

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

Compiled by

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FOREWORD

The first forest insect surveys in Ontario were carried out in 1936 from the Dominion Entomological Laboratory in Ottawa and continued from this location until 1944, when the province of Ontario was divided, for the purpose of these surveys, into northern and southern Ontario. In 1945, personnel from Ottawa continued to conduct and report on surveys in the area south of 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 three categories:

Major Insects or Diseases

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

Minor Insects or Diseases

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

Abiotic Damage

Damage caused by non-living factors.

All measurements in this review are in metric form and conversions from Imperial measurements from the earliest reports are taken to the second decimal point [i.e., sq. mi. to km^2 = area (sq. mi.) \times 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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1961-1966	W. Jansons, K. Hall
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1970	C. Davis
1971	H. Foster, C. Davis
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1976-1977	H. Foster, D. Lawrence
1978-1980	W. Biggs, D. Lawrence

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INTRODUCTION

This is a review of significant forest insects and diseases that have occurred within the current Nipigon District boundaries between 1950 and 1980. The present-day Nipigon District was formed in 1973 from parts of the former Thunder Bay, Geraldton and Sioux Lookout districts. In the selection of pests for this report particular attention was paid to the major working groups of host species in the district, mainly jack pine, white spruce, black spruce, balsam fir, white birch and aspen, as well as some ornamental and shade trees. The insects and diseases included are capable of causing, or have caused, tree mortality or growth reduction. Also included are abiotic problems that cause damage, i.e., salt, frost, etc.

SUMMARY

FOREST INSECTS

Eastern Blackheaded Budworm, *Acleris variana* (Fern.) [Major]
pages 13-14

There is no record of tree mortality caused by this defoliator, which affects primarily spruce, balsam fir and eastern hemlock. Moderate numbers were recorded in 1954 and 1955; then populations collapsed. Only light infestations have occurred since then.

Uglynest Caterpillar, *Archips cerasivorana* (Fitch) [Major]
page 14-15

Although this pest is not of economic importance to the forest industry because it attacks mainly cherry, nevertheless, the large numbers of tents that it forms on trees along roadways are unsightly, and therefore it is considered a nuisance.

Birch Skeletonizer, *Bucculatrix canadensisella* Cham. [Major]
pages 16-22

Defoliation by this insect seldom causes mortality of the host but weakened trees are subject to attack by secondary insects and diseases. Large outbreaks of this insect usually last 3 to 4 years, then decline rapidly. Two major infestations causing moderate-to-severe defoliation occurred, one in 1963 and 1964, the other from 1970 to 1973. In 1973 all host stands in the district were affected.

Large Aspen Tortrix, *Choristoneura conflictana* (Wlk.) [Major]
pages 23-28

This leafroller, which is a pest of poplar, has not been known to cause tree mortality. High populations were present in the district from 1970 to 1975.

Spruce Budworm, *Choristoneura fumiferana* (Clem.) [Major]
pages 29-46

This insect is considered the most destructive insect pest in eastern Canada. The main hosts are white spruce and balsam fir, and although black spruce, eastern hemlock, and tamarack are not major hosts, they are attacked as well. Considerable tree mortality of balsam fir and white spruce can occur. Medium-to-heavy infestations were present in the district from 1950 to 1960. Large areas of tree mortality associated with the infestations were mapped.

Larch Casebearer, *Coleophora laricella* (Hbn.) [Major]
page 47

A serious pest of both native and European larch, this insect can cause reduced tree growth and tree mortality after two consecutive years of complete defoliation. No serious infestations occurred in the district.

Jack Pine Tip Beetle, *Conophthorus banksianae* McP. [Major]
pages 47-48

This beetle attacks primarily jack pine and occasionally Scots and red pine. Infested terminals are often killed, and multiple branching results. High populations were encountered from 1955 to 1959. Similar levels were not recorded until 1979.

Spruce Beetle, *Dendroctonus rufipennis* (Kirby) [Major]
page 49

Normally this pest attacks overmature or weakened spruce trees, but during outbreaks it will attack any tree, regardless of size or vigor. Tree mortality was recorded in 1952, 1953 and 1955.

Birch Leafminer, *Fenusa pusilla* (Lep.)
pages 49-50

[Major]

Defoliation by this miner can weaken trees and leave them susceptible to secondary insects and diseases, and may be a predisposing factor in birch decline. As a rule the insect attacks single trees, but when populations build up, stands of trees are severely defoliated. Medium-to-heavy infestations were recorded for 11 successive years, from 1967 to 1977.

American Aspen Beetle, *Gonioctena americana* (Schaeef.)
pages 51-52

A common pest of aspen, this insect is usually found on young, open-growing trees, but its impact is usually minimal. Except for four years, 1951, 1957, 1965 and 1974 (see text) low numbers have persisted in the district.

Northern Tent Caterpillar, *Malacosoma californicum pluviale* Dyar
pages 52-53

This insect is a common defoliator of pin cherry (its preferred food) and several other deciduous species. Defoliation is seldom serious, however. The low numbers recorded in the district reduced the aesthetic value of roadside and ornamental trees.

Forest Tent Caterpillar, *Malacosoma disstria* Hbn.
pages 54-58

[Major]

This caterpillar is widely distributed through North America. Infestations usually last an average of five years and high populations denude large areas of susceptible stands. The principal host attacked is aspen; however, many other deciduous species also suffer severe defoliation. Repeated defoliation retards the growth and vigor of trees, leaving them susceptible to attack by other pests. Medium-to-heavy infestations were recorded in 1950, 1952, 1953, 1965, 1973 and 1974.

Pine Sawflies, Red Pine Sawfly, *Neodiprion nanulus nanulus* Schedl.
Jack Pine Sawfly, *N. pratti banksianae* Roh.
Redheaded Jack Pine Sawfly, *N. virginianus* complex

pages 59-62

[Major]

The sawflies listed are capable of causing mortality of semi-mature and plantation pine trees when populations are high. Except for the years 1952, 1964, 1965, 1970, 1976, 1977 and 1978, fluctuating populations of one or more of the sawflies were recorded throughout the 30-year review period.

Bruce Spanworm, *Operophtera bruceata* (Hlst.)
pages 62-65

[Major]

Epidemics of this pest are of short duration. In the western part of the province, the preferred host is trembling aspen; in the eastern part sugar maple and birch are preferred. Moderate-to-severe defoliation occurred from 1976 to 1978.

Aspen Leafblotch Miner, *Phyllonorycter ontario* (Free.)
pages 66-67

[Major]

Although this insect has not been known to cause tree mortality, severe browning of foliage over a period of years can cause a reduction in growth. High populations were recorded in 17 of the 30 years under review.

Yellowheaded Spruce Sawfly, *Pikonema alaskensis* (Roh.)
pages 67-69

[Major]

This destructive insect has been categorized as a serious pest of young spruce plantations and open-growing ornamentals. High mortality can occur after successive years of severe defoliation. Fluctuating populations were recorded from 1951 to 1980.

White Pine Weevil, *Pissodes strobi* (Peck)
pages 69-70

[Major]

This weevil is considered the most destructive pest of white pine in North America. Successive weeviling over a period of years results in multiple-stemmed trees. Weeviling ranged from light to heavy intensity. The highest percentage of trees attacked (30%) was recorded in 1957.

Larch Sawfly, *Pristiphora erichsonii* (Htg.)
pages 71-72

[Major]

The larch sawfly is the primary defoliating insect of native larch and most exotic species. On good sites, larch trees can withstand six to nine years of severe defoliation before mortality occurs; on less favorable sites, mortality may follow three or more years of complete defoliation. This pest was recorded in every year of the 30-year review period and high populations were recorded in 25 of these years.

Mountain-ash Sawfly, *Pristiphora geniculata* (Htg.)
page 73

Although this sawfly is a serious pest of shade or ornamental mountain-ash, severe defoliation does not kill trees. Moderate-to-severe defoliation was recorded from 1977 to 1980.

Ambermarked Birch Leafminer, *Profenusa thomsoni* (Konow)
page 74

High populations have resulted in foliar browning of birch, this insect's preferred host, over large areas in the northern part of the province, from Lake Nipigon to the Quebec border. Moderate-to-severe damage occurred in the Nipigon District in 1966.

Spearmarked Black Moth, *Rheumaptera hastata* (L.)
pages 75-76

This pest is responsible for small sporadic outbreaks in Ontario. Typical damage on white birch, the preferred host, is manifested by leaves tied together with silk. Moderate-to-heavy infestations occurred in 1953, 1961 and 1962.

Other Noteworthy Insects
pages 77-85

[Major and Minor]

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

FOREST DISEASES

Eastern Dwarf Mistletoe, *Arceuthobium pusillum* Peck
page 89

[Major]

The presence of this mistletoe results in reduced vigor and growth. Infections were reported in 1952 and 1954.

Armillaria Root Rot, *Armillaria mellea* (Vahl:Fr.) Kummer
pages 89-90

[Major]

This root rot disease often kills trees previously stressed by drought, insects, other pathogens or unfavorable environment. However, under some circumstances the fungus, or certain strains of the fungus, can kill vigorous trees. Both deciduous and coniferous trees are attacked. Surveys revealed mortality as high as 10% in a white spruce plantation near Limestone Lake. Elsewhere the incidence was less than 5%.

Scleroderris Canker, *Ascocalyx abietina* (Lagerb.) Schläpfer-Bernhard
pages 90-93 [Major]

The native strain of this fungus does not usually have a serious impact on trees 2-4 m high, and cankers often cease activity on older trees. Stem cankers can result in considerable mortality, as was evidenced over a period of years in regeneration in the Cosgrave Lake area.

Spruce Needle Rusts, *Chrysomyxa ledi* (Alb. & Schwein.) de Bary
var. *ledi* and *C. ledicola* (Peck) Lagerh. [Major]
pages 94-96

The most noticeable damage caused by moderate-to-severe infections by these needle rusts consists of premature defoliation and accompanying growth loss. Such infection levels were recorded in 1954, 1966, 1969, 1974 and 1975.

Spruce Cone Rust, *Chrysomyxa pirolata* (Körn.) Winter [Major]
page 97

Infections reduce seed viability. One survey disclosed that 77% of the infected cones in the Black Sturgeon Lake area were infected in 1964.

Ink Spot, *Ciborinia whetzelii* (Seaver) Seaver [Major]
pages 98-99

This ink spot disease is widespread throughout the range of aspen. Many poplar species and hybrids are susceptible, but trembling aspen is most commonly affected. Heavily infected trees may be defoliated prematurely and repeated attacks can reduce increment and even kill regeneration. Moderate-to-severe foliar damage was recorded in eight years of the 30-year period described.

Pine Needle Rust, *Coleosporium asterum* (Dietel) Sydow [Major]
page 100

High infections may result in a reduction in growth of regeneration and sapling-size trees. Moderate-to-severe foliar damage was reported in 1963, 1964 and 1969.

Comandra Blister Rust, *Cronartium comandrae* Peck [Major]
page 101

Infection is restricted by the absence of the alternate host of this rust. Both stems and branches are affected. Moderate-to-severe infections were reported in 1970 near Cosgrave Lake.

Sweet Fern Blister Rust, *Cronartium comptoniae* Arthur [Major]
page 101

Infection by this disease results in branch or stem cankers and possibly tree mortality. Trees are relatively safe from infection when their basal stem diameter reaches 8 cm. Surveys in the Nipigon District revealed affected trees but no associated mortality.

White Pine Blister Rust, *Cronartium ribicola* J.C. Fischer [Major]
page 102

Whole-tree, top or branch mortality can occur in infected white pine. Whole-tree mortality was recorded in 1968, 1970, 1973 and 1974.

Tar Spot Needle Cast, *Davisomyces ampla* (J. Davis) Darker [Major]
page 103

Heavy foliar infections result in growth reduction and loss of older foliage. Moderate-to-severe foliar damage was observed in four years of the 30-year period.

Delphinella Tip Blight, *Delphinella balsameae* (Waterman) E. Müller [Minor]
page 104

Needles and shoots of the current year are killed. This tip blight was first recorded in Ontario in 1958, in the Nipigon District.

Western Gall Rust, *Endocronartium harknessii* (J.P. Moore) Y. Hirats. [Major]
pages 104-105

The presence of this rust is signalled by branch and stem galls. Infection of the majority of young trees often results in tree mortality. Surveys disclosed as much as 10% mortality in the Nezhah area in 1973.

Hypoxyton Canker, *Hypoxyton mammatum* (Wahlenb.) J. Miller [Major]
page 106

Main stem infections often result in mortality of that portion of the tree that is distal to the canker. Winds often cause breakage at the point of cankering. Surveys showed that the incidence of cankered trees varied from 1% to 26%.

Linospora Leaf Blight, *Linospora tetraspora* G.E. Thompson [Minor]
page 107

Leaf discoloration and premature defoliation are characteristic of this disease. Moderate-to-severe foliar damage was reported in two years.

Septoria Leaf Spot, *Mycosphaerella populicola* G.E. Thompson [Minor]
page 107

Severe foliar infections result in leaf discoloration and premature defoliation. Damage was recorded in the last three years of the review period.

White Trunk Rot, *Phellinus igniarius* (L.:Fr.) Quélet [Major]
page 108

This fungus is responsible for considerable wood loss. The presence of the disease is signalled by a hoof-shaped conk. Usually decay is confined to the heartwood. The highest incidence of the disease was observed in Kilkenny Township.

Shoot Blight, *Pollacia elegans* Servit [Minor]
pages 108-109

Shoot mortality and accompanying growth reduction are the principal results of this disease. Little damage has occurred in the district since the blight was first reported in 1954.

Shoot Blight, *Sirococcus conigenus* (DC.) P. Cannon & Minter [Major]
page 109

This fungus attacks several conifers, but causes the most serious damage to red pine. The current season's growth is killed and repeated attacks may cause tree mortality. The only collection in the district in the 30-year period under review was made in 1974 and this represented a new distribution record.

Shoot Blight, *Venturia macularis* (Fr.) E. Müller & v. Arx [Major]
pages 109-110

This disease has its greatest impact on aspen regeneration. The terminal shoot is attacked, and subsequently takes the shape of a "shepherd's crook". Repeated attacks result in a clumped top and reduced stocking. The disease was first recorded in the district in 1954.

ABIOTIC DAMAGE

pages 113-116

Drought

Trees rooted in shallow soils are more readily affected than those growing in deeper soils. Drought-weakened trees are also predisposed to attack by secondary insects and diseases.

Frost

During the growing season, living tissues are most susceptible to low temperatures. Spring frosts can kill developing foliage of both deciduous and coniferous trees.

Hail

Hailstorms can cause foliar damage or wounding of the bark and cambium, especially on young tender-barked trees.

Wind

Broken branches, tops and windthrown trees are products of severe windstorms.

Winter Drying

This condition is common to conifers. In midwinter or early spring, cold temperatures followed by warm, sunny days and accompanying dry winds result in excessive moisture loss. This moisture cannot be replaced by the tree because the ground and stem tissues are frozen. A form of drought results. Later in the spring the damage manifests itself as reddened foliage.

INSECTS

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

Host(s): bF, bS, wS

[Major]

<u>Year</u>	<u>Remarks</u>
1950	not reported
1951	Low numbers were observed along Highway 11 between Beardmore and Nezhah and in Legault and Leduc twps.
1952	Light defoliation was detected along Highway 17 from Kama Bay east to the district border and in Legault Twp.
1953	Ground surveys revealed light infestations in Wiggins and McAllister twps, along Highway 11 from Beardmore to Nezhah, along Highway 17 from Nipigon to Kama Bay and near Boulder Lake. Moderate numbers were collected in the North Wind Lake area.
1954	Light populations were detected in McAllister Twp and near Onaman Lake. Moderate numbers were recorded in the Obonga Lake area.
1955	Populations collapsed.
1956-1959	not reported
1960	Low numbers were detected.
1961	Increased populations were reported but associated damage was light.
1962	not reported
1963	Light damage was observed at Scotch Lake.
1964-1965	Low numbers were detected.
1966-1969	not reported
1970	Only a few larvae were collected.
1971	Numbers increased but associated damage was light.
1972	Low numbers were present.
1973	Light defoliation of shoreline trees was noted at Smoothrock Lake and Granite Falls.

(cont'd)

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

Host(s): bF, bS, wS

[Major]

<u>Year</u>	<u>Remarks</u>
1974	Previous areas of light infestation persisted and new areas of light damage were detected east of Lake Nipigon to the district border.
1975	Light populations were recorded in Ledger Twp and previous areas of light infestation at Smoothwater Lake declined to trace numbers.
1976	Light infestations persisted.
1977	Only trace populations were observed.
1978-1980	not reported

Uglynest Caterpillar, *Archips cerasivorana* (Fitch.)

Host(s): cherry

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1954	not reported
1955	Moderate numbers were reported in Leduc Twp.
1956	Moderate populations recurred near Blackwater Lake, Leduc Twp.
1957	Moderate numbers persisted in Leduc Twp and a light infestation occurred in Walters Twp.
1958	Medium-to-heavy infestations continued in Leduc Twp and light populations were recorded near Beardmore, Nezhah and Orient Bay.
1959	Moderate-to-severe populations occurred in Leduc and Summers twps, at Nezhah and at km 8 on the Auden Road.
1960	Medium-to-heavy infestations were detected in Walters and Leduc twps and low numbers were observed near Nezhah and in Kilkenny Twp.

(cont'd)

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

Host(s): cherry

[Major]

<u>Year</u>	<u>Remarks</u>
1961	Large numbers of tents were observed in Walters Twp and populations declined in Leduc Twp.
1962	The number of tents recorded in one square chain in Walters and Leduc twps ranged from 3 to 6.
1963	Light populations were recorded in the district.
1964-1969	not reported
1970	Low numbers were reported in the district.
1971-1975	not reported
1976	Light populations were observed in the district.
1977	not reported
1978	Occasional nests were noted at several locations.
1979	Low numbers were detected in Ledger and Nipigon twps.
1980	Light damage was reported near Jellicoe.

Birch Skeletonizer, *Bucculatrix canadensisella* Cham.

Host(s): wB

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1960	not reported
1961	Light populations were recorded in the Little Sturge Lake area.
1962	An area of medium-to-heavy infestation extended north from Lyon Twp, to the south end of Lake Nipigon and along its eastern shore into Sandra Twp. Three smaller pockets of moderate-to-severe damage were also recorded: one in Legault Twp, another in Pifher and Elmhirst twps and a third (the largest one) east of Humboldt Bay, Lake

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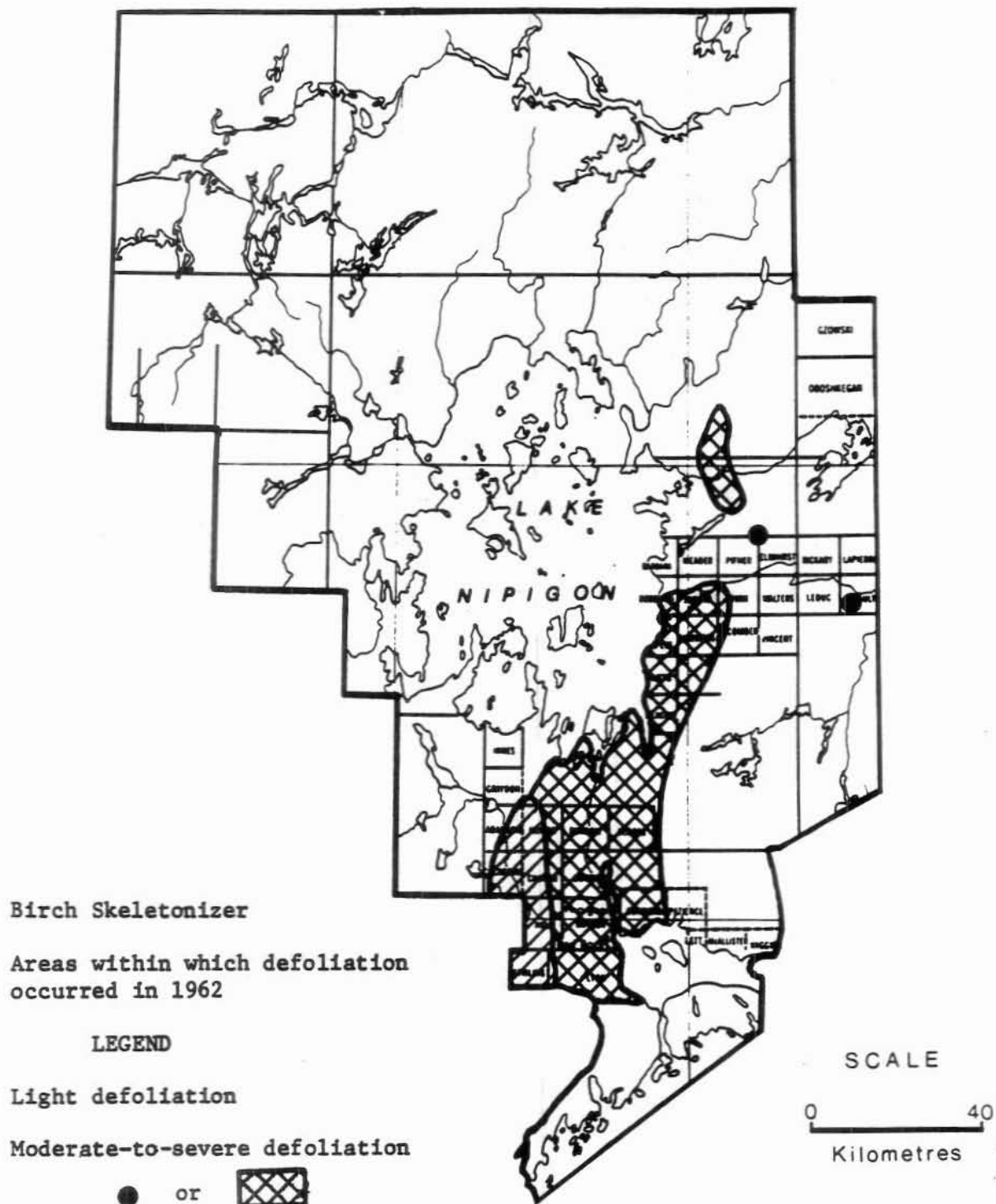
Birch Skeletonizer, *Bucculatrix canadensisella* Cham. (concl.)

Host(s): wB

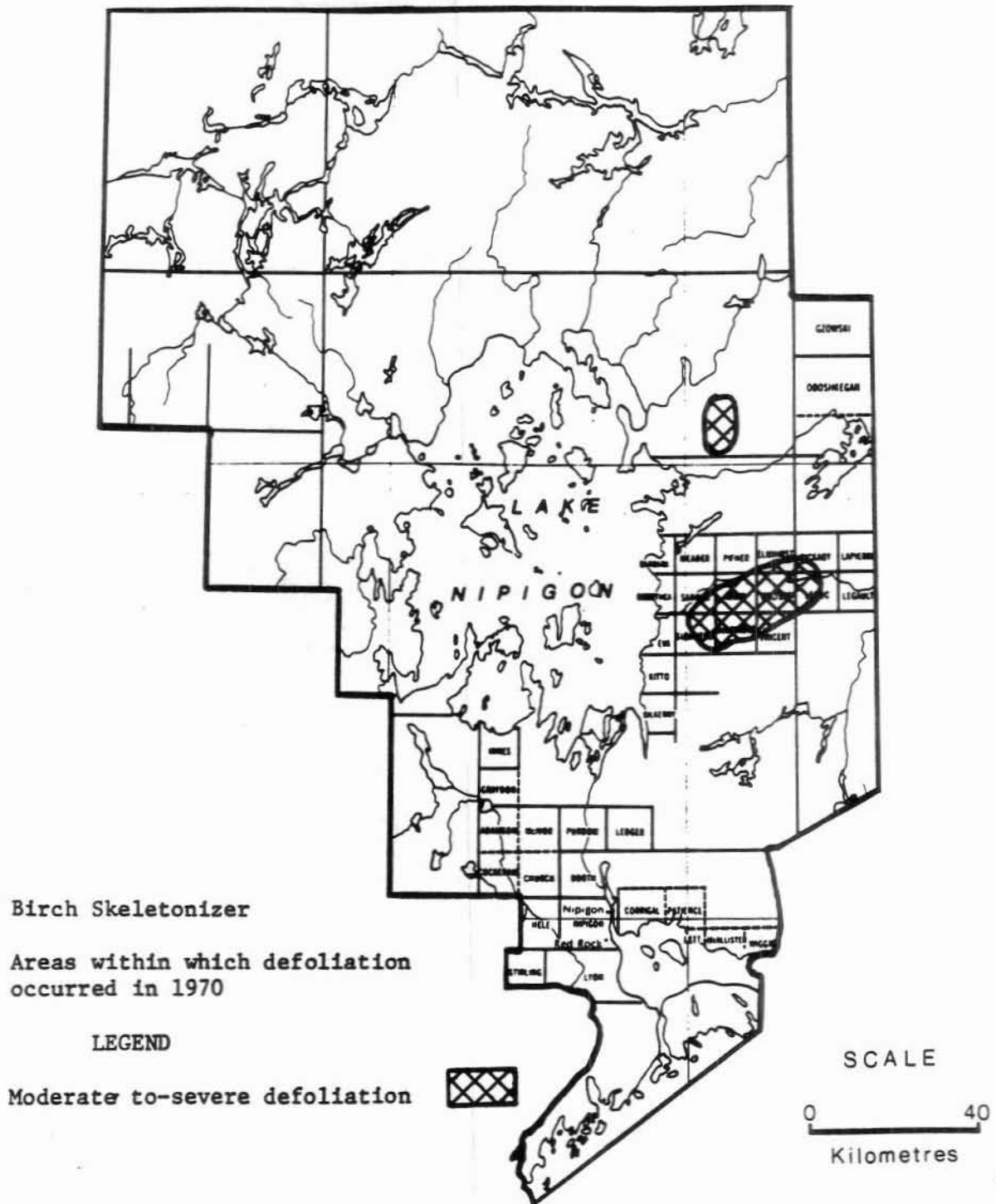
[Major]

<u>Year</u>	<u>Remarks</u>
	Nipigon. An area of light defoliation was mapped along the western edge of the larger infestations (see map, page 17).
1963	What was previously the main area of moderate-to-severe defoliation expanded to the east, with a narrow arm of medium-to-heavy infestation extending into the Geraldton District. The area of light defoliation mapped the previous year also increased slightly (see map, page 18).
1964	The area of moderate-to-severe damage increased considerably, extending north from Lyon and McAllister twps, part way up the east and west sides of Lake Nipigon and into the neighboring districts of Thunder Bay and Geraldton (see map, page 19).
1965	Previously high populations declined to endemic levels.
1966-1969	not reported
1970	An area of medium-to-heavy infestation covering 260 km ² occurred east of Beardmore as far as Leduc Twp. A smaller area of similar damage occurred east of South Peninsula, Lake Nipigon (see map, page 20).
1971	Moderate-to-severe skeletonizing of host stands occurred west of Gull Bay, Lake Nipigon, to the district border and east of East Bay, Lake Nipigon, to the district border. Premature leaf drop and associated discoloration of white birch prevented aerial assessment of insect damage.
1972	Except for an area of light infestation in the southeastern corner, host stands in the district experienced moderate-to-severe damage (see map, page 21).
1973	Medium-to-heavy infestations were observed affecting host stands throughout the district (see map, page 22).
1974	Populations declined to low numbers.
1975	Populations collapsed.
1976-1980	not reported

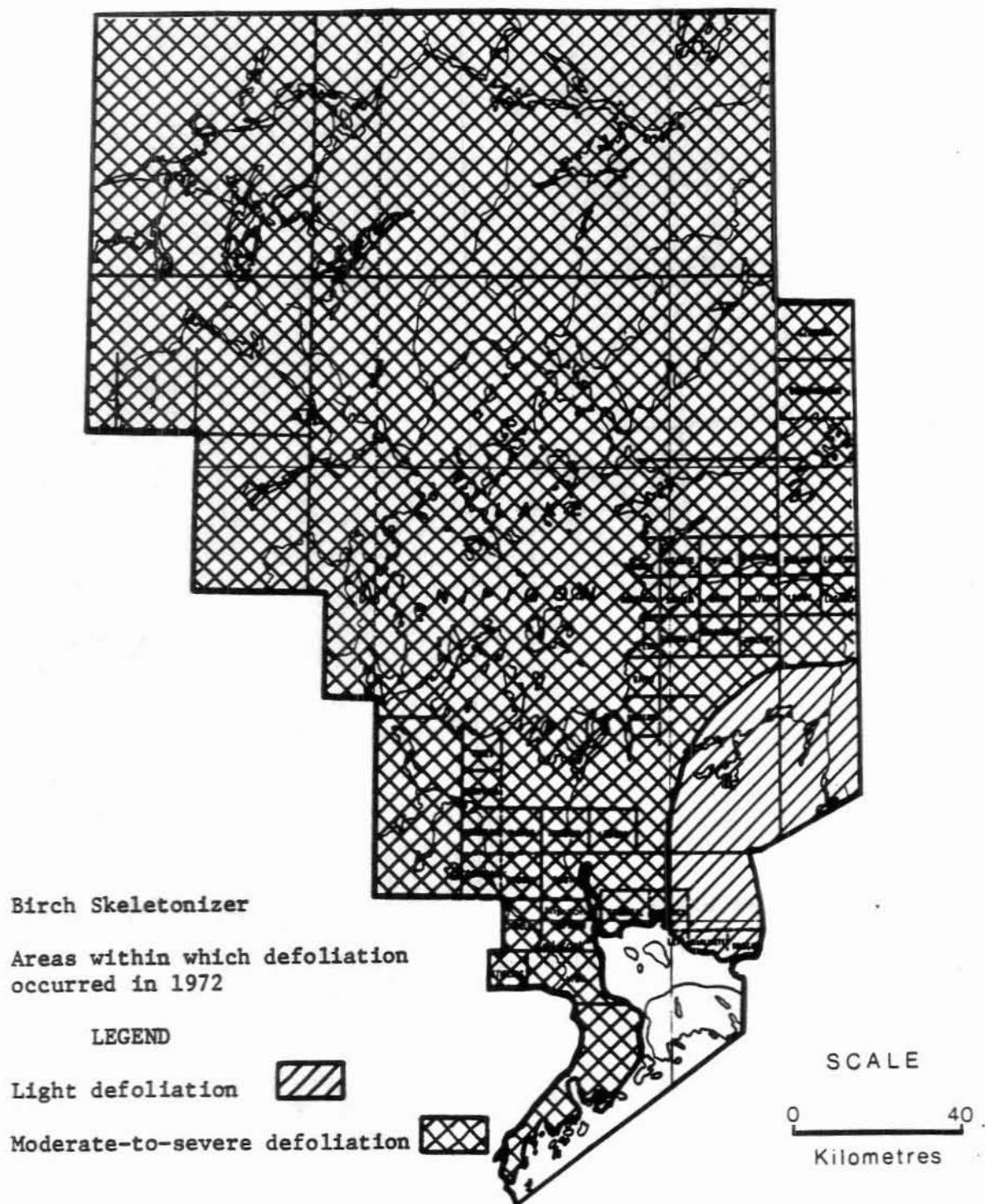
NIPIGON DISTRICT



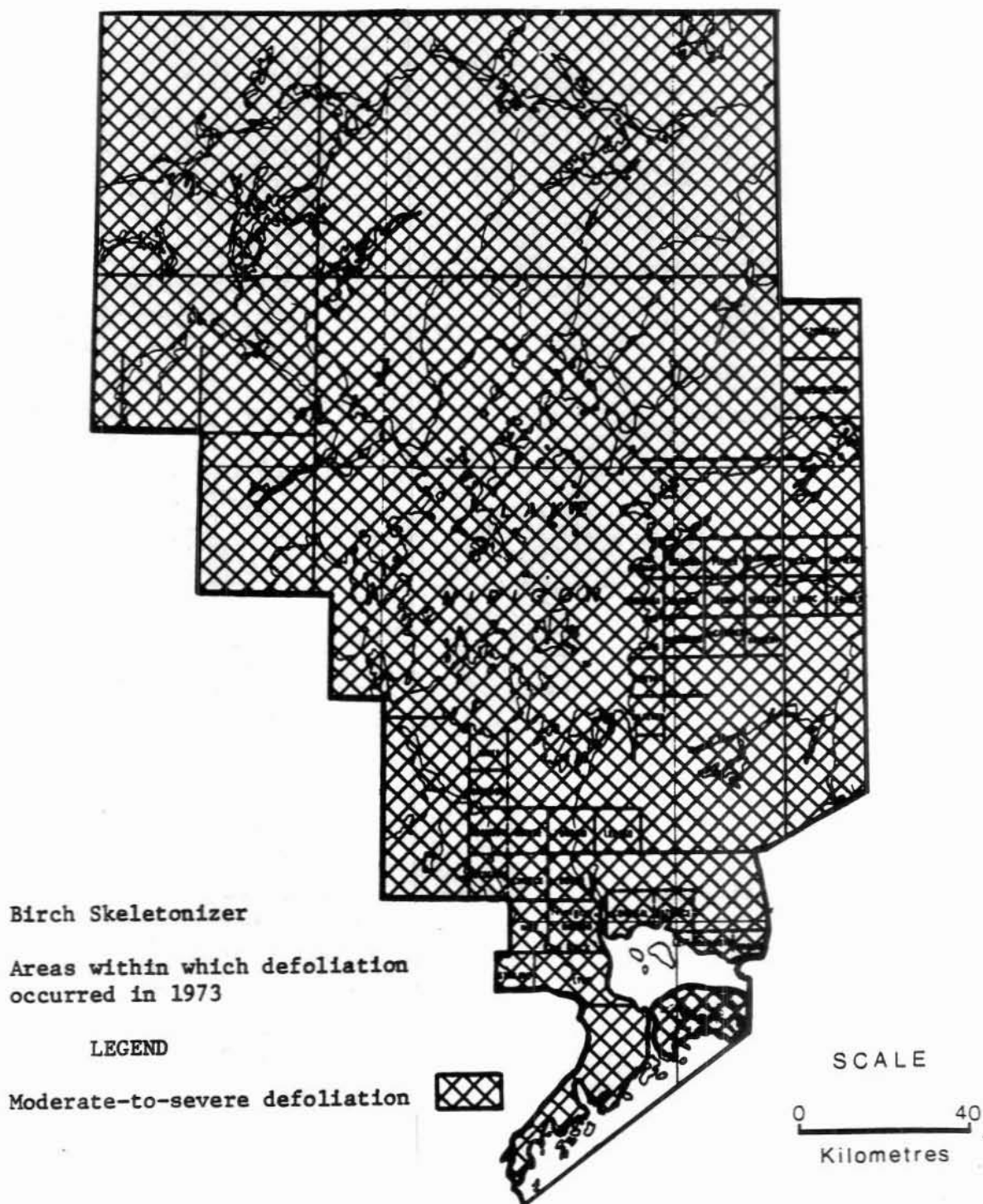
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NIPIGON DISTRICT



NIPIGON DISTRICT



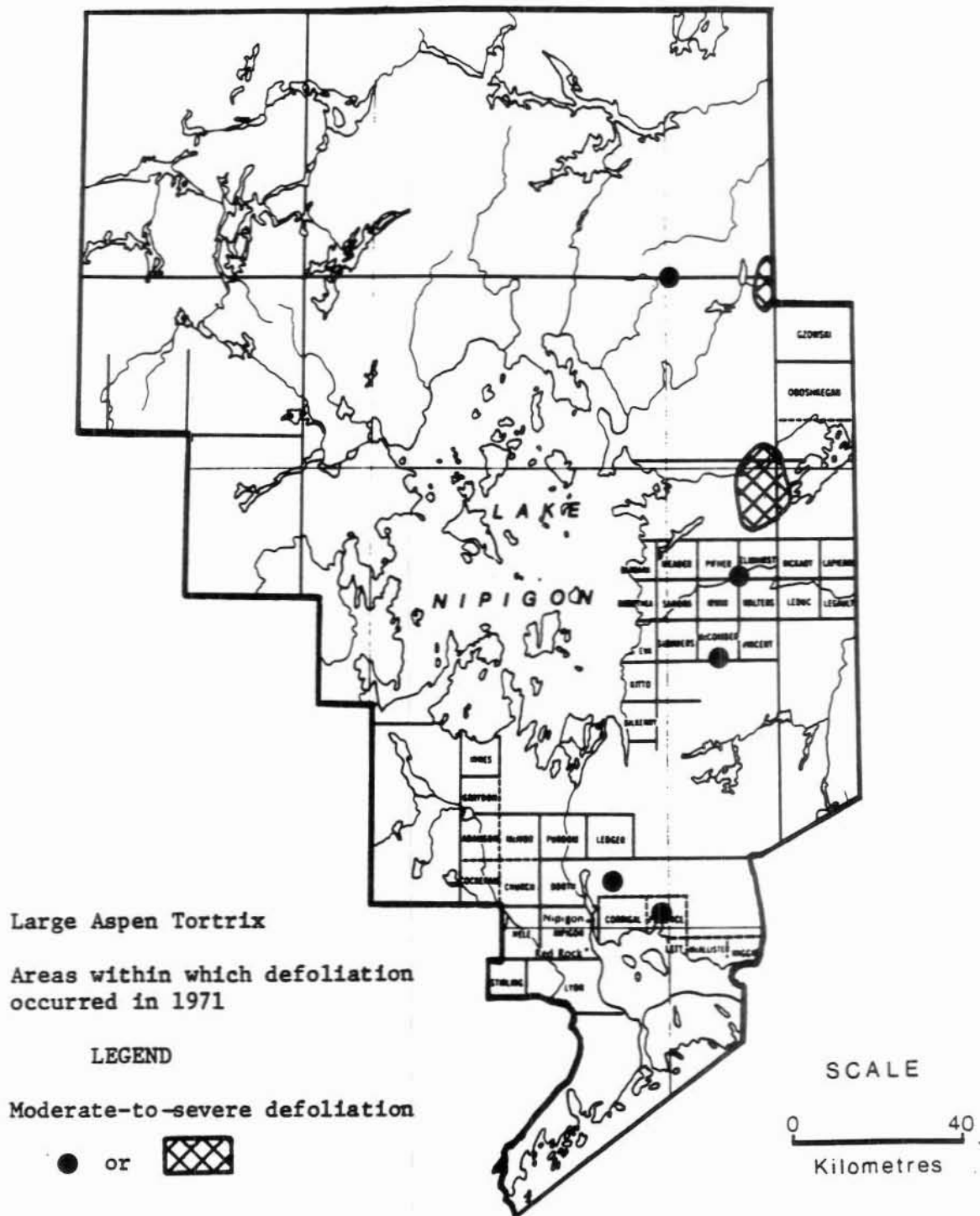
Large Aspen Tortrix, *Choristoneura conflictana* (Wlk.)

