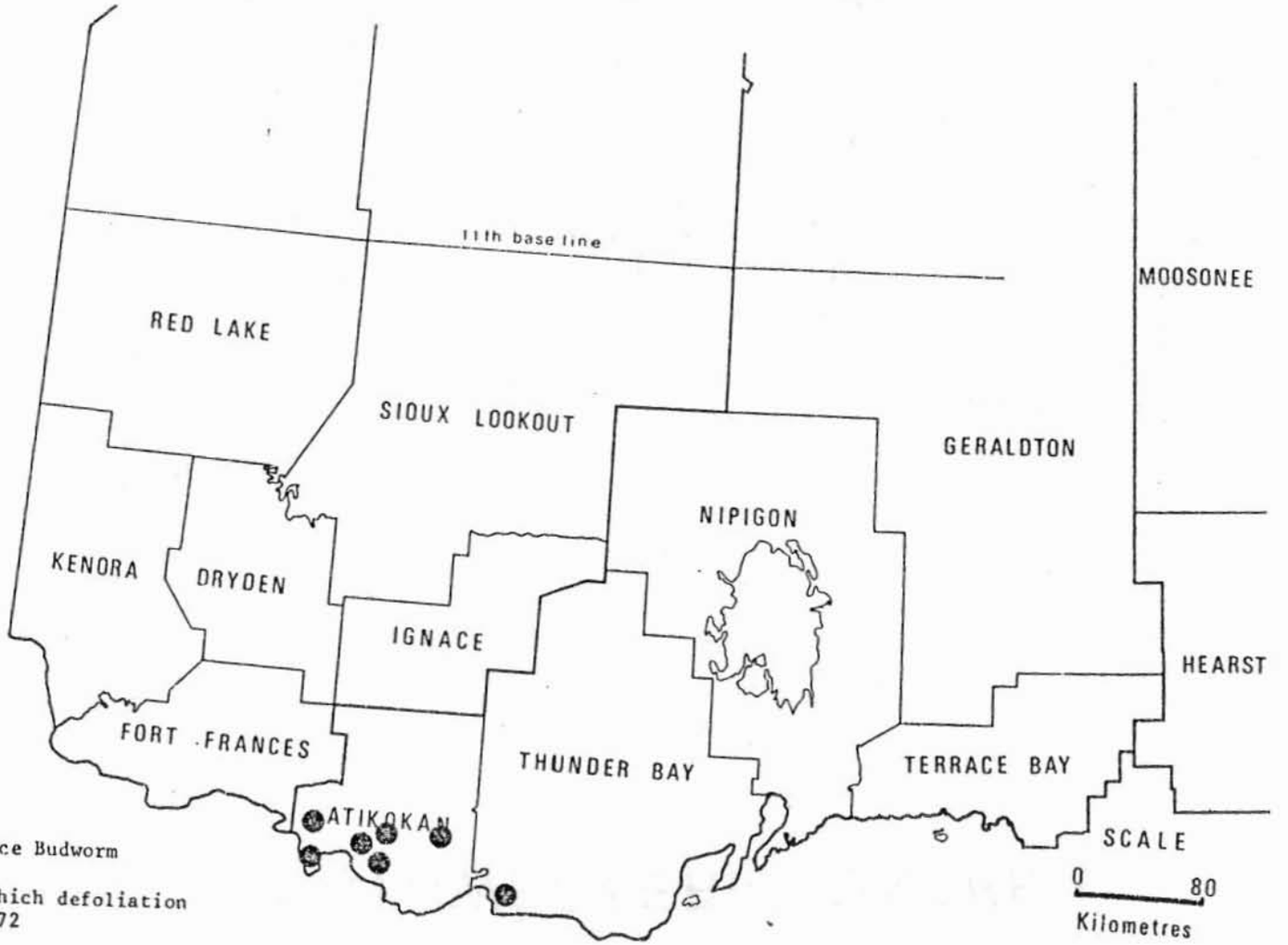
Spruce Budworm

Areas within which defoliation occurred in 1971

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHWESTERN ONTARIO



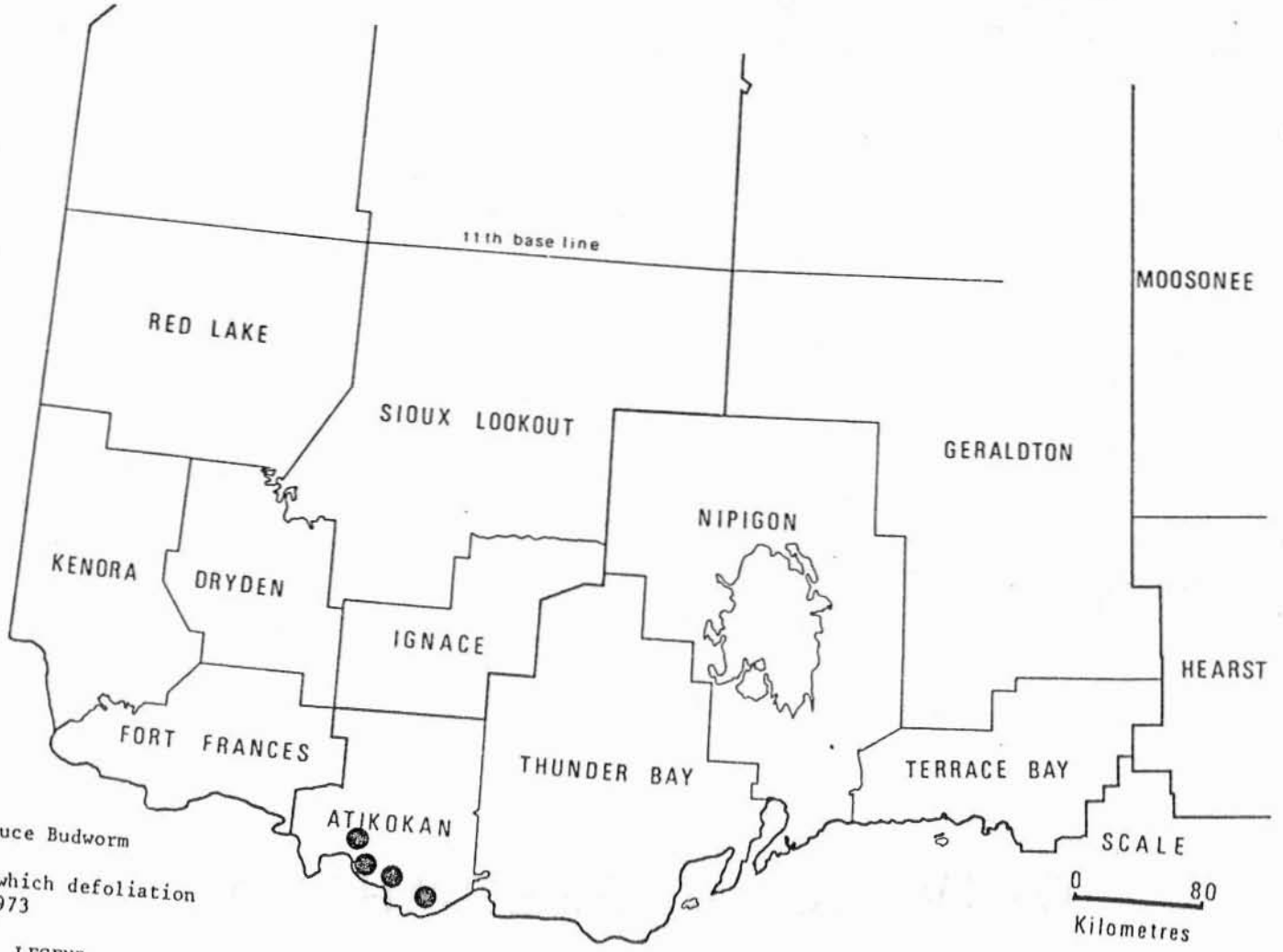
Spruce Budworm

Areas within which defoliation occurred in 1972

LEGEND

Moderate-to-severe defoliation ●

NORTHWESTERN ONTARIO



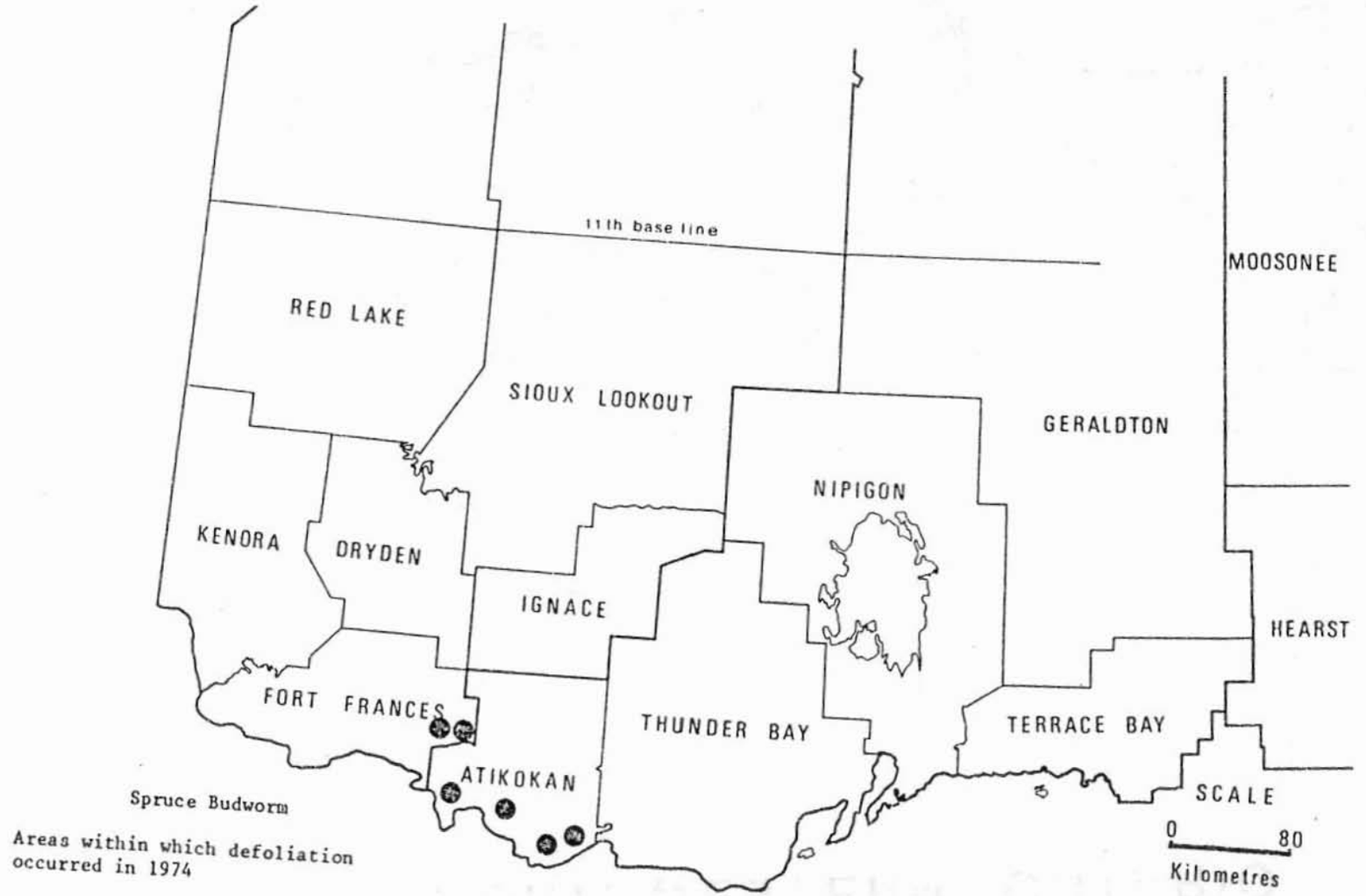
Spruce Budworm

Areas within which defoliation occurred in 1973

LEGEND

Moderate-to-severe defoliation ●

NORTHWESTERN ONTARIO



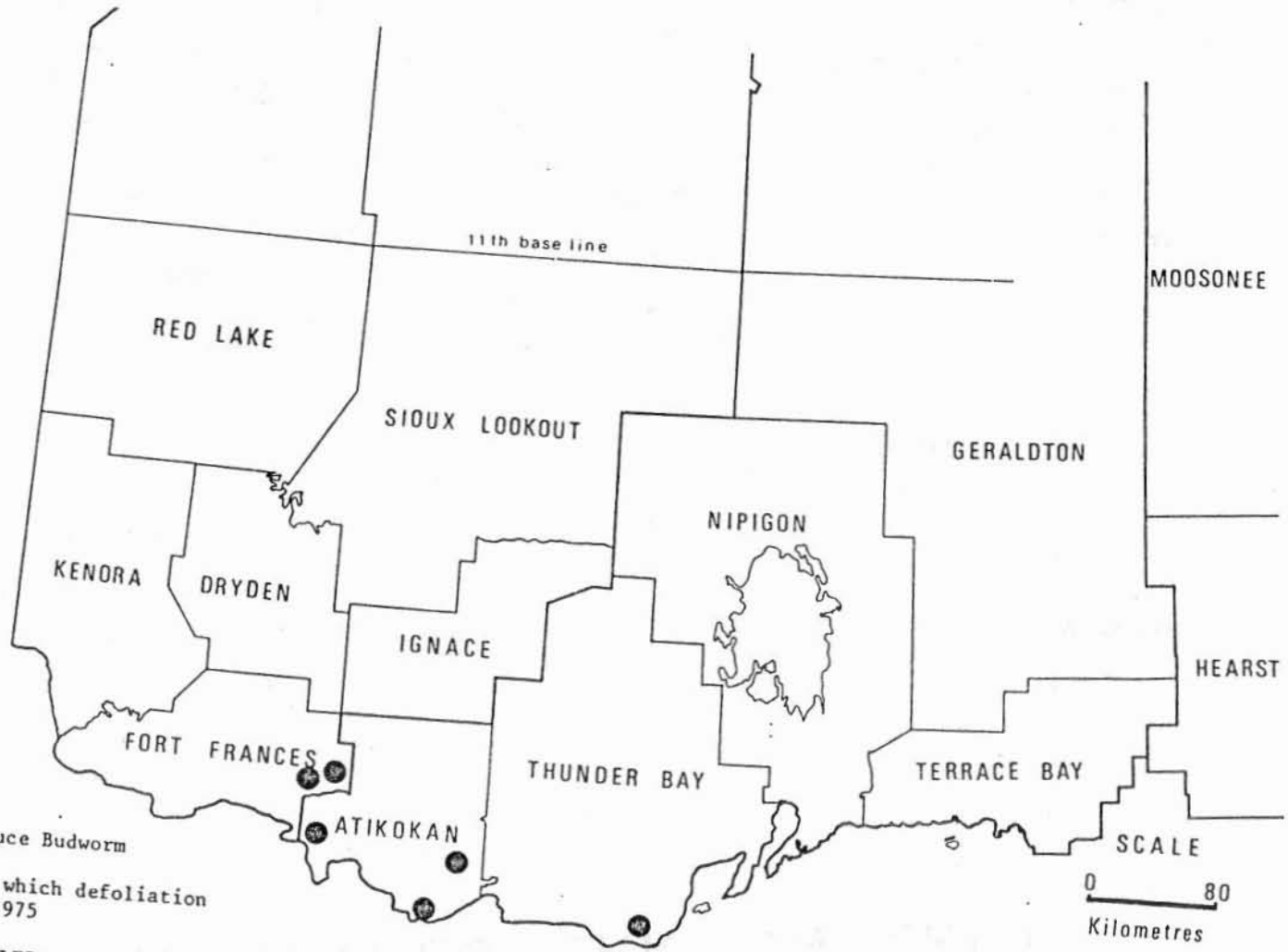
Spruce Budworm

Areas within which defoliation occurred in 1974

LEGEND

Moderate-to-severe defoliation

NORTHWESTERN ONTARIO



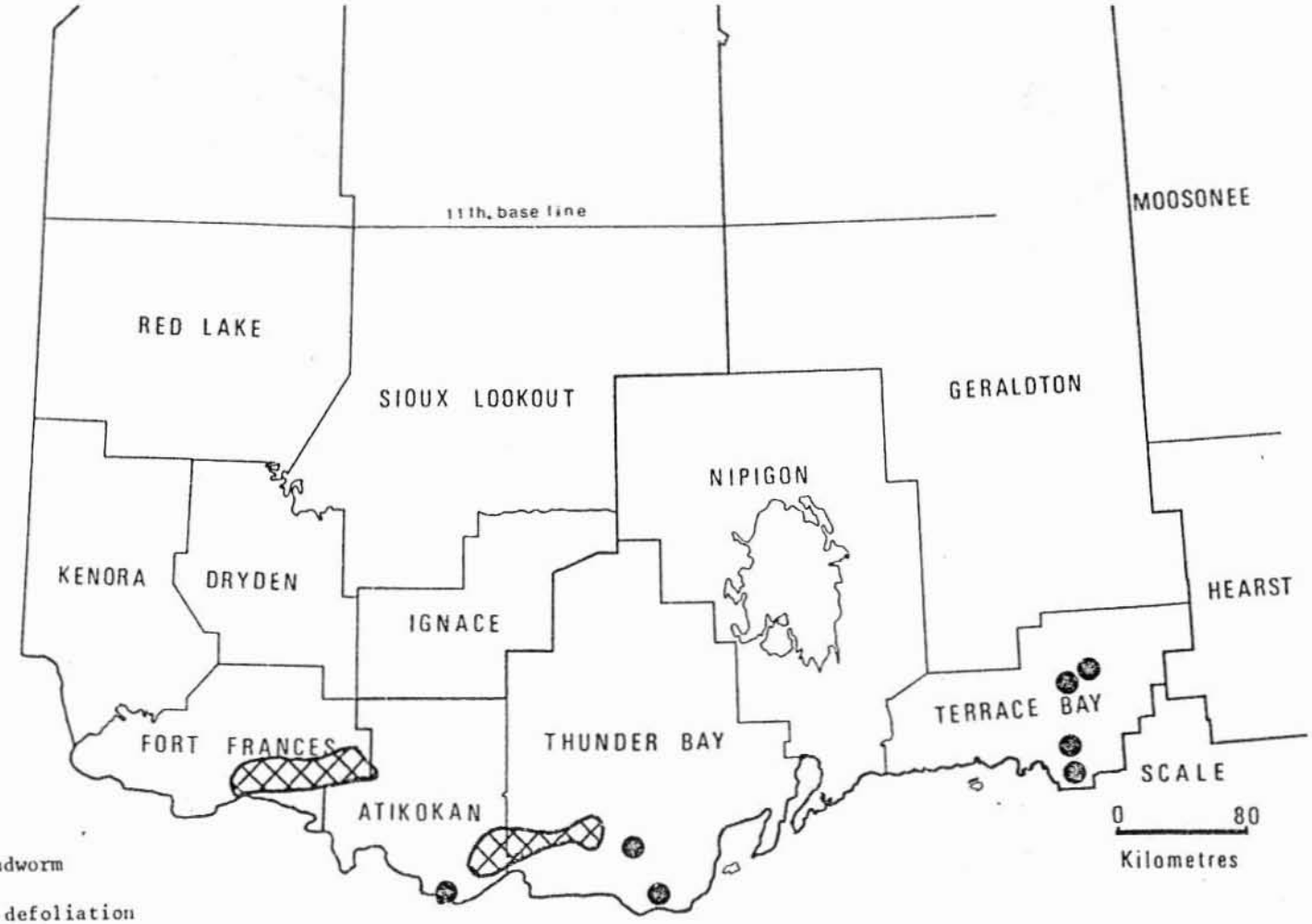
Spruce Budworm

Areas within which defoliation occurred in 1975

LEGEND

Moderate-to-severe defoliation ●

NORTHWESTERN ONTARIO



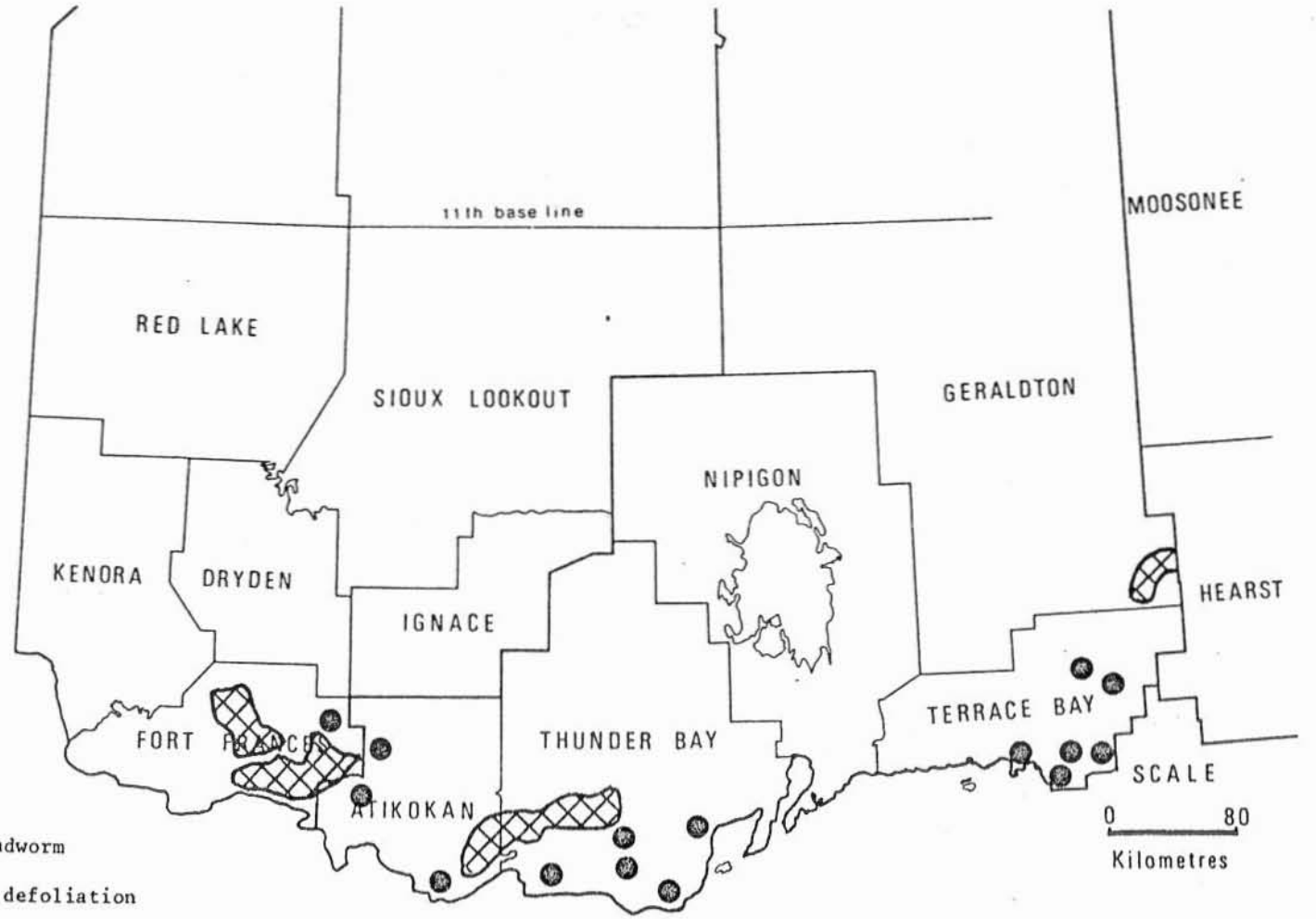