Host(s): poplar

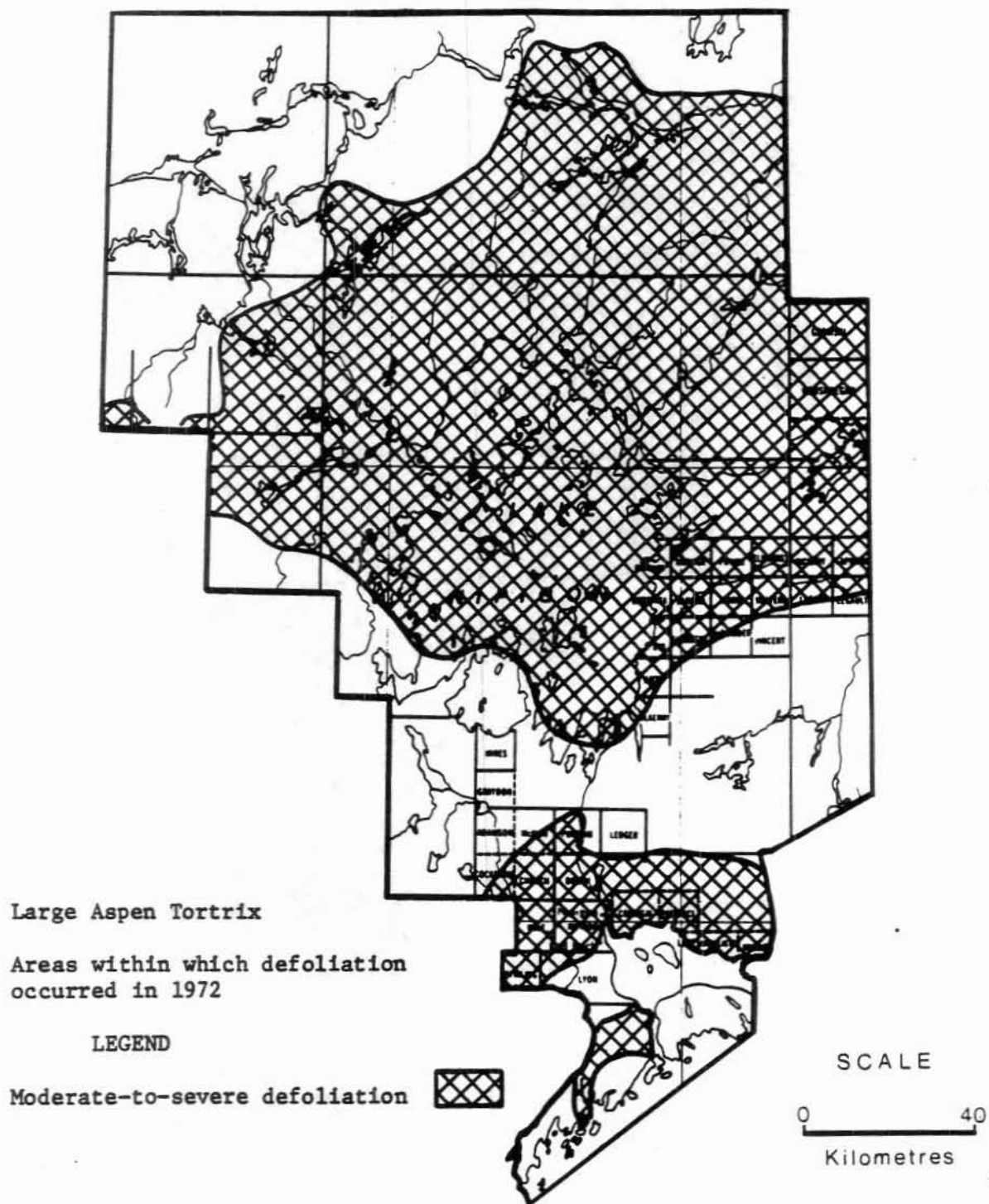
[Major]

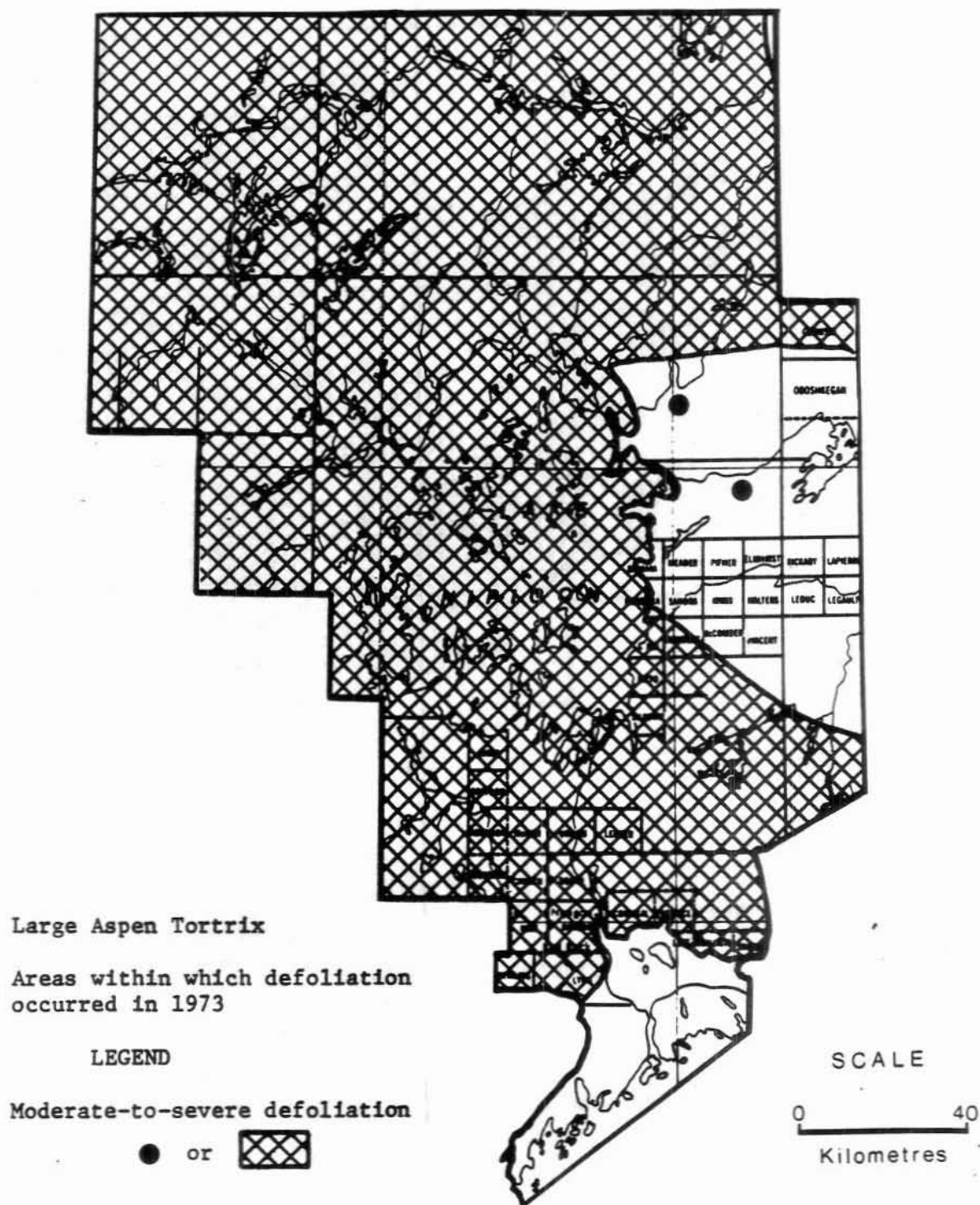
<u>Year</u>	<u>Remarks</u>
1950-1954	not reported
1955	Low numbers were found near Orient Bay, Lake Nipigon.
1956	A medium-to-heavy infestation was recorded at the west end of Whitewater Lake.
1957-1967	not reported
1968	Low numbers were reported in Summers Twp.
1969	not reported
1970	Light defoliation was noted along Highway 17 east of Nipigon to Kama Bay. A small pocket of medium-to-heavy infestation was recorded at Kama Bay.
1971	Seven pockets of moderate-to-severe defoliation were recorded in the eastern part of the district. The largest area of damage, 26 km ² , occurred west of Onaman Lake (see map, page 24).
1972	An extensive outbreak of medium-to-heavy infestation covering a large part of the district was recorded (see map, page 25).
1973	The area of moderate-to-severe defoliation increased significantly. Only the Black Bay Peninsula and an area east of Lake Nipigon were unaffected by high populations (see map, page 26).
1974	The previously widespread area of medium-to-heavy infestation decreased to three separate pockets of moderate-to-severe defoliation. The largest area of moderate-to-severe damage occurred southeast of Lake Nipigon and extended into Geraldton District (see map, page 27).
1975	A further decrease in the area of moderate-to-severe defoliation was recorded. Two small areas of damage were detected, one in Leduc Twp, the other south of Onaman Lake (see map, page 28).
1976	Low numbers were recorded.
1977-1980	not reported

NIPIGON DISTRICT

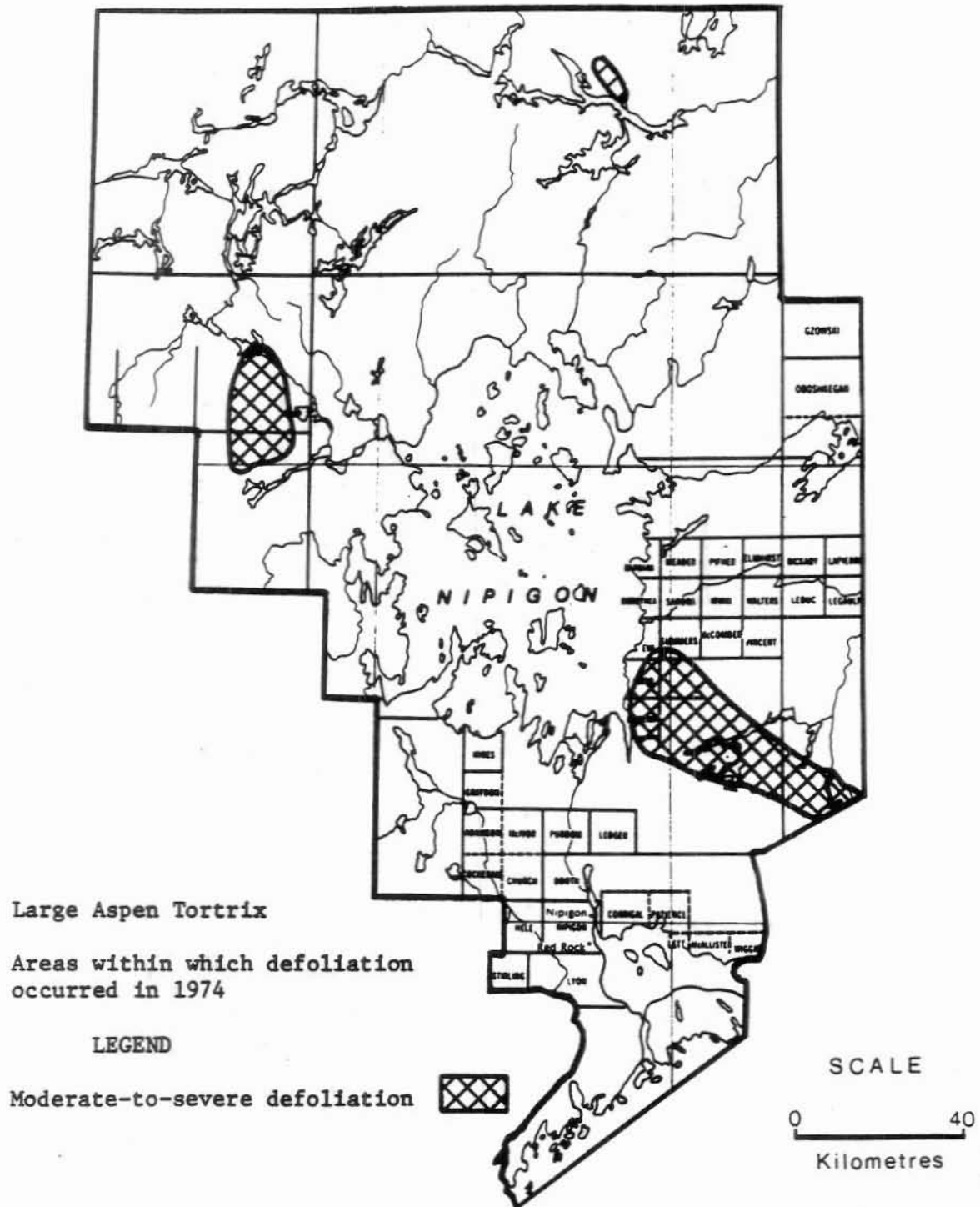


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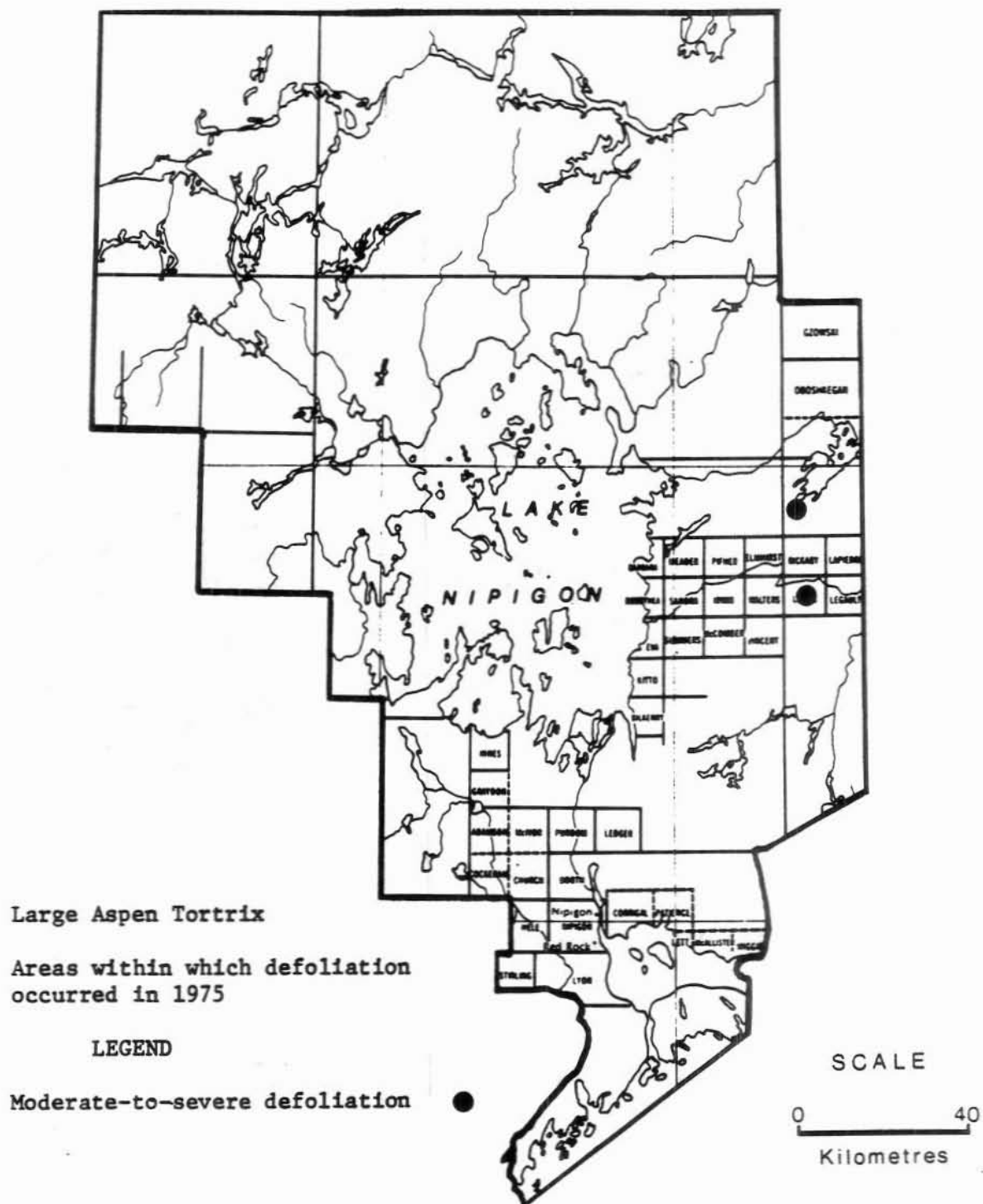


NIPIGON DISTRICT

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NIPIGON DISTRICT



Spruce Budworm, *Choristoneura fumiferana* (Clem.)

Host(s): bF, wS, bS

[Major]

<u>Year</u>	<u>Remarks</u>
1950	Populations declined to low levels south of Lake Nipigon except for small pockets of moderate-to-severe damage in the Disraeli-Sturge lakes area. A medium-to-heavy infestation persisted on the Black Bay Peninsula (see map, page 31). Mortality from a previous infestation increased around Lake Nipigon; there was a small pocket in Legault Twp and several others were noted in the Toronto Lake area (see map, page 32).
1951	Moderate-to-severe damage recurred on the Black Bay Peninsula and a small pocket of moderate-to-severe defoliation was noted west of Sturge Lake (see map, page 33). A slight increase was observed in the main area of mortality mapped previously (see map, page 34).
1952	The Black Bay Peninsula infestation remained relatively unchanged, but a population increase was noted in the small pocket near Sturge Lake. Two new areas of moderate-to-severe damage were discovered within a pocket of light infestation centered in Corrigan and Patience twps. A medium-to-heavy infestation was recorded in Wiggins Twp (see map, page 35). Mortality was mapped on the Black Bay Peninsula.
1953	The medium-to-heavy infestation persisted on the Black Bay Peninsula and extended northward. An area of light defoliation was mapped to the north in Ledger and Purdom twps. Light defoliation was also noted in the area adjoining the medium-to-heavy infestation near Sturge Lake. The infestation in Wiggins Twp spread westward into Nipigon Twp (see map, page 36). Mortality continued to spread mainly to the west of Lake Nipigon. A plot near Shesheeb Bay on the Black Bay Peninsula sustained 30% balsam fir tree mortality.
1954	The medium-to-heavy infestation in the Disraeli-Sturge lakes area doubled in size and was fringed by an area of light damage. Little damage occurred within the area of infestation on Black Bay Peninsula. The previously mapped area of moderate-to-severe defoliation in the southeastern corner of the district increased substantially (see map, page 37).

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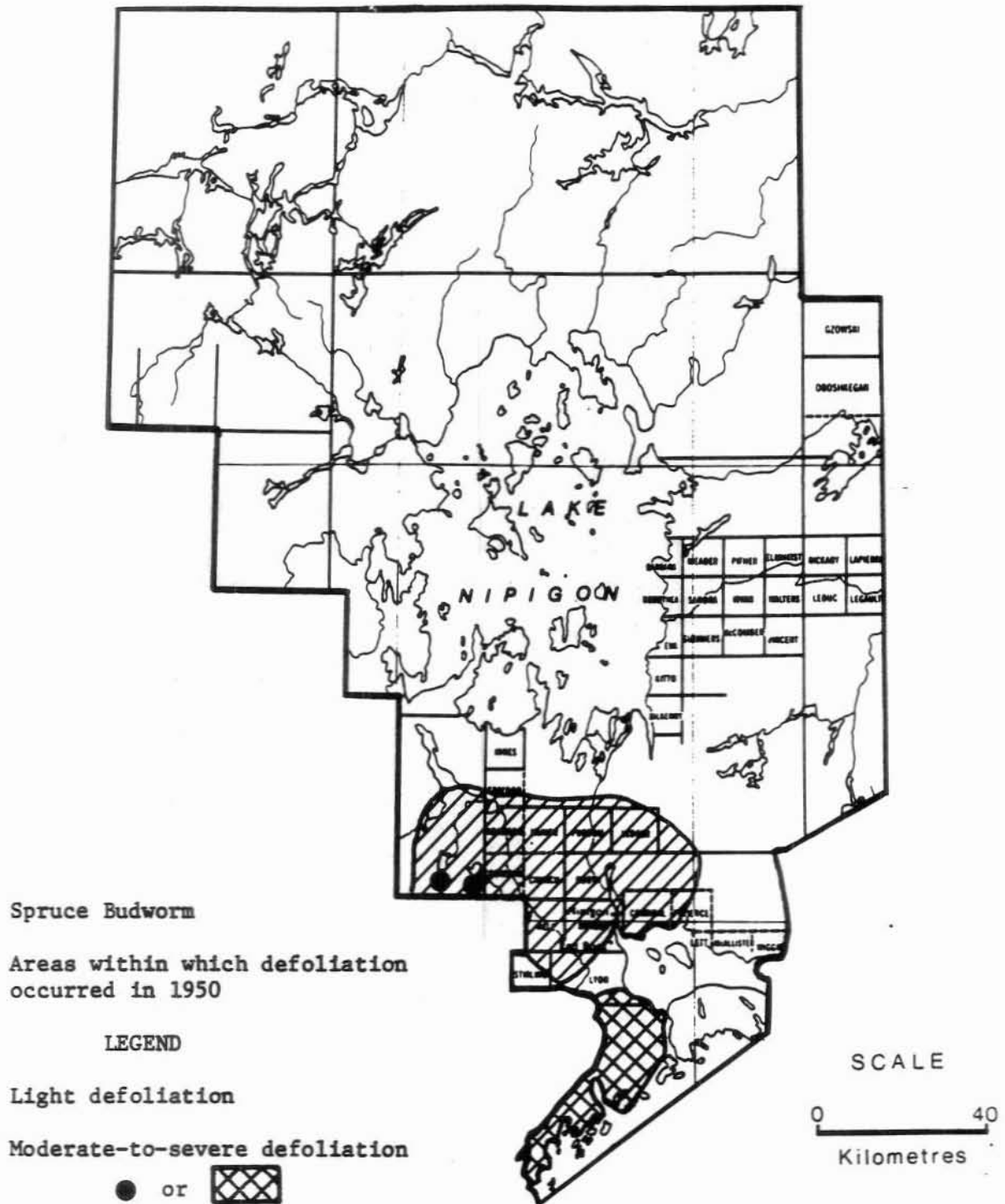
Spruce Budworm, *Choristoneura fumiferana* (Clem.) (concl.)

Host(s): bF, wS, bS

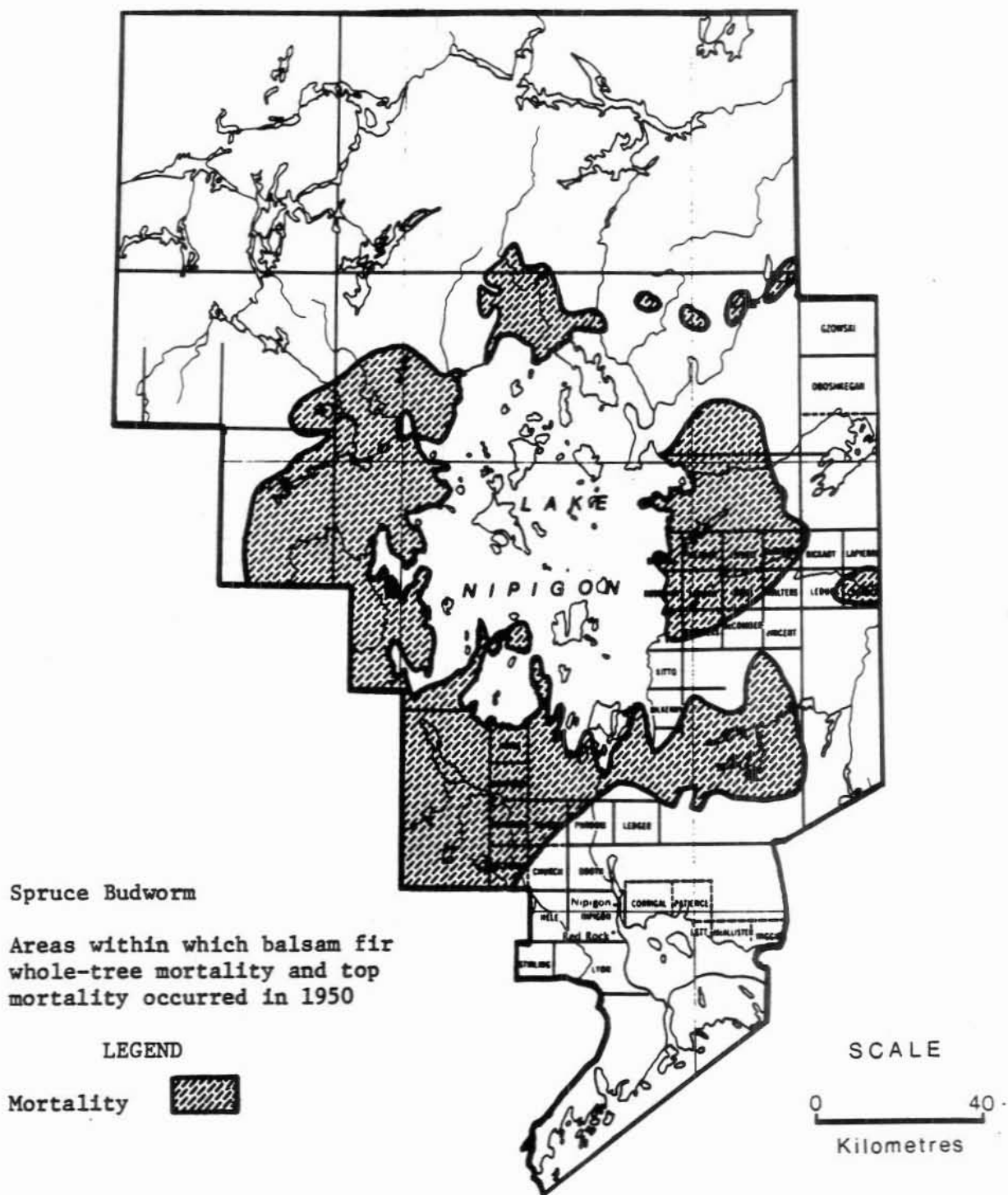
[Major]

<u>Year</u>	<u>Remarks</u>
1955	Populations declined markedly in the area of infestation near Sturge Lake. The medium-to-heavy infestation on the Black Bay Peninsula merged with the infestation in the southeastern corner of the district (see map, page 38).
1956	The previously mapped area of medium-to-heavy infestation was considerably reduced. A medium-to-heavy infestation occurred in the eastern part of St. Ignace Island (see map, page 39). Increased mortality was noted on the Black Bay Peninsula (see map, page 40).
1957	An area of light defoliation was observed to the north of the current medium-to-heavy infestation at Black Bay. High populations continued in the eastern part of St. Ignace Island. A population decline was noted in the western part of the infestation in the southeastern corner of the district (see map, page 41).
1958	The infestation on the Black Bay Peninsula declined to three pockets of moderate-to-severe defoliation. Small areas of moderate-to-severe damage were mapped in Nipigon and Hele twps. The infestation in the southeastern corner of the district was comparable to that of the previous year (see map, page 42).
1959	Except for three small pockets, previously mapped areas of medium-to-heavy infestation collapsed (see map, page 43). Tree mortality was mapped on St. Ignace Island and in Wiggins Twp north to Blair Lake (see map, page 44).
1960	The infestation at the mouth of the Nipigon River declined to light intensity. Population decreases were noted in the previously mapped area of moderate-to-severe defoliation in the southeastern corner of the district (see map, page 45). Tree mortality increased but the area within which mortality was mapped remained unchanged from the previous year (see map, page 46).
1961	Infestations collapsed.
1962-1980	no infestations reported

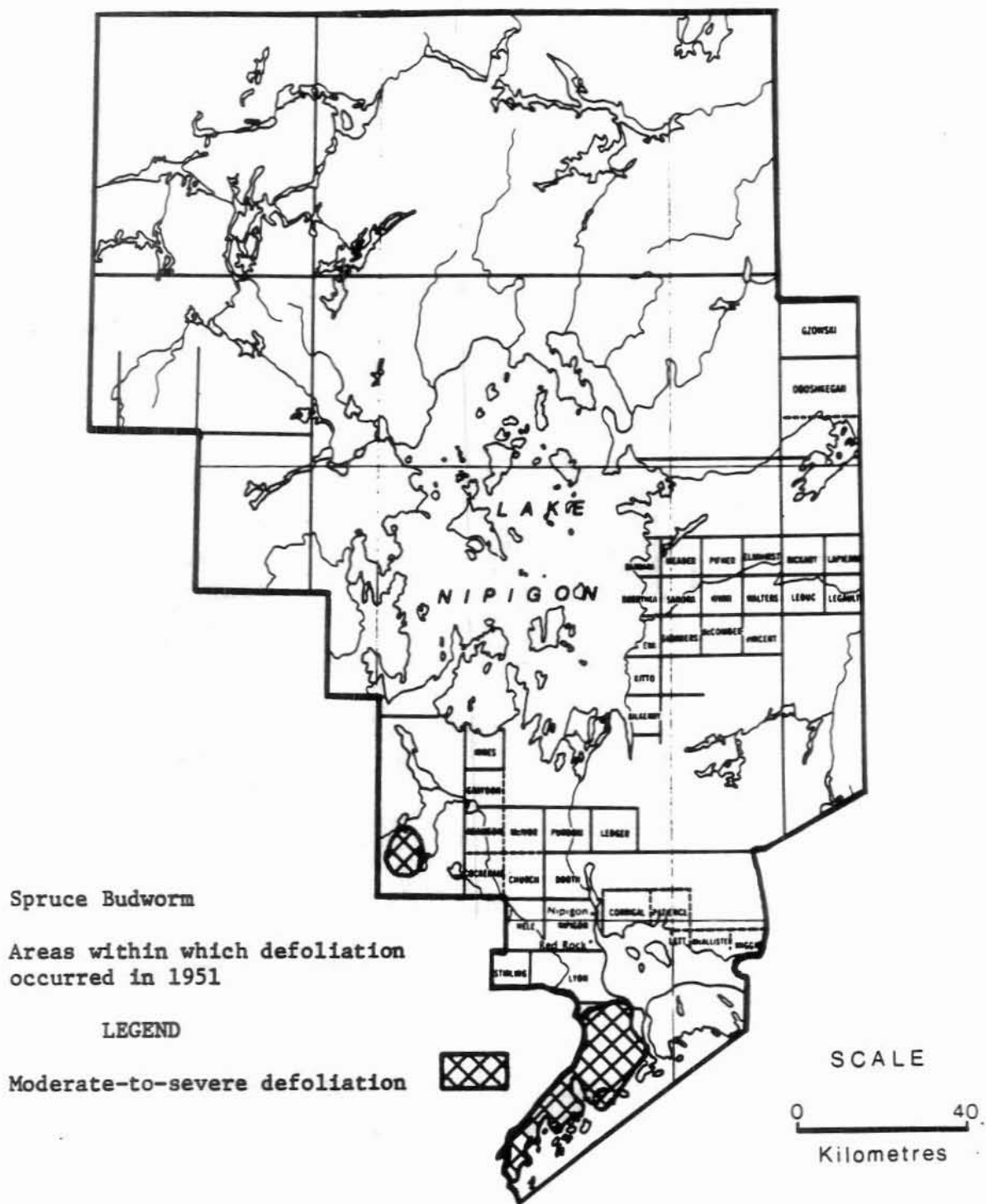
NIPIGON DISTRICT



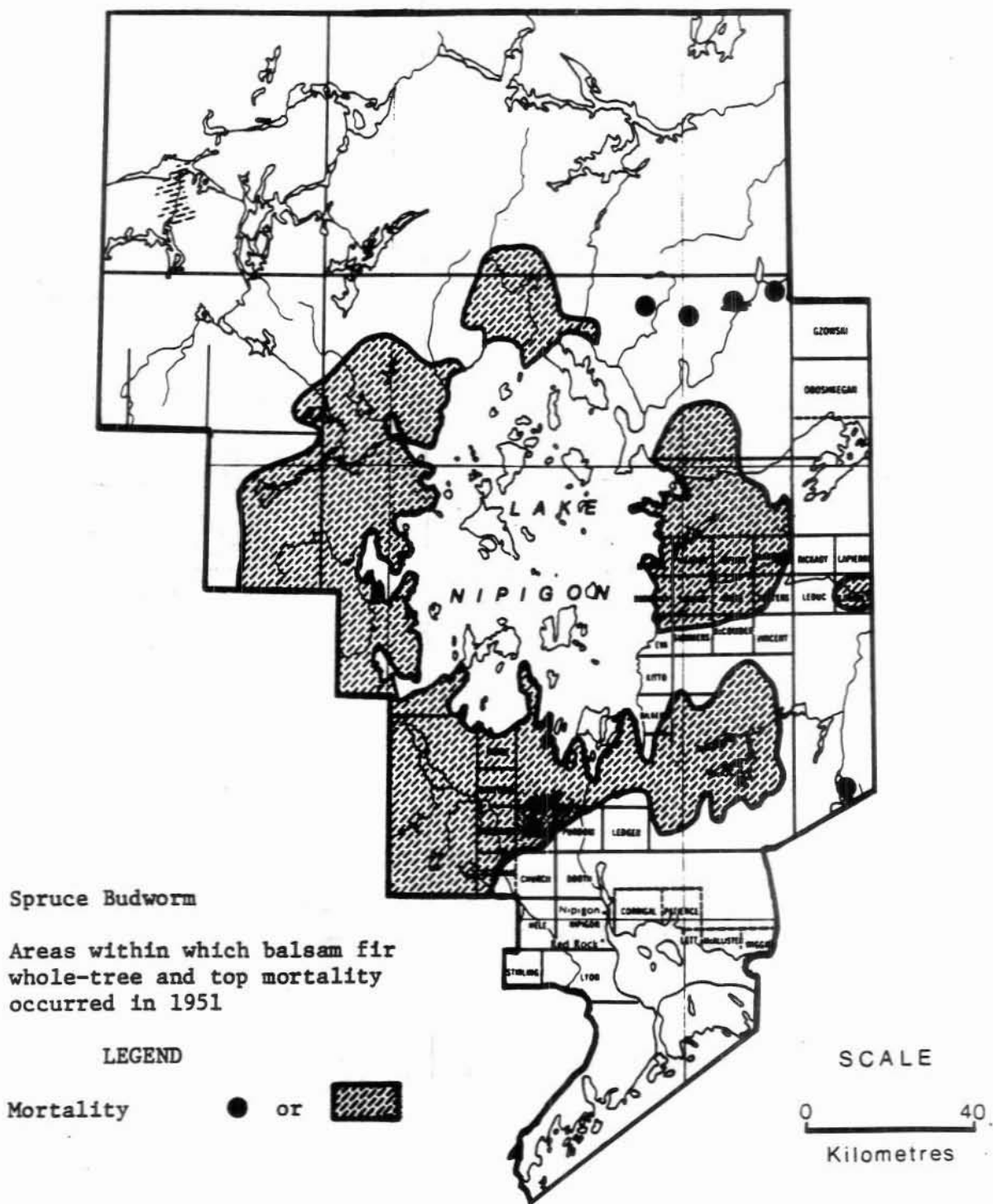
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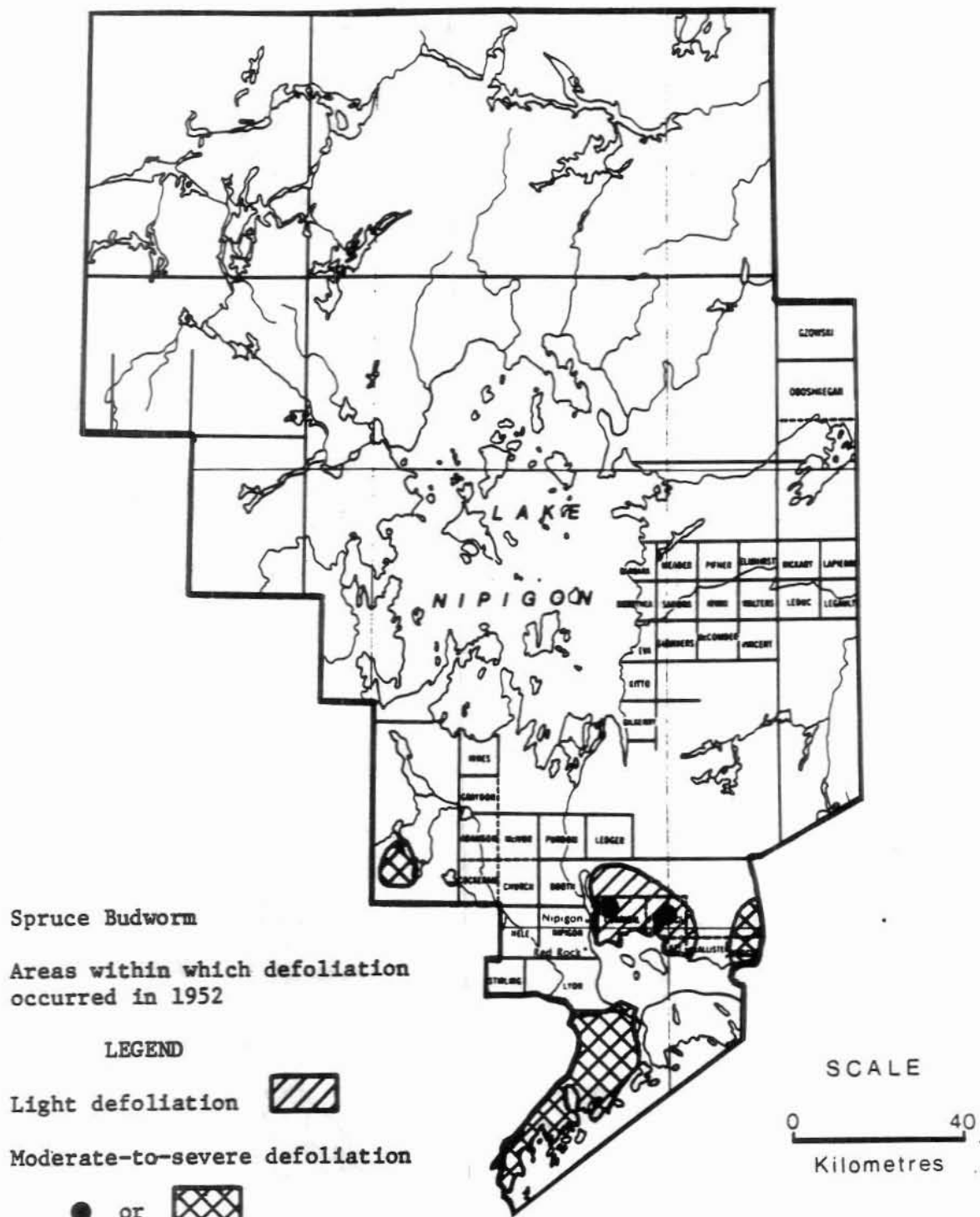
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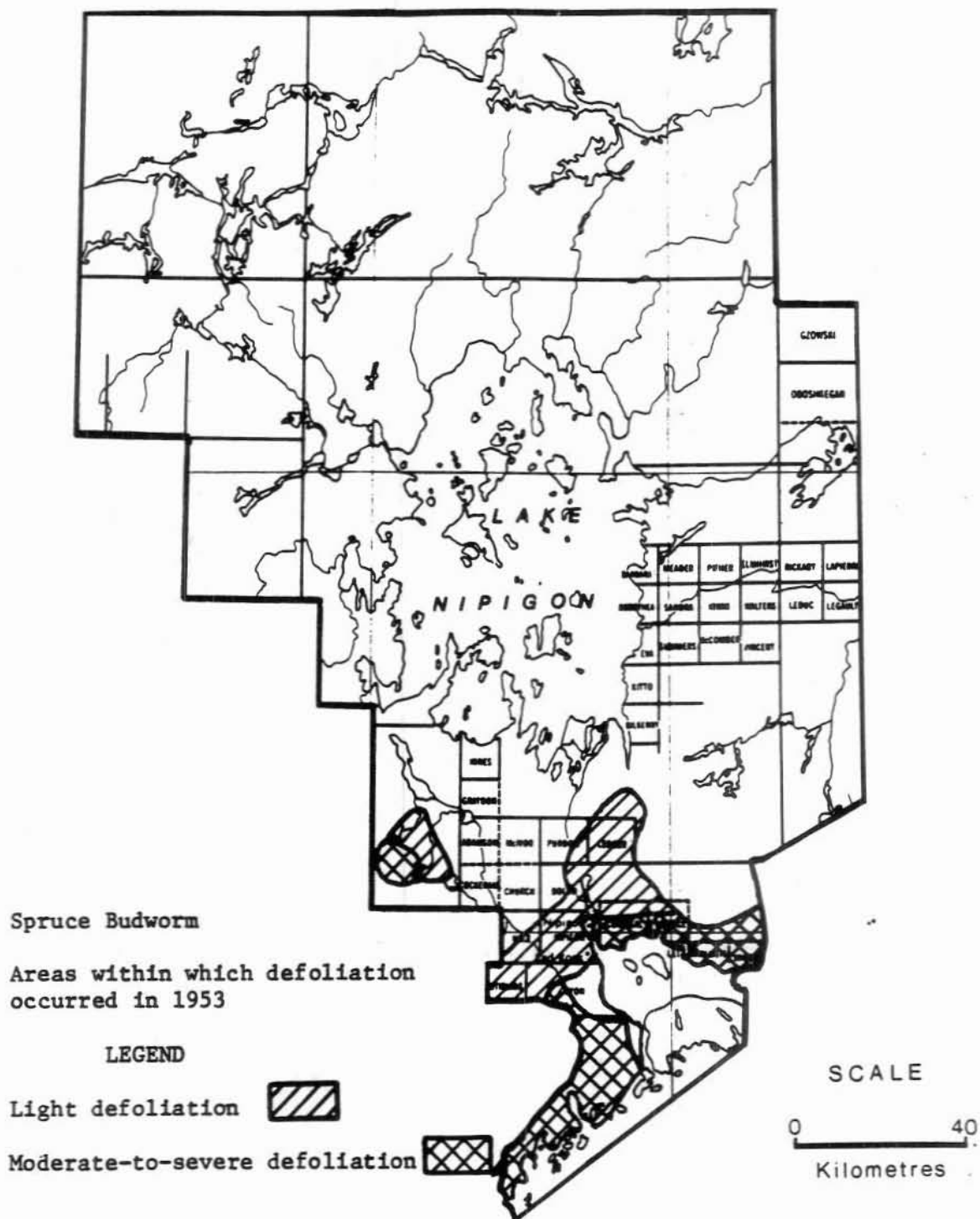
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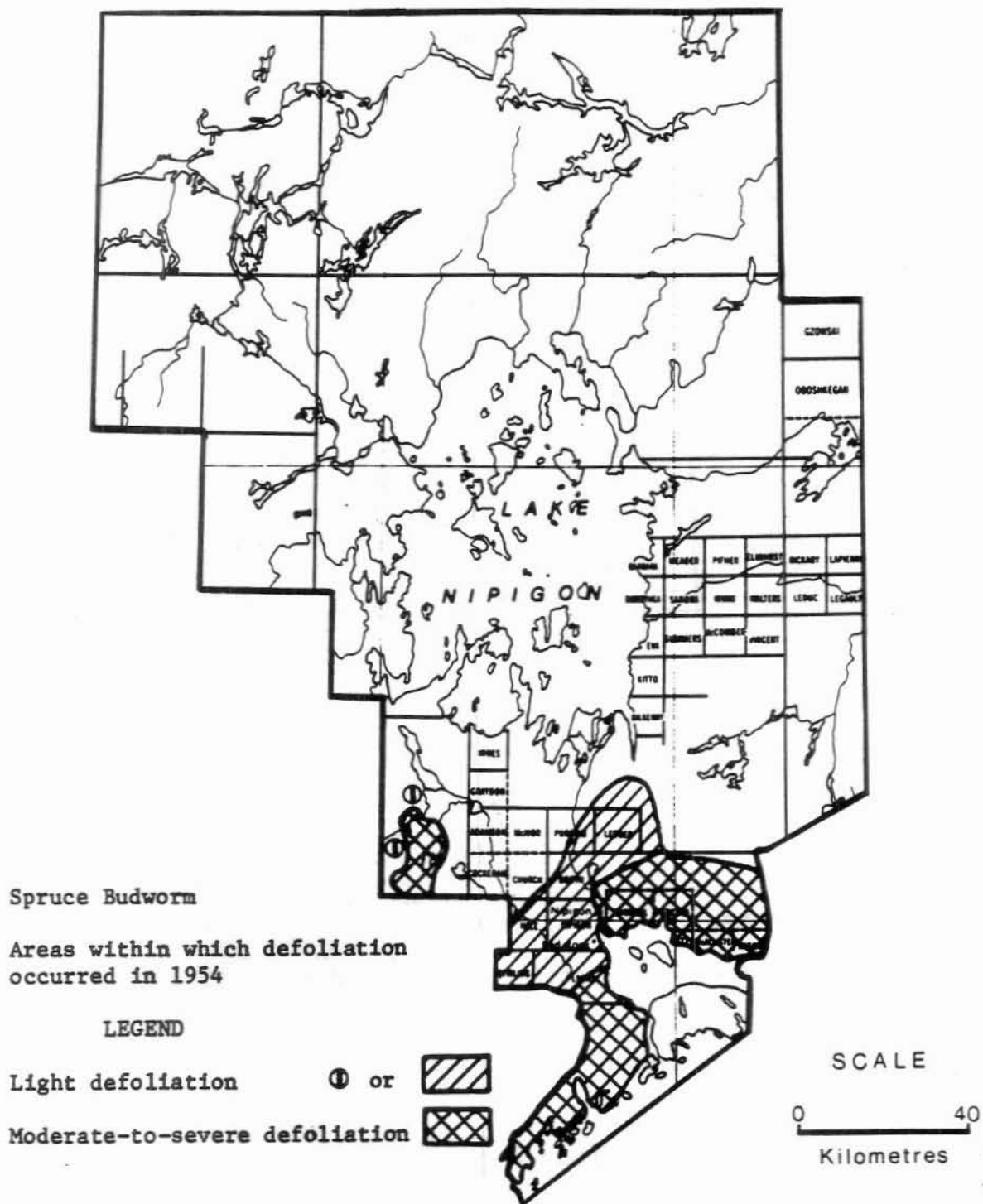
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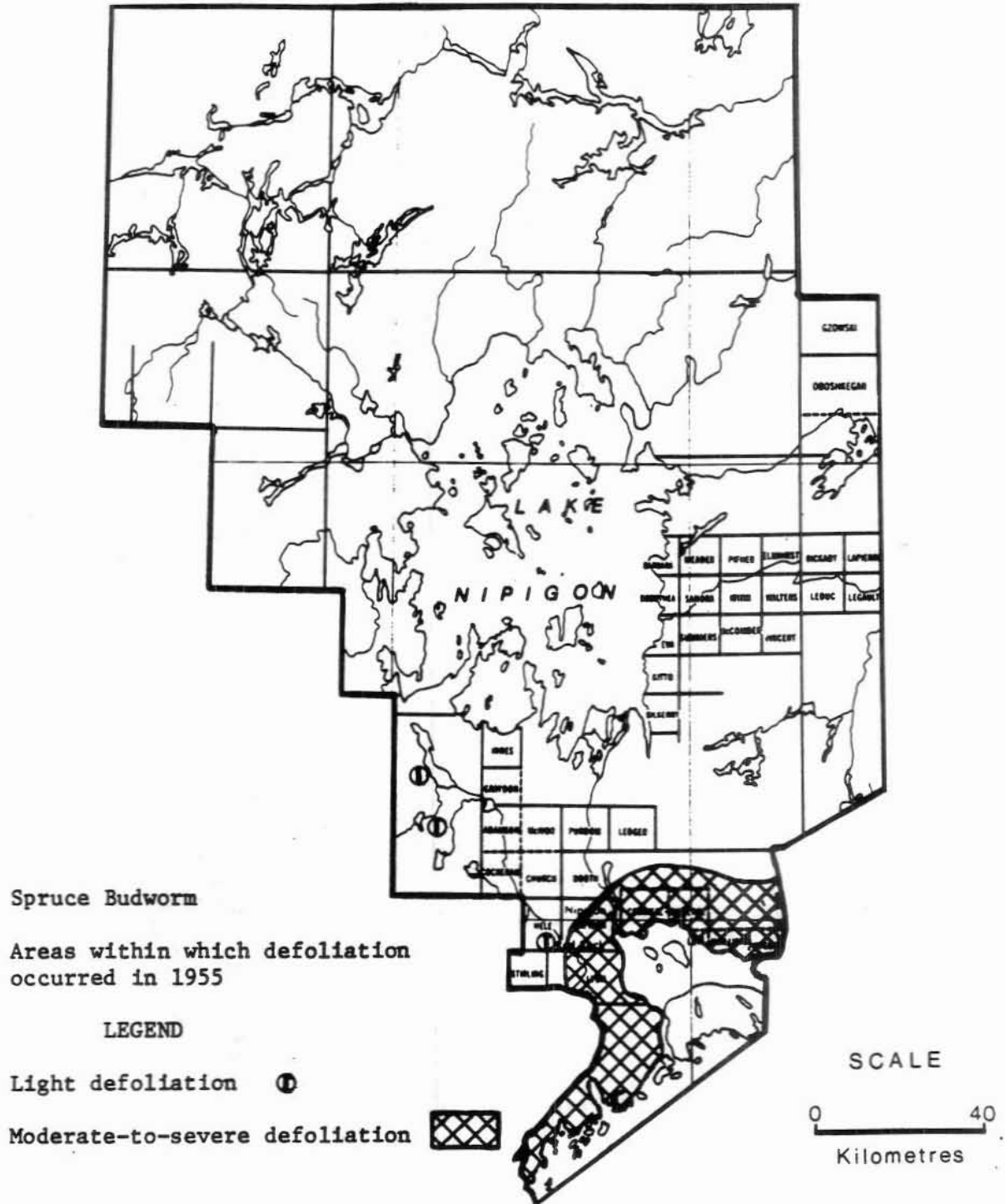
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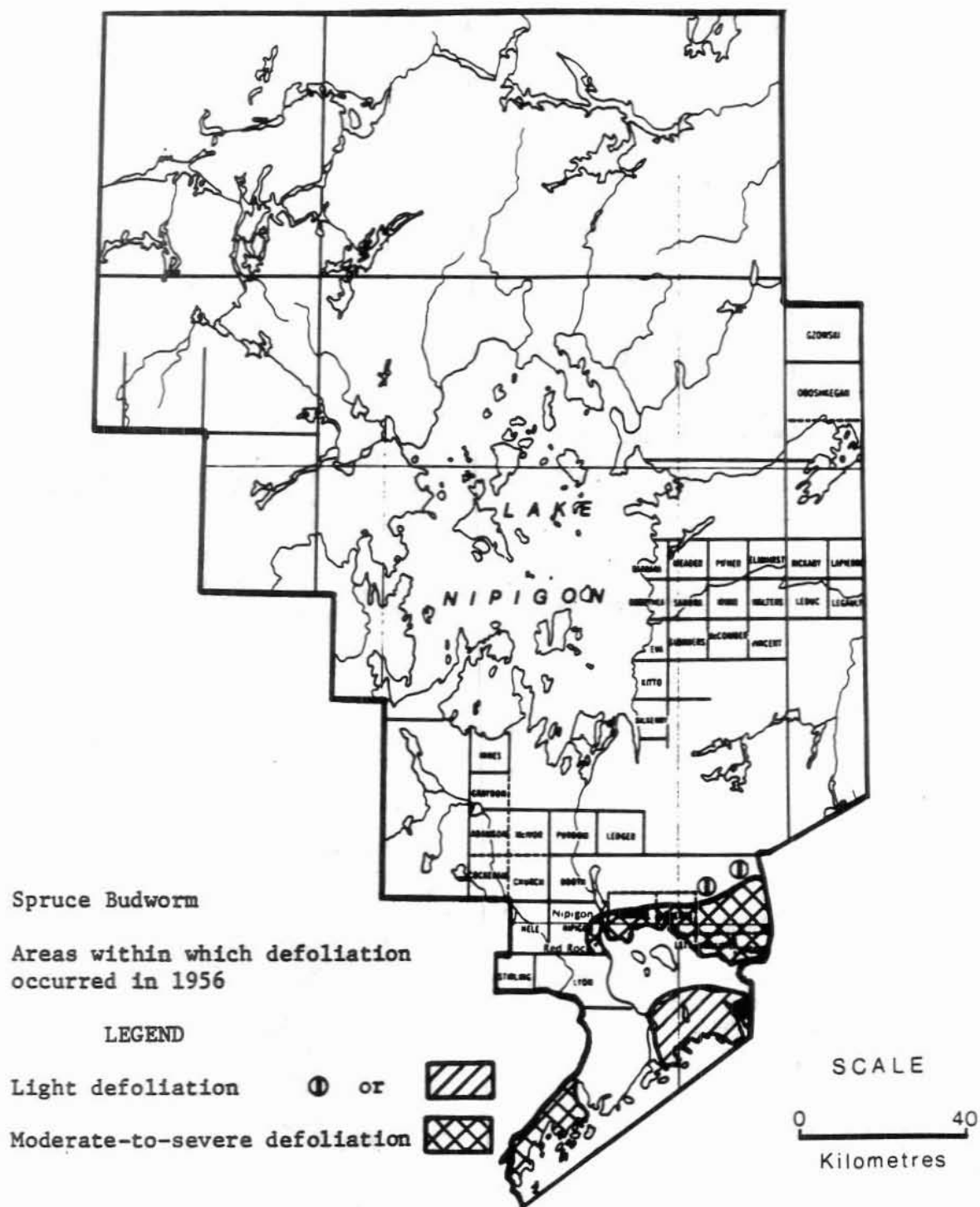