Spruce Budworm

Areas within which defoliation occurred in 1976

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHWESTERN ONTARIO



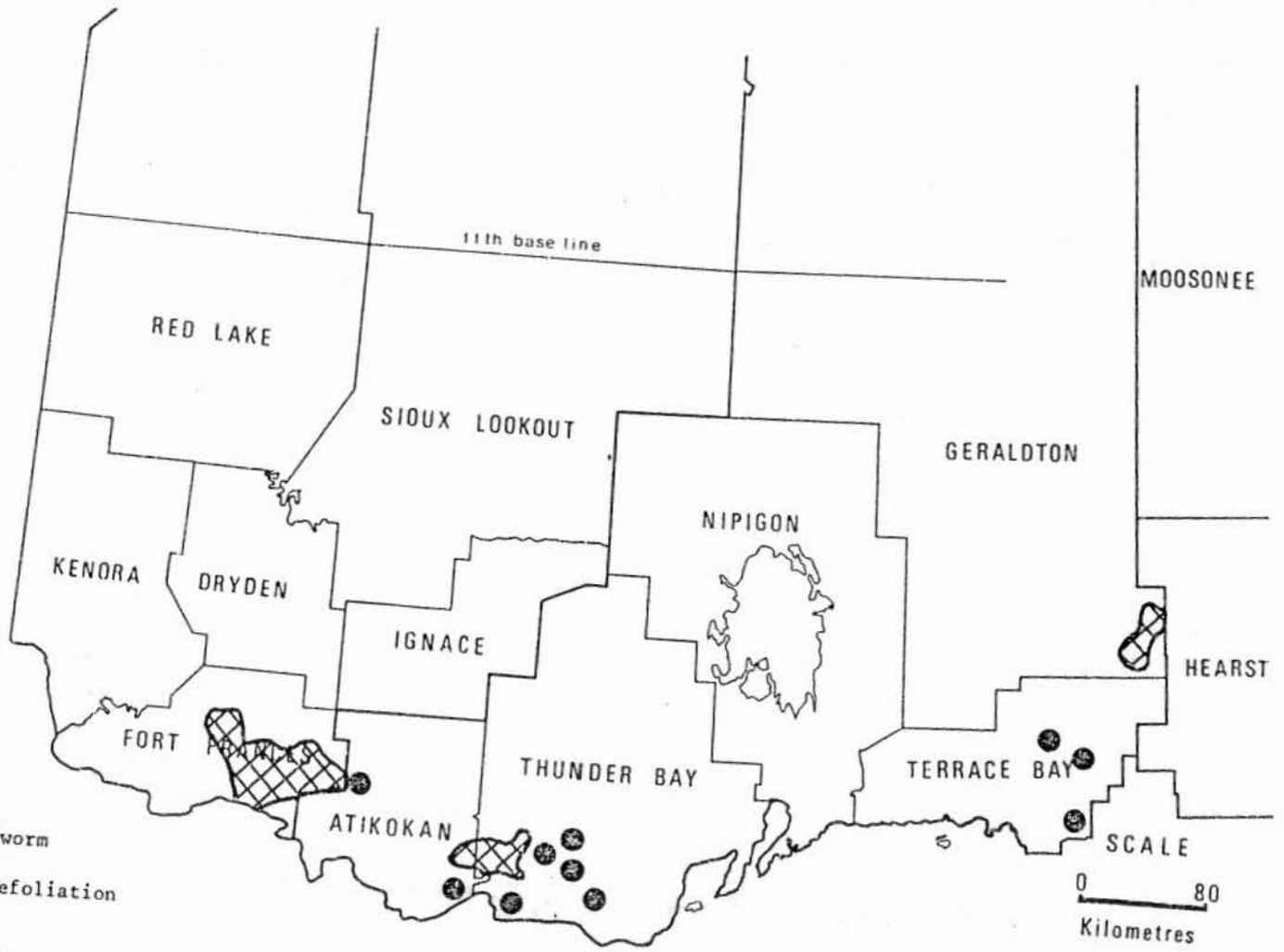
Spruce Budworm

Areas within which defoliation occurred in 1977

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHWESTERN ONTARIO



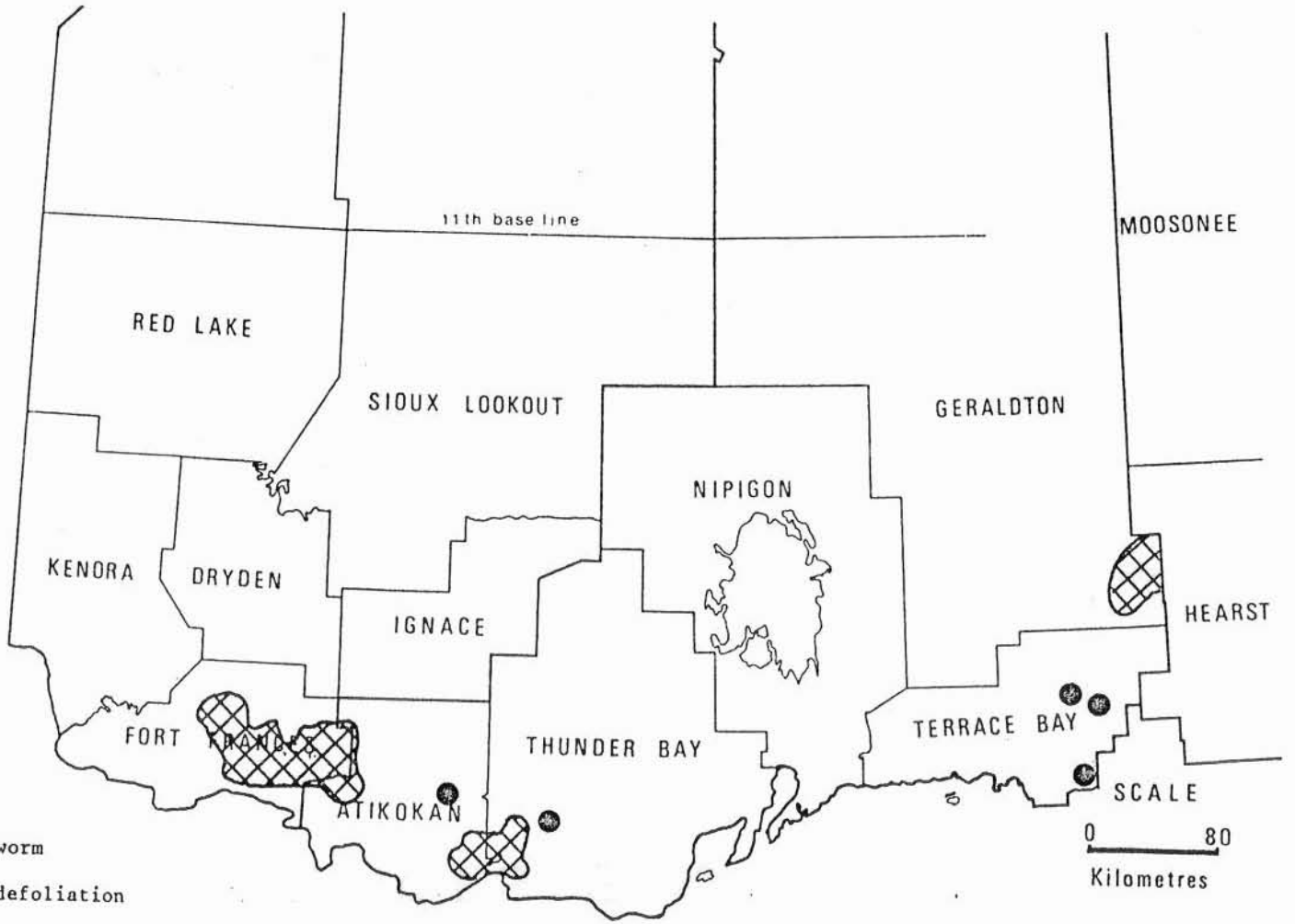
Spruce Budworm

Areas within which defoliation occurred in 1978