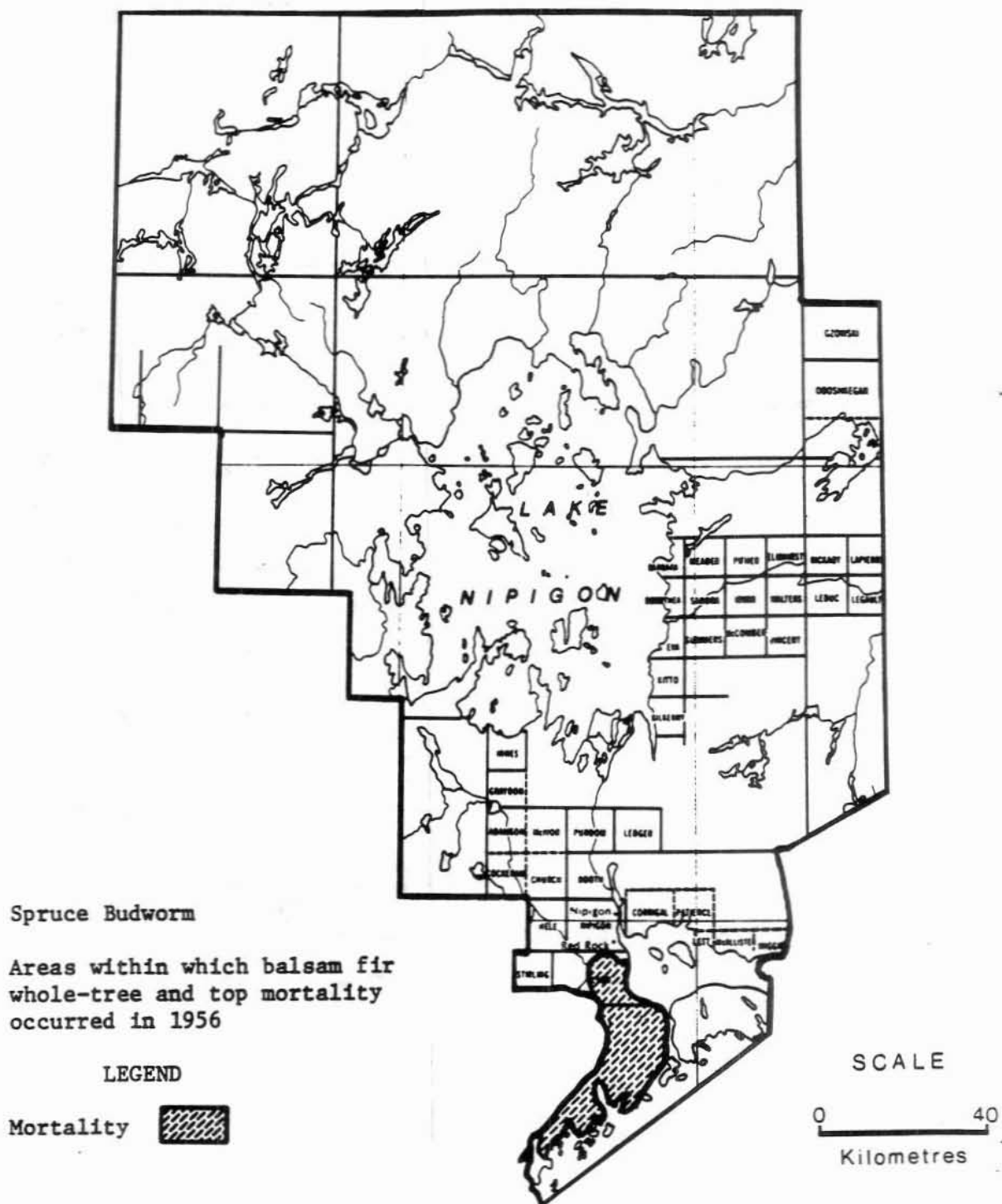
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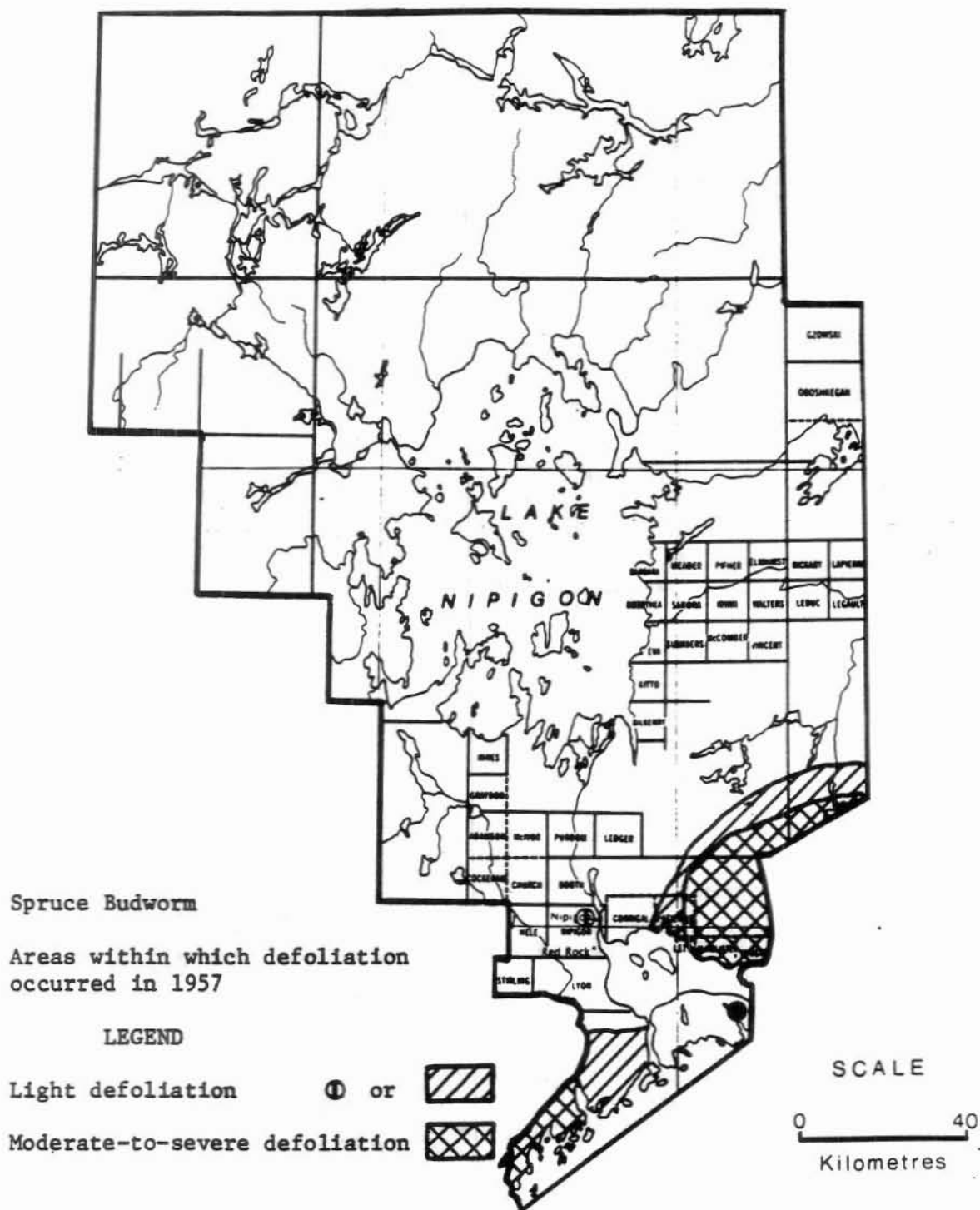
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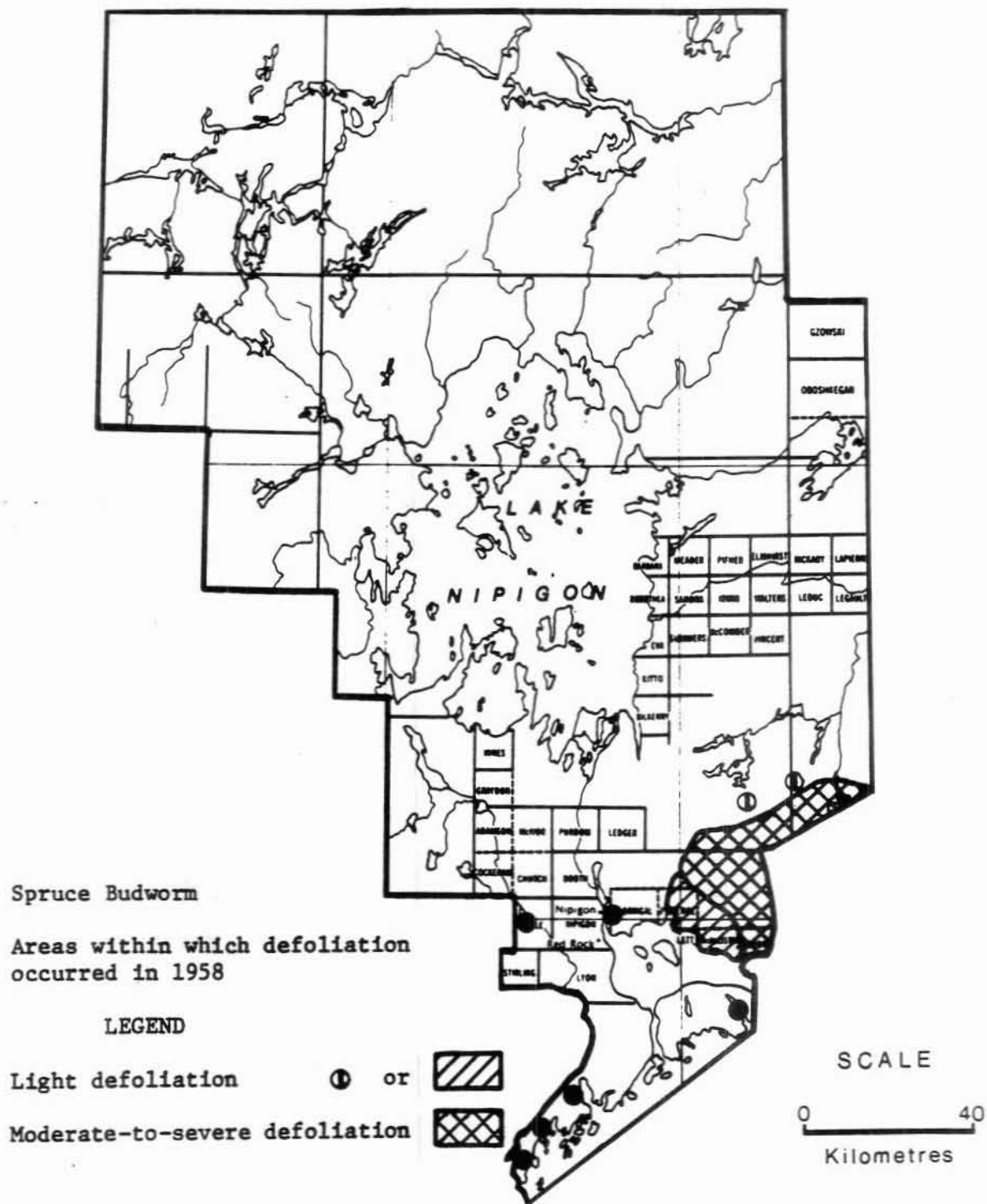
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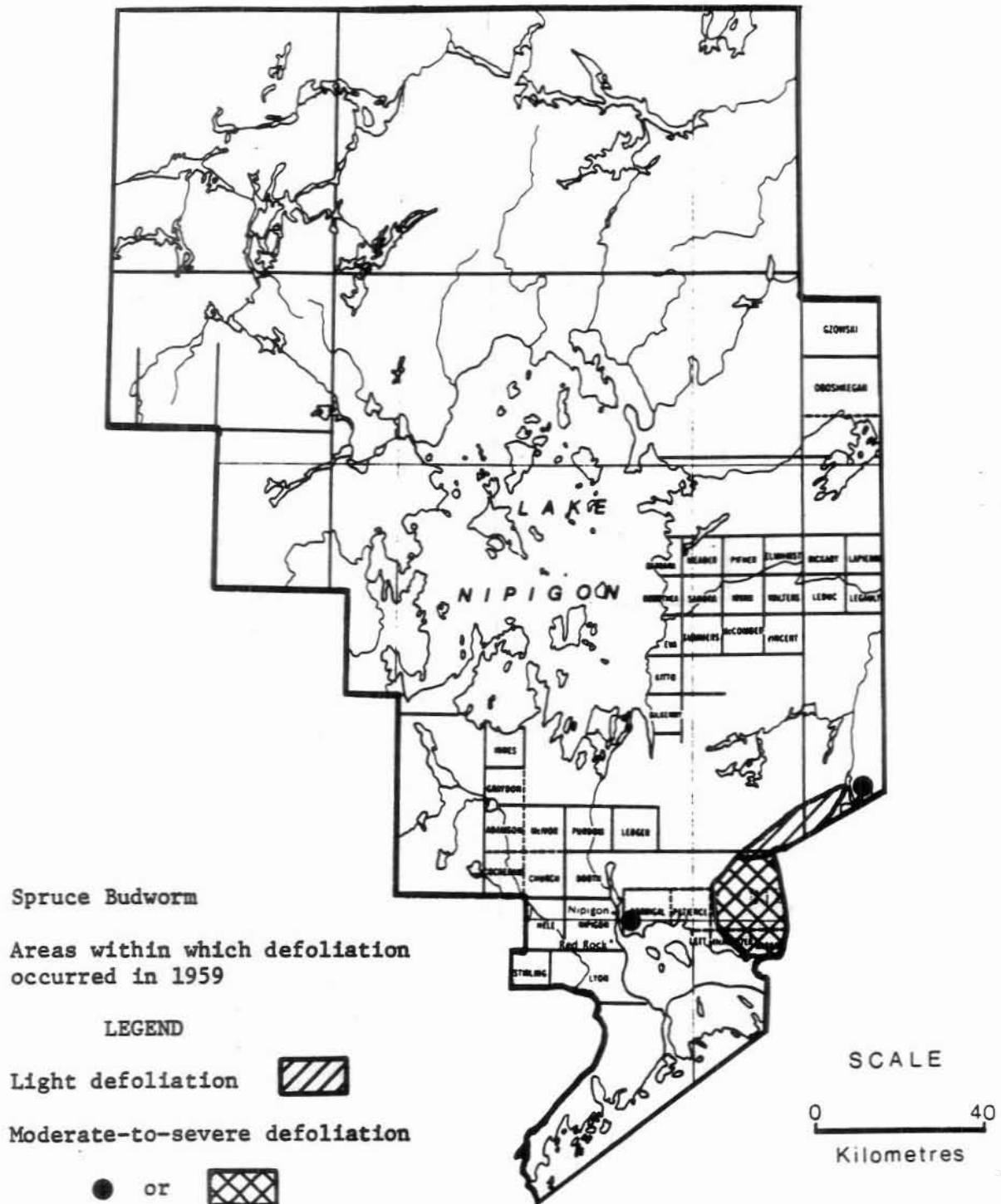
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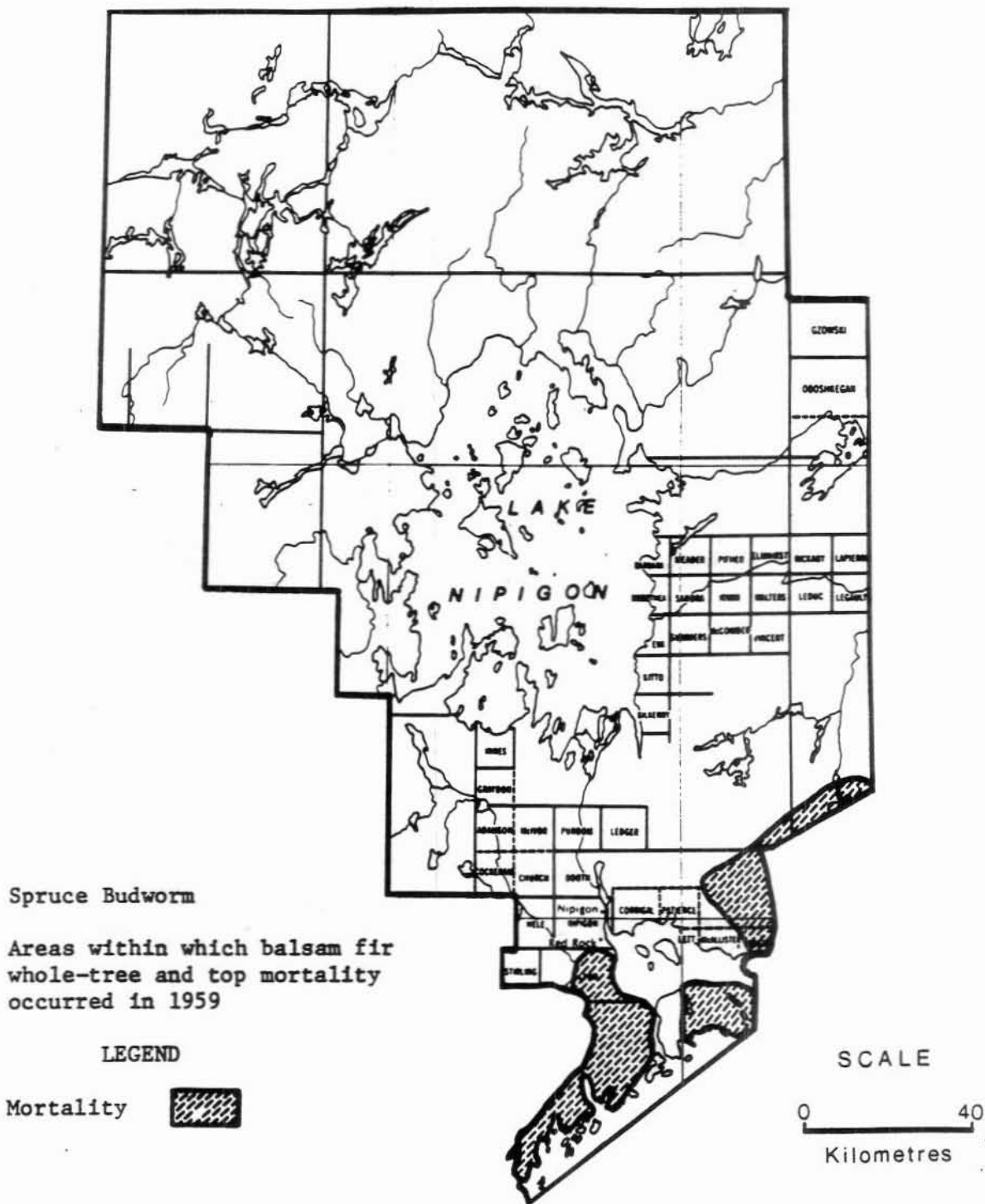


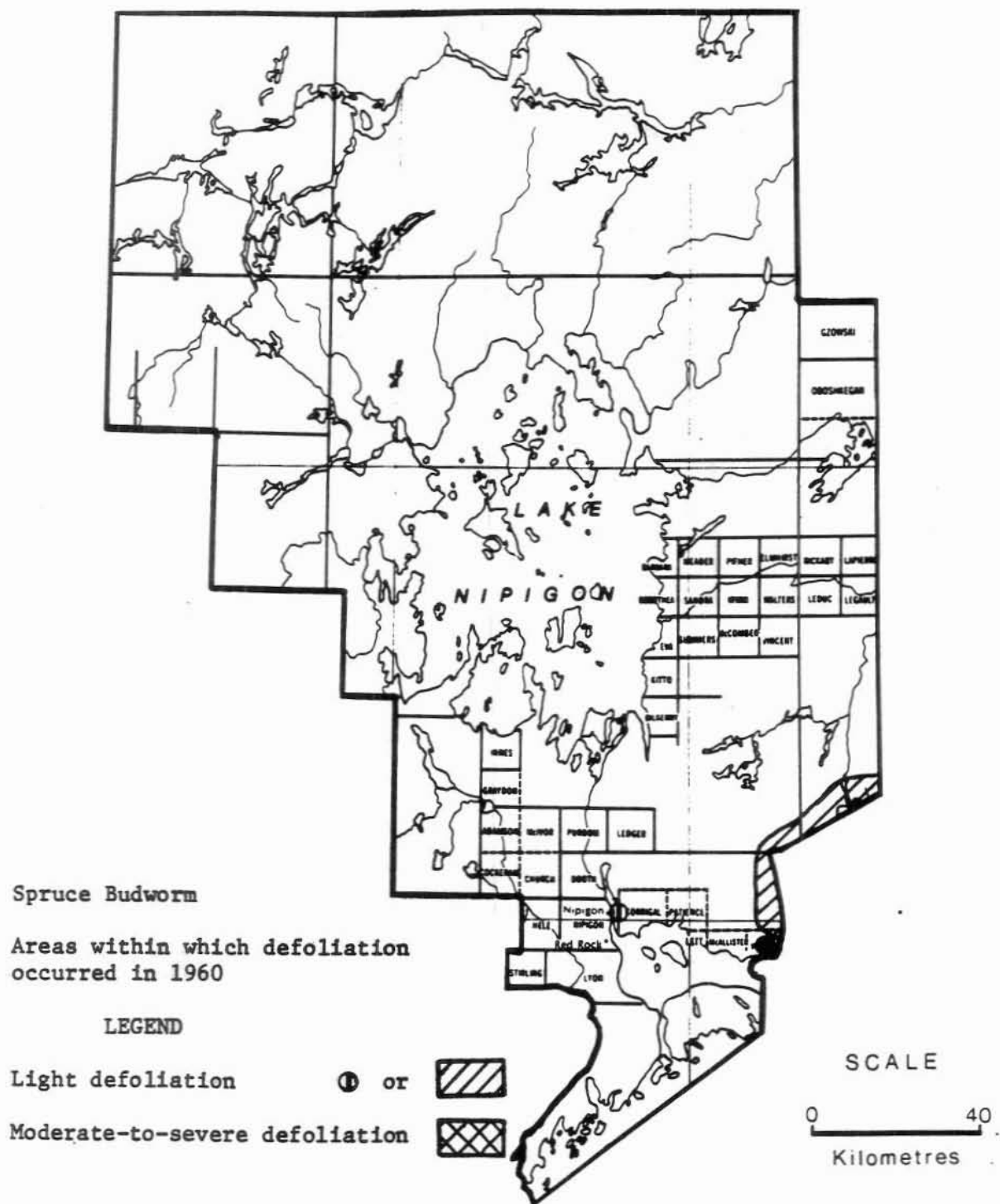
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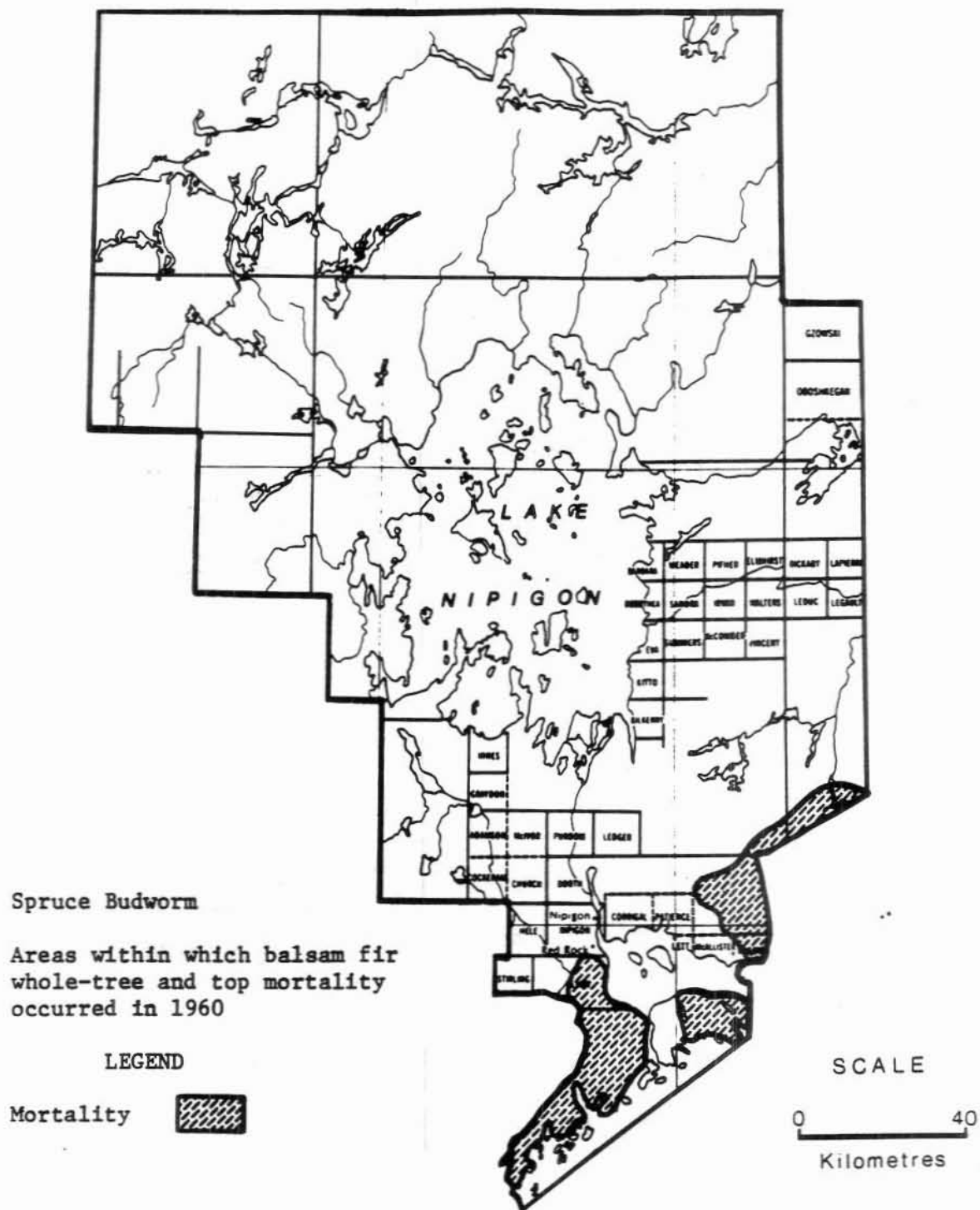
NIPIGON DISTRICT

NIPIGON DISTRICT



NIPIGON DISTRICT

NIPIGON DISTRICT



Larch Casebearer, *Coleophora laricella* (Hbn.)

Host(s): tL

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1957	not reported
1958	Light populations were recorded in Nipigon Twp, west to the district border.
1959-1960	not reported
1961	Low numbers were collected in Corrigan Twp and near Polly Lake.
1962-1963	not reported
1964	Examination revealed 1.4 and 1.2 larvae per 45-cm branch tip in Corrigan and Lyon twps, respectively.
1965	Populations decreased in Corrigan and Lyon twps.
1966-1969	not reported
1970	Trace populations were recorded in the district.
1971-1974	not reported
1975	Low numbers were collected in Ledger Twp.
1976-1980	not reported

Jack Pine Tip Beetle, *Conophthorus banksianae* McP.

Host(s): jack pine

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1952	not reported
1953	Light infestations were reported from Nipigon to Hurkett and at Nezhah and Black Sturgeon Lake.
1954	Light damage was observed from Nipigon to Hurkett.
1955	High numbers occurred in Leduc Twp and low populations were detected in Nipigon and Ledger twps.

(cont'd)

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

Host(s): jack pine

[Major]

<u>Year</u>	<u>Remarks</u>
1956	Medium-to-heavy infestations were recorded in Legault Twp and low numbers continued to infest Nipigon and Ledger twps.
1957	High populations persisted in Legault Twp and light damage was reported west of Nipigon to the district border.
1958	Medium-to-heavy infestations were detected near Beardmore and Hogarth and in Corrigan Twp, and between one and 12 shoots each were affected on trees with a DBH of 5-10 cm near Kama Bay and Nezhah and in Nipigon and McComb twps. Low numbers were noted near Sturge Lake.
1959	Pockets of medium-to-heavy infestations persisted near Beardmore.
1960	Populations declined near Beardmore.
1961	Numbers continued to decline near Beardmore.
1962	Evaluation revealed 0.2 shoots per tree attacked at one location in Summers Twp.
1963	Light populations were recorded.
1964-1965	A light infestation occurred in Patience Twp.
1966-1971	not recorded
1972	common in areas of regeneration
1973-1978	not reported
1979	Moderate populations were recorded in Stirling Twp.
1980	not reported

Spruce Beetle, *Dendroctonus rufipennis* (Kirby)

Host(s): white spruce

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1951	not reported
1952	Mortality was observed in the Obonga Lake-Gull Bay area and on Shakespeare and neighboring islands in Lake Nipigon.
1953	Populations declined in the Obonga Lake-Gull Bay area and on Shakespeare Island. Pockets of mortality were recorded between Orient Bay and Black Sturgeon Lake.
1954	not reported
1955	A light infestation and light mortality were observed in the Gathering Lake area.
1956-1980	not reported

Birch Leafminer, *Fenusa pusilla* (Lep.)

Host(s): birch

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1965	not reported
1966	Light defoliation was observed in the Black Sturgeon Lake area.
1967	High populations were recorded affecting 4.0 ha near Orient Bay.
1968	Populations declined to moderate levels in the Orient Bay infestation.
1969	Medium-to-heavy infestations were noted along the Armstrong Road between Black Sturgeon Lake and Gull Bay on Lake Nipigon, and near Orient Bay, also on Lake Nipigon. In the latter area, 8.0 ha were affected.

(cont'd)

Birch Leafminer, *Fenusa pusilla* (Lep.) (concl.)

Host(s): birch

[Major]

<u>Year</u>	<u>Remarks</u>
1970	High numbers were detected at Gull Bay and at Black Sturgeon Lake; low populations were observed in Sandra Twp and near Cosgrave Lake.
1971	Medium-to-heavy infestations were recorded east of the Nipigon River to the district border, and at Gull Bay and Black Sturgeon Lake.
1972	Moderate populations were observed south of Orient Bay to Lake Superior and in the Gull Bay area; low numbers occurred north of Orient Bay to Beardmore.
1973	Pockets of medium-to-heavy infestations were noted in the southern part of the district.
1974	Moderate numbers were recorded south of Beardmore to Orient Bay.
1975	No change occurred in the status of this pest.
1976	Pockets of high populations were detected south of Orient Bay. Low numbers were observed near Humboldt Bay, Lake Nipigon.
1977	Moderate populations were observed east of Nipigon to the district border and from Orient Bay to Upper Roslyn Lake.
1978	The pest was not present in the district south of a line running through Humboldt and Gull bays, Lake Nipigon.
1979-1980	Light mining was present at several locations in the southern part of the district.

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

Host(s): aspen

[Major]

<u>Year</u>	<u>Remarks</u>
1950	not reported
1951	Moderate populations were recorded in Patience and Purdom twps.
1952	not reported
1953	A light infestation occurred near Shillabeer Lake.
1954	Low numbers were observed in Leduc Twp and in the Sturge-Black Sturgeon lakes area.
1955	Light damage was detected in Leduc Twp and in the Black Sturgeon Lake area.
1956	not reported
1957	Medium-to-heavy infestations occurred along the Black Sturgeon Lake Road.
1958	Light populations were detected along the Black Sturgeon Lake and Auden roads.
1959	Light infestations were observed in McComber Twp and along the Black Sturgeon Lake Road.
1960	Light defoliation was recorded in Hele Twp and along the Black Sturgeon Lake Road.
1961	Low numbers persisted in the Black Sturgeon Lake area and moderate populations were reported in Patience Twp.
1962	Light infestations were detected near Willet Lake.
1963	Light populations were observed in Patience Twp.
1964	Light damage was reported near Gull Bay, Lake Nipigon.
1965	Moderate numbers occurred along the Armstrong Road.

(cont'd)

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

Host(s): aspen

[Major]

<u>Year</u>	<u>Remarks</u>
1966	Populations along the Armstrong Road declined to light levels.
1967-1969	not reported
1970	Light defoliation was observed in the Nipigon area.
1971-1973	not reported
1974	A medium-to-heavy infestation was recorded on the west side of Muskrat Lake.
1975-1976	not reported
1977	Low numbers were observed in the Gull Bay area.
1978-1980	Light populations were commonly found.

Northern Tent Caterpillar, *Malacosoma californicum pluviale* Dyar

Host(s): cherry

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1951	not reported
1952	Low numbers were recorded in Patience Twp.
1953	Light populations were observed along Hwy 17 east of Kama Bay and near Orient Bay.
1954	not reported
1955	Low numbers were present in the district.

(cont'd)

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

Host(s): cherry

[Major]

<u>Year</u>	<u>Remarks</u>
1956-1957	not reported
1958	Light infestations were detected in the Roslyn Lake area and near Keemle Lake and Nipigon.
1959	Low numbers were observed in Wiggins, Booth and Patience twps.
1960	Light damage was recorded in Wiggins, Patience and Kilkenny twps and along the Camp 88 Road.
1961	Light populations were detected in Ledger Twp, near Orient Bay and in the Black Sturgeon Lake area.
1962-1963	Low numbers persisted in Ledger Twp and near Orient Bay.
1964-1965	Light infestations were reported in Irwin Twp and near Polly Lake.
1966	Trace numbers were observed in the district.
1967-1969	not reported
1970	Low populations were recorded.
1971-1972	not reported
1973	Light damage was present west of the district border to Lake Nipigon.
1974	Low numbers were found at several points.
1975	Light infestations were observed in several areas east of Orient Bay.
1976-1980	not reported

Forest Tent Caterpillar, *Malacosoma disstria* Hbn.

Host(s): aspen, deciduous spp.

<u>Year</u>	<u>Remarks</u>
1950	Light defoliation was encountered in McAllister and Summers twps as well as at various points in the southern part of Lake Nipigon. Moderate-to-severe defoliation was recorded in Legault Twp.
1951	Populations declined in Legault Twp and several scattered areas of light damage were observed.
1952	A significant increase in numbers and area affected was recorded in the district. Light and medium-to-heavy infestations were recorded (see map, page 56).
1953	The area and intensity of infestation remained similar to those of the previous year, although populations were reduced by severe frosts in some areas such as Gull Bay, and from Orient Bay to Eva Twp (see map, page 57).
1954	Infestations collapsed. High numbers of parasites were found at several locations.
1955-1958	not reported
1959	trace numbers collected
1960	trace numbers found in Nipigon Twp
1961	not reported
1962	Several young aspen in Patience Twp were severely defoliated.
1963	Low numbers of larvae were observed in Patience Twp.
1964	Light populations were noted on understory trees in Pifher Twp.
1965	Light and medium-to-heavy infestations extended from Thunder Bay District to Gull Bay and Orient Bay on Lake Nipigon. Light defoliation of several overstory trees was also recorded in Kilkenny Twp (see map, page 58).

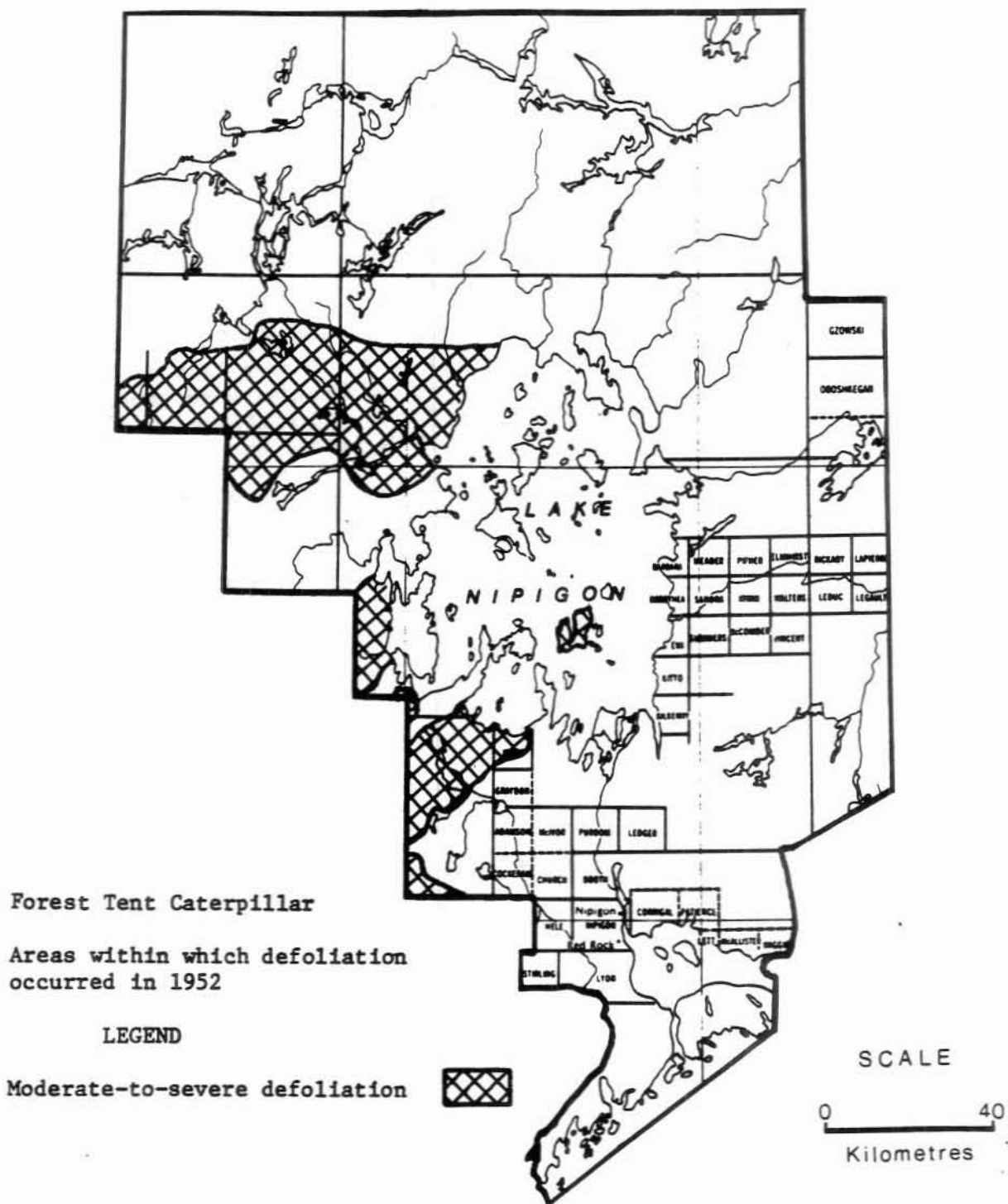
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Forest Tent Caterpillar, *Malacosoma disstria* Hbn. (concl.)

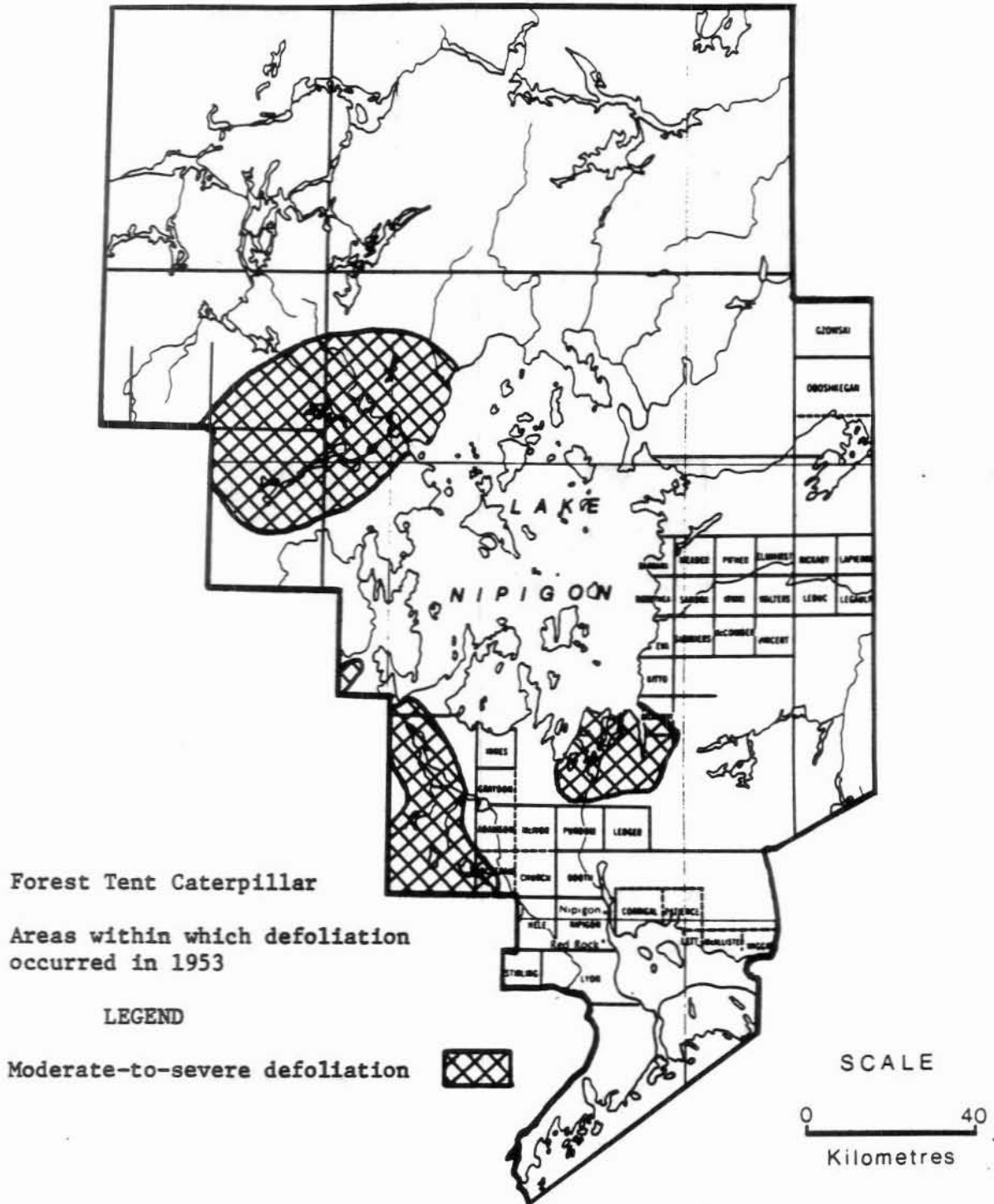
Host(s): aspen, deciduous spp.

<u>Year</u>	<u>Remarks</u>
1966	Infestations collapsed.
1967-1970	not reported
1971	low numbers collected west of Onaman Lake
1972	Light populations were detected at five points in the Onaman River area.
1973	A small area of medium-to-heavy infestation was reported at the 21-km mark on the Onaman Lake Road and 130 km ² of moderate-to-severe defoliation were mapped in Leduc and Walters twps. Light infestations were recorded along Highway 11 east of Beardmore to the district border.
1974	High populations continued on the Onaman Lake Road and the medium-to-heavy infestation in Leduc and Walters twps increased to 389 km ² . Larvae were collected occasionally west of Lake Nipigon.
1975	Previously mapped medium-to-heavy infestations collapsed to light intensity.
1976	Previously mapped light infestations were further reduced to trace numbers.
1977	Light populations were detected in Walters and McComber twps and near Leopard Lake.
1978-1980	not reported

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

Host(s): jP

[Major]

<u>Year</u>		<u>Remarks</u>
1950	<i>N. virginianus</i>	Low numbers were collected in Leduc and Legault twps.
1951	<i>N. virginianus</i>	Light damage was detected along Hwy 11 in Legault Twp.
1952		not reported
1953	<i>N. virginianus</i>	Light defoliation occurred in Nipigon and Ledger twps and north of Black Sturgeon Lake to the Poshkokagan River.
	<i>N. pratti banksianae</i>	Light damage was reported in Stirling, Irwin and Ledger twps.
1954	<i>N. virginianus</i>	Medium-to-heavy infestations occurred north of Orient Bay and along the shore of Burntrock Lake, and low numbers were collected along Hwy 11 from Nipigon to Beardmore, north of Hwy 17 to the north end of Black Sturgeon Lake, near Roslyn Lake and in Wiggins and Leduc twps.
	<i>N. nanulus nanulus</i>	Medium-to-heavy infestations were observed on shoreline trees on North Wind Lake, Meader Twp.
	<i>N. pratti banksianae</i>	Light damage was recorded in Nipigon Twp and near Black Sturgeon Lake and Cliff Lake.
1955	<i>N. virginianus</i>	Moderate-to-severe defoliation occurred along Hwy 11, north of Orient Bay and at Rolland Lake, Leduc Twp; light and moderate defoliation were noted in Legault and Hele twps and in the Black Sturgeon-Sturge lakes area.
1955	<i>N. nanulus nanulus</i>	Light populations were observed along Hwy 11 in Legault and Leduc twps and in the Lake Nipigon-Black Sturgeon lakes area.

(cont'd)

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

Host(s): jP

[Major]

<u>Year</u>		<u>Remarks</u>
1956	<i>N. virginianus</i>	High numbers were recorded in Wiggins and McAllister twps. Low populations occurred in Legault, Leduc and Corrigan twps, west of Nipigon to the district border, north of Orient Bay and in the Black Sturgeon Lake area.
	<i>N. nanulus nanulus</i>	Light infestations were detected near Black Sturgeon Lake, in Ledger Twp and in the town of Nipigon.
	<i>N. pratti banksianae</i>	Low numbers were collected in Legault Twp.
1957	<i>N. virginianus</i>	Light damage was detected in Legault Twp and at km 32 on the Auden Road.
	<i>N. nanulus nanulus</i>	Light defoliation was recorded near Obonga Lake and in Corrigan Twp.
1958	<i>N. virginianus</i>	Light populations occurred in Leduc, Legault, Stirling and Nipigon twps, and along the Black Sturgeon Lake Road and at km 32 on the Auden Road.
1959	<i>N. virginianus</i>	Light damage was detected in Walters, Leduc, Summers, Nipigon, Lyon and Corrigan twps, and at km 32 on the Auden Road. Counts of 20 and 8 colonies per tree were made at Hogarth and Keemle Lakes, respectively. Moderate numbers occurred 25 km south of Armstrong.
1960	<i>N. virginianus</i>	Medium-to-heavy infestations were noted in Legault Twp, at Keemle Lake and along the Auden Road. Light infestations occurred in Leduc, Sandra, Pifher and Walters twps and in the Black Sturgeon-Sturge lakes area.
	<i>N. nanulus nanulus</i>	one colony found near the Gravel River, Wiggins Twp

(cont'd)

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

Host(s): jP

[Major]

<u>Year</u>		<u>Remarks</u>
1961	<i>N. virginianus</i>	Moderate populations were recorded in the Little Sturge Lake area; low numbers occurred in the Black Sturgeon Lake area, at km 51 on the Auden Road and in Stirling and Nipigon twps.
1962	<i>N. virginianus</i>	Light infestations were observed along the Camp 72 Road, in the Little Sturge Lake area and 18 km south of Armstrong.
1963	<i>N. virginianus</i>	Low numbers continued to infest an area near Little Sturge Lake and 18 km south of Armstrong.
1964		not reported
1965		not reported
1966	<i>N. virginianus</i>	Light defoliation was recorded in Kitto Twp.
	<i>N. nanulus nanulus</i>	Low numbers were recorded in Summers Twp.
1967	<i>N. nanulus nanulus</i>	Light populations were recorded in Summers Twp.
1968	<i>N. nanulus nanulus</i>	Moderate-to-severe defoliation occurred in Summers Twp.
1969	<i>N. nanulus nanulus</i>	High populations continued to infest an area in Summers Twp.
1970		not reported
1971	<i>N. virginianus</i>	Moderate-to-severe defoliation was reported on a few trees in Ledger Twp.
1972	<i>N. virginianus</i>	Light damage was recorded in McComber Twp.
	<i>N. pratti banksianae</i>	Low numbers were collected in Ledger Twp.

(cont'd)

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

Host(s): jP

[Major]

<u>Year</u>		<u>Remarks</u>
1973	<i>N. virginianus</i>	Light defoliation was detected in McComber Twp.
1974	<i>N. virginianus</i>	Light populations were observed in the northern part of the district.
1975	<i>N. virginianus</i>	Light damage was recorded in the Black Sturgeon Lake area.
1976-1978		not reported
1979	<i>N. virginianus</i>	High numbers were observed in Lapierre Twp and light damage was noted along Hwy 11 in Legault Twp.
1980	<i>N. virginianus</i>	Populations collapsed in Lapierre Twp.

Bruce Spanworm, *Operophtera bruceata* (Hlst.)

Host(s): tA

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1968	not reported
1969	Low numbers were recorded in several areas.
1970-1975	not reported
1976	Moderate-to-severe damage was mapped over an area of 5 km ² north of Armstrong. Medium-to-heavy infestations were observed from Armstrong south to Black Bay, in parts of Ledger, Kilkenny and Summers twps and in the Leopard-Barbara lakes and Kama Bay areas.

(cont'd)

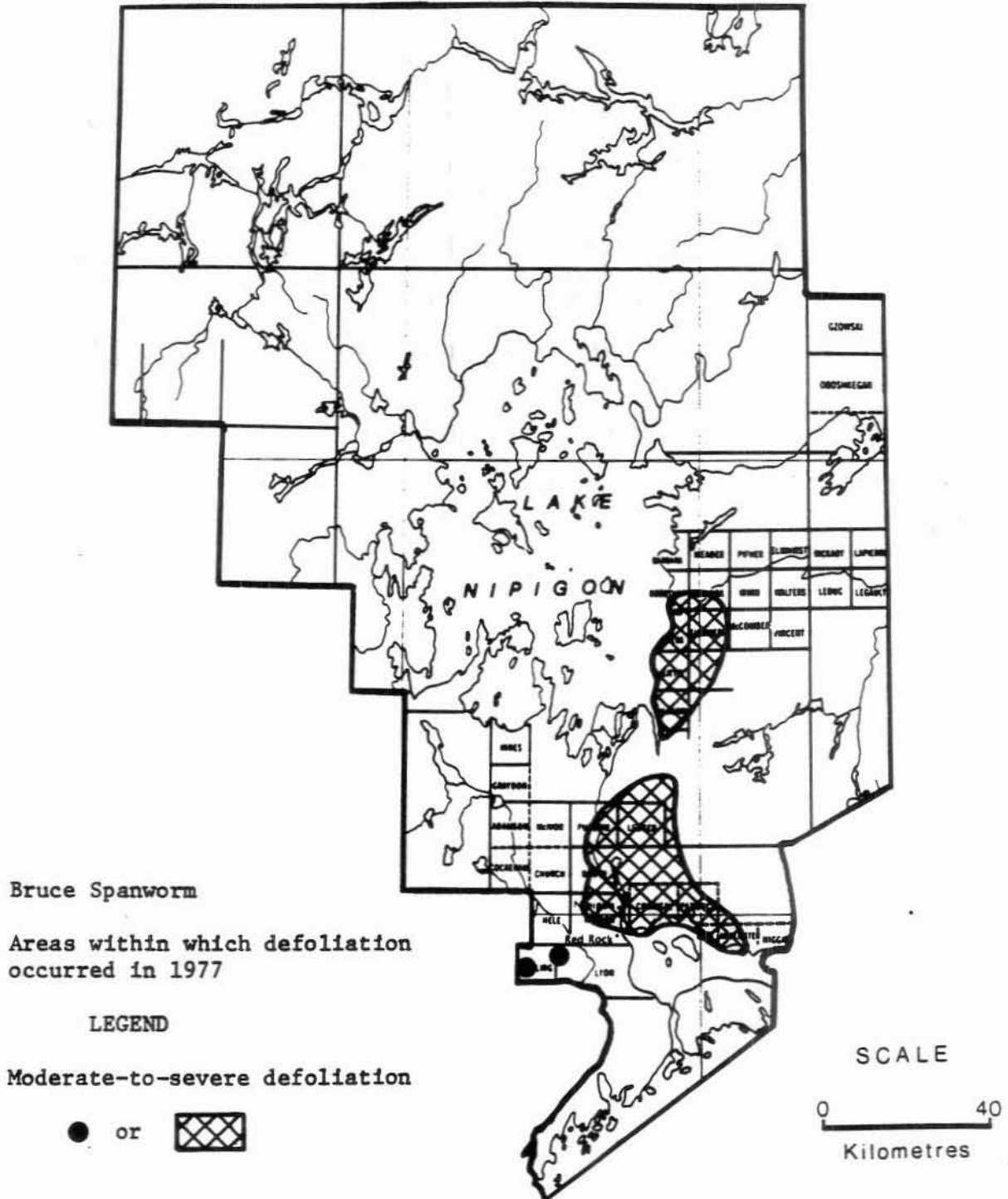
Bruce Spanworm, *Operophtera bruceata* (Hlst.) (concl.)

Host(s): tA

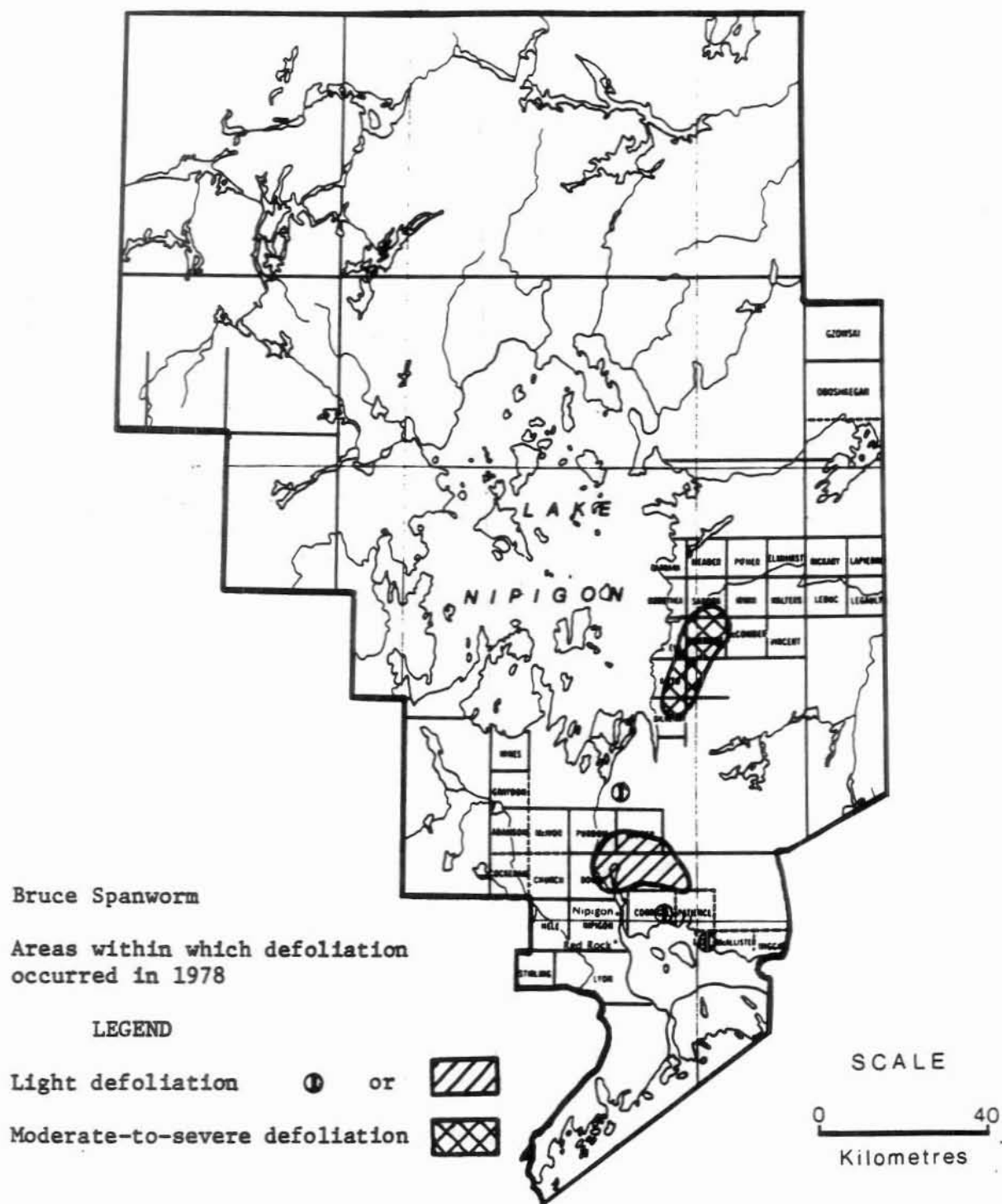
[Major]

<u>Year</u>	<u>Remarks</u>
1977	Two pockets of medium-to-heavy infestations were observed near Black Bay. Moderate-to-severe damage affecting 400 km ² was mapped south of Lake Nipigon. Another area of moderate-to-severe defoliation occurred on the eastern shore of Lake Nipigon (see map, page 64).
1978	A large pocket of light defoliation was mapped between Lake Superior and Lake Nipigon. A medium-to-heavy infestation was recorded east of Lake Nipigon. Isolated pockets of light damage were also detected in Corrigan and Lett twps and east of Pine Portage (see map, page 65).
1979	Populations collapsed.
1980	not reported

NIPIGON DISTRICT



NIPIGON DISTRICT



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

Host(s): tA

[Major]

<u>Year</u>	<u>Remarks</u>
1950	High populations affecting aspen regeneration were reported throughout the district, and severe mining was noted in Leduc and Legault twps.
1951	Medium-to-heavy infestations were present in most aspen stands in the district.
1952	Moderate damage and occasional pockets of severe mining were recorded in the eastern part of the district.
1953	Previously mapped areas of moderate damage decreased in size.
1954-1955	not reported
1956	Medium-to-heavy infestations were observed near Caribou and Waweig lakes.
1957	High numbers occurred around Whitewater Lake.
1958-1960	Light populations were recorded on small-diameter aspen throughout the district.
1961	Medium-to-heavy infestations were observed along the main road between Highway 11 and Auden; small numbers of insects were collected elsewhere.
1962	High populations continued along the main road between Highway 11 and Auden.
1963	Examination revealed 0.3 mines per leaf near Kopka Lake.
1964-1966	Only light populations were detected.
1967	High numbers were reported at scattered locations in the southwestern corner of the district. Low populations were found elsewhere.
1968	Low numbers were recorded.
1969	Moderate numbers were reported in the Black Sturgeon Lake area.
1970	Occasional areas of heavy infestation were recorded.

(cont'd)

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

Host(s): tA

[Major]

<u>Year</u>	<u>Remarks</u>
1971	Increased populations were observed at numerous locations.
1972-1973	Scattered pockets of medium-to-heavy infestations were recorded.
1974	High populations were observed in the Black Sturgeon Lake area. Elsewhere, low and moderate numbers were reported.
1975	not reported
1976-1977	Severe mining occurred in the Beardmore-Orient Bay area.
1978	Light damage was recorded at many locations.
1979	Medium-to-heavy infestations were observed in Kilkenny Twp.
1980	High populations occurred in Kilkenny Twp and along Highway 801.

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

Host(s): spruce

[Major]

<u>Year</u>	<u>Remarks</u>
1950	not reported
1951	Low numbers were collected in the southwestern part of the district.
1952	Moderate-to-severe damage was recorded in McAllister Twp, and light defoliation was observed in Booth Twp.
1953	High populations continued to infest hedgerow trees in McAllister Twp, and low numbers were noted in the Orient Bay-Cosgrave Lake area.

(cont'd)

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

Host(s): spruce

[Major]

<u>Year</u>	<u>Remarks</u>
1954	Medium-to-heavy infestations occurred on a small island in Gurney Lake and near the town of Nipigon. Previously high populations in McAllister Twp collapsed.
1955	Roadside trees along Hwy 11 in Leduc and Legault twps experienced light defoliation. High populations were noted on roadside trees along Hwy 17 west of Nipigon to the district border.
1956	Populations declined.
1957	Low numbers were reported.
1958-1959	Moderate-to-severe defoliation of roadside trees was observed along Hwy 17 west of Nipigon to the district border.
1960-1961	Low numbers were recovered from several locations.
1962-1964	not reported
1965	Light damage was reported at several locations.
1966	not reported
1967	Low numbers were recorded.
1968	Light defoliation was confined to ornamentals or roadside trees.
1969	not reported
1970-1974	Low numbers were reported.
1975-1976	Medium-to-heavy infestations were recorded on ornamentals in the town of Nipigon.
1977	Light defoliation was observed in built up areas east of Lake Nipigon.
1978	Moderate-to-severe defoliation was recorded in a plantation in Stirling Twp, and on roadside trees north of Beardmore.

(cont'd)

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

Host(s): spruce

[Major]

<u>Year</u>	<u>Remarks</u>
1979	Low numbers were noted in Stirling Twp.
1980	Moderate-to-severe damage was observed along Hwy 17 east of Nipigon.

White Pine Weevil, *Pissodes strobi* (Peck)

Host(s): pine, spruce

[Major]

<u>Year</u>	<u>Remarks</u>
1950	not reported
1951	Light infestations were noted between Jackpine and Nezhah and east of Jellicoe along Hwy 11.
1952	Light infestations persisted between Jackpine and Nezhah.
1953	Low numbers were observed in Walters Twp.
1954-1956	not reported
1957	In Legault Twp, 30% of the trees examined were infested.
1958-1959	not reported
1960-1961	Moderate numbers of roadside trees were attacked in McComber Twp.
1962	Of the trees examined, 14% in McComber Twp, 5% at Mile 24, Auden Road, and 4% in Summers Twp were damaged.
1963	Damage decreased to 8% in McComber Twp and to 2% at Mile 24, Auden Road, and remained at 4% in Summers Twp. Evaluation at two locations near Armstrong revealed an average of 11% damage.
1964	Of the roadside trees examined, 16% in Legault Twp, 7% in Summers Twp, and 2% at Mile 24, Auden Road, were attacked.

(cont'd)

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

Host(s): pine, spruce

[Major]

<u>Year</u>	<u>Remarks</u>
1965	Of the trees examined, 11% in Legault Twp and 4% in McComber Twp were damaged.
1966	The percentage of trees attacked decreased to 4% in Legault Twp and 1% in McComber Twp.
1967	Light populations were recorded in the district.
1968	Of the trees examined, 3% in Booth Twp, 16% in Walters Twp, and 2% in Legault Twp were attacked.
1969	Of the trees examined, 4% in Booth Twp, 17% in Walters Twp and 8% in Legault Twp were attacked.
1970	Of the trees examined, 7% in an area in Stirling Twp, 2% in Adamson Twp and 2% near Kopka Lake were affected.
1971	Two percent of the trees near Kopka Lake were damaged.
1972	Damage levels of 6% occurred near Kopka Lake.
1973	Nine percent of the trees in an area near Kopka Lake were affected.
1974	Low numbers were commonly observed in the district.
1975	Moderate damage occurred along the Spruce River Road and 1% of the trees near Kopka Lake were damaged.
1976-1977	not reported
1978	In two areas near Limestone Lake, 15% and 21%, respectively of the trees had been weeviled.
1979	Damage counts of 9% and 15% were recorded near Limestone Lake.
1980	Populations decreased, and damage counts were 2% and 6% near Limestone Lake.

Larch Sawfly, *Pristiphora erichsonii* (Htg.)

Host(s):

<u>Year</u>	<u>Remarks</u>
1950	Medium-to-heavy infestations were scattered throughout the district as far north as Whiteclay Lake.
1951	Numerous pockets of moderate-to-high populations reflected a district-wide population increase.
1952	Larch stands in Ledger and Lyons twps were completely defoliated. Elsewhere in the district medium-to-heavy infestations persisted.
1953	High populations were again recorded throughout the district as far north as Whitewater Lake.
1954	Moderate-to-severe populations continued to infest the district.
1955	Population declines were noted in most of the district, but high numbers persisted in six areas in the southeastern portion.
1956	Except for high numbers in Ledger, McAllister and Wiggins twps, populations continued to decrease.
1957	Four areas of medium-to-high populations in Legault, Ledger, McAllister and Wiggins twps and light damage in numerous locations reflected a continuing decline in populations.
1958	The trend of declining populations was reversed and medium-to-heavy infestations were observed at Lapierre, Ledger, Cockeram, Stirling, McAllister and Wiggins twps.
1959	The number of medium-to-heavy infestations increased, especially in the western half of the district, from Stirling Twp north to Whitewater Lake.
1960	High populations were observed in stands east and south of Lake Nipigon.
1961	Moderate-to-severe damage was recorded in Pifher, McComber and Leduc twps. Light defoliation was detected in several areas south of Lake Nipigon. Light mortality (1.3%) of suppressed trees with a DBH of 5-8 cm was noted in Ledger Twp.

(cont'd)

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

Host(s):

<u>Year</u>	<u>Remarks</u>
1962	Medium-to-heavy infestations were observed in Kitto and McComber twps. Mortality increased to 7.6% in Ledger Twp.
1963	Populations declined to low numbers.
1964	Light populations were detected at several locations.
1965	Moderate-to-severe damage was recorded at two locations.
1966	Pockets of medium-to-heavy infestation occurred in Legault and McComber twps.
1967	High populations were noted in Legault, Leduc, McComber and Kilkenny twps.
1968	One area of medium-to-high populations was recorded in Ledger Twp.
1969	High numbers were observed in Ledger Twp, near Black Sturgeon Lake and in the West Bay area of Lake Nipigon.
1970	Medium-to-heavy infestations were reported in Ledger, Summers, McComber and Leduc twps and near Auden.
1971	High populations were recorded in Patience, Ledger, McComber, and Elmhirst twps and near Auden.
1972	Moderate-to-severe damage was recorded in Leduc Twp.
1973	Two areas of medium-to-heavy infestation were detected in the northeastern part of the district.
1974	Moderate-to-severe populations occurred northwest of Lake Nipigon as well as in Ledger and Summers twps.
1975	High populations were noted at four widely separated locations.
1976	One area of medium-to-heavy infestation was noted in Lyon Twp.
1977-1980	Low numbers were collected.

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

Host(s): aMo

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1969	not reported
1970	Low numbers collected in Clavet Twp represented the first record of this sawfly in the district.
1971	Light populations were noted west of the town of Nipigon to the district border.
1972	Light damage was observed north of Nipigon along Hwy 11 to the district border.
1973-1974	not reported
1975-1976	Light defoliation was recorded at several locations.
1977	Moderate-to-severe defoliation was observed southwest of Nipigon.
1978	High numbers were collected in the Limestone Lake area.
1979	Medium-to-heavy infestations recurred in the Limestone Lake area and west of Nipigon to the district border. Light populations were found near Black Sturgeon Lake.
1980	Moderate-to-severe defoliation occurred along Hwy 17 and in the Limestone Lake area.

Ambermarked Birch Leafminer, *Proferusa thomsoni* (Konow) (concl.)

Host(s): white birch

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1962	not reported
1963	Light populations were observed south of Orient Bay and along Hwy 17 west of Nipigon.
1964	not reported
1965	Light damage was detected along the Armstrong Road and in Ledger Twp.
1966	High numbers caused 90% defoliation near Leonard Lake, Kilkenny Twp; light populations were recorded in Sandra and Ledger twps and along the Auden Road.
1967	Small pockets of light infestation were observed near Beardmore.
1968	not reported
1969	Light damage was recorded near Beardmore.
1970-1973	not reported
1974	Trace populations were present in the northern part of the district.
1975	not reported
1976	Light infestations were recorded at a few scattered locations.
1977-1980	not reported

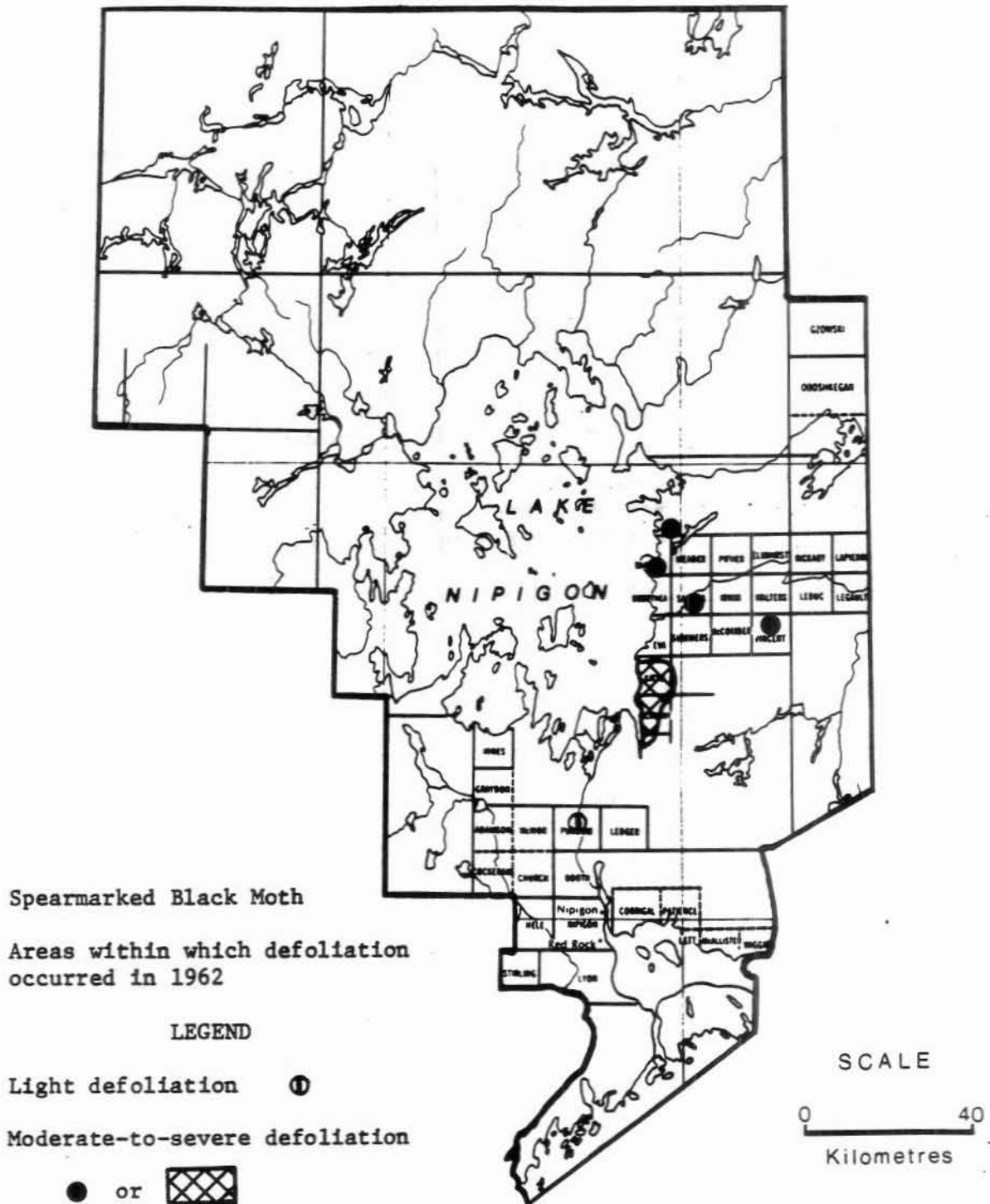
Spearmarked Black Moth, *Rheumaptera hastata* (L.)

Host(s): WB

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1952	not reported
1953	Medium-to-heavy infestations were recorded from Keemle Lake to Beardmore, near Joe Lake in Lyon Twp, and near the Ombabika River. Light damage was observed from Black Sturgeon Lake to Gull Bay, Lake Nipigon.
1954-1960	not reported
1961	A medium-to-heavy infestation of 130 km ² extended westward from Beardmore to Lake Nipigon and south to Orient Bay. Moderate populations occurred in Sandra, Vincent and Barbara twps and in the Northwind Lake area. Light damage was recorded in Purdom Twp.
1962	Moderate-to-severe defoliation occurred near Humboldt Bay, Lake Nipigon, in the Disraeli and Leckie lakes area and north of Muskrat Lake (see map, page 76).
1963	Populations declined.
1964-1976	not reported
1977	Low numbers were recorded near Orient Bay.
1978-1979	Light populations were observed at several locations.
1980	not reported

NIPIGON DISTRICT



Other Noteworthy Insects

Cedar Leafminers, *Argyresthia aureoargentella* Brower, *A. thuiella*
(Pack.)

Host(s): cedar

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1957	not reported
1958	Light populations were observed west of Nipigon to the district border.
1959	not reported
1960	A light infestation was reported near Onaman Lake.
1961-1980	not reported

Jack Pine Budworm, *Choristoneura pinus pinus* Free.

Host(s):

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1976	not reported
1977	trace numbers collected southeast of Jellicoe
1978-1980	not reported

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

Host(s): aspen

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1960	not reported
1961	Low numbers were observed near Muskrat Lake.
1962-1970	not reported

(cont'd)

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

Host(s): aspen

[Major]

<u>Year</u>	<u>Remarks</u>
1971	Medium-to-heavy infestations were recorded from Nipigon to Kama Bay.
1972	Low numbers were detected near Kama Bay.
1973-1980	not reported

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

Host(s): spruce

[Minor]

<u>Year</u>	<u>Remarks</u>
1950-1969	not reported
1970	Light populations were observed in the Nipigon area.
1971-1972	Low numbers were recorded in McComber and Summers twps, near Nipigon, Firehill Creek and Polly Lake.
1973	Light damage was recorded in McComber Twp near Nezhah, Firehill Creek and Nipigon.
1974-1975	Low numbers were collected.
1976-1980	not reported

Willow Leafminer, *Micrapteryx salicifoliella* Cham.

Host(s): willow

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1971	not reported
1972	Medium-to-heavy infestations were recorded in the Humboldt Bay area.

(cont'd)

Willow Leafminer, *Micrapteryx salicifoliella* Cham. (concl.)

Host(s): willow

[Major]

<u>Year</u>	<u>Remarks</u>
1973	Moderate-to-severe defoliation was observed in the Onaman River-Frank Lake area.
1974-1979	not reported
1980	Light populations were detected in the northern part of the district.

Sawyer Beetles, *Monochamus* spp.

Host(s): pine, spruce

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1954	not reported
1955	High numbers were observed on skidways along the Camp 51 Road.
1956-1976	not reported
1977	Extensive branch and twig mortality was noted in areas southeast of Armstrong.
1978	High populations and tree mortality were observed in cut-over areas south of Kopka Lake.
1979	Low numbers were recorded in cut-over areas along the Peck Lake Road.
1980	not reported

A Leaf Folding Sawfly, *Nematus* sp.

Host(s): aspen

[Minor]

<u>Year</u>	<u>Remarks</u>
1950-1959	not reported
1960	Low numbers were observed in Leduc, Legault and Summers twps and near Orient Bay.
1961-1962	not reported
1963	Light damage was detected at Whitewater Lake.
1964-1965	not reported
1966-1967	Light populations were recorded.
1968-1974	not reported
1975	Medium-to-heavy infestations were observed near Black Sturgeon Lake.
1976-1980	not reported

Redheaded Pine Sawfly, *Neodiprion lecontei* (Fitch)

Host(s): jP

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1953	not reported
1954	Low numbers were recorded along the Auden Road.
1955-1980	not reported

Mourningcloak Butterfly, *Nymphalis antiopa* (L.)

Host(s): deciduous

[Minor]

<u>Year</u>	<u>Remarks</u>
1955	Low numbers were detected in McAllister Twp.
1956-1963	not reported
1964	Moderate-to-severe defoliation was observed in Kilkenny Twp.
1965-1980	not reported

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

Host(s): jP

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1953	not reported
1954-1955	Light damage was reported near Black Sturgeon Lake.
1956	not reported
1957	Low numbers were recorded at several locations.
1958	Surveys disclosed 4.0 nodules per tree in Walters Twp and 10 nodules per tree in Corrigan Twp.
1959	Light populations were detected in Walters Twp.
1960	Evaluations disclosed 2.6 nodules per tree in Summers Twp and 1.0 nodules per tree in Walters Twp.
1961	Light damage was recorded in Nipigon, Stirling, Summers and Walters twps and near Black Sturgeon and Muskrat lakes.
1962	Populations declined in Summers Twp.
1963	In Summers Twp, an evaluation disclosed 0.3 nodules per tree.
1964	Low numbers were collected along Hwy 527.

(cont'd)

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

Host(s): jP

[Major]

<u>Year</u>	<u>Remarks</u>
1965-1968	not reported
1969	Evaluation of 100 trees revealed a population of 63 nodules.
1970-1973	not reported
1974	Light populations were detected in the northern part of Nipigon District.
1975-1976	Low numbers were observed.
1977-1978	not reported
1979	Low numbers were collected.
1980	not reported

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

Host(s): spruce

[Minor]

<u>Year</u>	<u>Remarks</u>
1950-1953	not reported
1954	Low numbers were recorded in Patience, Corrigan and Nipigon twps and near Black Sturgeon and Obonga lakes.
1955	Light populations were observed in Nipigon Twp and in the Obonga Lake area.
1956-1959	not reported
1960	Low numbers were reported along the Auden Road and in Wiggins Twp.
1961-1964	not reported
1965	Light damage occurred in Wiggins Twp.
1966-1973	not reported

(cont'd)

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

Host(s): spruce

[Minor]

<u>Year</u>	<u>Remarks</u>
1974-1975	Low numbers were commonly found at several locations.
1976-1980	not reported

Spruce Bud Midge, *Rhabdophaga swainei* Felt

Host(s): spruce

[Minor]

<u>Year</u>	<u>Remarks</u>
1950-1958	not reported
1959	Low numbers were observed in Summers and Booth twps, and near Berryman Lake.
1960	not reported
1961	Light populations were recorded in Stirling, Corrigan and Summers twps.
1962-1963	Low numbers were observed in Corrigan and Summers twps.
1964	Evaluations revealed terminal bud damage of 4.0% and 1.3% in Corrigan and Summers twps, respectively.
1965	Light populations persisted in Corrigan and Summers twps.
1966	Light damage recurred in Corrigan Twp.
1967	Populations increased in Corrigan Twp where 3.6% of the terminal buds were infested.
1968	Evaluations revealed that 75% of the terminal buds were affected in a small area in Sandra Twp.
1969-1973	not reported
1974-1976	Light populations were detected at several locations in the district.
1977-1980	not reported

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

Host(s): jP

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1954	not reported
1955	Low numbers were recorded in the Black Sturgeon Lake area.
1956	Pockets of medium-to-heavy infestations were observed at the north end of Black Sturgeon Lake and near Wigwassan and Bukemiga lakes.
1957	Tree mortality (40%) was recorded near Black Sturgeon Lake and in the Wigwassan Lake area.
1958	A slight increase in mortality was reported near Black Sturgeon Lake.
1959-1973	not reported
1974	Moderate numbers were detected at km 40 on the Black Sturgeon Lake Road.
1975-1980	not reported.

Spruce Bud Moth, *Zeiraphera canadensis* Mut. & Free., *Z. unfortunata* Powell (= *destitutana* Mut. & Free.), *Z. fortunana* Kft.

Host(s): spruce

[Minor]

<u>Year</u>	<u>Remarks</u>
1950-1953	not reported
1954	Low numbers were observed in Corrigan and Patience twps.
1950-1953	not reported
1954	Low numbers were observed in Corrigan and Patience twps.
1955-1958	not reported

(cont'd)

Spruce Bud Moth, *Zeiraphera canadensis* Mut. & Free., *Z. unfortunata*
Powell (= *destitutana* Mut. & Free.), *Z. fortunana* Kft. (concl.)

Host(s): spruce

[Minor]

<u>Year</u>	<u>Remarks</u>
1959	Light populations were recorded in Lett and Patience twps.
1960	not reported
1961	Light damage was reported in Stirling Twp.
1962	Small pockets of medium-to-heavy infestation were noted near Macdiarmid and in Stirling Twp.
1963	Populations declined near Macdiarmid; low numbers persisted in Stirling Twp.
1964	Light populations recurred in Stirling Twp.
1965	not reported
1966	A light infestation was recorded near Macdiarmid.
1967-1971	not reported
1972	High populations were detected along Hwy 11 east of Nipigon.
1973	Medium-to-heavy infestations were observed at several locations.
1974-1975	Moderate populations were reported at several points north of Cameron Falls.
1976	High populations were detected along Hwy 585 north of Nipigon.
1977	Moderate populations were observed in the Black Sturgeon Lake and Jessie Lake areas.
1978	Light damage was noted west of Lake Nipigon.
1979	Light populations were detected at several locations.
1980	not reported

DISEASES

Eastern Dwarf Mistletoe, *Arceuthobium pusillum* Peck

Host(s): bS

[Minor]

<u>Year</u>	<u>Remarks</u>
1950-1951	not reported
1952	collected at Uneven Lake
1953	not reported
1954	Light infections were recorded in the eastern portion of the district.
1955-1980	not reported

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

Host(s): conifers and hardwoods

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1957	not reported
1958	Diseased jack pine were observed at the north end of Black Sturgeon Lake.
1959	Collections were taken from trembling aspen in Lapierre Twp and from young white pine in plantations in Sandra Twp.
1960-1961	not reported
1962	Light damage was detected in red pine plantations in Sandra Twp.
1963-1964	not reported
1965	Light whole-tree mortality of young jack pine (of fire origin) was recorded in Irwin and Sandra twps.
1966-1969	not reported
1970	Light mortality of plantation jack pine was reported at several locations.