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHWESTERN ONTARIO



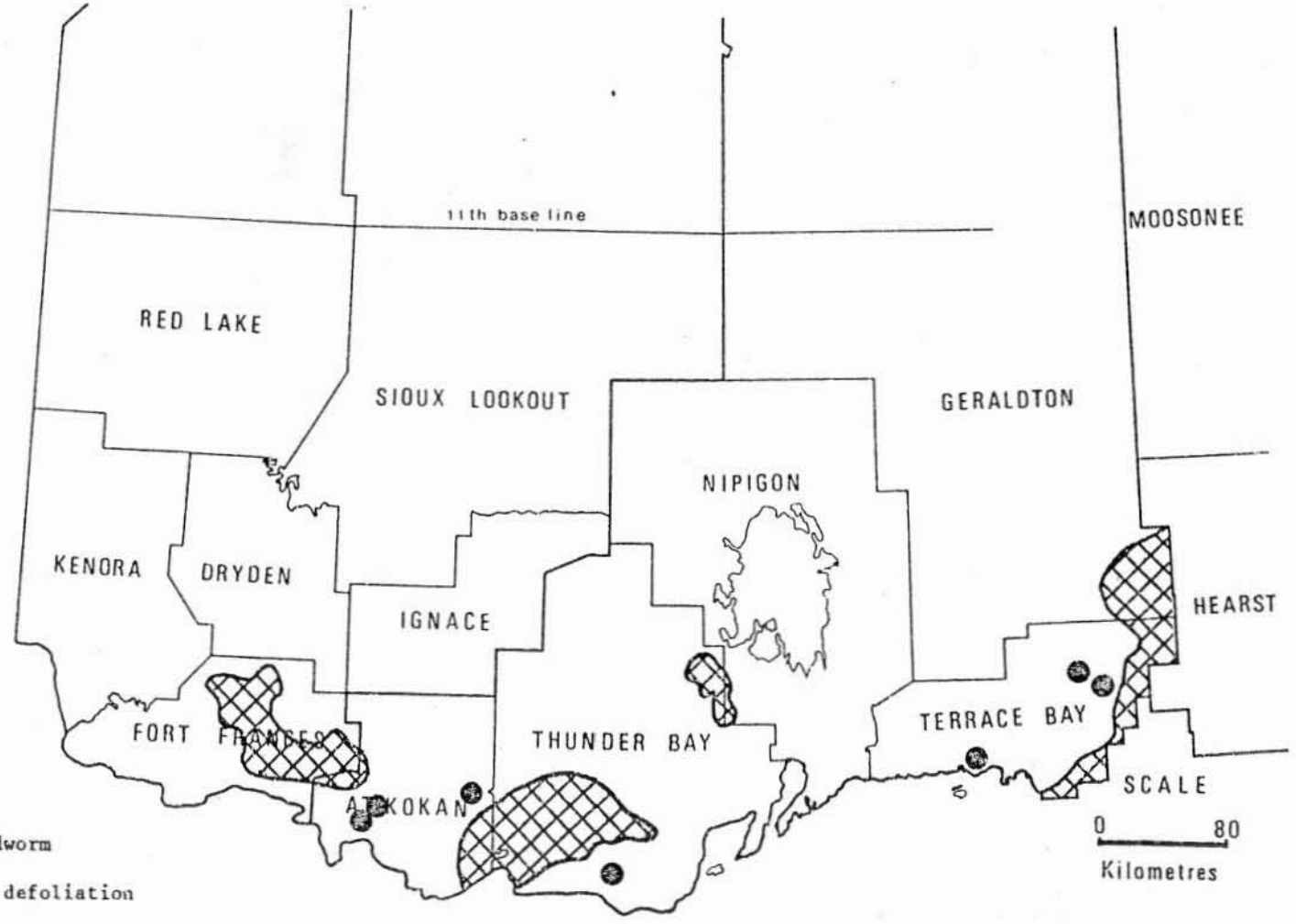
Spruce Budworm

Areas within which defoliation occurred in 1979

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHWESTERN ONTARIO



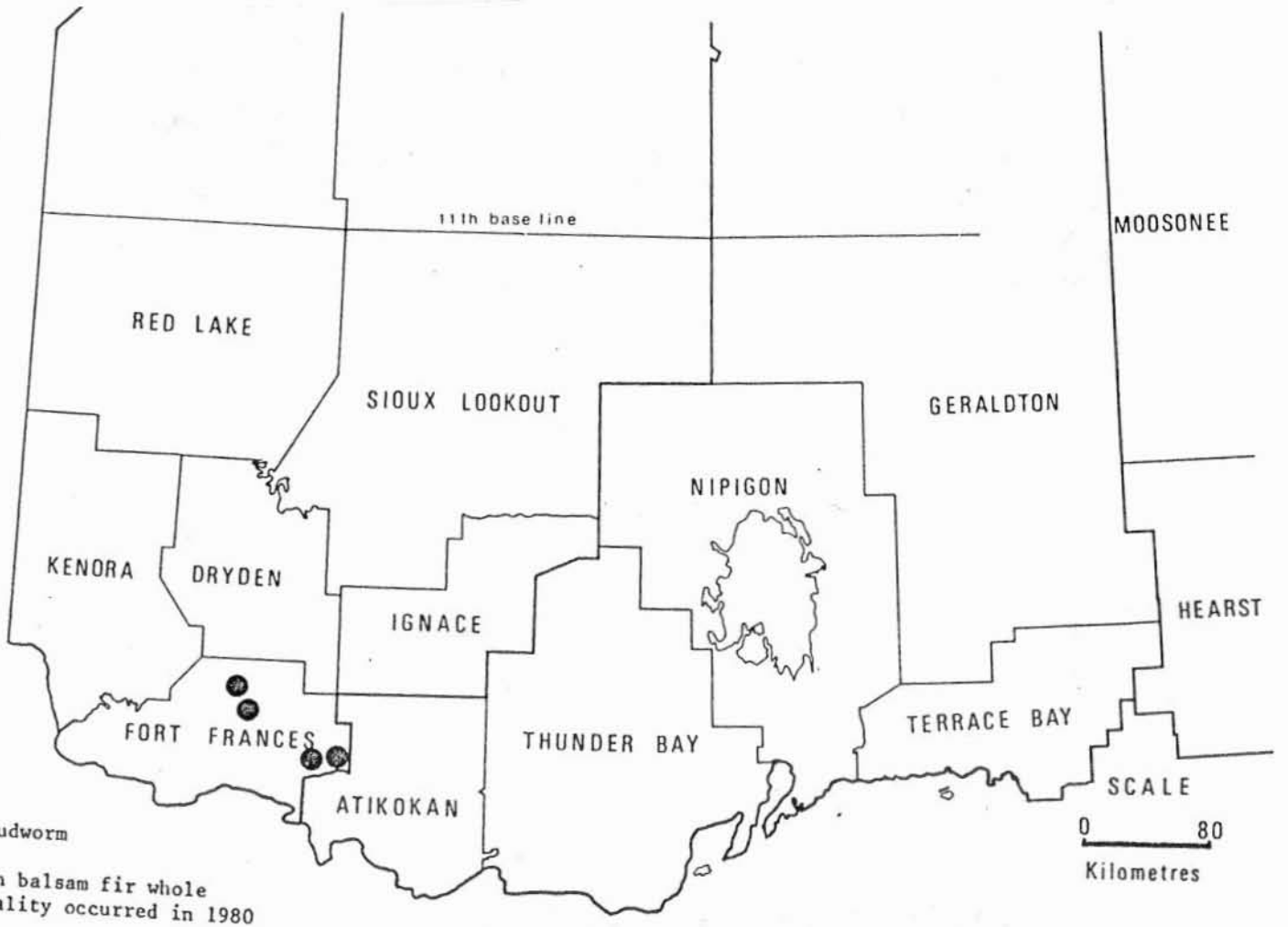
Spruce Budworm

Areas within which defoliation occurred in 1980

LEGEND

Moderate-to-severe defoliation ● or ▨

NORTHWESTERN ONTARIO