(cont'd)

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

Host(s): conifers and hardwoods

[Major]

<u>Year</u>	<u>Remarks</u>
1971-1972	not reported
1973	Evaluations disclosed 3% mortality in two jack pine plantations, one a 40-ha area near Frank Lake and the other a 20-ha area near Humboldt Bay.
1974	Mortality was recorded in young planted and second growth stands in the Blackwater Creek, Sturgeon River and Onaman Lake areas. Tree species affected were balsam fir, black spruce, white spruce and jack pine.
1975	not reported
1976	Surveys in the Sturgeon River area south of Highway 11 disclosed 5% mortality in a 20-ha area of 2-m jack pine.
1977	Assessment revealed 5% mortality of jack pine in the Sturgeon River area and in Sandra Twp. Ten percent mortality was encountered in 10 ha of 4-m white spruce near Limestone Lake.
1978	not reported
1979	A survey of jack pine in Elmhirst Twp revealed 1% mortality.
1980	One percent mortality was encountered in a 1-m black spruce plantation in the South Bay area of Lake Nipigon.

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

Host(s): rP, jP, wP

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1965	not reported
1966	Assessment in one area of 2.4-m red pine disclosed 37% incidence of attack and an accompanying tree mortality rate of 3%.

(cont'd)

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

Host(s): rP, jP, wP

[Major]

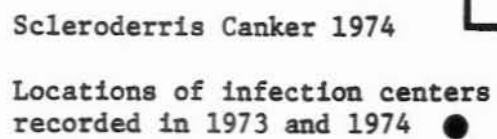
<u>Year</u>	<u>Remarks</u>
1967	not reported
1968	An evaluation in a 78-km ² area in Patience Twp revealed that 26% of the trees examined were affected. Ten percent tree mortality was recorded.
1969	not reported
1970	Surveys in 81 ha of jack pine regeneration near Cosgrave Lake disclosed that 82% of the trees were affected. Mortality was also recorded.
1971	Surveys in two areas of natural jack pine regeneration less than 4 ha in size near Cosgrave Lake revealed infection rates of 10% and 20%. In a 2-ha seeded area of jack pine near Cosgrave Lake 60% of the trees examined were infected.
1972	Evaluation of jack pine and red pine in Sandra Twp disclosed that 30%-50% of the trees were diseased. In a stand near Cosgrave Lake 90% of jack pine were affected, and mortality amounted to 10%. Light damage was also detected in the Frank Lake-Humboldt Bay area.
1973	High infection levels were again recorded in an area of jack pine near Cosgrave Lake. Light damage was detected in the Onaman River-Frank Lake area and in Sandra Twp.
1974	Surveys disclosed that 99% of the jack pine in an area near Cosgrave Lake were affected: 21% of the trees had stem cankers. Associated tree mortality was 17%. Stem infections averaged 4% and mortality averaged 1% on jack pine, red pine and white pine at three locations in Sandra Twp. Stem infections and tree mortality both averaged 3% on jack pine at two locations in Pifher Twp. One percent mortality was reported near Crooked Green and Fairloch lakes (see map, page 93).
1975	Dry summers and the fact that some of the trees were larger and therefore less susceptible to branch infections contributed to a decline in damage and tree mortality in Sandra Twp and near Cosgrave Lake.

(cont'd)

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

Host(s): rP, jP, wP [Major]

<u>Year</u>	<u>Remarks</u>
1976	New infections causing light damage were found in jack pine regeneration in Stirling Twp and in a red pine plantation near Pine Portage Dam.
1977	It was difficult to assess infection accurately because widespread damage caused by drought and frost was similar to that caused by <i>A. abietina</i> . Assessment was also made difficult because many of the cankers failed to produce fruiting bodies.
1978-1980	not reported



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

Host(s): spruce

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1953	not reported
1954	Moderate-to-severe infections were observed in the Black Sturgeon Lake area, along the Auden Road and along Highway 11 between Beardmore and Nipigon.
1955	Light foliar damage was detected in the Onaman River area, along the Black Sturgeon Lake Road and in Pifher Twp.
1956-1958	not reported
1959	Light infections were recorded in the Black Sturgeon Lake area.
1960	Observations revealed light foliar damage in Cockeram, Corrigal, Nipigon and Stirling twps and at Sturge Lake.
1961-1963	Light infections only were reported.
1964	Light foliar damage was observed in Booth Twp and along Highway 527.
1965	Surveys revealed light damage in the Black Sturgeon Lake area.
1966	Moderate-to-severe foliar infections were recorded at km 25 on the Auden Road and in the Barbara Lake area.
1967	Light foliar damage was observed near Kopka Lake.
1968	not reported
1969	Moderate-to-severe foliar infections were recorded on black spruce over a 650-km ² area near Onaman Lake and Auden (see map, page 96).
1970	Previously recorded high infection levels in the Onaman Lake-Auden area declined to light intensity.

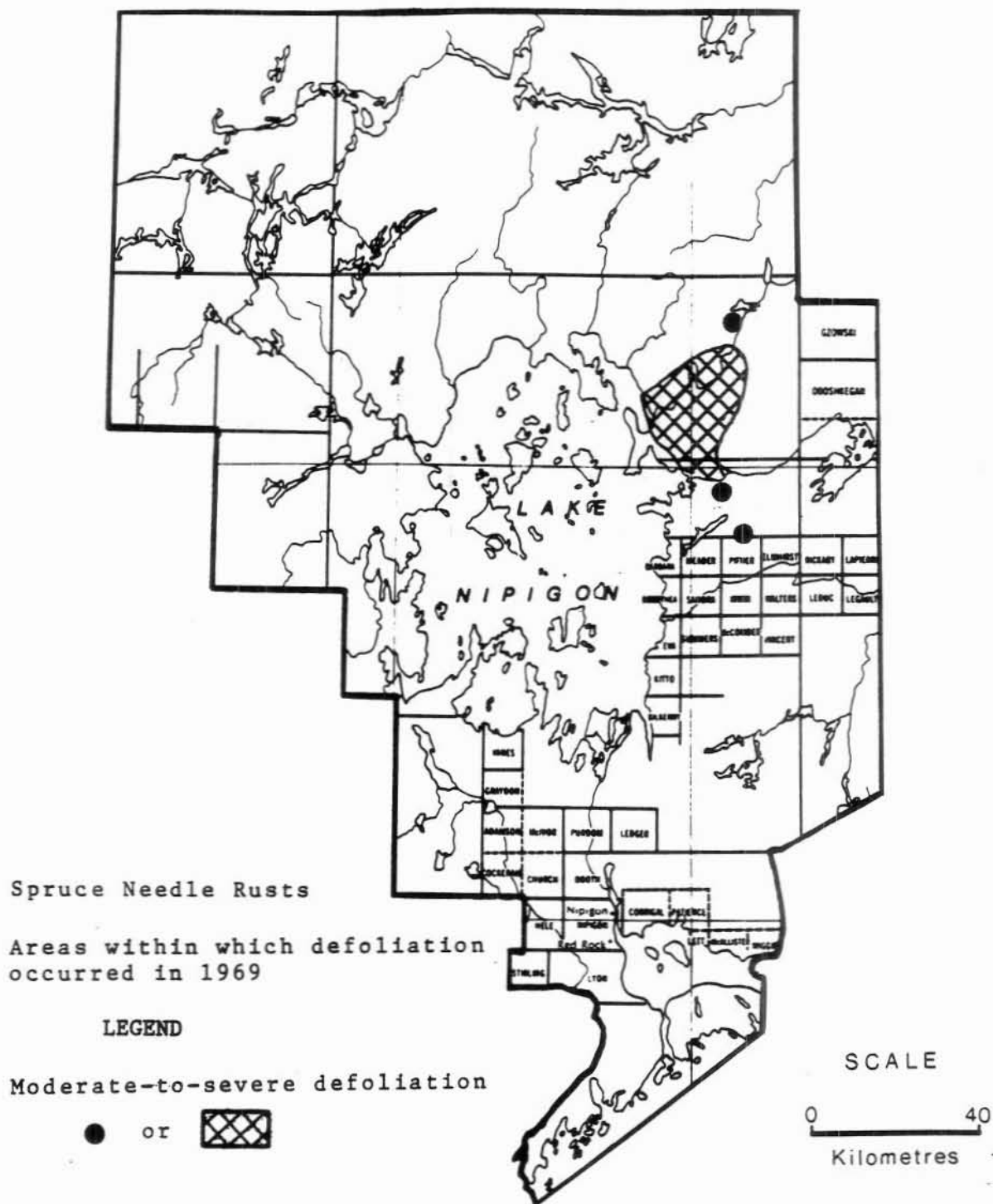
(cont'd)

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

Host(s): spruce

[Major]

<u>Year</u>	<u>Remarks</u>
1971	Light damage occurred in the Auden-Lake Nipigon area and 3 km south of Waweig Lake.
1972	not reported
1973	Light foliar damage was observed in Lake Nipigon Provincial Park.
1974	Surveys disclosed 10.4 km ² of moderate-to-severe foliar damage south of Brennan Lake. Similar damage was recorded in the Aldridge Lake area. An evaluation near Parks Lake revealed that 50% of the white spruce examined were affected, and that the accompanying defoliation amounted to 10%.
1975	Moderate-to-severe foliar infections were observed near Frank Lake.
1976	Evaluations near Auden, in the Crooked Green Creek area and in Lyon Twp revealed foliar infections of 1%, 5%, and 10%, respectively.
1977	Light damage was commonly observed east of Lake Nipigon.
1978-1980	not reported

NIPIGON DISTRICT

Spruce Cone Rust, *Chrysomyxa pirolata* (Körn.) Winter

Host(s): spruce, alt. pyrolas

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1961	not reported
1962	Moderate-to-severe infections were recorded on small trees in Pifher Twp and light damage was detected in stands at Black Sturgeon and Polly lakes.
1963	not reported
1964	A 100-cone sample disclosed that 77% and 14% of the cones were infected at Black Sturgeon and Helen lakes, respectively.
1965	Light damage was reported in McComber Twp.
1966	not reported
1967	One-hundred-cone samples from Ledger and Legault twps revealed that 4% and 6%, respectively, of the cones examined were infected.
1968-1971	not reported
1972	light infections encountered on black spruce north of Beardmore
1973-1979	not reported
1980	Associated damage was low on black spruce in the Limestone Lake area.

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

Host(s): tA

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1951	not reported
1952	Moderate-to-severe foliar damage was recorded along the Nonwatin Creek in Hele Twp and along the Black Sturgeon River.
1953-1957	not reported
1958	Surveys disclosed moderate-to-severe foliar infections along the Auden Road.
1959	not reported
1960-1961	Light foliar damage was reported throughout the district.
1962	Moderate-to-severe foliar infections were observed in Sandra Twp and light damage occurred in the Black Sturgeon Lake area.
1963-1964	not reported
1965	Surveys revealed moderate-to-severe foliar damage along Highway 527.
1966-1967	not reported
1968	Light foliar infections were detected along Highway 527.
1969	not reported
1970	Surveys disclosed that 4,000 ha of pole-size trembling aspen east of Beardmore experienced moderate-to-severe defoliation.
1971	The medium-to-heavy infestation east of Beardmore decreased in extent to 2,000 ha.
1972	not reported

(cont'd)

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

Host(s): tA

[Major]

<u>Year</u>	<u>Remarks</u>
1973	Light damage was recorded in 160 ha of forest in the Beardmore, Humboldt Bay and Lake Nipigon Provincial Park areas.
1974	Moderate-to-severe foliar damage occurred in areas north of Beardmore. Surveys south of Beardmore in Sandra, Pifher and Meader twps disclosed foliar infection ranging from 10% to 50%. Leaf damage varied from 30% to 80% in 2,000 ha of forested land in Irwin Twp.
1975	Light foliar damage occurred in the Beardmore-Sturgeon River area and north of Auden.
1976	Light foliar infections were observed at scattered points east of Lake Nipigon.
1977	Assessments revealed 40% foliar damage in a 40-ha stand in Sandra Twp and <10% foliar infections in stands in the Sturgeon River and Crooked Green Lake areas.
1978	In stands in which the disease was present, from 10% to 90% of the trees were affected and accompanying foliar infections varied from 1% to 15%.
1979	Light infections were detected in the district.
1980	not reported

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

Host(s): pines

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1961	not reported
1962	Light infections were detected in Pifher Twp.
1963	Moderate-to-severe damage (50% foliar infection) was recorded in Ledger Twp.
1964	Surveys disclosed 100% foliar infections in several plantations in Sandra Twp.
1965	Light damage only was observed in the district.
1966-1968	not reported
1969	Small pockets of moderate-to-severe foliar infections were reported in Sandra Twp.
1970	The previous moderate-to-severe foliar infections in Sandra Twp declined to light intensity.
1971	not reported
1972	Surveys disclosed light foliar infection in the Beardmore area.
1973	Light damage was recorded in Legault and Sandra twps.
1974-1980	not reported

Comandra Blister Rust, *Cronartium comandrae* Peck

Host(S): jP

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1969	not reported
1970	Moderate-to-severe infections were recorded near Cosgrave Lake.
1971	not reported
1972	Light damage was observed in the Cosgrave Lake area.
1973-1974	Light infections were reported in Legault Twp.
1975-1976	Collections were made near Auden and Frank Lake.
1977-1980	not reported

Sweet Fern Blister Rust, *Cronartium comptoniae* Arthur

Host(s): jP

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1958	not reported
1959	A single tree infection was recorded in McComber Twp.
1960-1968	not reported
1969	Evaluation at two locations in Sandra Twp disclosed that 28% and 18% of the trees examined were infected.
1970	Light damage was detected in Sandra Twp.
1971-1972	High infections were recorded in natural stands in Lapierre Twp and light damage occurred in Sandra Twp.
1973-1980	not reported

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

Host(s): wP

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1961	not reported
1962-1963	This rust was common in the district.
1964-1967	not reported
1968	Assessment disclosed about 10 ha of moderate-to-severe infection in a 120-ha plantation in Sandra Twp. Light mortality was also observed.
1969	not reported
1970	Light mortality of young trees was recorded in Sandra Twp.
1971	Light infections were detected in Ledger Twp.
1972	Moderate-to-severe infection was observed in Sandra Twp and light infection occurred in the Nipigon River area.
1973	Light tree mortality was recorded in Sandra Twp.
1974	Moderate-to-severe damage and accompanying mortality occurred in Sandra Twp and light damage was recorded in Ledger Twp.
1975-1976	Evaluation again disclosed moderate-to-severe damage in Sandra Twp.
1977-1980	not reported

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

Host(s): jP

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1959	not reported
1960	Light foliar damage was recorded in the Black Sturgeon Lake area.
1961	not reported
1962	Moderate-to-severe foliar infections were observed in Sandra and Dorothea twps.
1963	not reported
1964	Evaluation of a stand of young trees in Sandra Twp revealed that 65% of the trees experienced moderate-to-severe infection.
1965	Assessment disclosed moderate-to-severe foliar damage on 28% of the young trees at one location in Eva Twp.
1966	Light foliar damage was recorded in the area of previously moderate-to-severe infection in Eva Twp.
1967	Light damage only was observed in the district.
1968	not reported
1969	Evaluation of a 40-ha stand disclosed that 35% of the trees experienced moderate-to-severe infections.
1970	Surveys revealed light foliar infections in Sandra Twp.
1971-1972	not reported
1973	Light foliar damage was reported near Humboldt Bay.
1974-1975	not reported
1976	Light foliar infections were observed on 9-m trees in the Crooked Green Creek area.
1977	not reported
1978	Moderate-to-severe damage was observed in the Limestone Lake area.
1979-1980	not reported

Delphinella Tip Blight, *Delphinella balsameae* (Waterman) E. Müller

Host(s): bF [Minor]

<u>Year</u>	<u>Remarks</u>
1950-1957	not reported
1958	A collection made at the north end of Black Sturgeon Lake represented an Ontario record.
1959-1961	not reported
1962	Damage was recorded on the west side of Black Sturgeon Lake and along the Auden Road.
1963	Evaluation disclosed 25% shoot mortality of trees ranging from 2.5 cm to 10 cm DBH in an area from Onaman River to Frank Lake. Light damage was present at the north end of Black Sturgeon Lake.
1964	Light damage persisted at the north end of Black Sturgeon Lake.
1965-1974	not reported
1975	Light defoliation was observed in the Black Sturgeon Lake area.
1976-1980	not reported

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

Host(s): jack pine [Major]

<u>Year</u>	<u>Remarks</u>
1950-1958	not reported
1959	numerous galls recorded on jack pine with a DBH of 13 cm at Black Sturgeon Lake
1960	not reported
1961	Moderate-to-severe infections were recorded at the north end of Black Sturgeon Lake.

(cont'd)

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

Host(s): jack pine [Major]

<u>Year</u>	<u>Remarks</u>
1962	Moderate-to-severe damage occurred at Black Sturgeon Lake and in Eva Twp.
1963	Surveys disclosed moderate-to-severe infections in jack pine stands in Summers Twp and near Black Sturgeon Lake.
1964	Assessments revealed that 72% and 6% of the trees examined in Stirling and Summers twps, respectively, were affected.
1965	Surveys disclosed that 75% of trees with a DBH of 15 cm were infected at one location in Stirling Twp.
1966	not reported
1967	Light damage occurred in stands along Highway 527.
1968-1970	not reported
1971	Assessment in a 50-ha natural stand in Vincent Twp disclosed that 80% of the trees examined were affected.
1972	High infections were again observed in Vincent Twp and evaluation revealed 17% infection in Summers Twp.
1973	Evaluation revealed 10% and 5% tree mortality in the Nezah area and in Summers Twp, respectively. Light infections were recorded in Legault Twp.
1974	A high level of infection was noted in the Nezah area and light mortality was recorded in Summers Twp.
1975	The damage level and incidence remained high in the Nezah area and light infections were observed in Summers Twp.
1976	Assessment in the Nezah area revealed that 45% of the trees examined were affected with 10% stem cankers and 3% mortality.
1977	Stem infections were encountered on 1% of the trees in an area in Pifher Twp.
1978-1980	not reported

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

Host(s): tA

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1952	not reported
1953	Light infections were recorded in Leduc Twp and in stands southwest of Lake Nipigon.
1954	Light damage was observed in the eastern part of the district.
1955	Infected trees were observed in the central and southern parts of the district.
1956-1958	not reported
1959	Light infections were noted in the Black Sturgeon Lake area.
1960-1966	not reported
1967	Light damage was observed at several locations in the district.
1968	Assessment in a 78-km ² area in Patience Twp disclosed that 26% of the trees were cankered and 10% were killed.
1969-1972	not reported
1973	Assessment of a 40-ha stand in Meader Twp disclosed 1% current mortality.
1974-1980	not reported

Linospora Leaf Blight, *Linospora tetraspora* G.E. Thompson

Host(s): bPo

[Minor]

<u>Year</u>	<u>Remarks</u>
1950-1961	not reported
1962	Observations disclosed moderate-to-severe foliar damage on St. Ignace Island.
1963-1969	not reported
1970	Moderate-to-severe foliar infections were detected along the Auden Road.
1971-1980	not reported

Septoria Leaf Spot, *Mycosphaerella populicola* G.E. Thompson

Host(s): bPo

[Minor]

<u>Year</u>	<u>Remarks</u>
1950-1977	not reported
1978-1979	Premature defoliation and foliar discoloration occurred in the northern parts of the district.
1980	Light infections were reported at several locations in the district.

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

Host(s): tA, wB

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1952	not reported
1953	Light damage was observed in the Black Sturgeon Lake area and in the eastern part of the district.
1954	Conks were recorded on large-diameter aspen in the Black Sturgeon Lake area, the Auden Road area, near Disraeli and Keemle lakes and in Cockeram, Summers and Ledger twps.
1955	Assessment disclosed infection levels of > 10% along the Black Sturgeon Lake Road.
1956-1964	not reported
1965	Observations revealed a light incidence of stem cankers in Black Sand Provincial Park, Kilkenny Twp.
1966	Quantitative sampling at one location in Black Sand Provincial Park, Kilkenny Twp revealed that 16% of host trees were affected with up to eight conks per tree.
1967-1980	not reported

Shoot Blight, *Pollaccia elegans* Servit

Host(s): bPo

[Minor]

<u>Year</u>	<u>Remarks</u>
1950-1963	not reported
1964	Assessment of trees < 2 m tall at Pine Portage and near Black Sturgeon Lake revealed that an average of one and two shoots per tree, respectively, were affected.
1965	Damage assessments of poplar regeneration at Black Sturgeon Lake and Pine Portage revealed an average of one shoot per tree damaged at each location.
1966-1968	not reported

(cont'd)

Shoot Blight, *Pollaccia elegans* Servit (concl.)

Host(s): bPo

[Minor]

<u>Year</u>	<u>Remarks</u>
1969	moderate-to-severe damage of regeneration-size trees in the Black Sturgeon Lake area
1970-1977	not reported
1978	Moderate-to-severe foliar damage was recorded in stands between Red Rock and Nipigon.
1979-1980	not reported

Shoot Blight, *Sirococcus conigenus* (DC.) P. Cannon & Minter

Host(s): rP, jP

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1973	not reported
1974	The first record of this disease in the district was established when samples were collected near Orient Bay.
1975-1980	not reported

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

Host(s): tA

[Major]

<u>Year</u>	<u>Remarks</u>
1950-1953	not reported
1954	Light infections were recorded in the Black Sturgeon Lake area.
1955	Moderate-to-severe infections were noted along the Black Sturgeon Lake Road and in Leduc Twp.
1956-1957	not reported

(cont'd)

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

Host(s): tA

[Major]

<u>Year</u>	<u>Remarks</u>
1958	Evaluation at two locations near Black Sturgeon Lake and in one area in Stirling Twp revealed the average number of damaged shoots to be 4.0, 3.2 and 2.7, respectively.
1959	Assessment at two locations near Black Sturgeon Lake examined the year before disclosed 1.1 and 3.1 infected shoots per tree. At one location in Lyon Twp, 2.3 shoots per tree were affected.
1960-1961	Light infections were common throughout the district.
1962	A high incidence of attack was recorded along the Black Sturgeon Lake Road but associated damage was light.
1963	Moderate-to-severe shoot mortality was observed in McMaster and Hele twps. Light damage was revealed in Sandra Twp.
1964	Surveys disclosed 100% incidence of attack in Patience Twp and in the Gull River area.
1965	Assessment disclosed that 92% of a 100-tree sample near Gull Bay was damaged.
1966	Light shoot mortality was recorded in Sandra Twp.
1967	Small areas of light infection were observed at numerous locations.
1968-1975	not reported
1976	Evaluations near Auden and Frank Lake and in Patience Twp disclosed an incidence of attack of 50% at the first two locations and 60% at the latter.
1977	Terminal mortality averaged 8% at two locations in the Sturgeon River area and 11% dead terminals were encountered near Crooked Green Lake.
1978	Assessment in six areas of regeneration disclosed an average incidence of infection of 80%.
1979	Terminal mortality averaged 85% in a 20-ha area near Conglomerate Lake. Damage varied in extent elsewhere in the district.
1980	Light damage was reported in the Peck Lake area.

ABIOTIC DAMAGE

Drought

<u>Year</u>	<u>Remarks</u>
1950-1969	not reported
1970	Damage to all species of deciduous trees, especially white birch, was recorded in the western part of the district.
1971-1975	not reported
1976	Discoloration of white birch was evident by early August in the southwestern part of the district. Associated tree mortality was also observed. Surveys revealed 5% mortality of eastern white cedar near Helen Lake and 5% mortality of balsam fir in Colter Twp.
1977	Additional mortality of balsam fir, jack pine, trembling aspen and white birch was encountered in areas of shallow soils west of Lake Nipigon and the Nipigon River.
1978-1980	not reported

Frost

<u>Year</u>	<u>Remarks</u>
1950-1962	not reported
1963	Moderate-to-severe foliar damage to balsam fir was recorded along the Auden Road.
1964	Assessment of balsam fir revealed shoot damage ranging from 36% to 88% in the following areas : Onaman River, Black Sturgeon Lake, Pine Portage and Armstrong.
1965	Evaluation disclosed 90% shoot damage to balsam fir regeneration in Legault Twp and 21% shoot damage to balsam fir with a DBH of 10 cm in the Onaman River area.
1966-1967	not reported
1968	Light foliar damage was recorded on balsam fir along the southern end of the Armstrong Road and shoot damage ranging from 25% to 40% was observed in Cockeram Twp.

(cont'd)

Frost (concl.)

<u>Year</u>	<u>Remarks</u>
1969	Various levels of damage were recorded on conifers throughout the district.
1970-1971	not reported
1972	Surveys revealed moderate-to-severe foliar damage and associated tree mortality in three areas of black spruce planted in 1971 north of the Onaman River. Moderate-to-severe foliar damage of black and white spruce was recorded in nine young plantations in the Limestone Lake area. Similar damage was recorded on balsam fir, tamarack and some deciduous trees of different age classes along Highway 527 between Gull Bay and Armstrong.
1973	Late frosts in the Onaman River-Frank Lake area delayed leaf development of trembling aspen and killed developing shoots of balsam fir.
1974-1976	not reported
1977	Severe frosts over a six-day period in June resulted in severe foliar damage to trees of the following conifer species (in order of importance): white spruce, balsam fir, black spruce, tamarack and jack pine. In seven stands of black spruce and white spruce that were examined, the proportion of trees affected ranged from 5% to 100% and accompanying foliar damage ranged from 30% to 70%.
1978	Moderate-to-severe damage was reported across the district. Evaluation in seven stands of balsam fir revealed that 88% of the trees were affected and that the average (current) foliar damage was 51%. Similar surveys in three stands of white spruce disclosed that 90% of the trees were affected and that the average (current) foliar damage was 53%.
1979	Affected stands of black spruce in the Limestone Lake area had 25% to 75% (current) leader damage.
1980	Surveys of black spruce 4 m in height at Limestone Lake and in the South Bay area of Lake Nipigon disclosed an incidence of attack of 100% and 44%, respectively, with accompanying foliar damage of 3% and 6%.

Hail

<u>Year</u>	<u>Remarks</u>
1950-1969	not reported
1970	Severe damage to trees of several species was recorded in a small cutover south of Georgia Lake.
1971-1980	not reported

Wind

<u>Year</u>	<u>Remarks</u>
1950-1965	not reported
1966	Numerous white birch were blown down at Leonard Lake, Kilkenny Twp.
1967-1972	not reported
1973	A severe windstorm was responsible for small sporadic pockets of blowdown in a wide swath from the western boundary in the Redhead-Onamakawash lakes area eastward across the northern part of the district. Black spruce and trembling aspen were the species most affected.
1974-1980	not reported

Winter Drying

<u>Year</u>	<u>Remarks</u>
1950-1967	not reported
1968	Moderate-to-severe foliar browning was observed in a 120-ha plantation of white pine in Sandra Twp.
1969	Severe damage to white pine was observed in Sandra Twp.
1970-1973	not reported
1974	Twig and branch mortality were recorded in an older white pine plantation in Sandra Twp.
1975-1976	not reported
1977	Light damage to red pine occurred in Sandra and Ledger twps and similar damage was encountered on jack pine in Pifher Twp.
1978-1980	not reported

APPENDICES

APPENDIX B

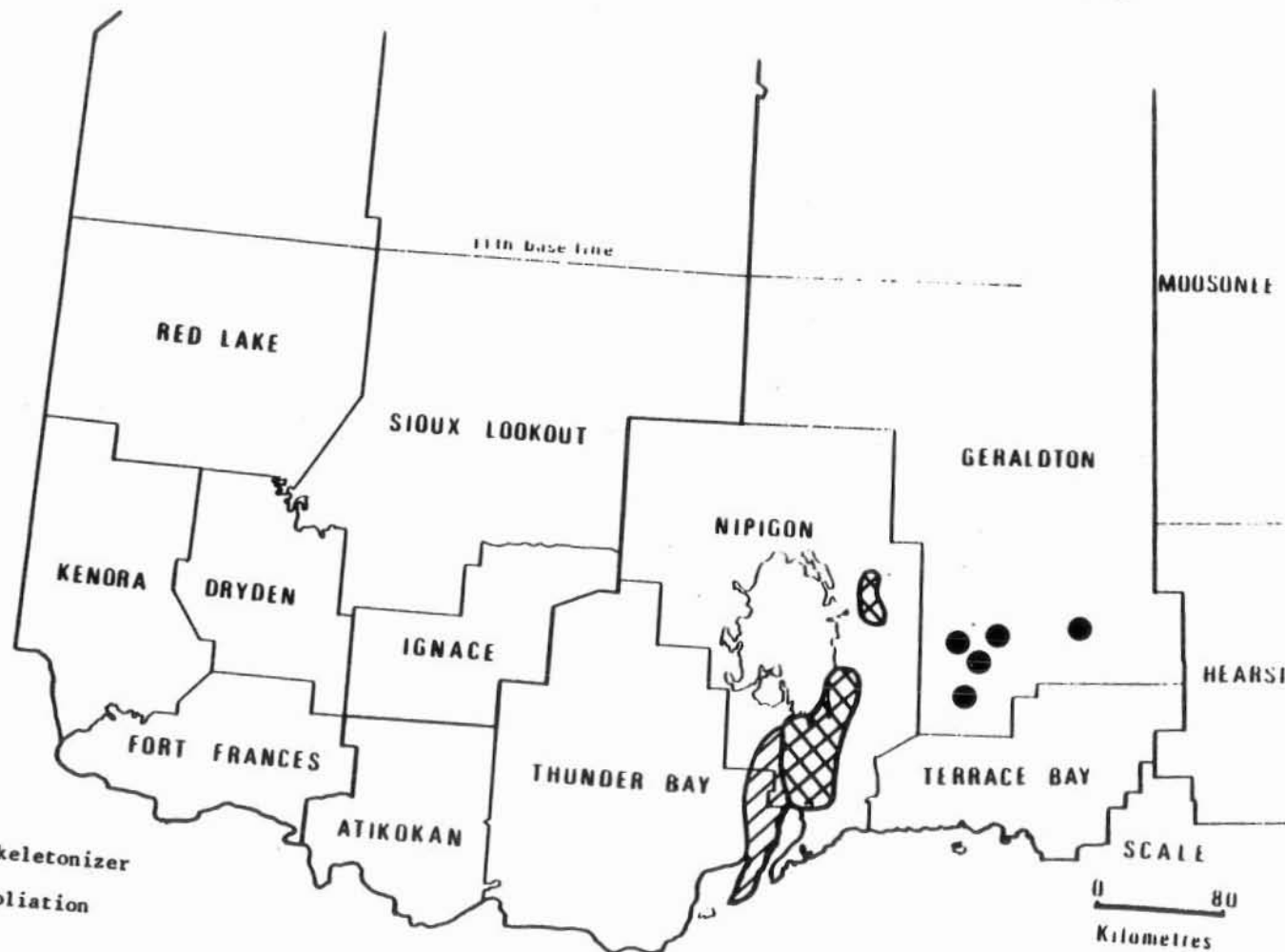
CONIFEROUS HOSTS

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

APPENDIX C

MAPS - NORTHWESTERN ONTARIO

NORTHWESTERN ONTARIO




Birch Skeletonizer

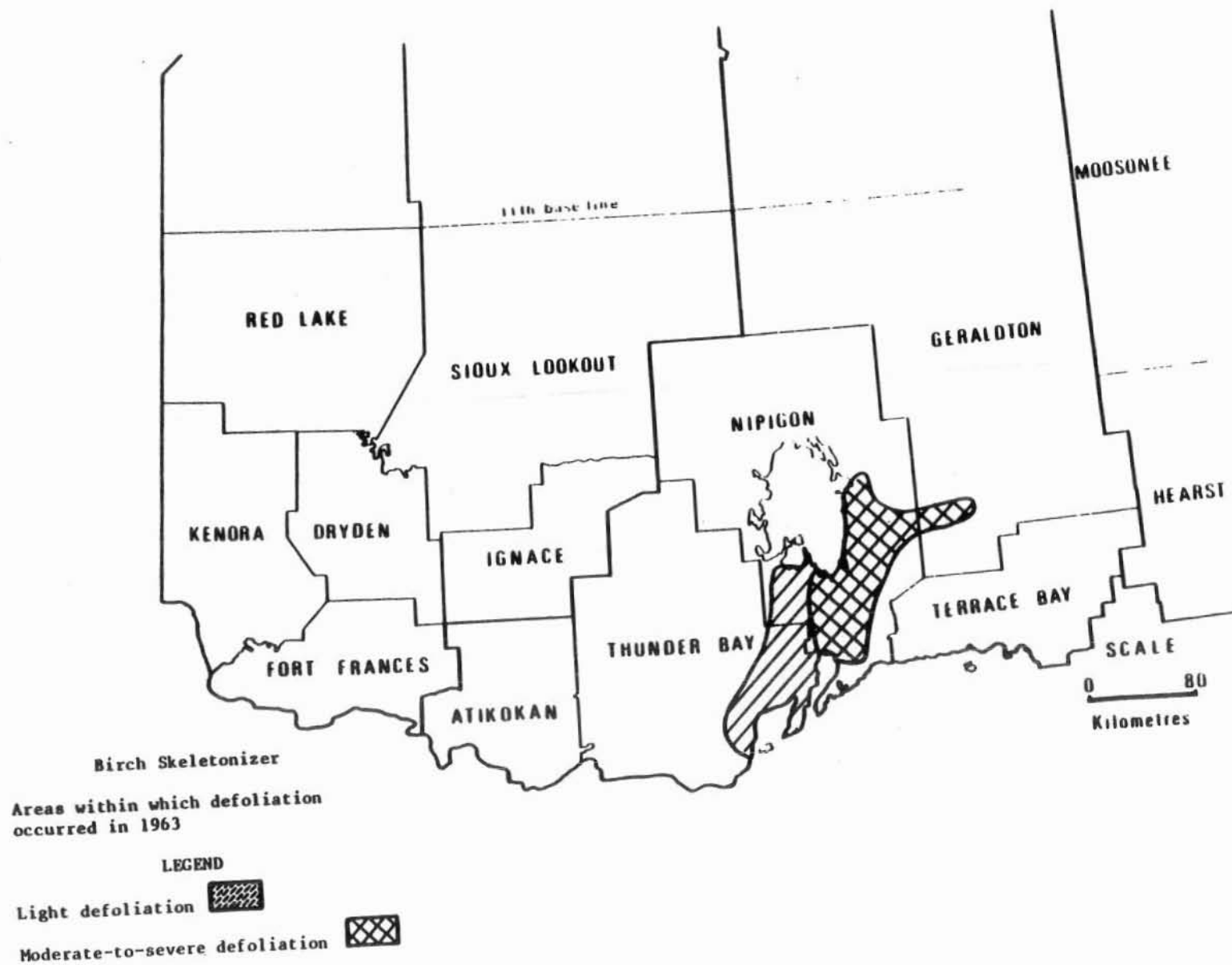
Areas within which defoliation
occurred in 1962

LEGEND

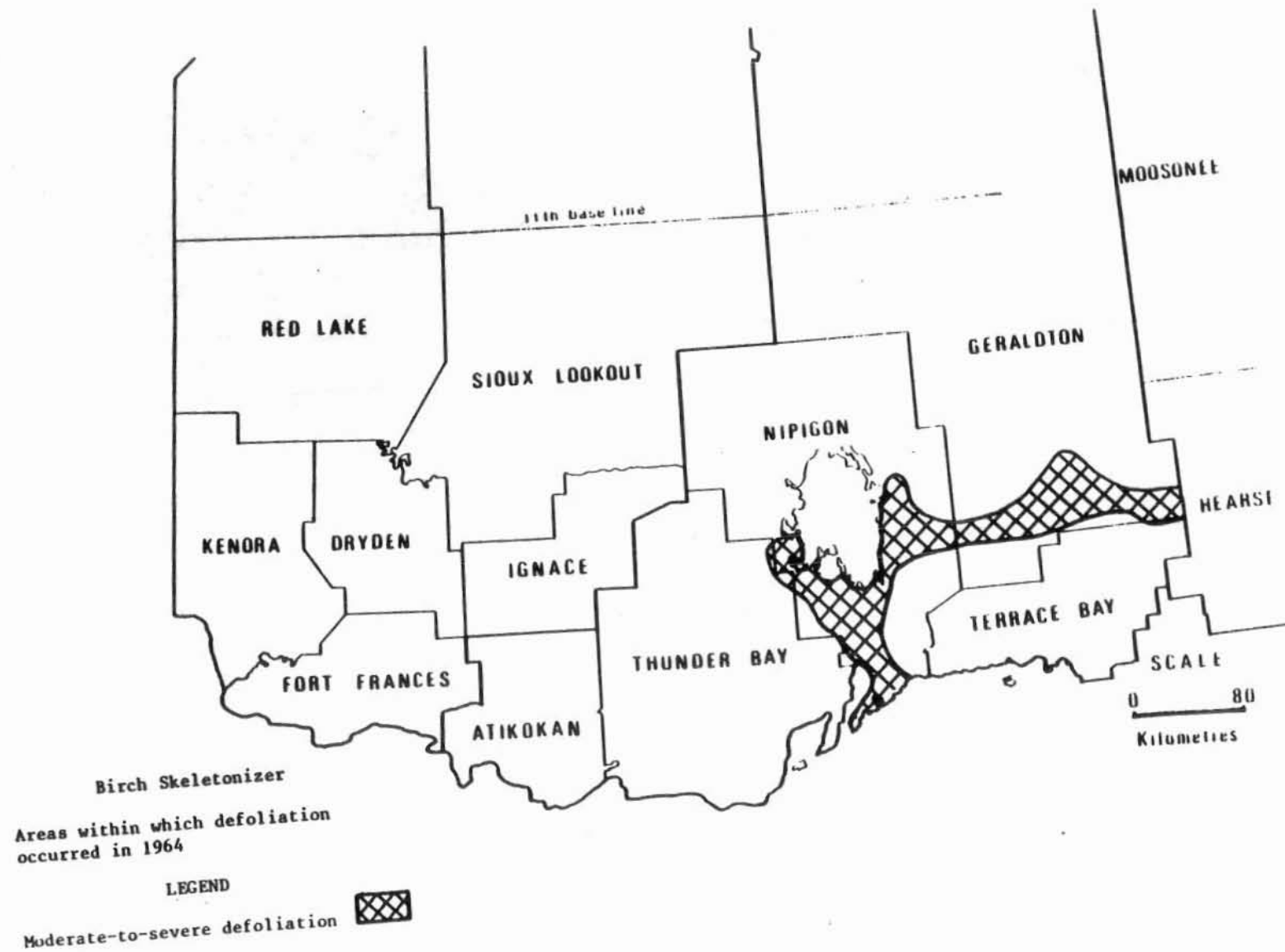
Light defoliation 

Moderate-to-severe defoliation ● or 

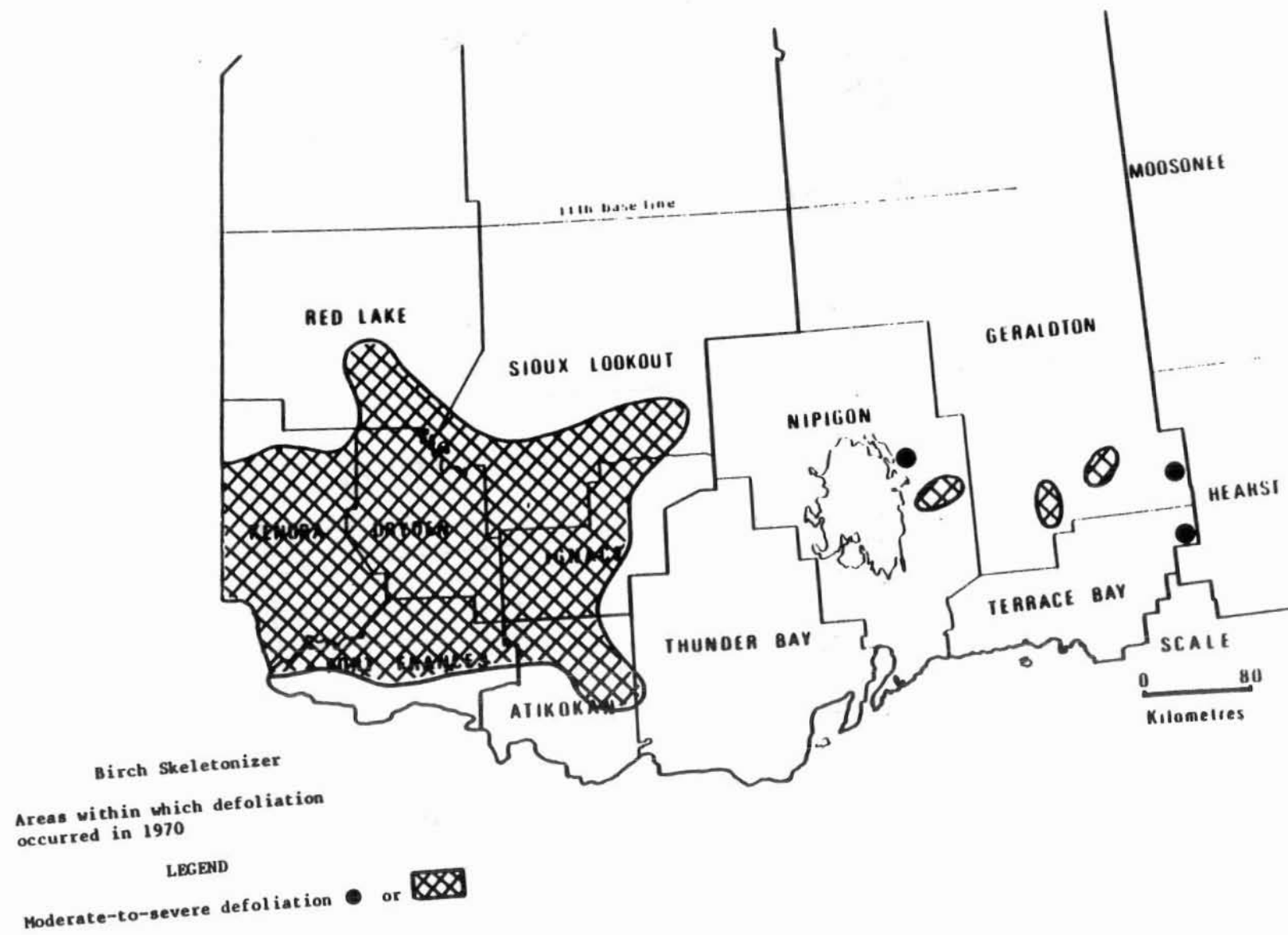
NORTHWESTERN ONTARIO



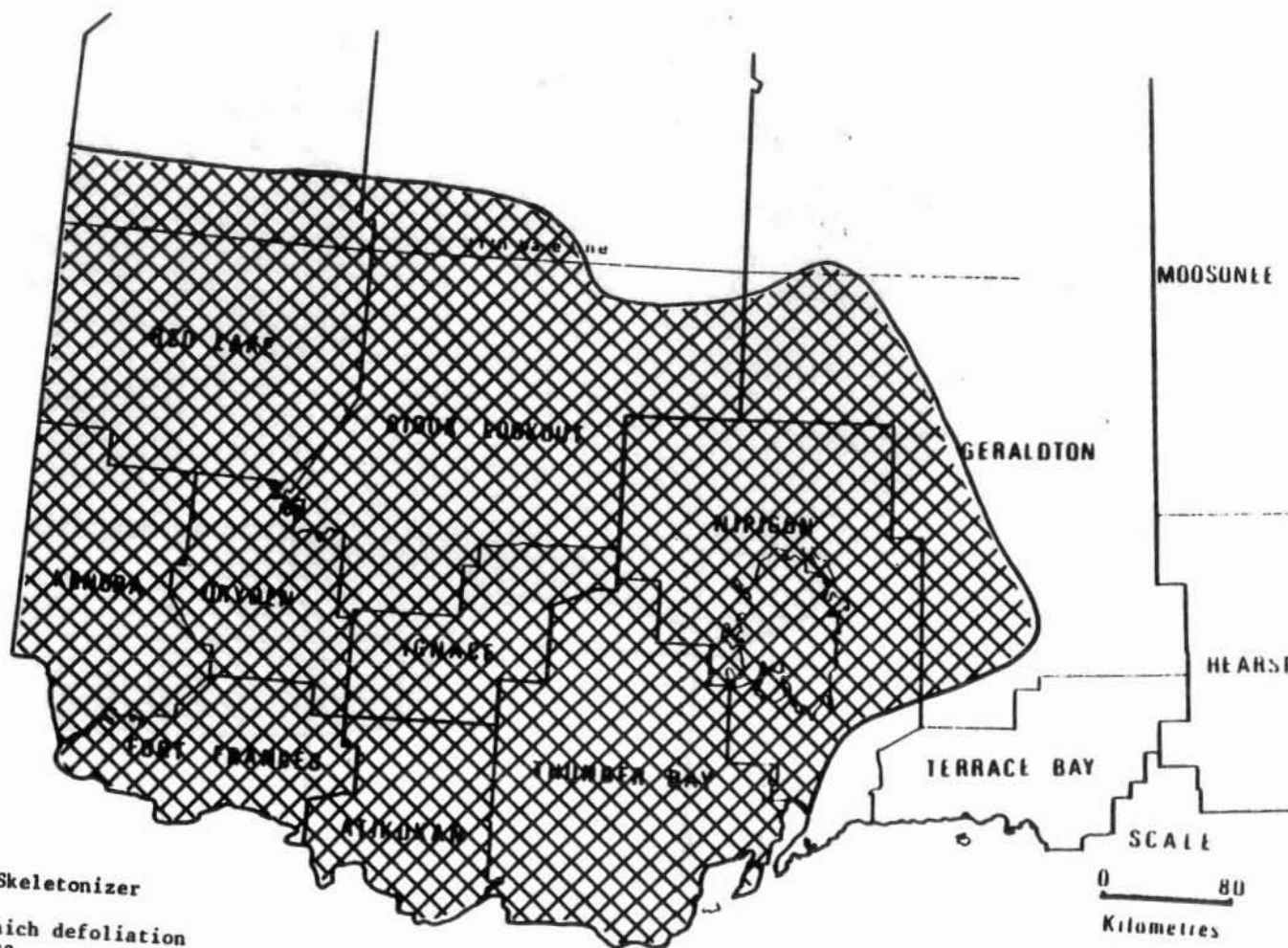
NORTHWESTERN ONTARIO



NORTHWESTERN ONTARIO




NORTHWESTERN ONTARIO



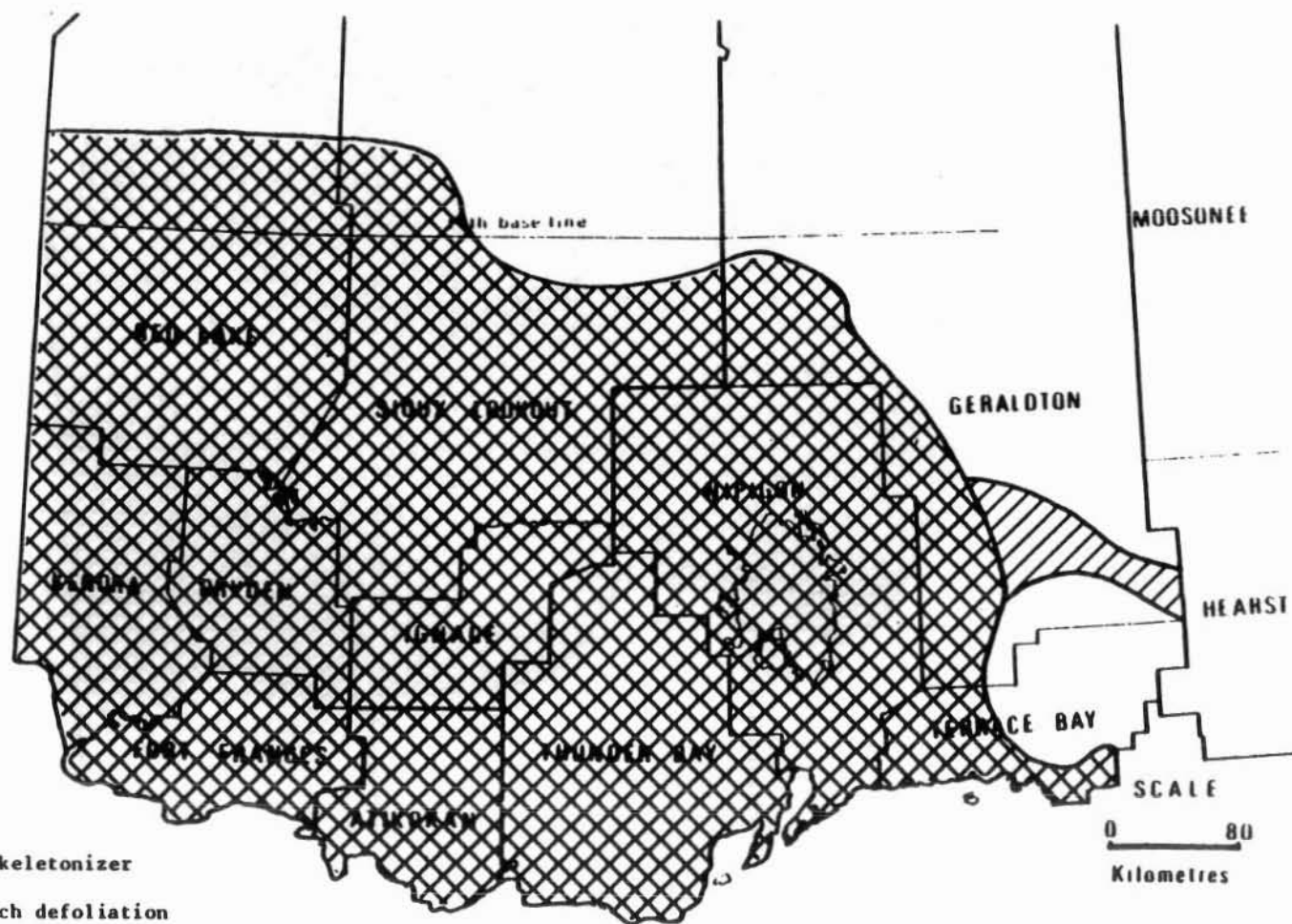
Birch Skeletonizer

Areas within which defoliation
occurred in 1972

LEGEND

Moderate-to-severe defoliation 

NORTHWESTERN ONTARIO



Birch Skeletonizer

Areas within which defoliation
occurred in 1973

LEGEND

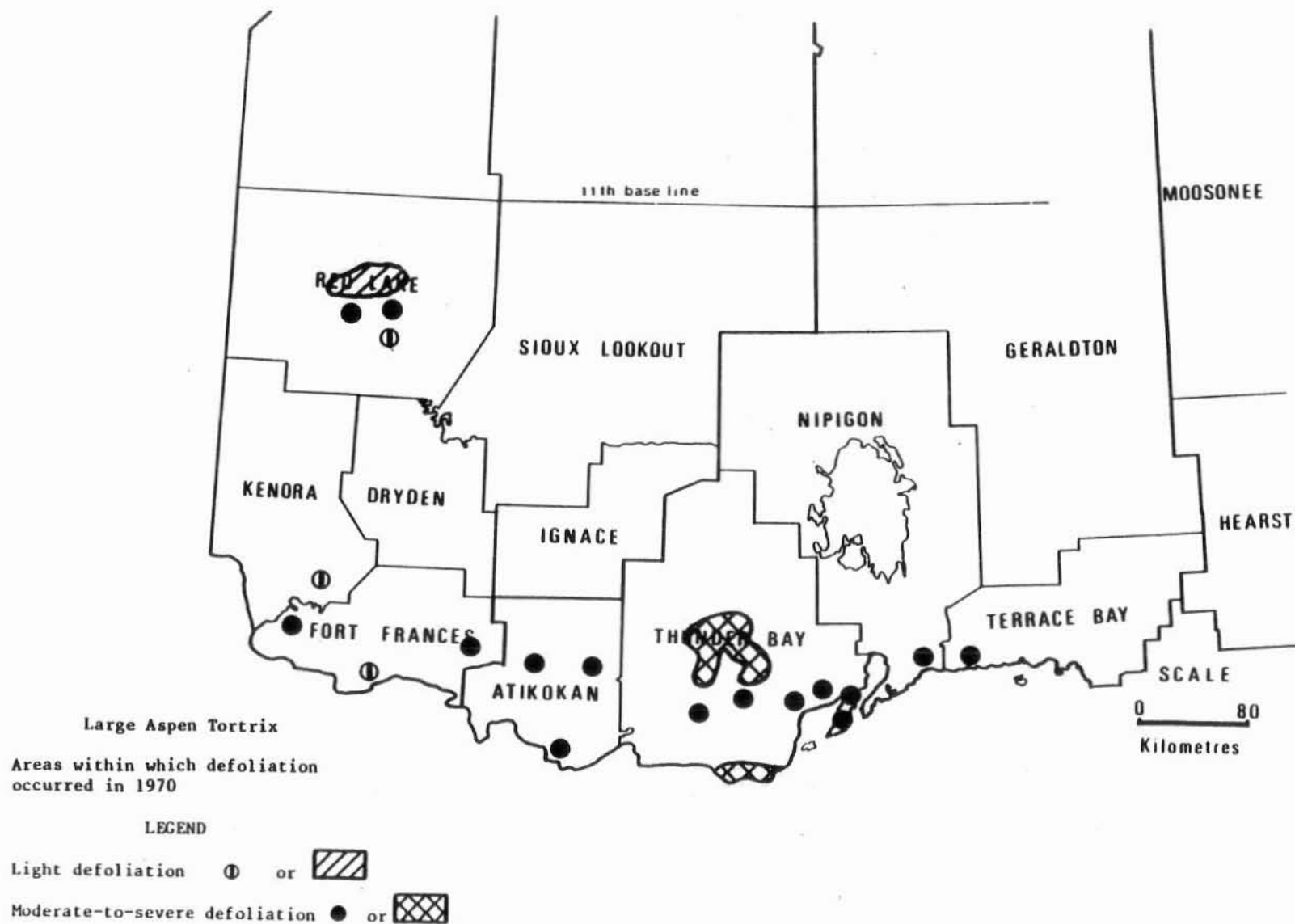
Light defoliation



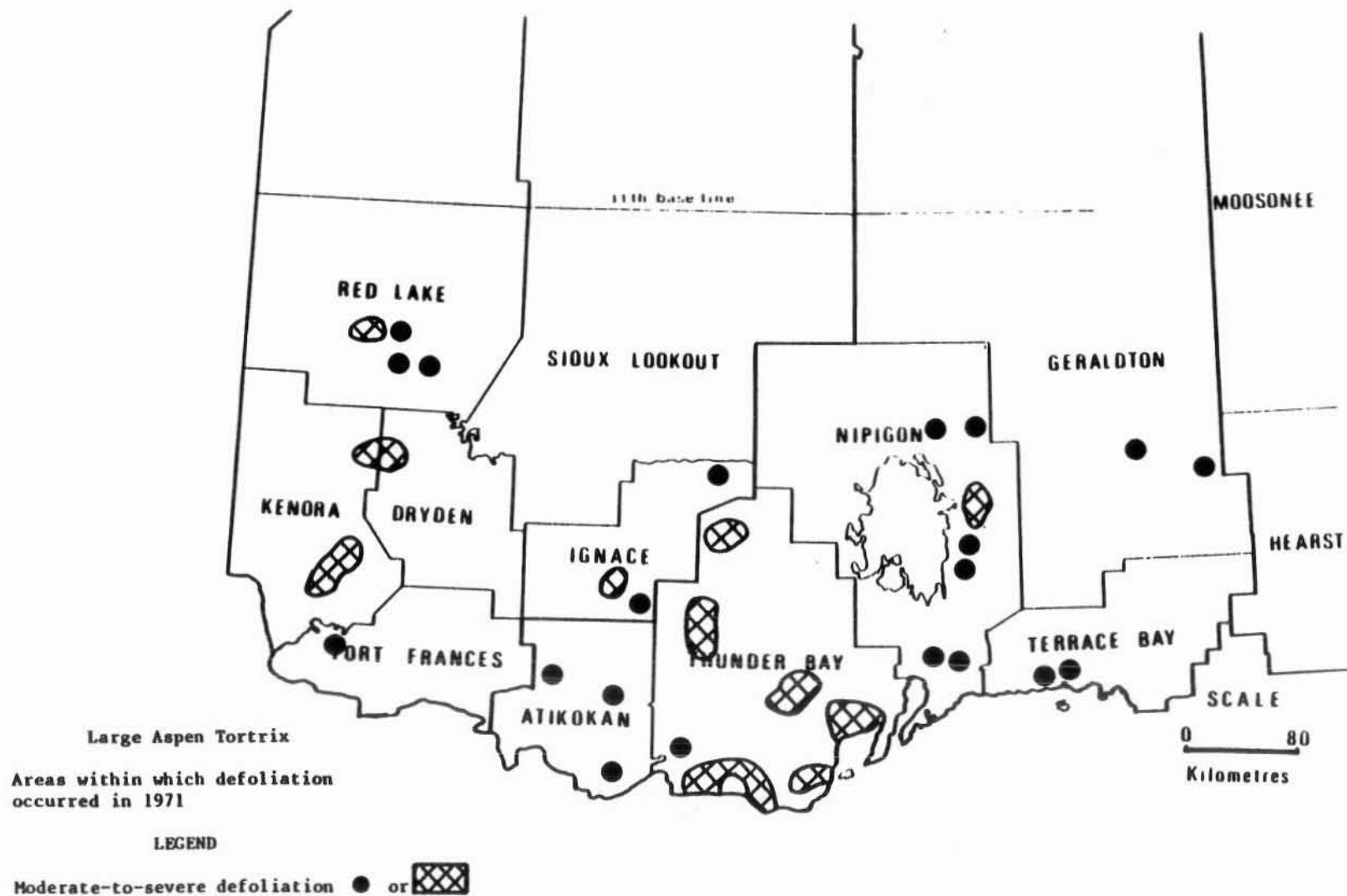
Moderate-to-severe defoliation



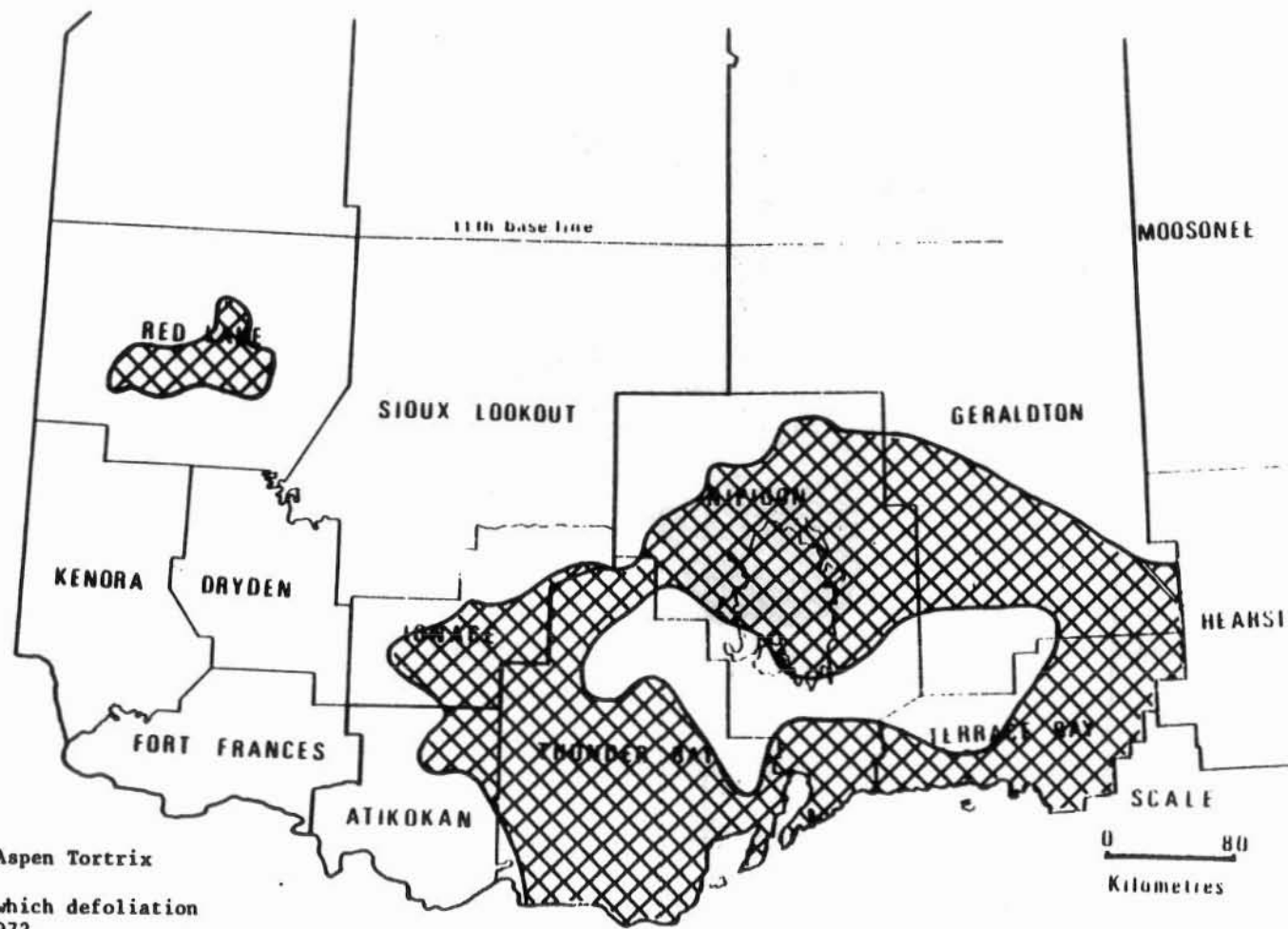
NORTHWESTERN ONTARIO



NORTHWESTERN ONTARIO



NORTHWESTERN ONTARIO



Large Aspen Tortrix

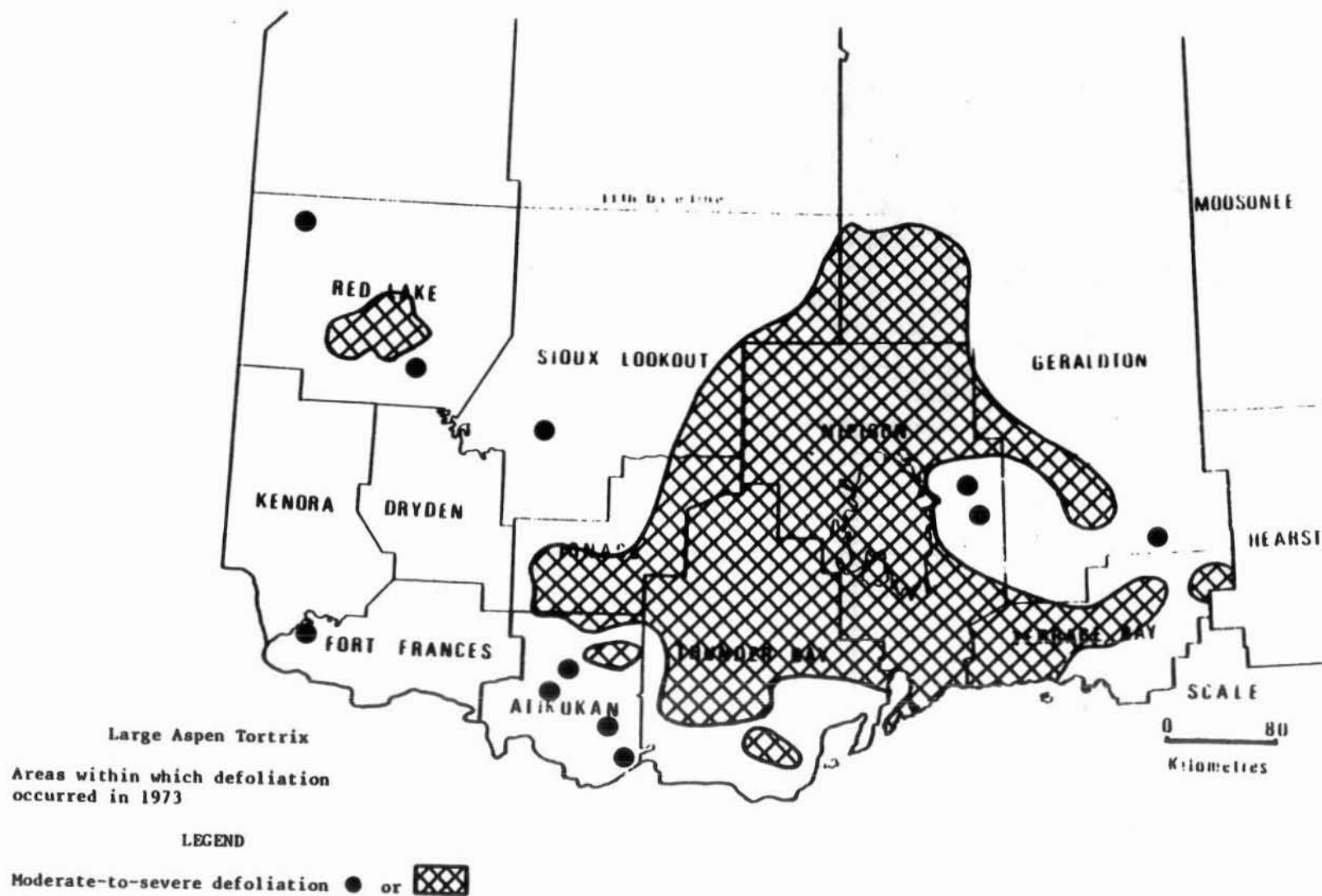
Areas within which defoliation
occurred in 1972

LEGEND

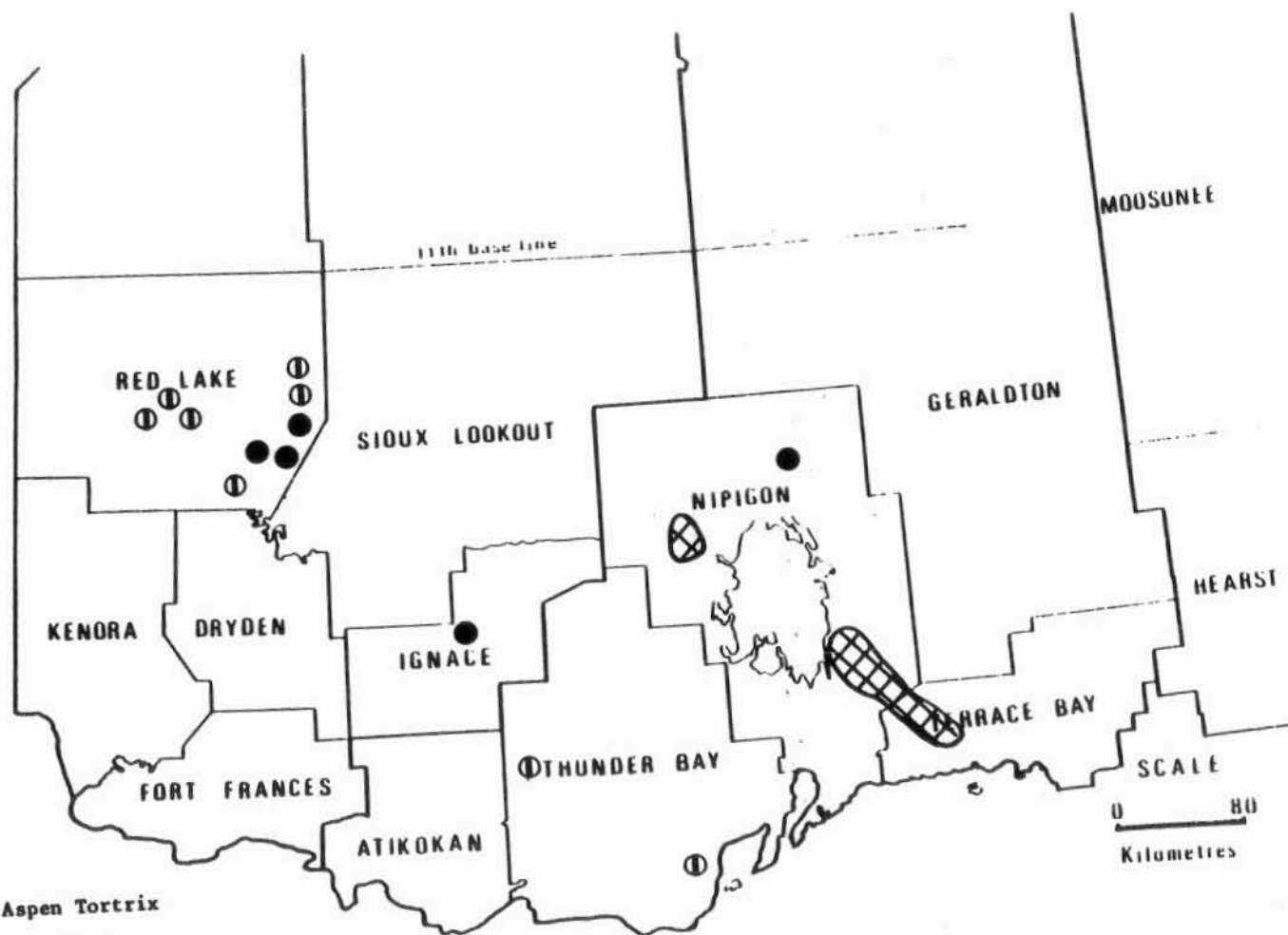
Moderate-to-severe defoliation



NORTHWESTERN ONTARIO



NORTHWESTERN ONTARIO




Large Aspen Tortrix

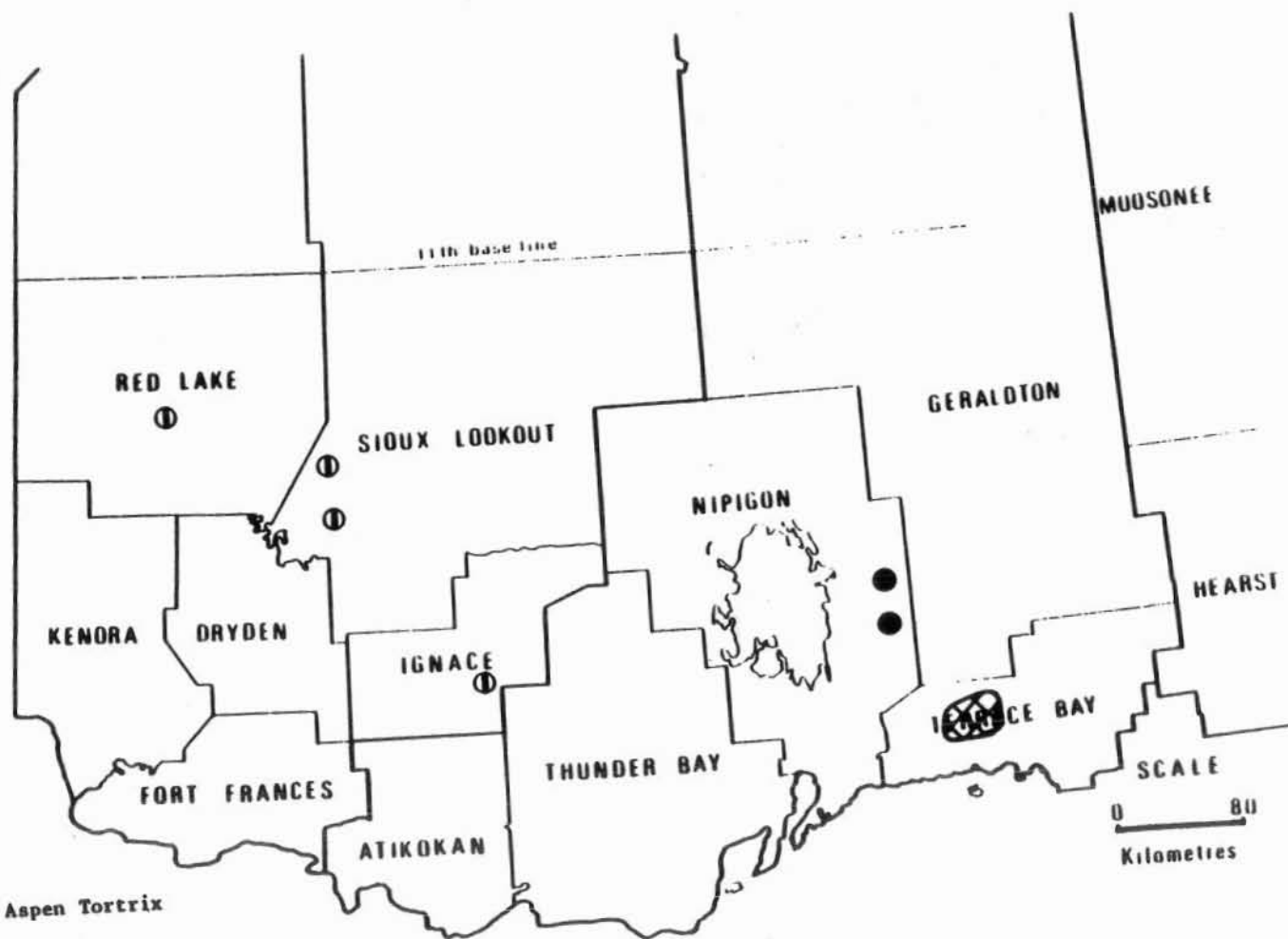
Areas within which defoliation
occurred in 1974

LEGEND

Light defoliation ○

Moderate-to-severe defoliation ● or 

NORTHWESTERN ONTARIO




Large Aspen Tortrix

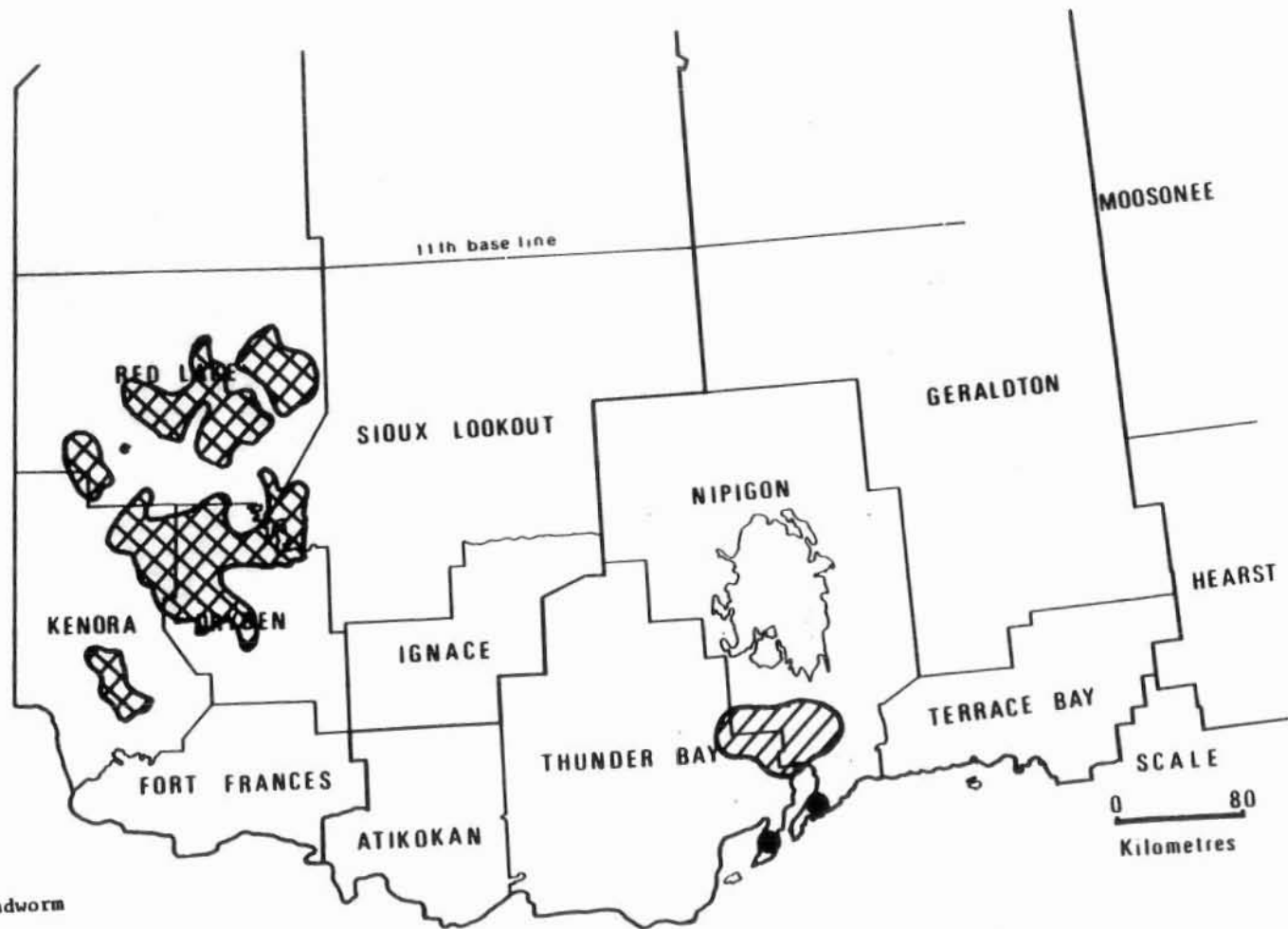
Areas within which defoliation occurred in 1975

LEGEND

Light defoliation ○

Moderate-to-severe defoliation ● or 


NORTHWESTERN ONTARIO




Spruce Budworm

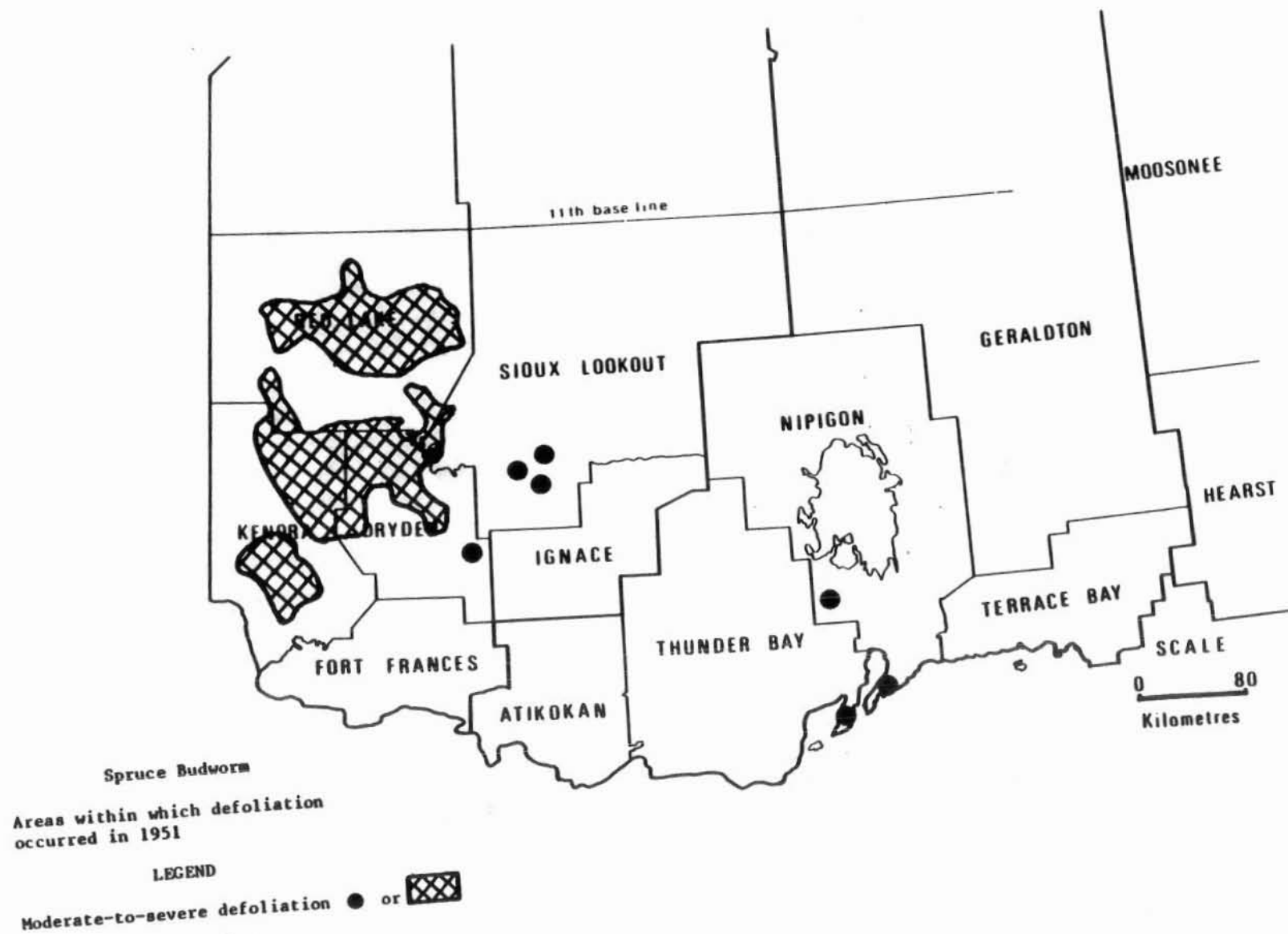
Areas within which defoliation occurred in 1950