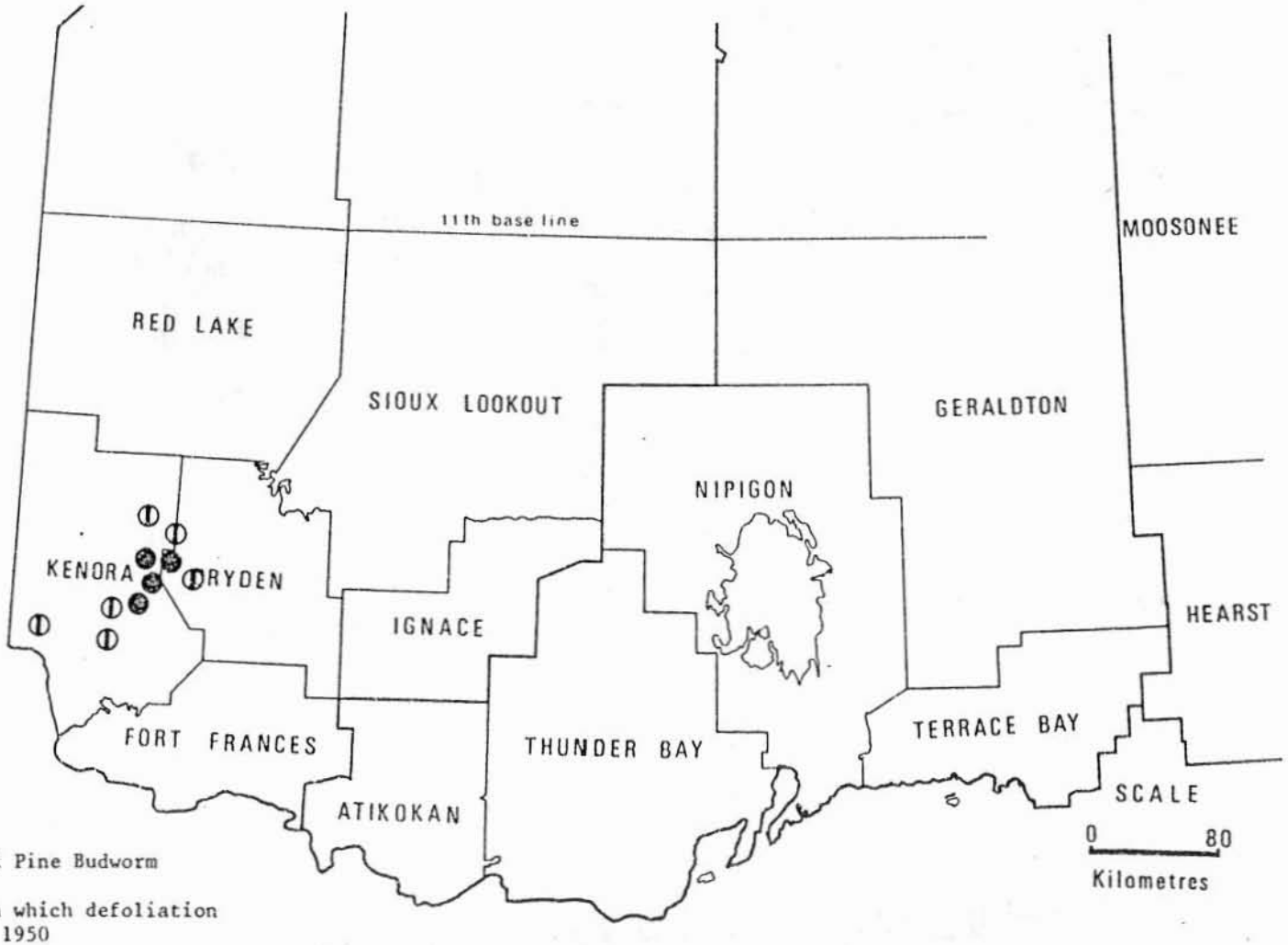
Spruce Budworm

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

LEGEND

Mortality ●

NORTHWESTERN ONTARIO



Jack Pine Budworm

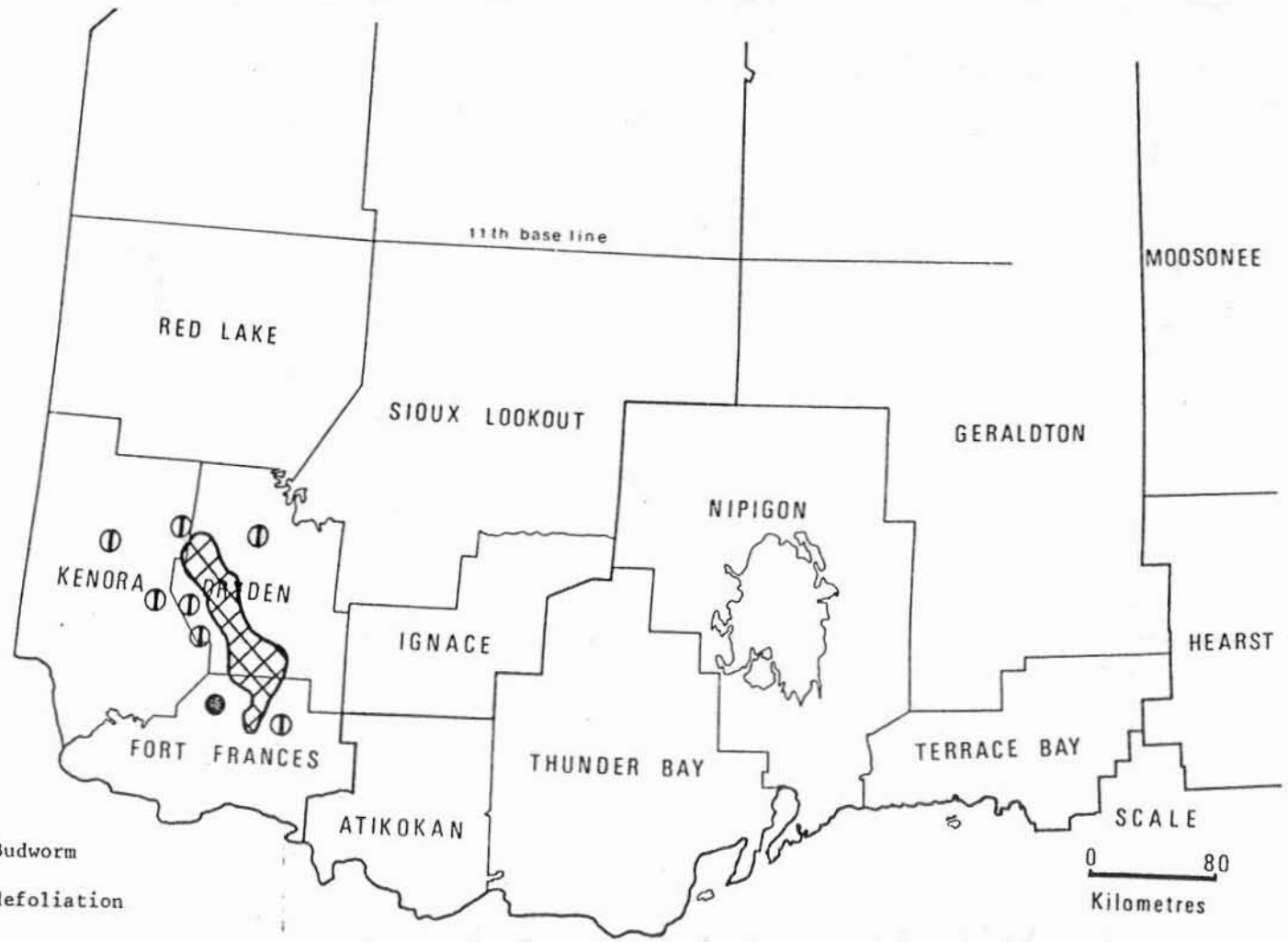
Areas within which defoliation occurred in 1950

LEGEND

Light defoliation ◐

Moderate-to-severe defoliation ●

NORTHWESTERN ONTARIO



Jack Pine Budworm

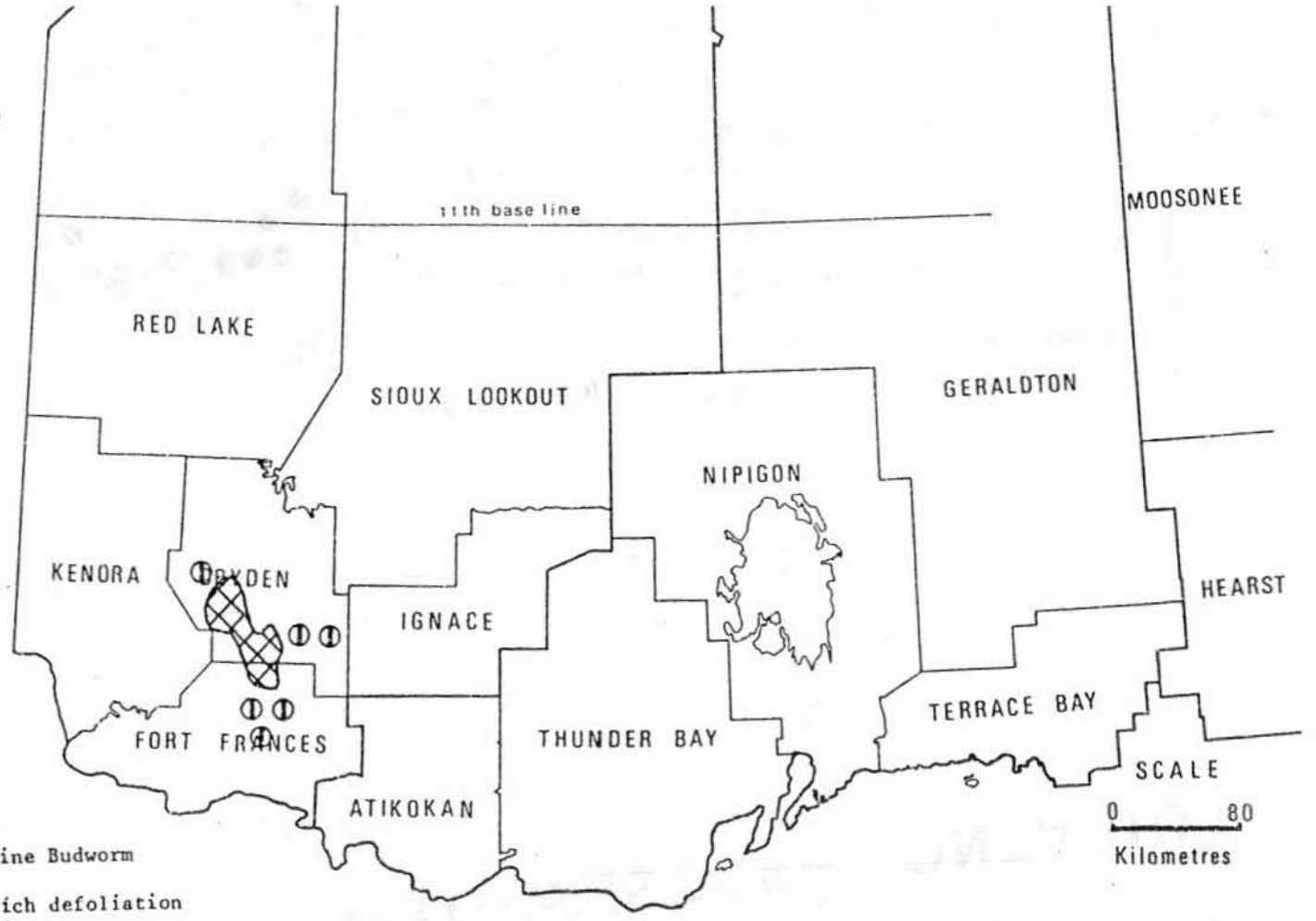
Areas within which defoliation occurred in 1961