LEGEND

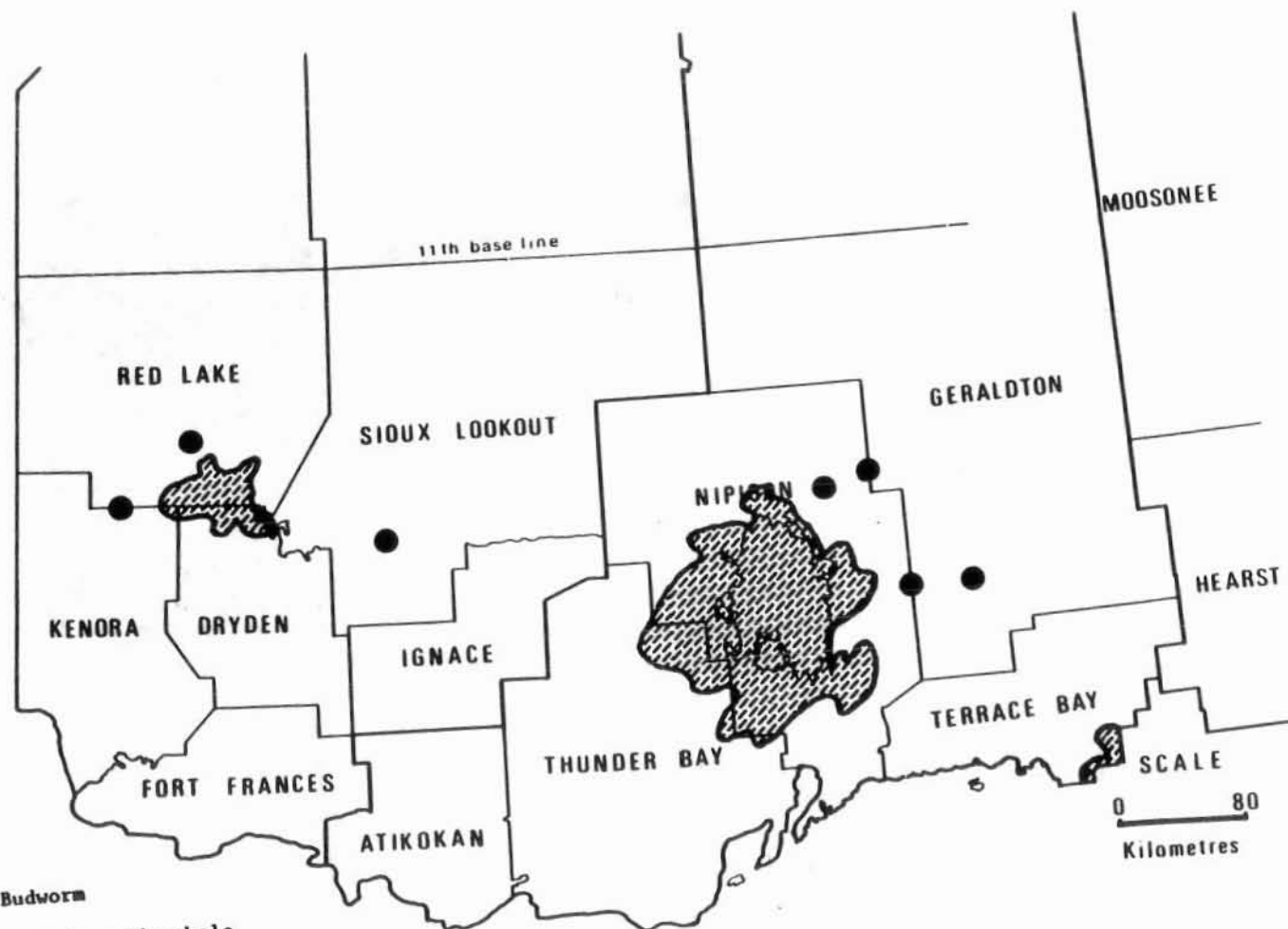
Light defoliation 

Moderate-to-severe defoliation ● or 

NORTHWESTERN ONTARIO




NORTHWESTERN ONTARIO



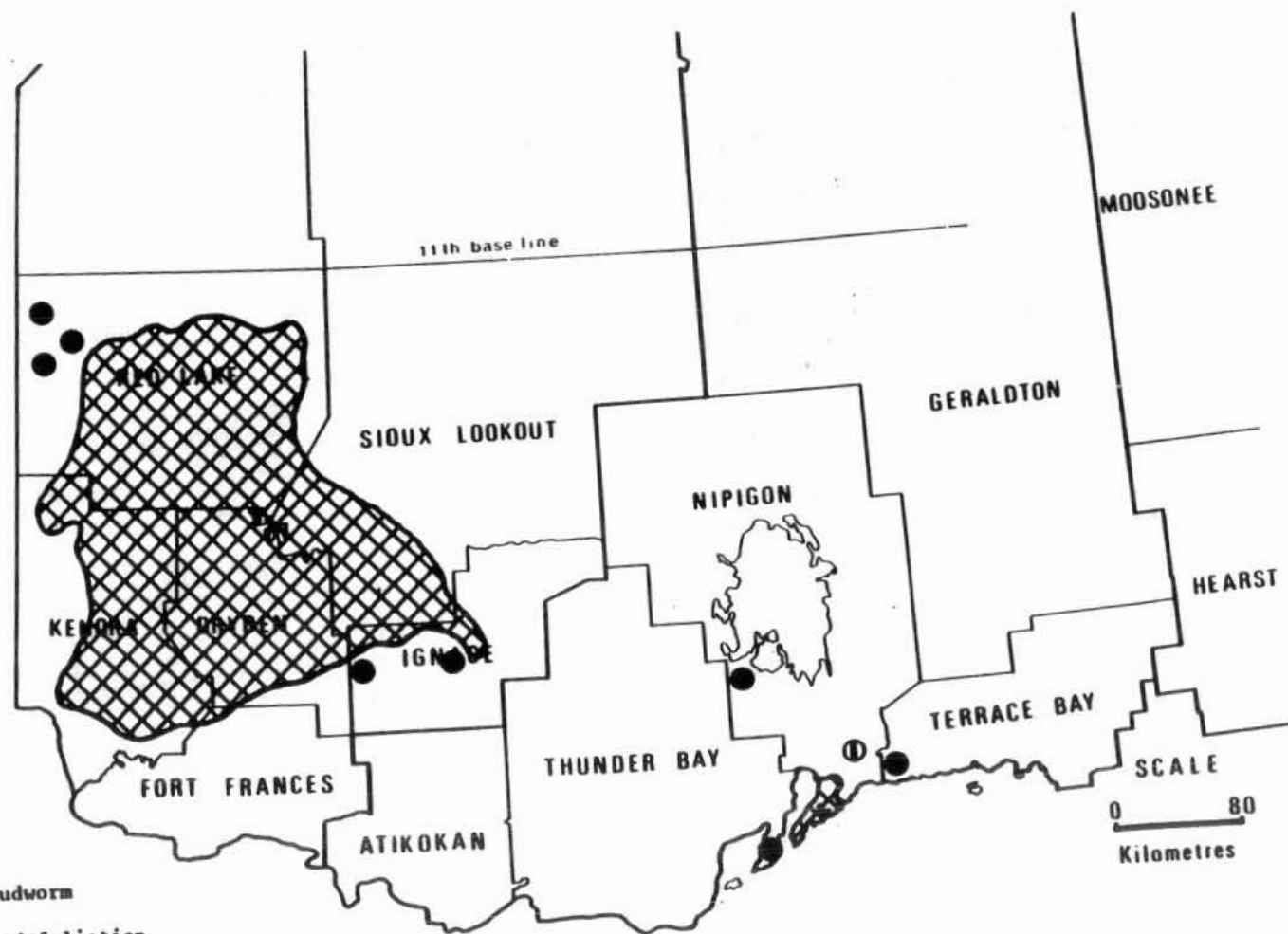
Spruce Budworm

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

LEGEND

Mortality ● or 

NORTHWESTERN ONTARIO




Spruce Budworm

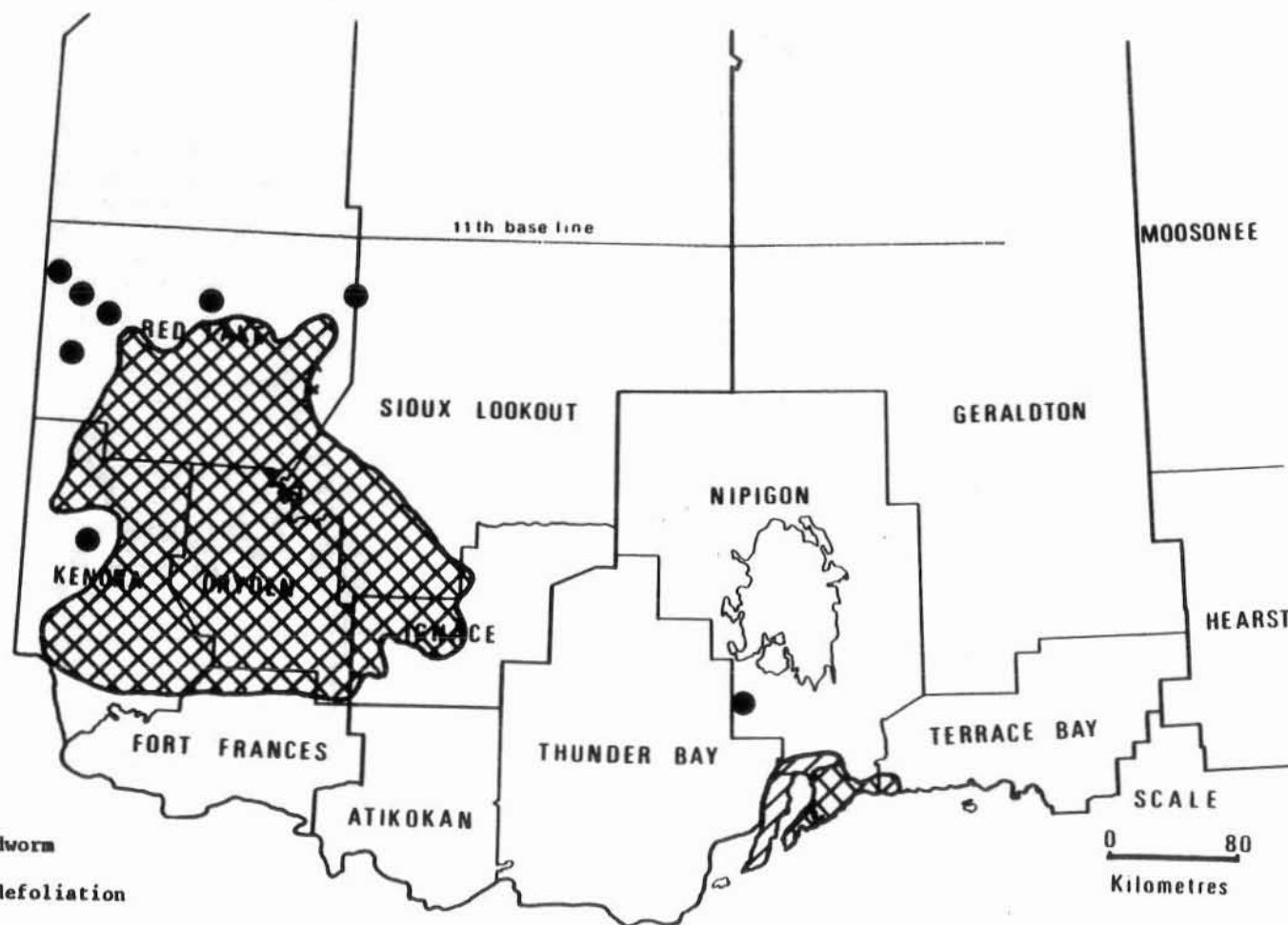
Areas within which defoliation occurred in 1952

LEGEND

Light defoliation ①

Moderate-to-severe defoliation ● or 

NORTHWESTERN ONTARIO



Spruce Budworm

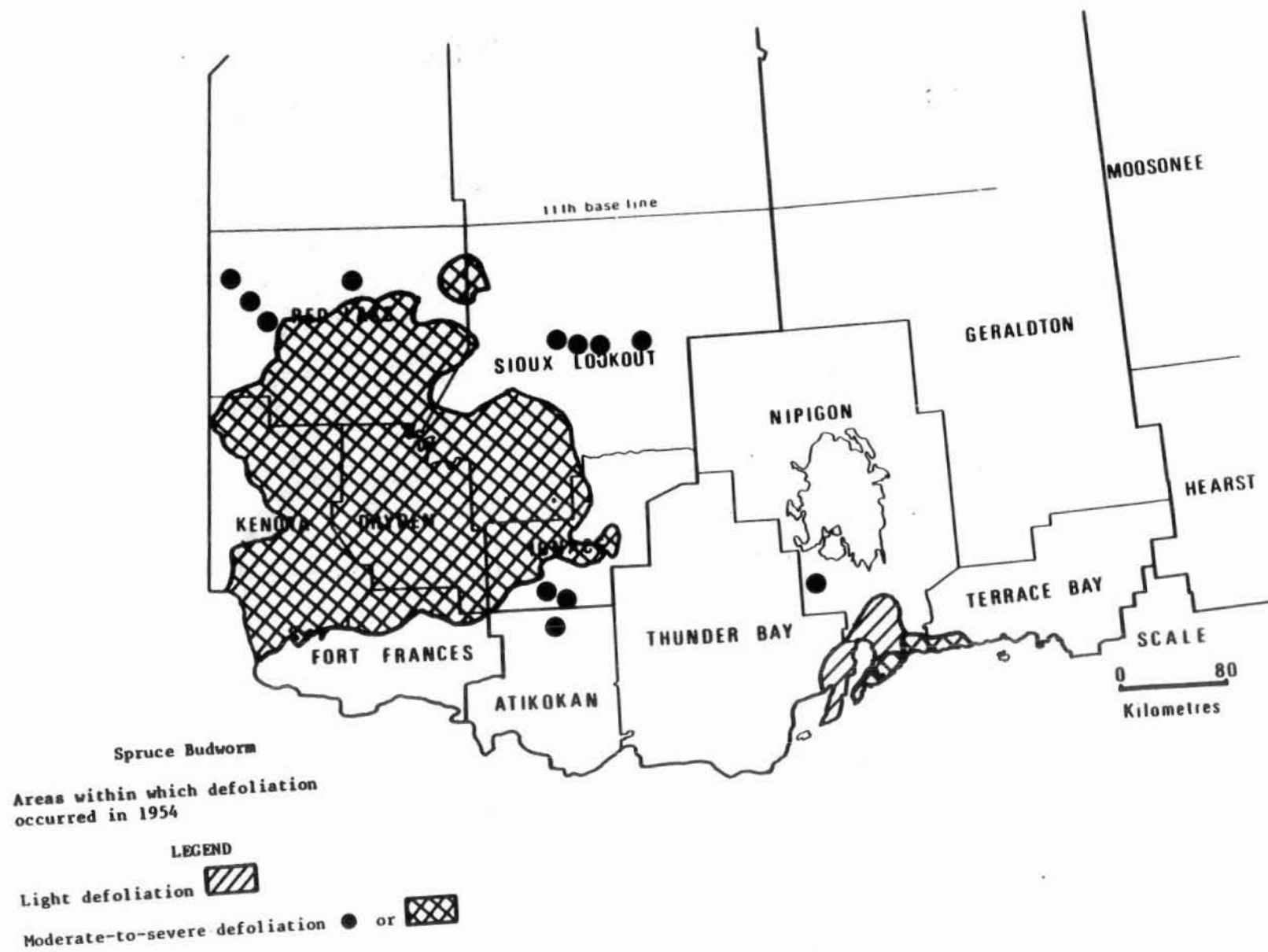
Areas within which defoliation
occurred in 1953

LEGEND

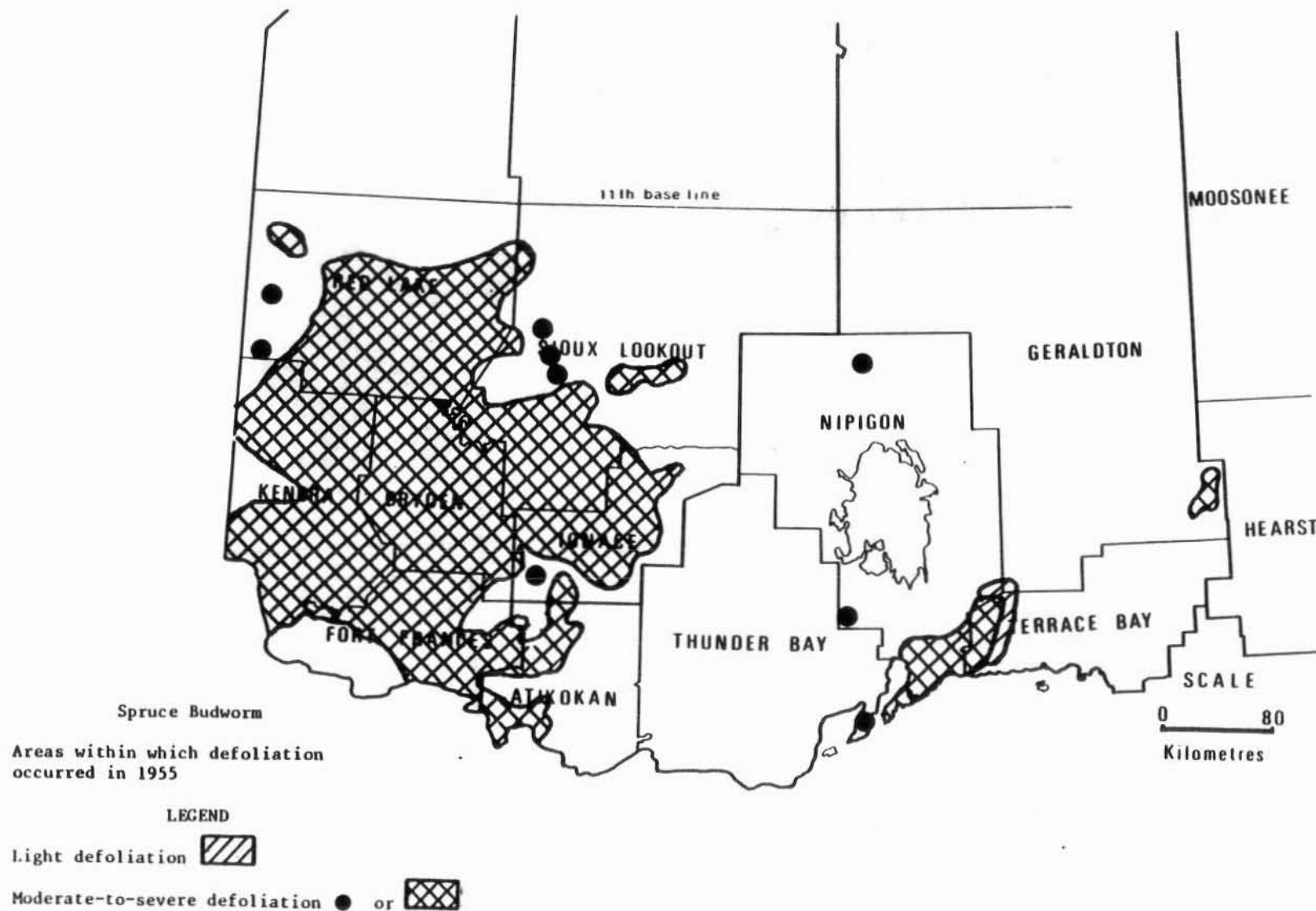
Light defoliation 

Moderate-to-severe defoliation ● or 

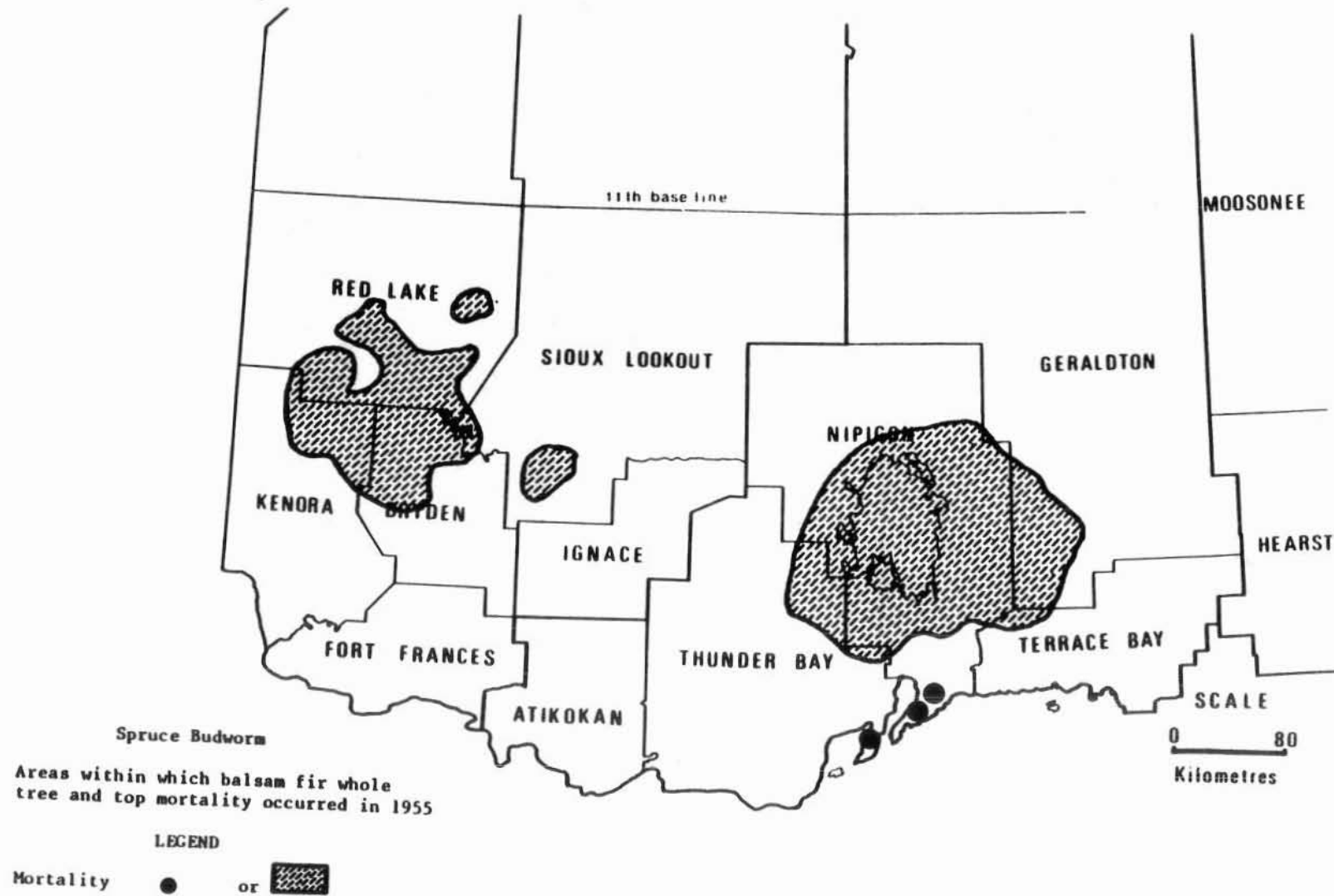
NORTHWESTERN ONTARIO



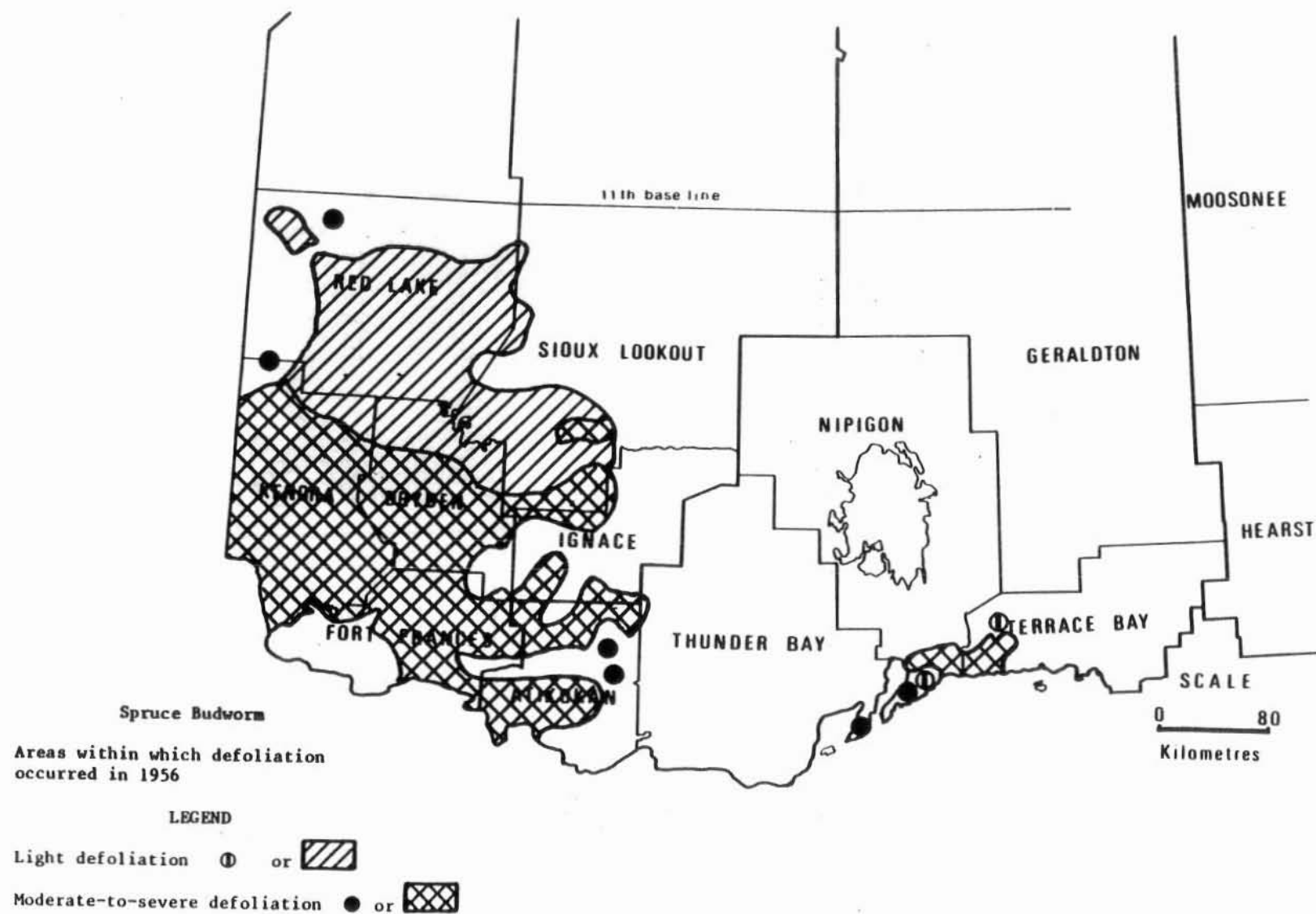
NORTHWESTERN ONTARIO



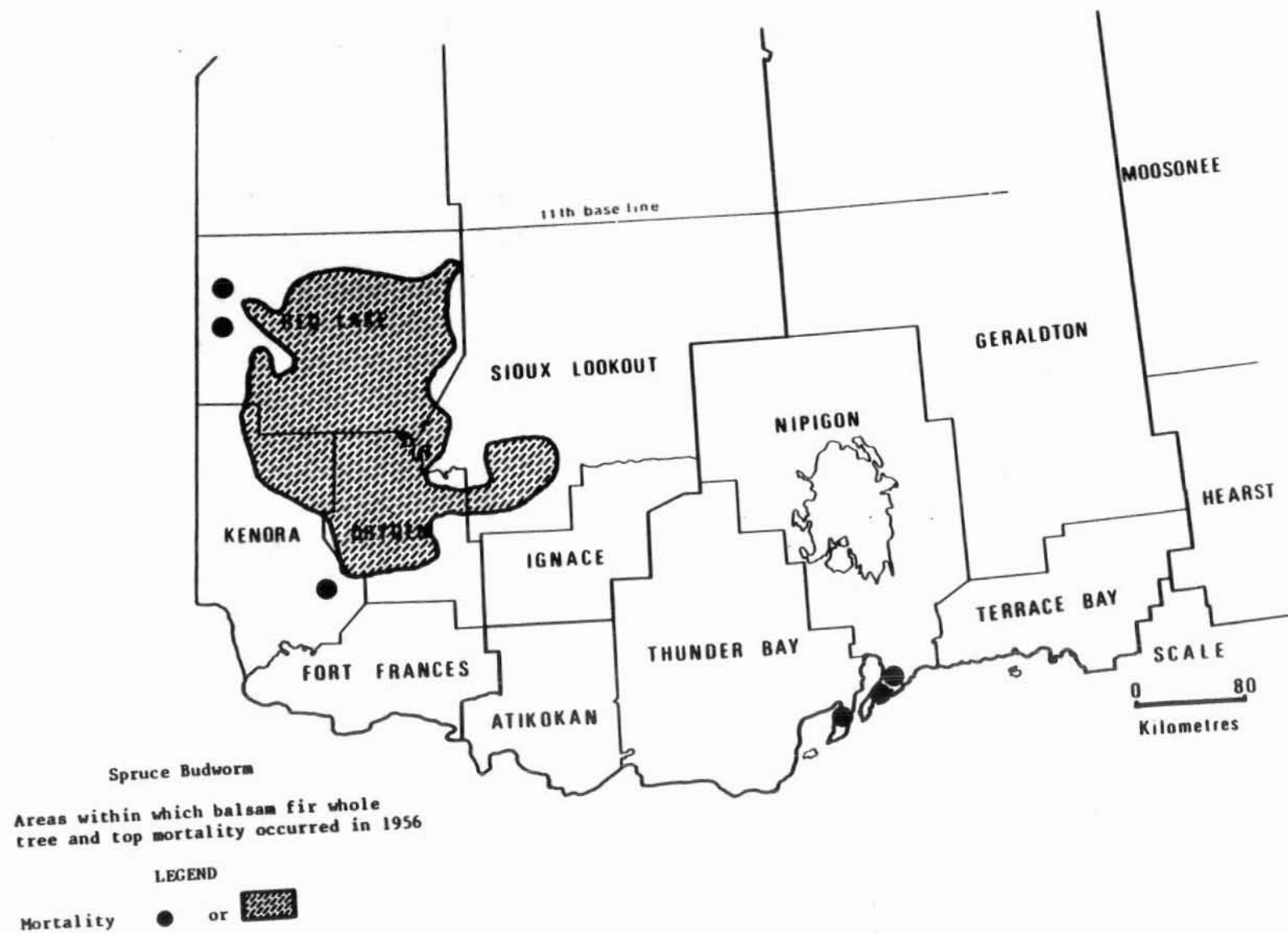
NORTHWESTERN ONTARIO



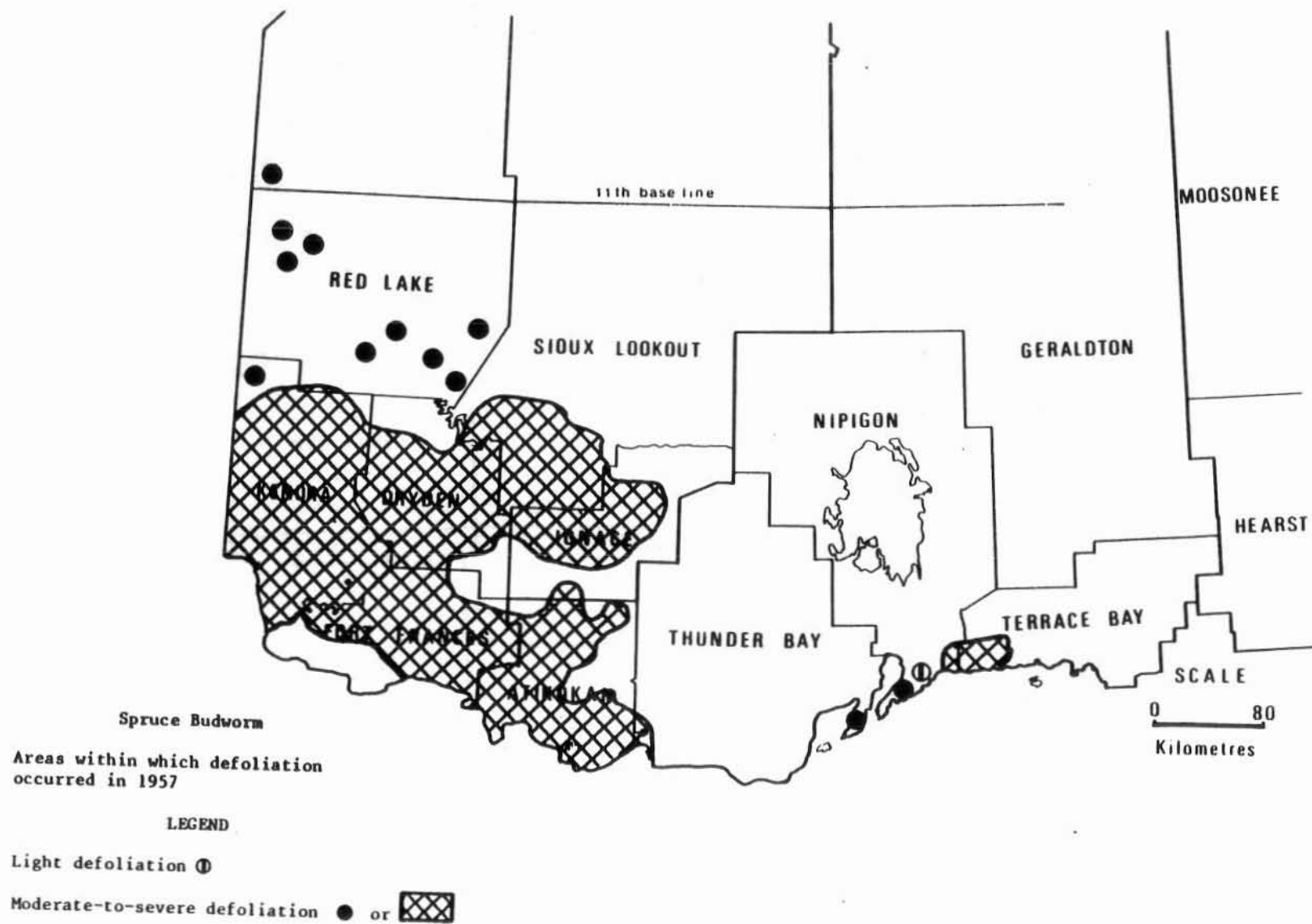
NORTHWESTERN ONTARIO



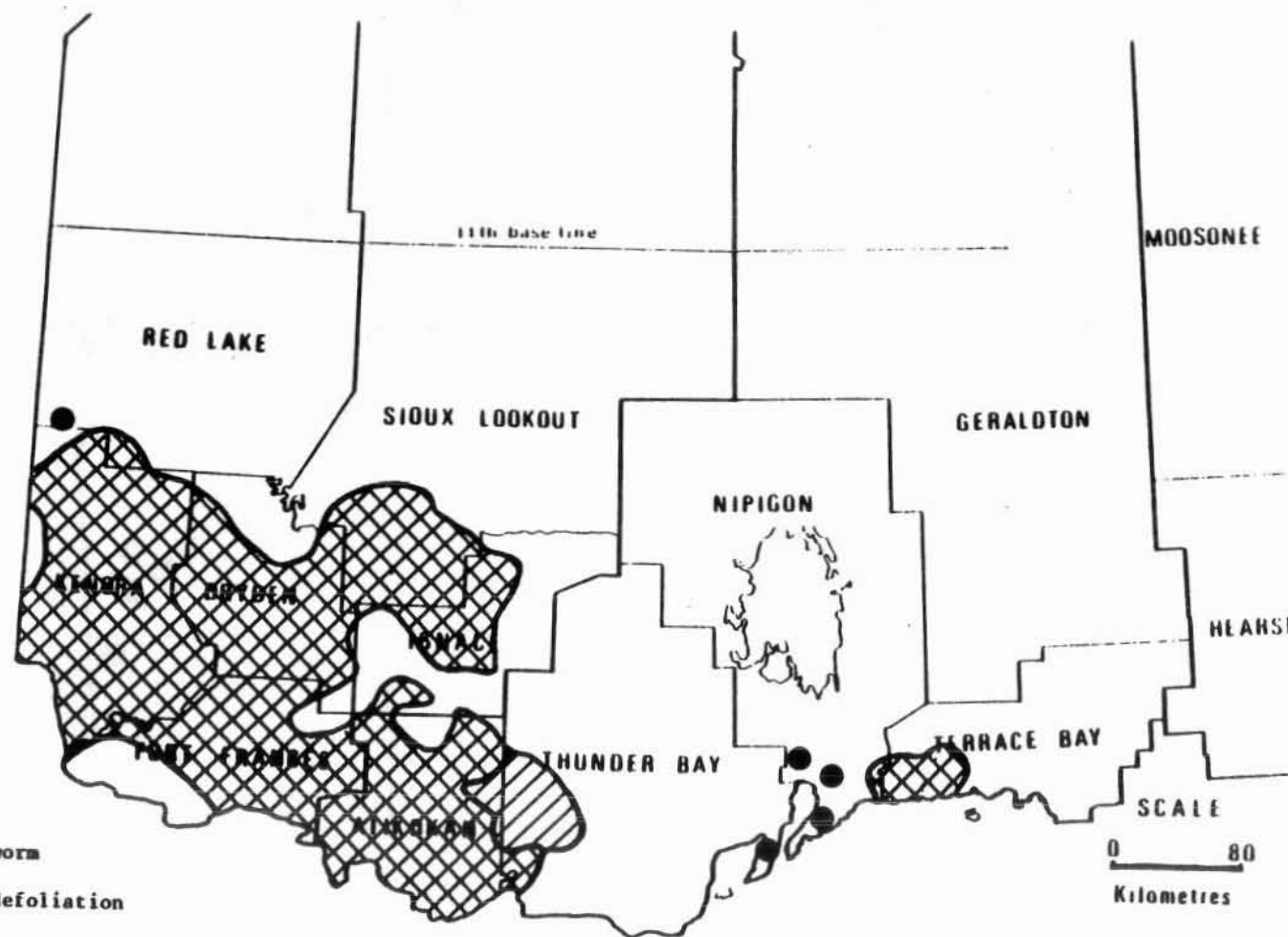
NORTHWESTERN ONTARIO



NORTHWESTERN ONTARIO



NORTHWESTERN ONTARIO



Spruce Budworm

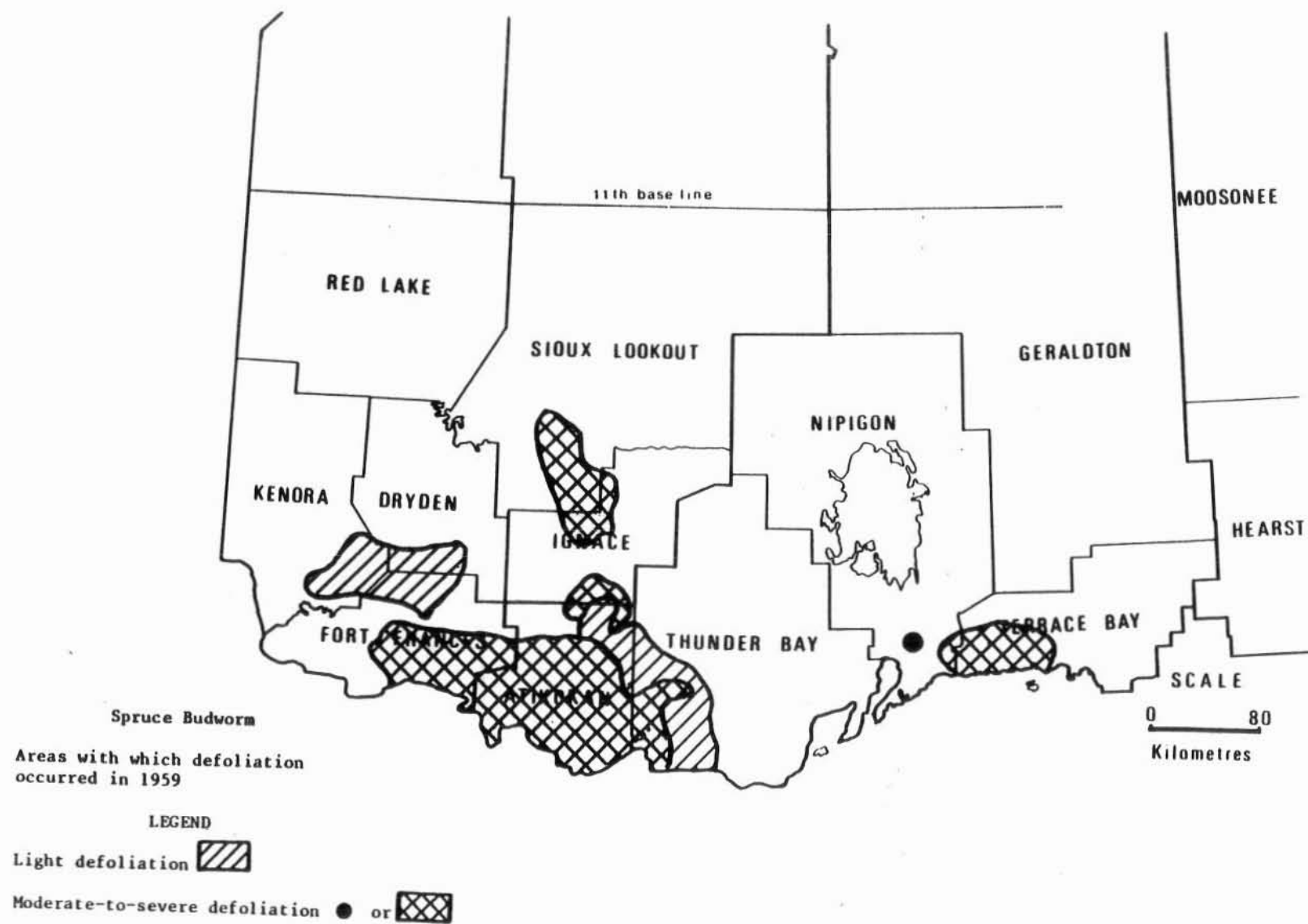
Areas within which defoliation
occurred in 1958