LEGEND

Light defoliation ◐ or

Moderate-to-severe defoliation ● or ▨

NORTHWESTERN ONTARIO



Jack Pine Budworm

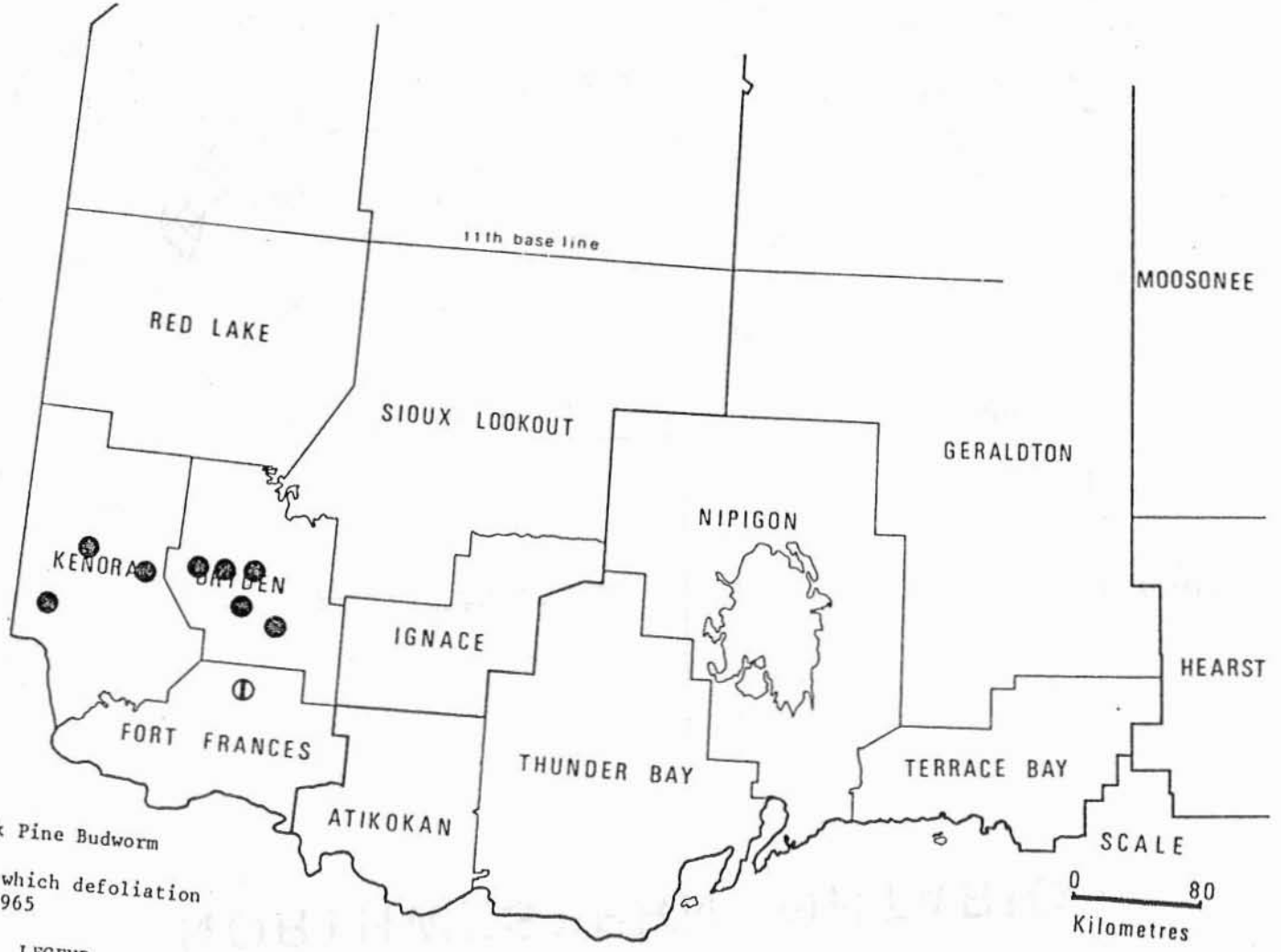
Areas within which defoliation occurred in 1962

LEGEND

Light defoliation ①

Moderate-to-severe defoliation

NORTHWESTERN ONTARIO



Jack Pine Budworm

Areas within which defoliation occurred in 1965

LEGEND

Light defoliation ◐

Moderate-to-severe defoliation ●

NORTHWESTERN ONTARIO

Jack Pine Budworm

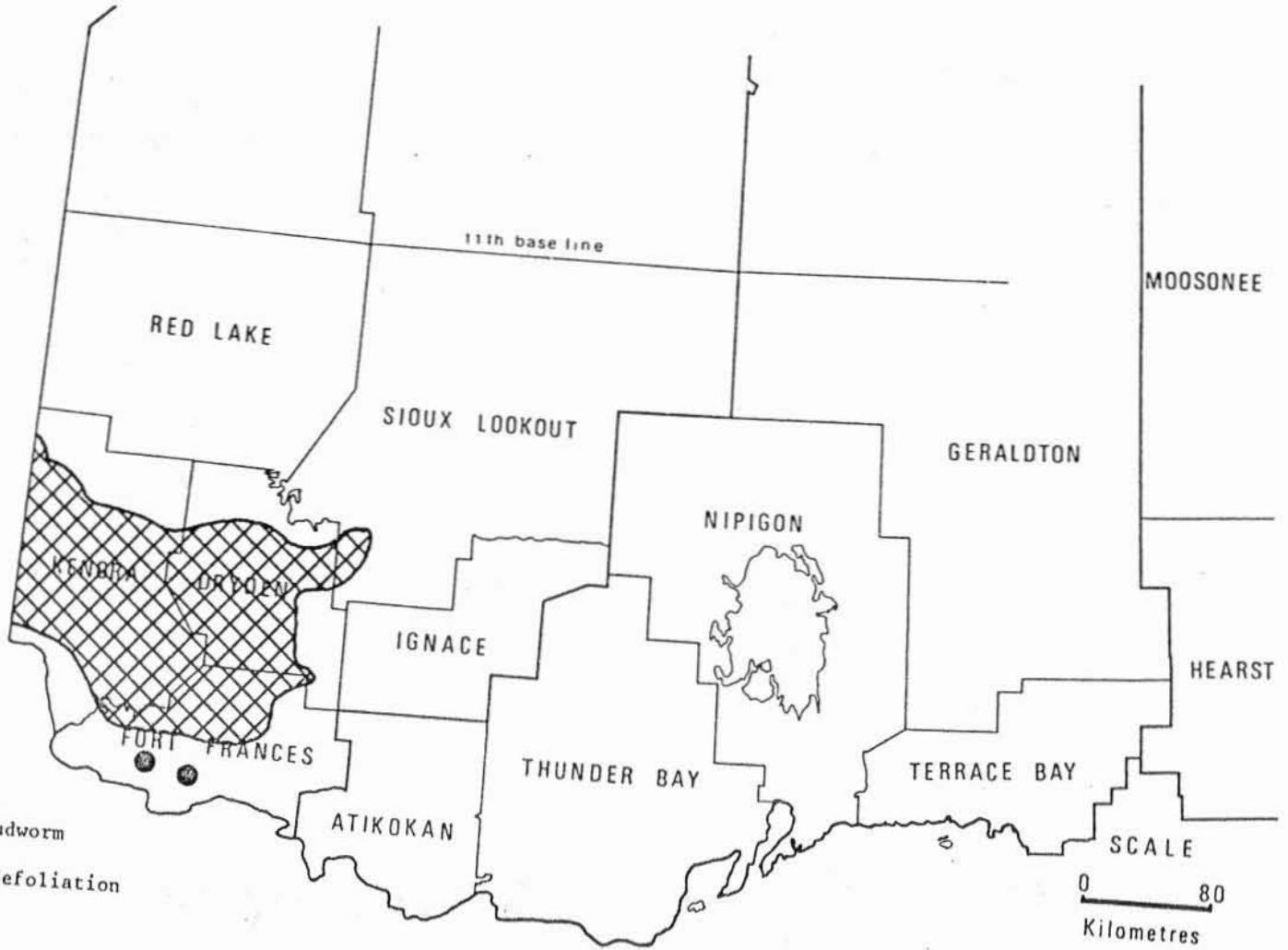
Areas within which defoliation occurred in 1966

LEGEND

Light defoliation

Moderate-to-severe defoliation

NORTHWESTERN ONTARIO



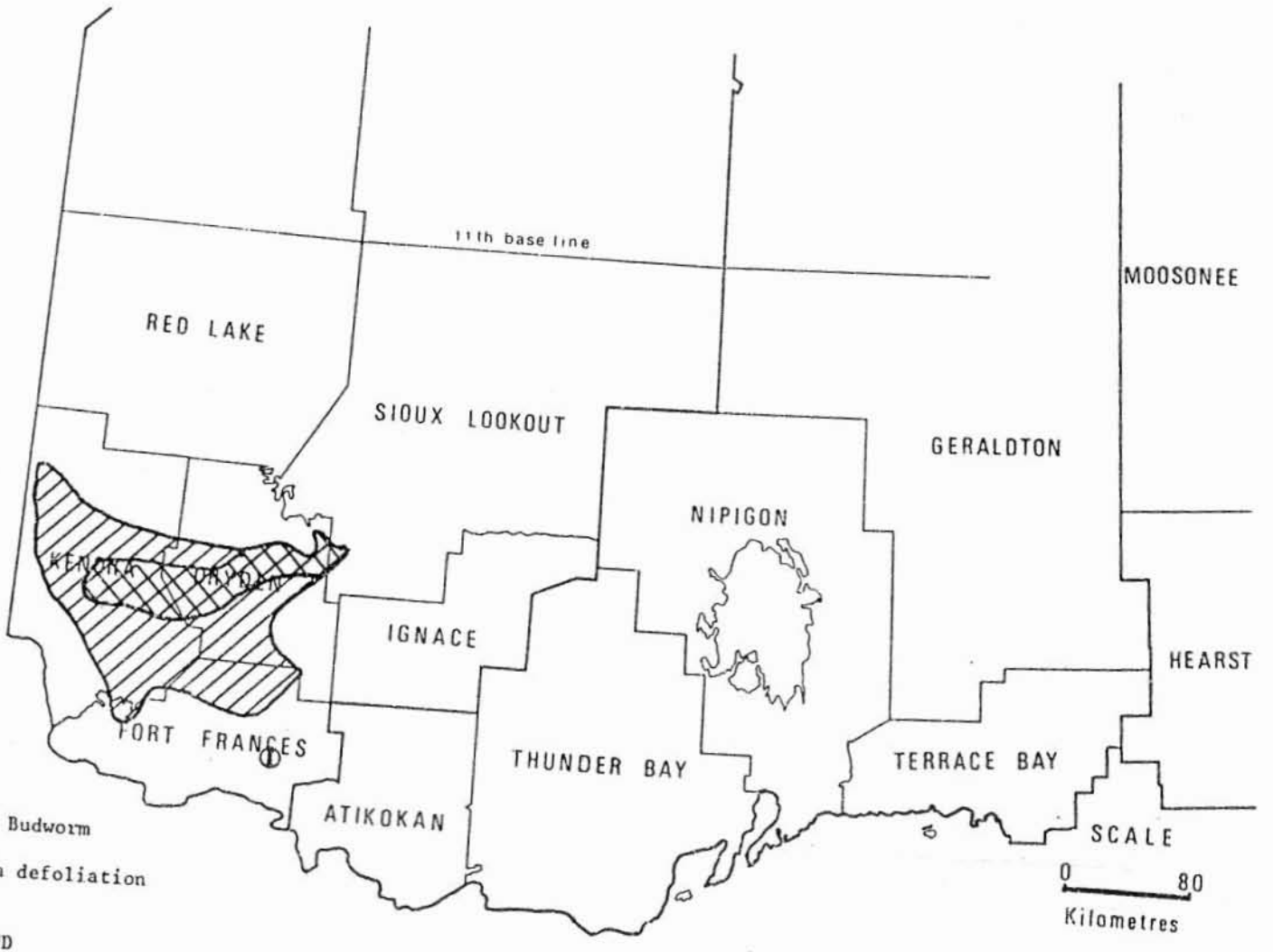
Jack Pine Budworm

Areas within which defoliation occurred in 1967

LEGEND

Moderate-to-severe defoliation or

NORTHWESTERN ONTARIO



Jack Pine Budworm

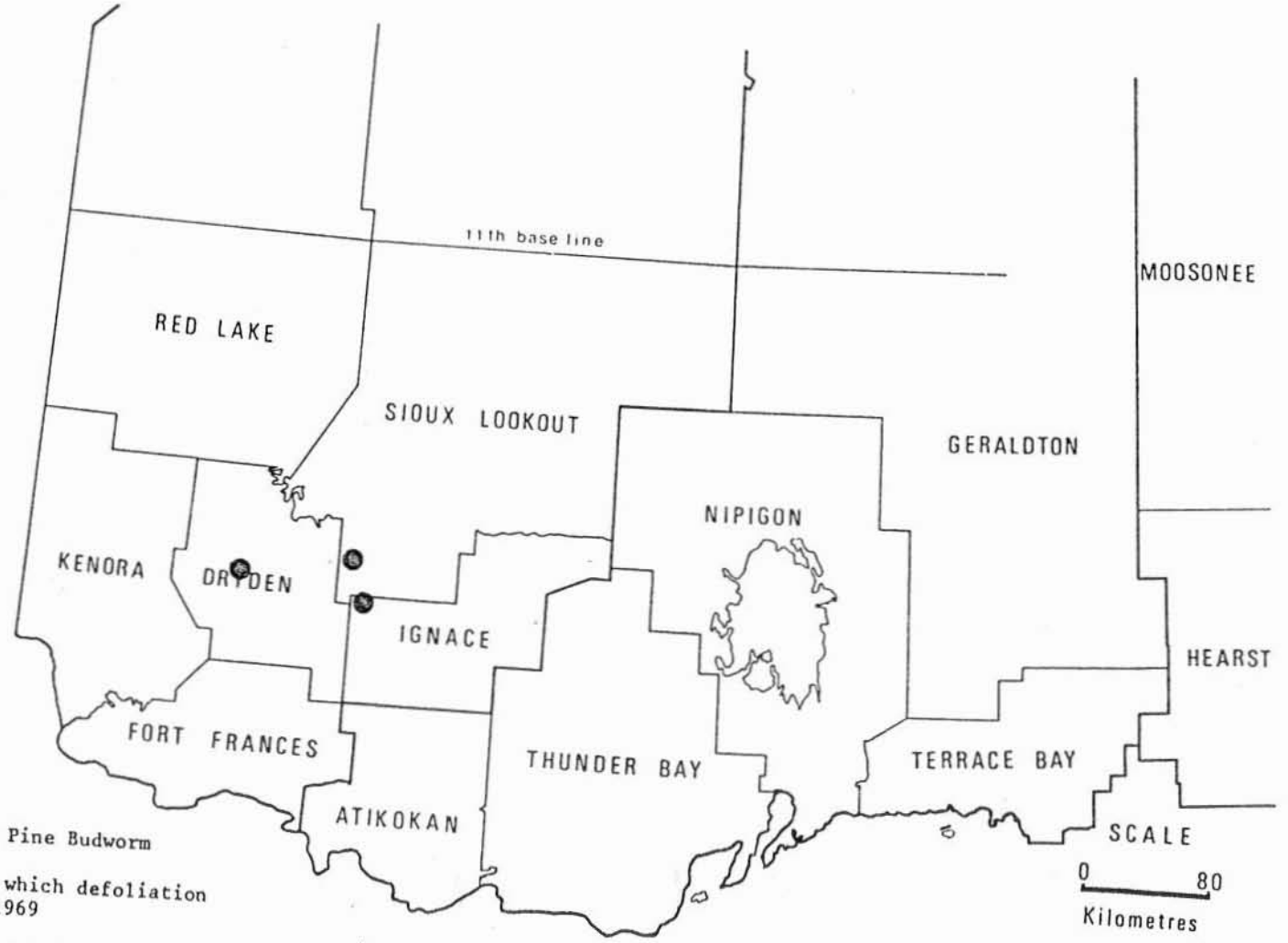
Areas within which defoliation occurred in 1968

LEGEND

Light defoliation or

Moderate-to-severe defoliation

NORTHWESTERN ONTARIO



Jack Pine Budworm

Areas within which defoliation occurred in 1969

LEGEND

Moderate-to-severe defoliation

NORTHWESTERN ONTARIO

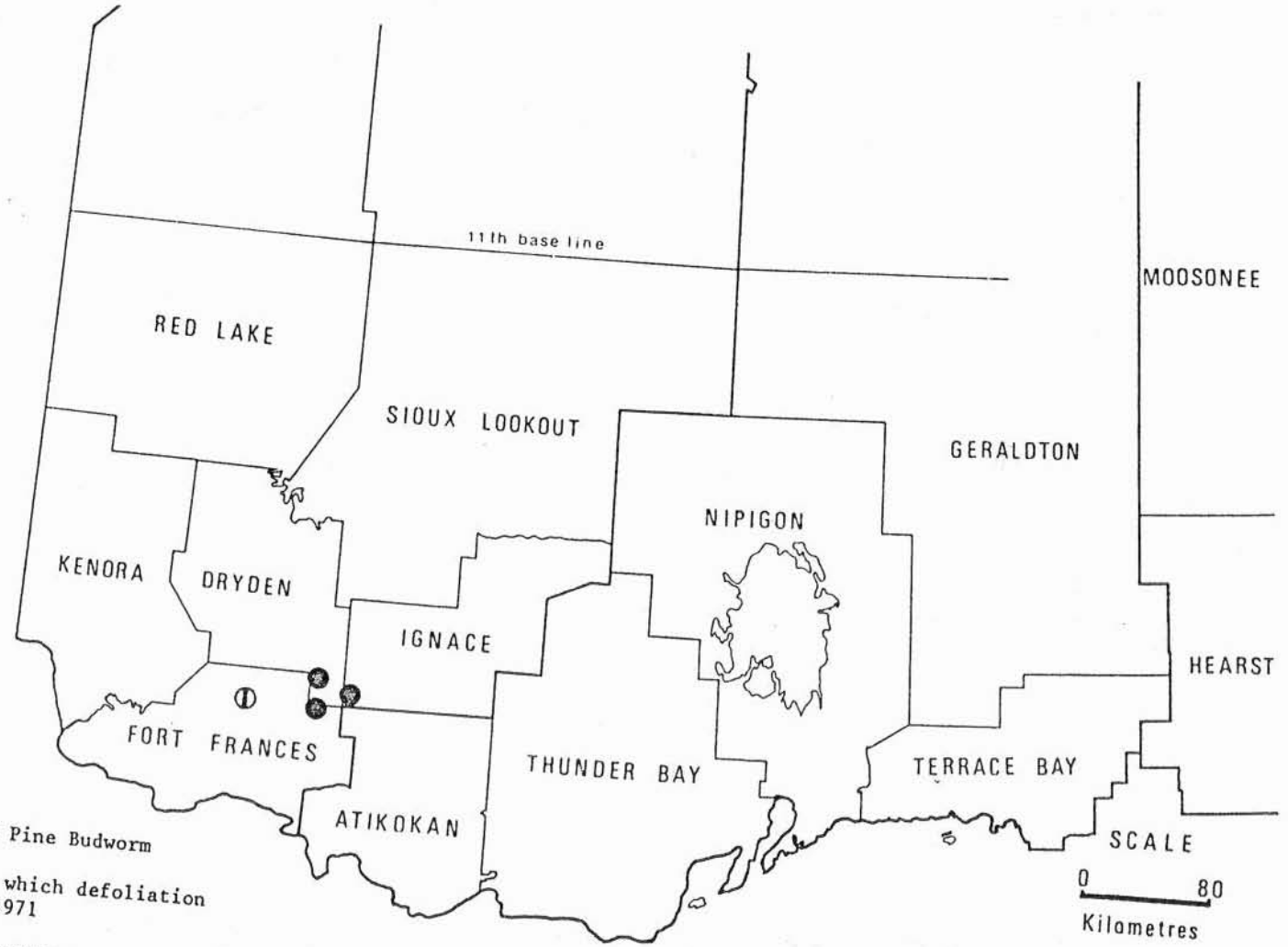
Jack Pine Budworm

Areas within which defoliation occurred in 1970

LEGEND

Moderate-to-severe defoliation

NORTHWESTERN ONTARIO



Jack Pine Budworm

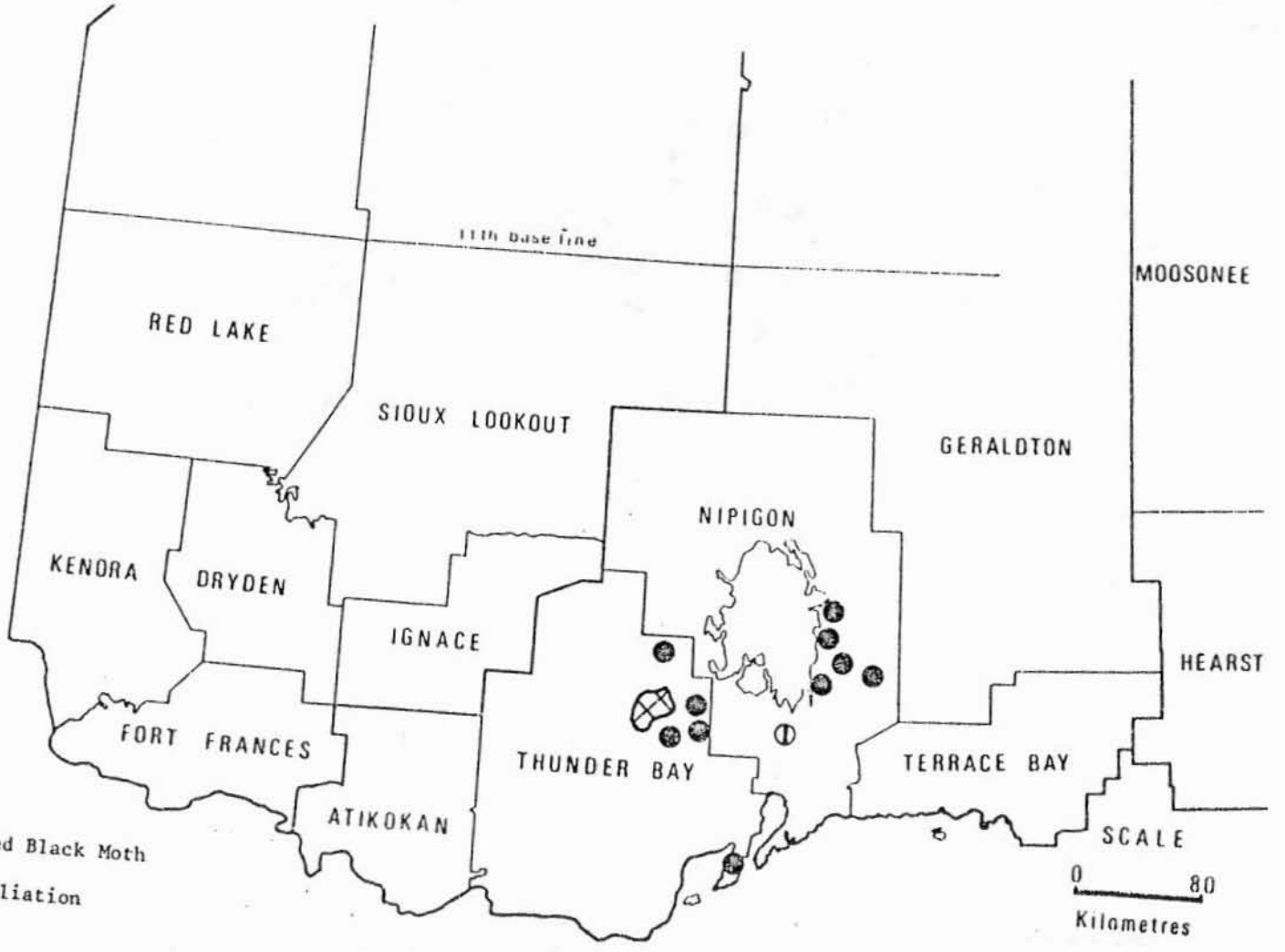
Areas within which defoliation occurred in 1971

LEGEND

Light defoliation ◐

Moderate-to-severe defoliation ●

NORTHWESTERN ONTARIO



Spearmarked Black Moth

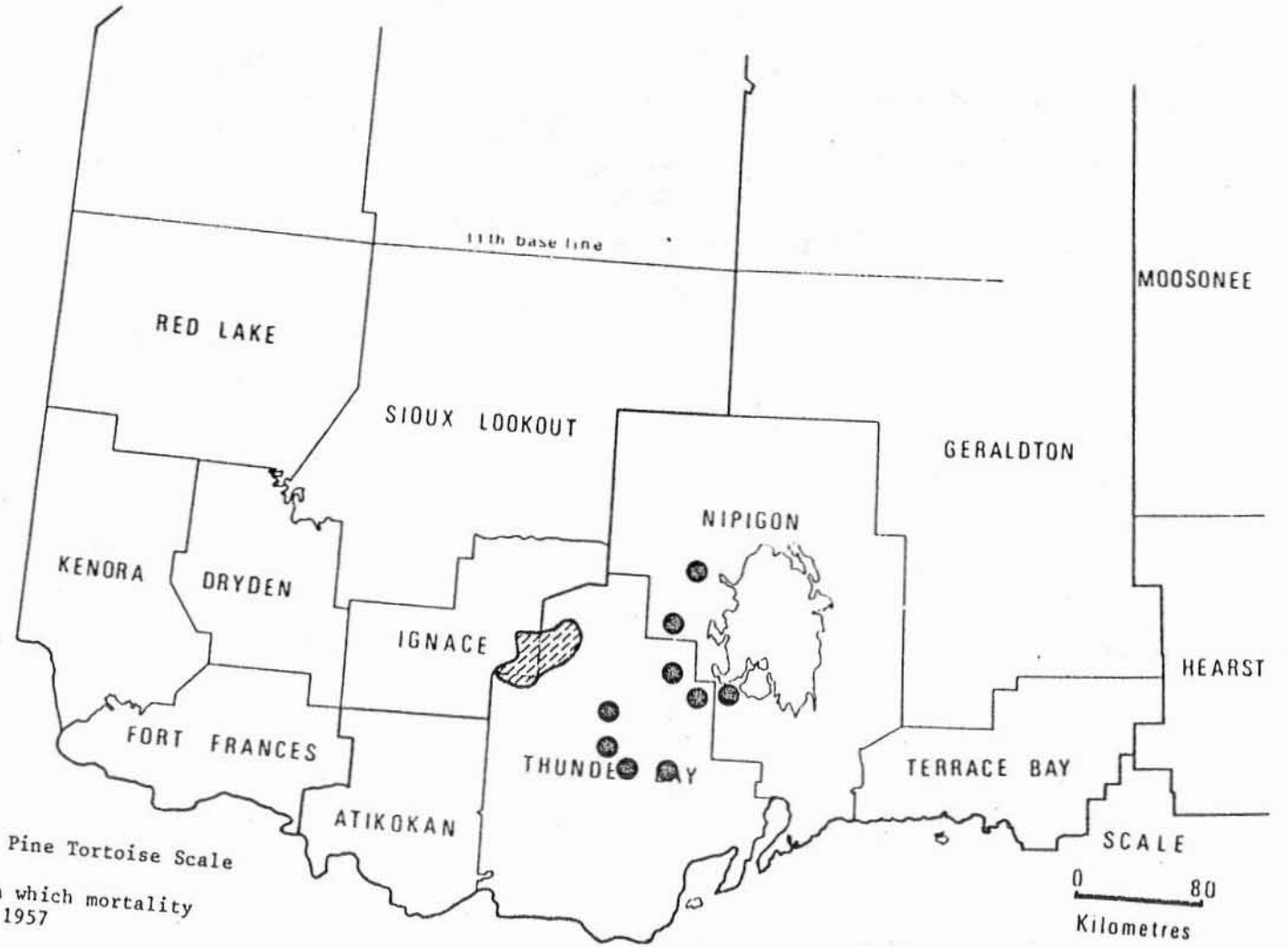
Areas within which defoliation occurred in 1962

LEGEND

Light defoliation ◐

Moderate-to-severe defoliation ● or ▨

NORTHWESTERN ONTARIO



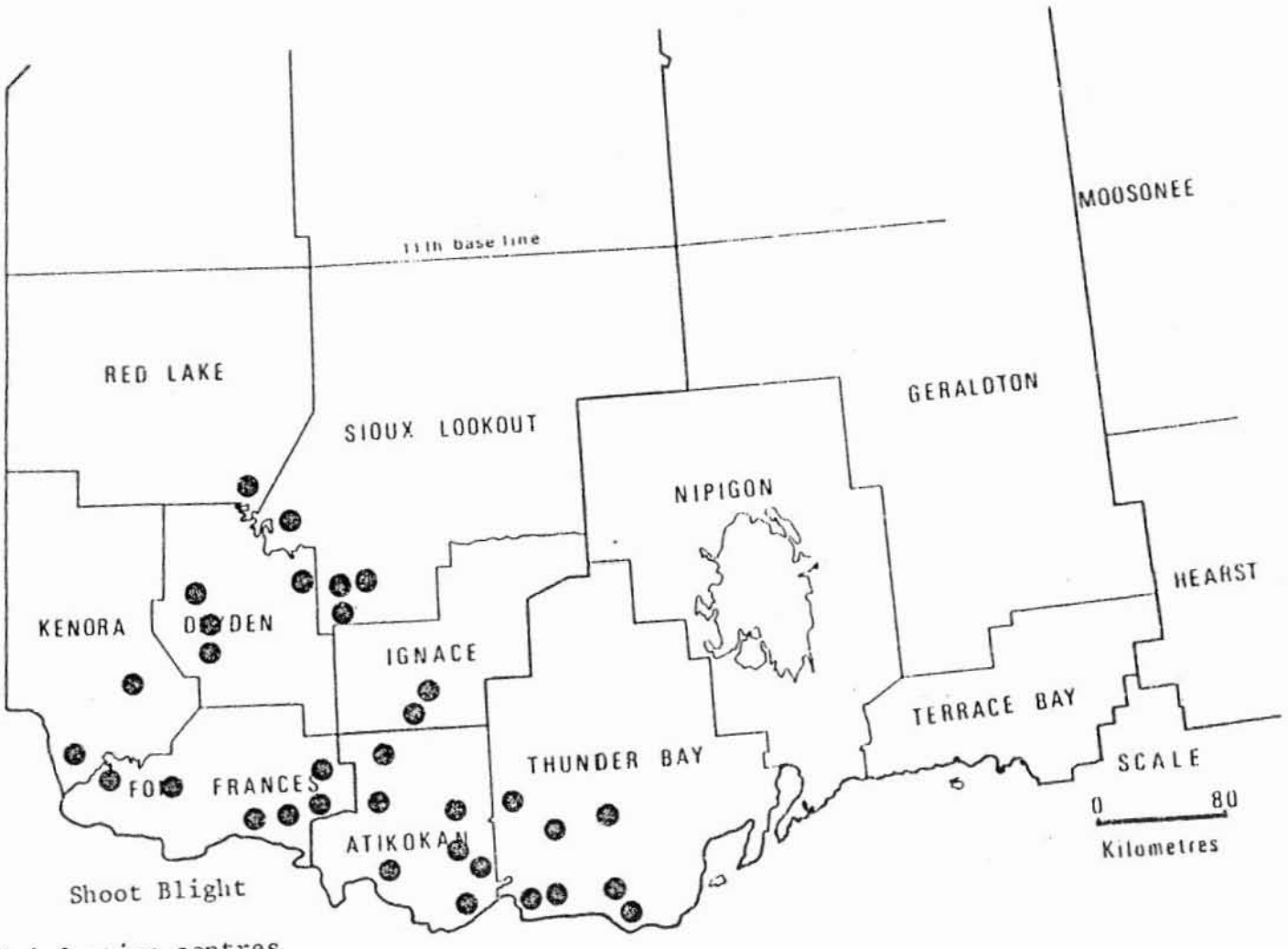
Pine Tortoise Scale

Areas within which mortality occurred in 1957

LEGEND

Mortality ● or ▨

NORTHWESTERN ONTARIO



Shoot Blight

Locations of infection centres in 1973

LEGEND

Infection centres ●