LEGEND

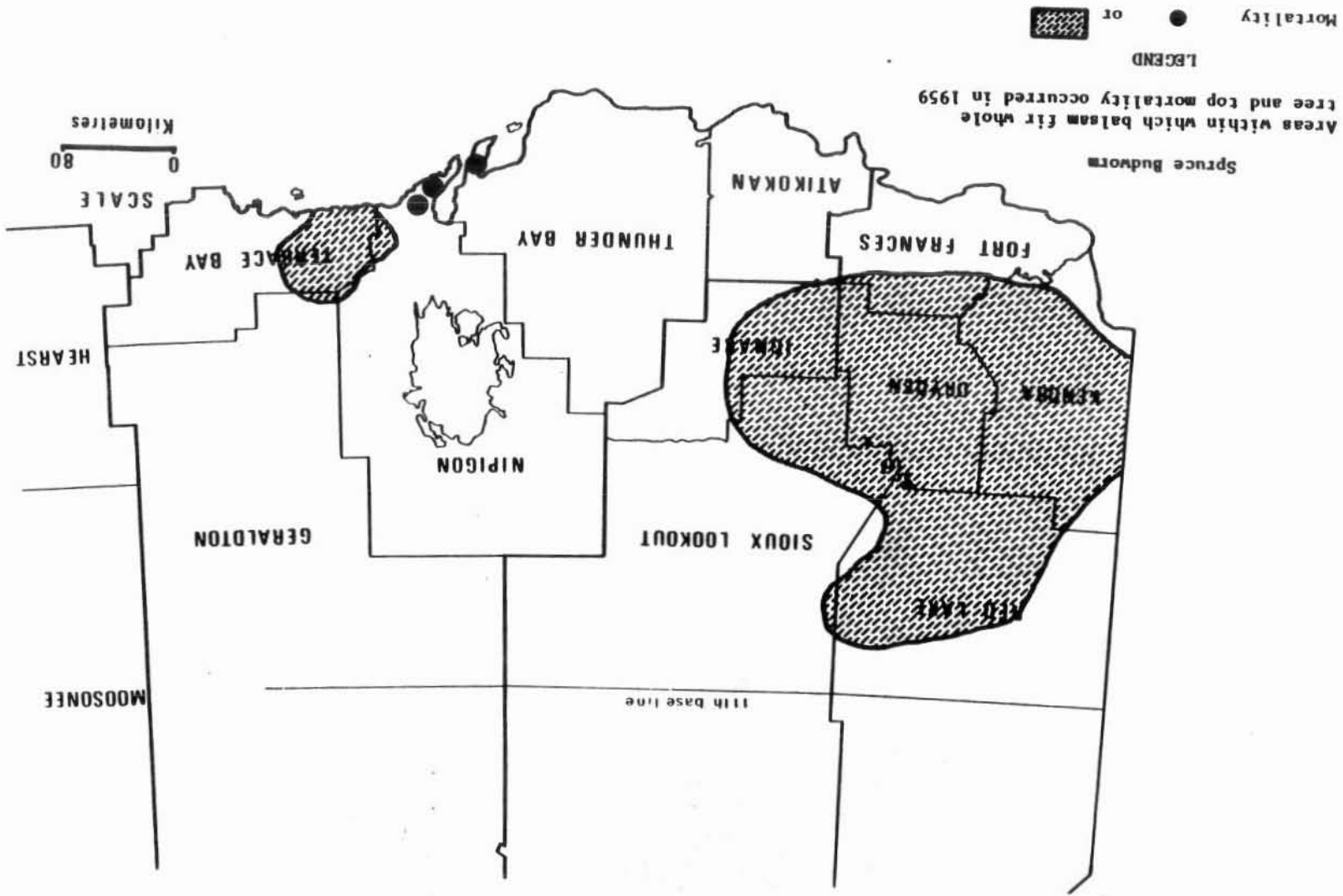
Light defoliation 

Moderate-to-severe defoliation ● or 

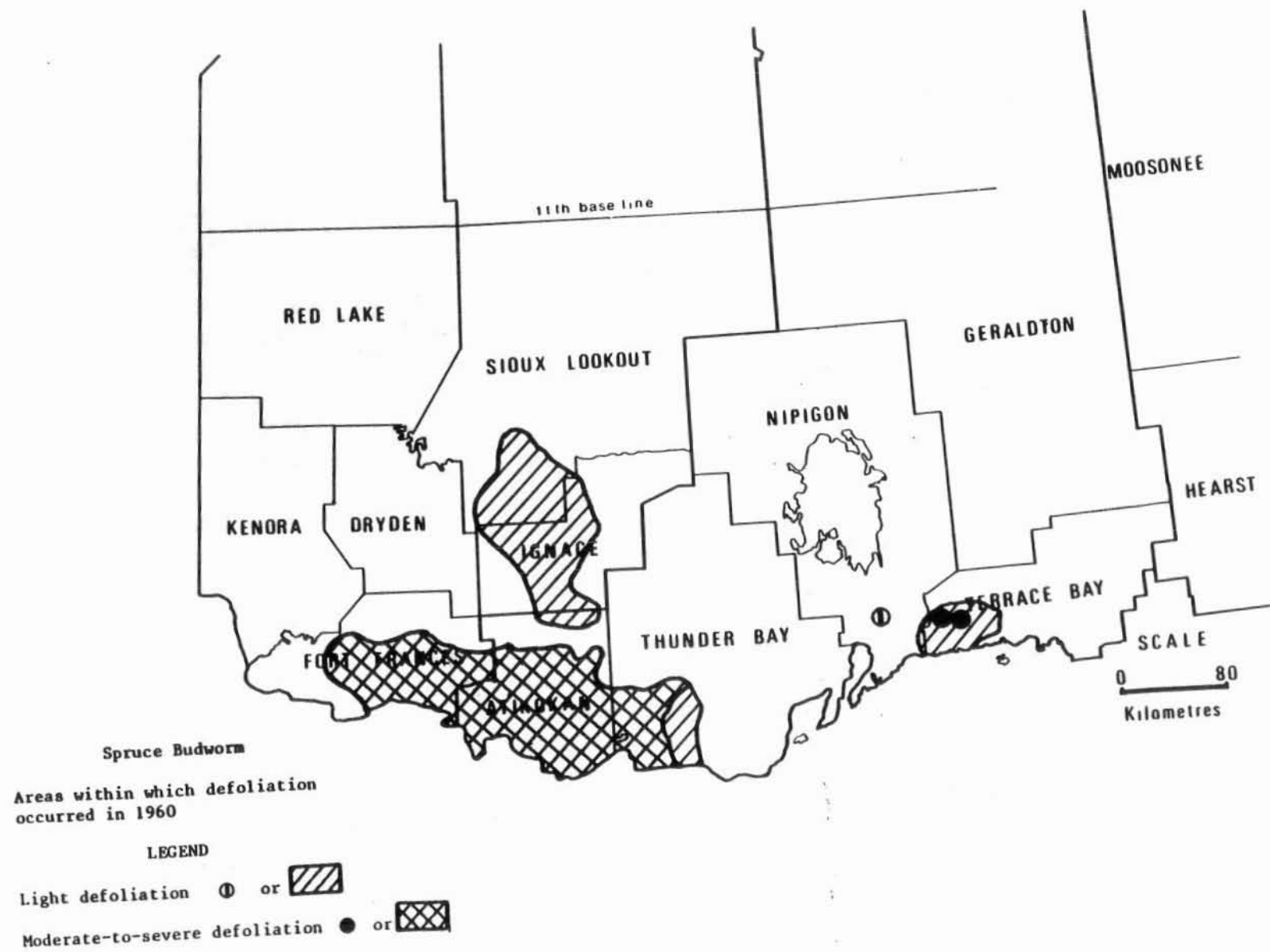
NORTHWESTERN ONTARIO



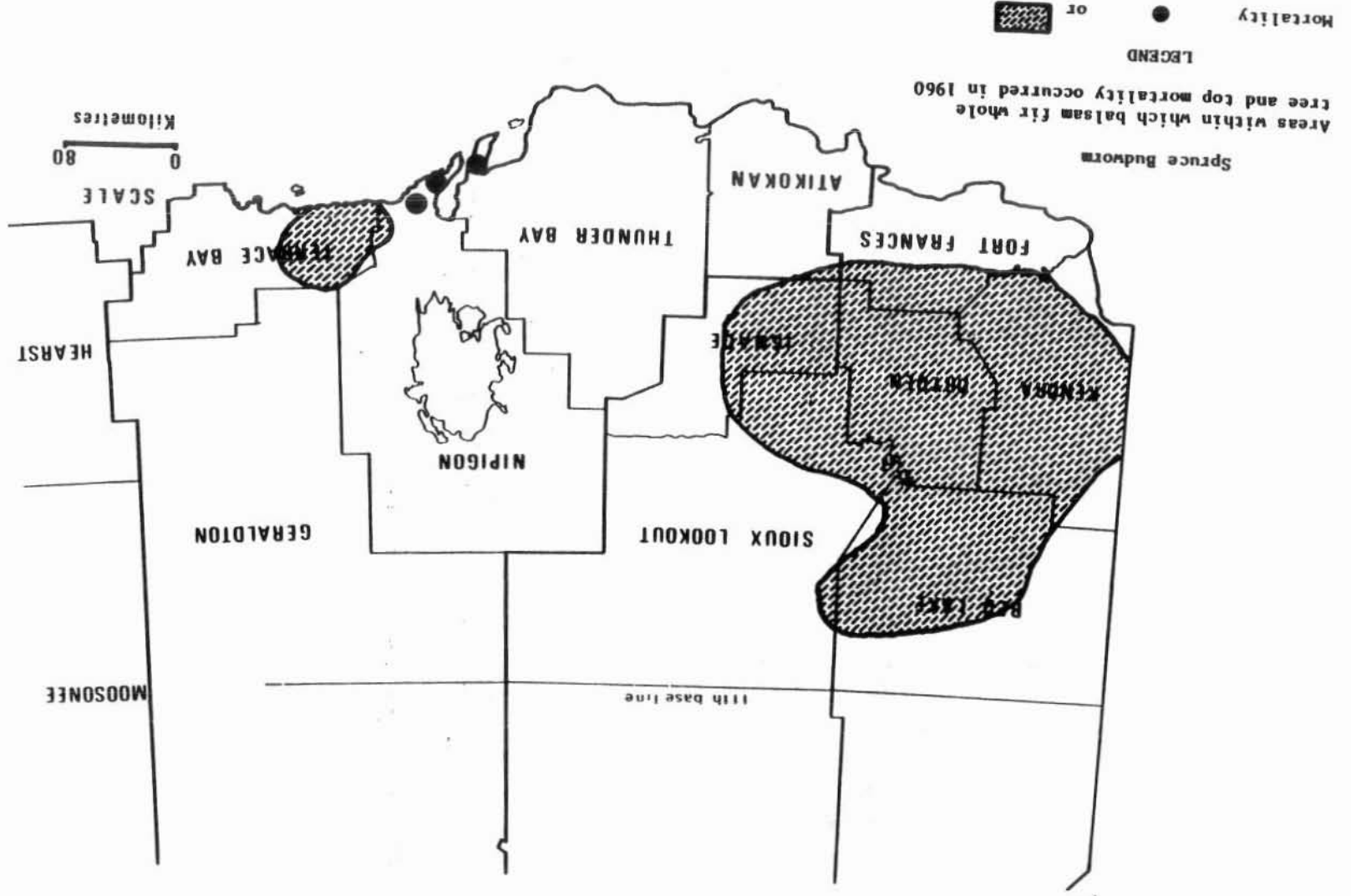
NORTHWESTERN ONTARIO



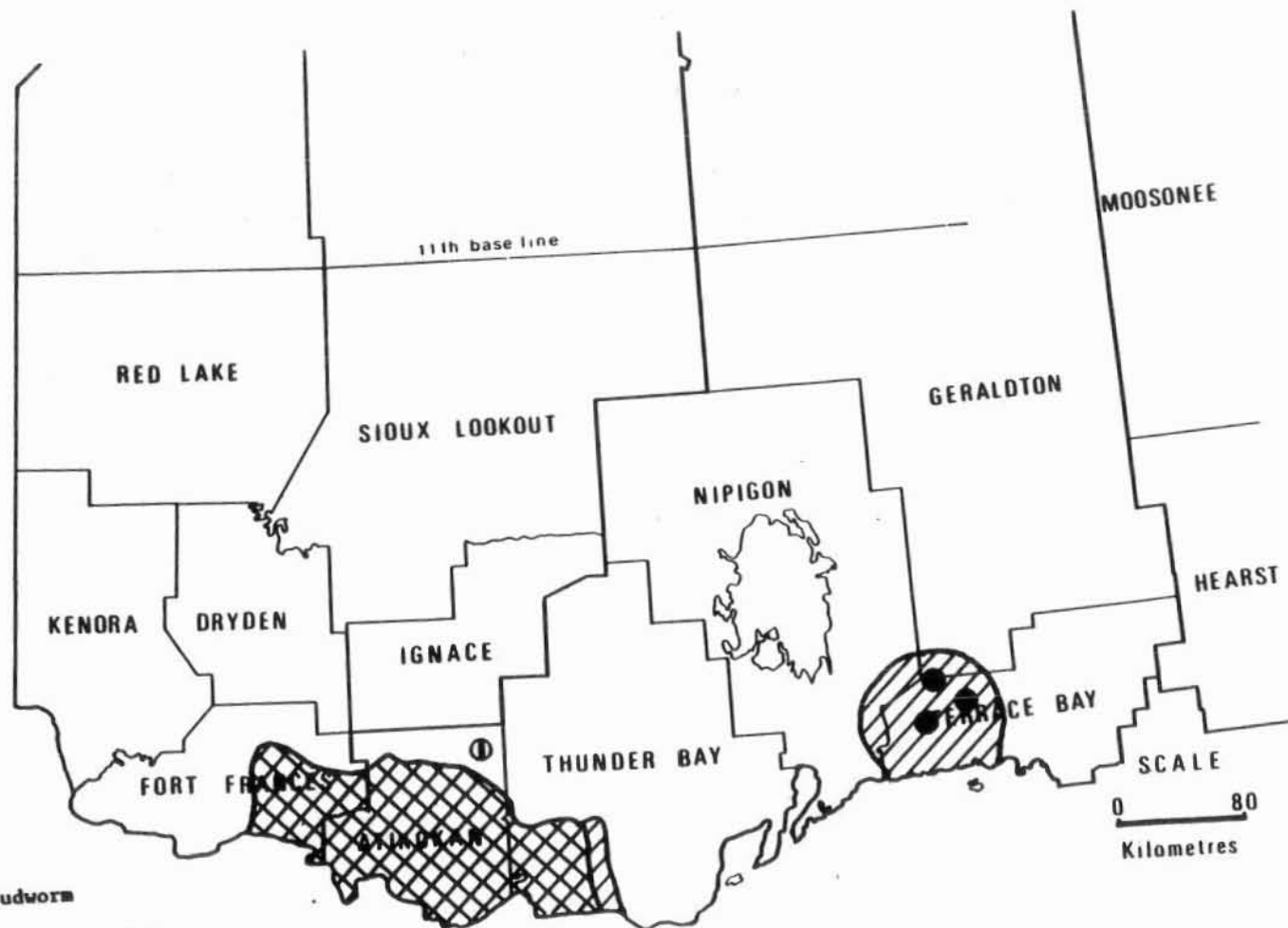
NORTHWESTERN ONTARIO



NORTHWESTERN ONTARIO




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Spruce Budworm

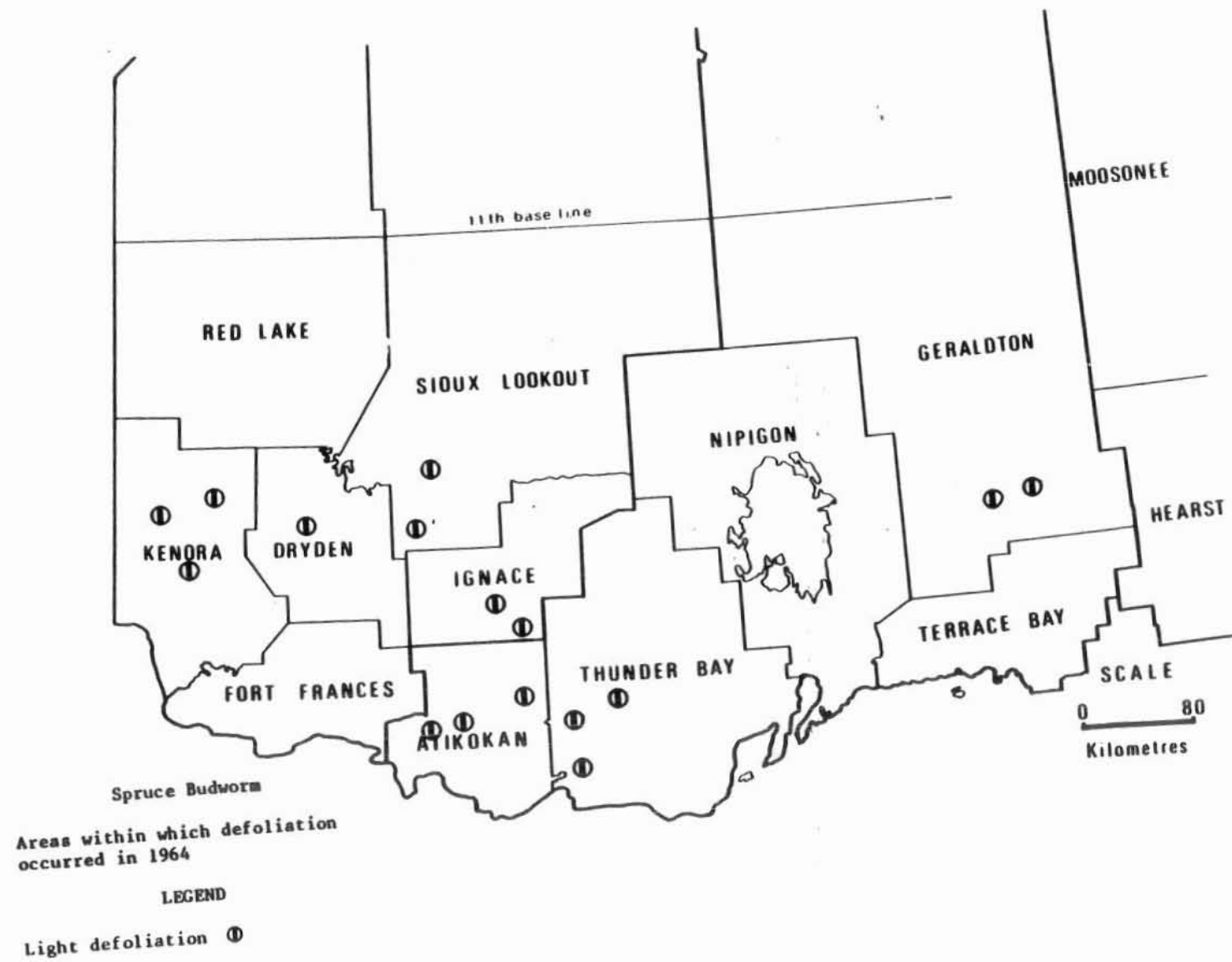
Areas within which defoliation occurred in 1961

LEGEND

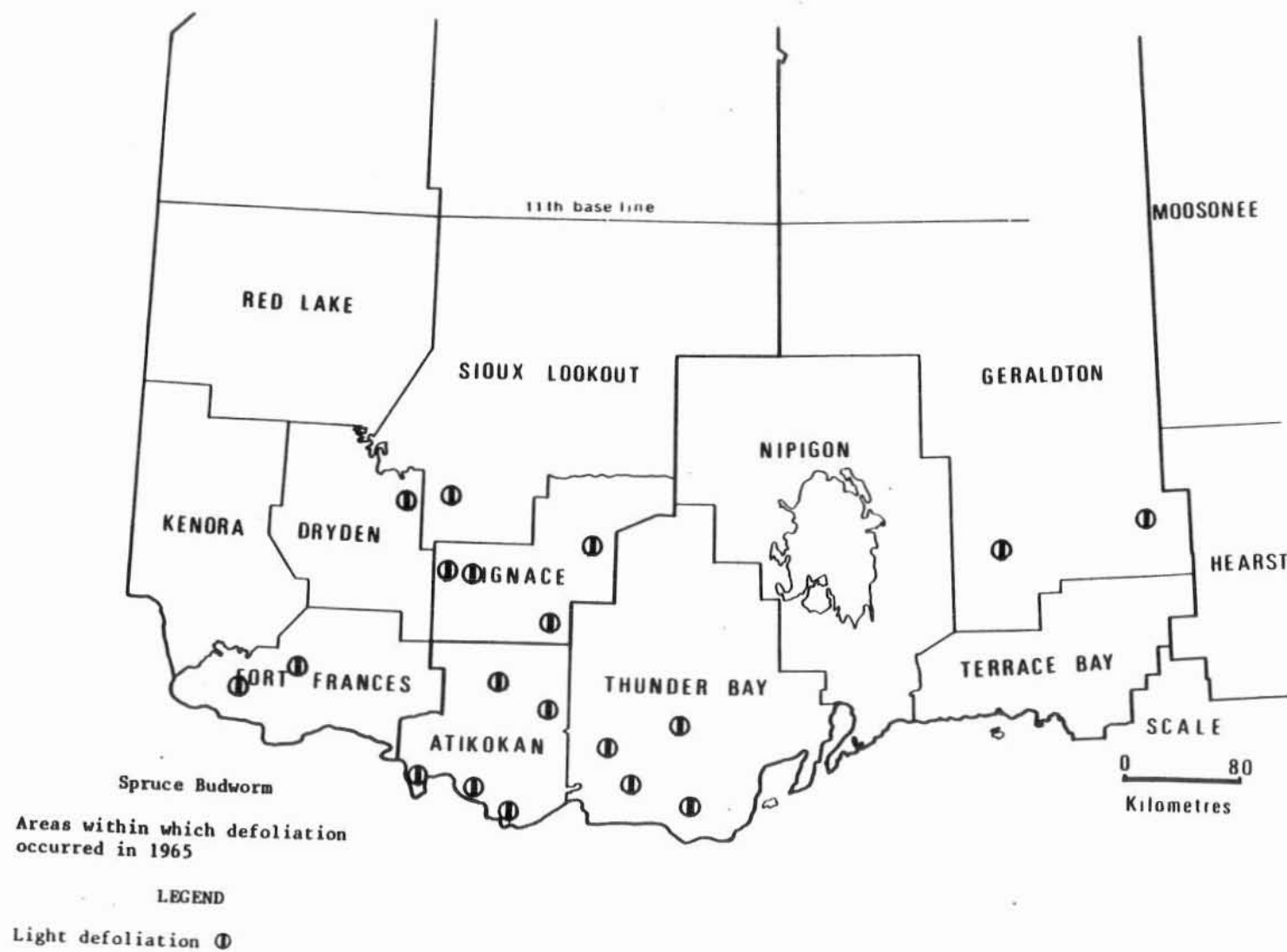
Light defoliation ① or 

Moderate-to-severe defoliation ● or 

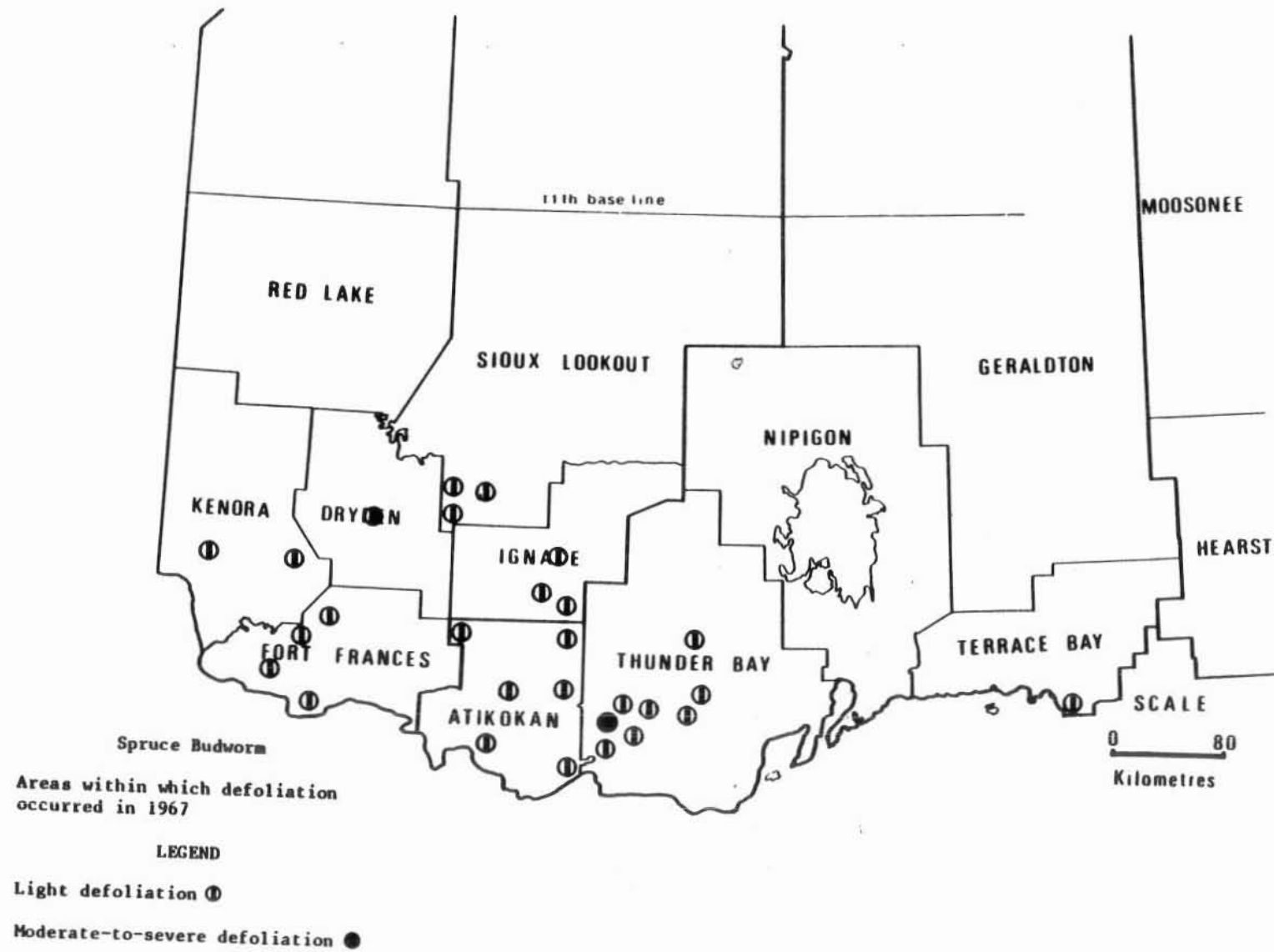
NORTHWESTERN ONTARIO



NORTHWESTERN ONTARIO



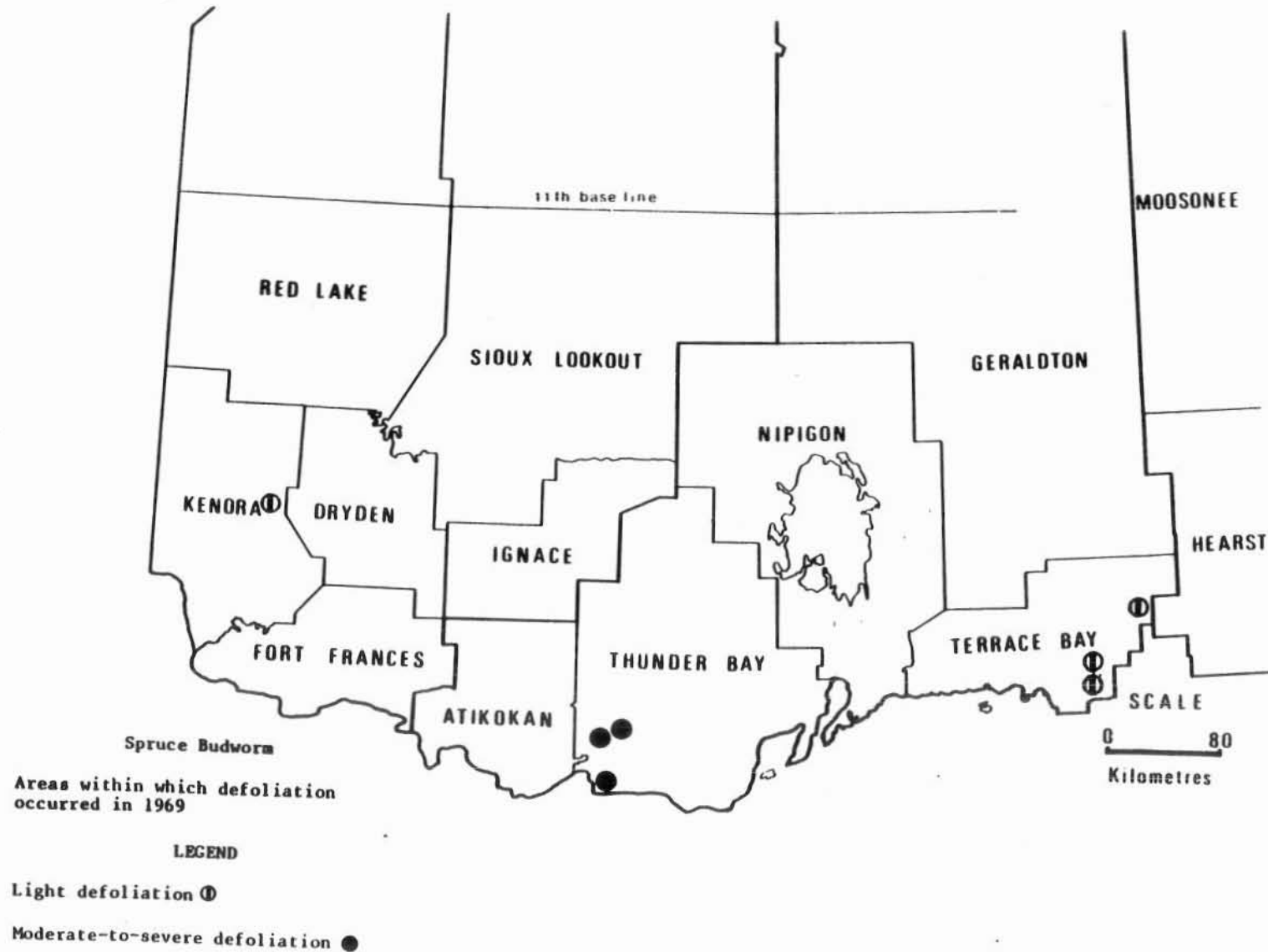
NORTHWESTERN ONTARIO



NORTHWESTERN ONTARIO



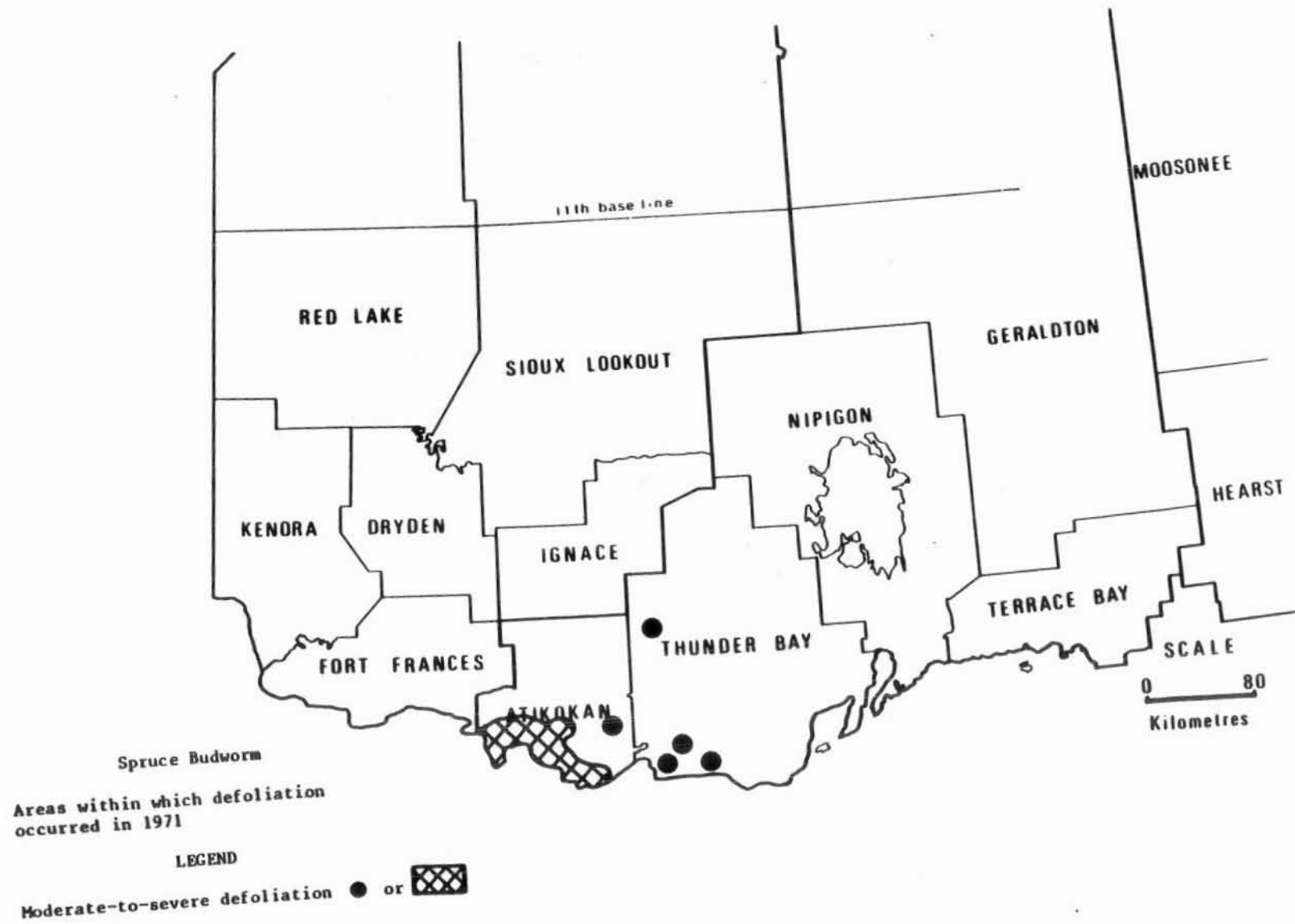
NORTHWESTERN ONTARIO



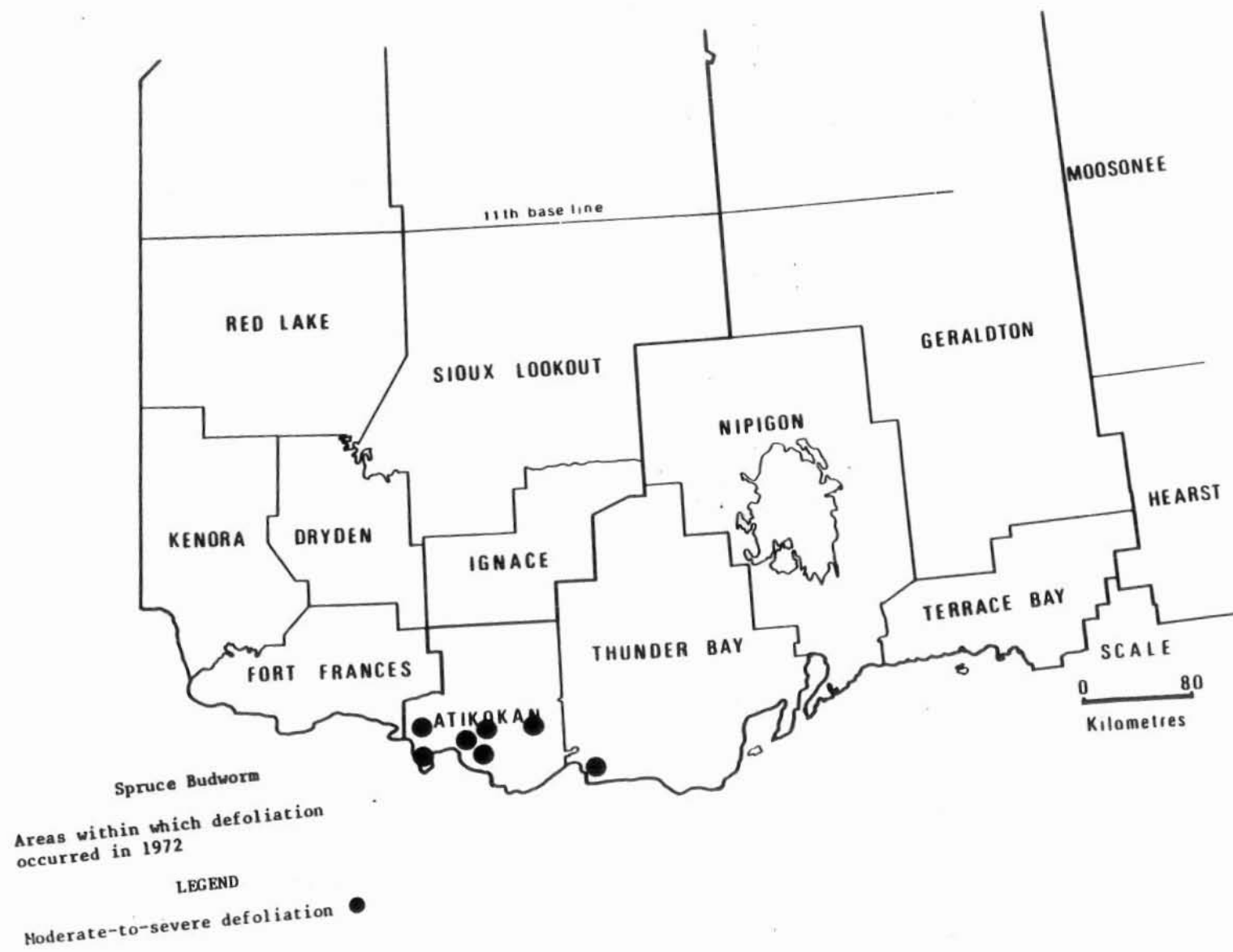
NORTHWESTERN ONTARIO



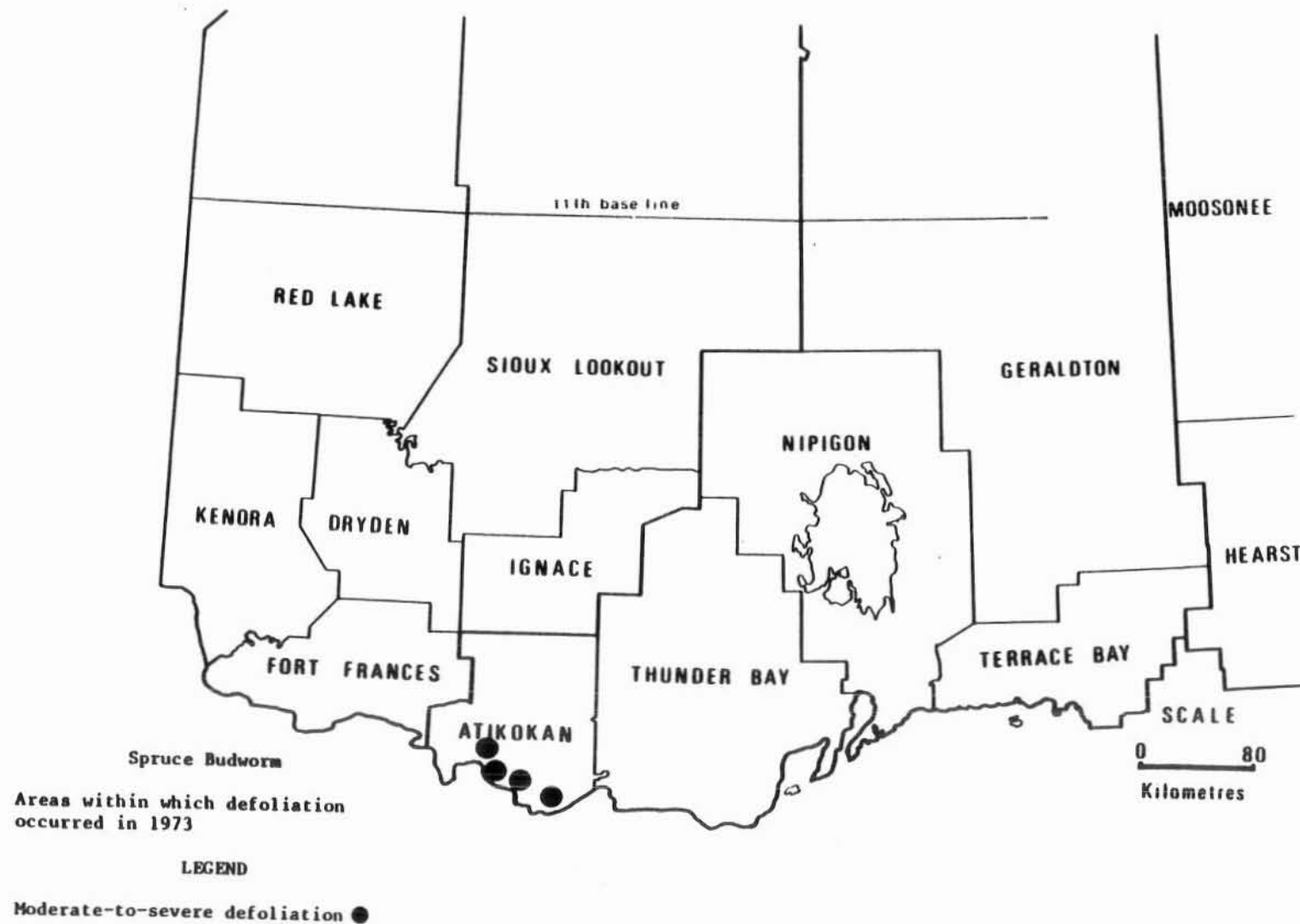
NORTHWESTERN ONTARIO



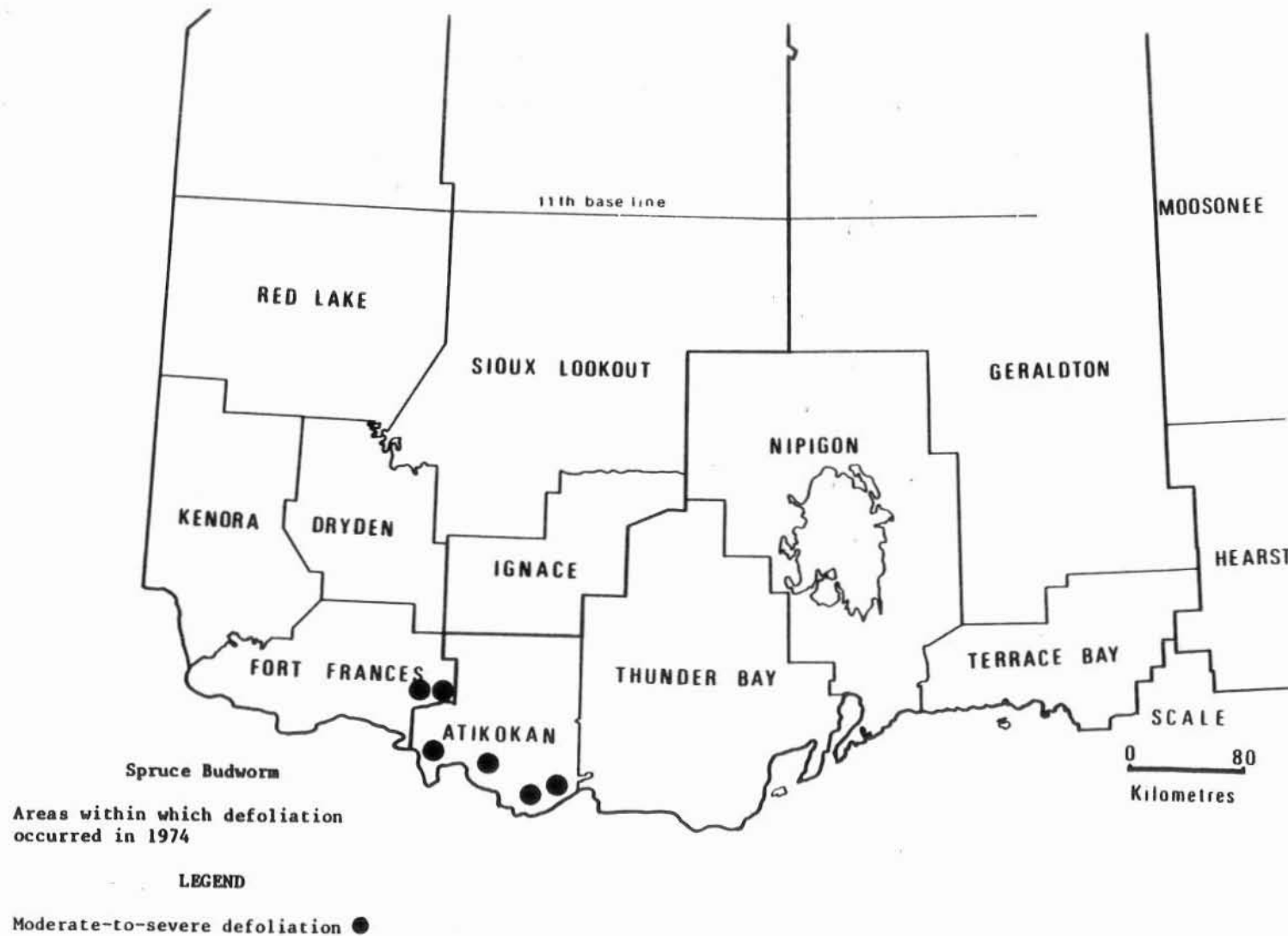
NORTHWESTERN ONTARIO



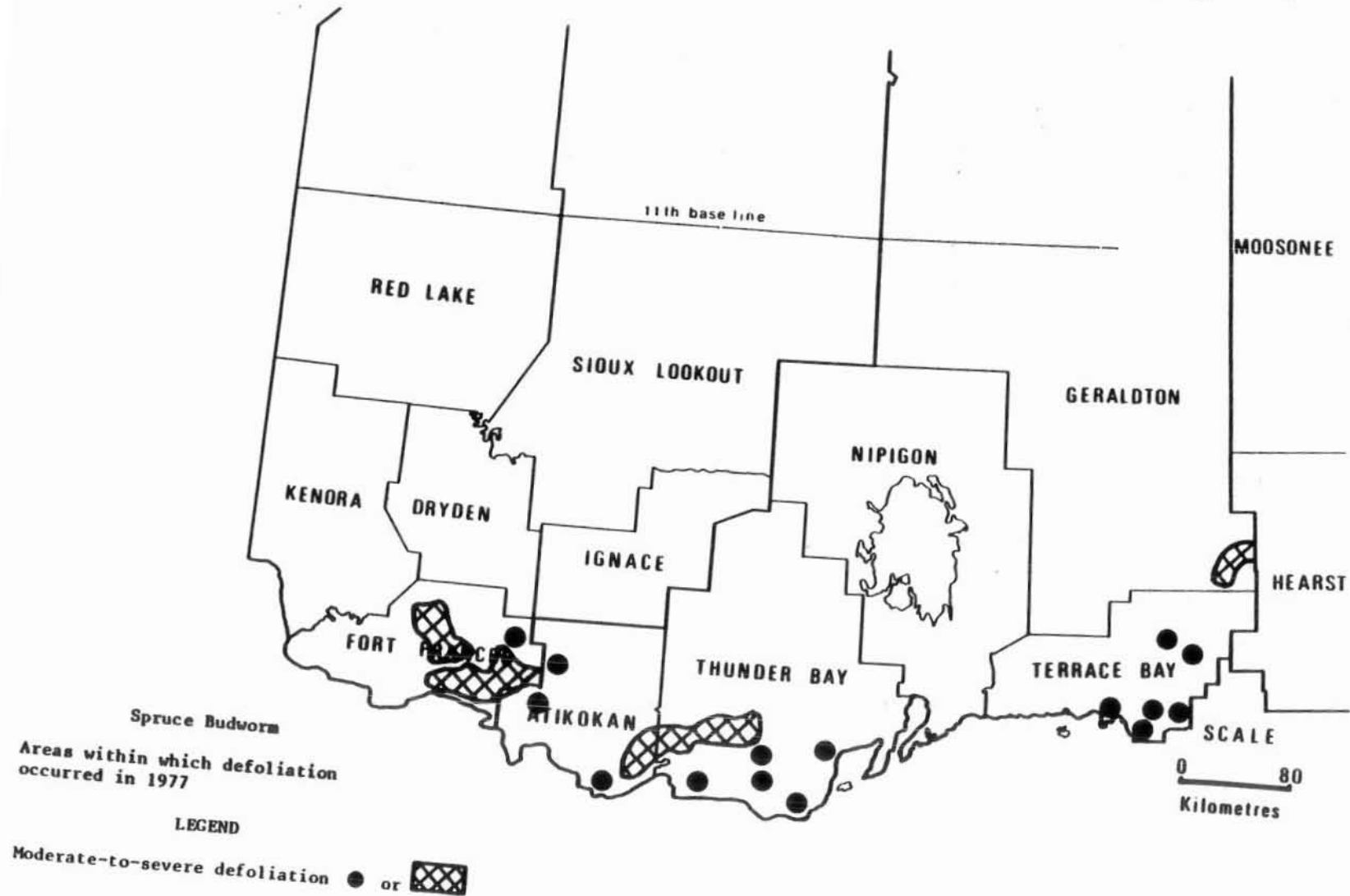
NORTHWESTERN ONTARIO



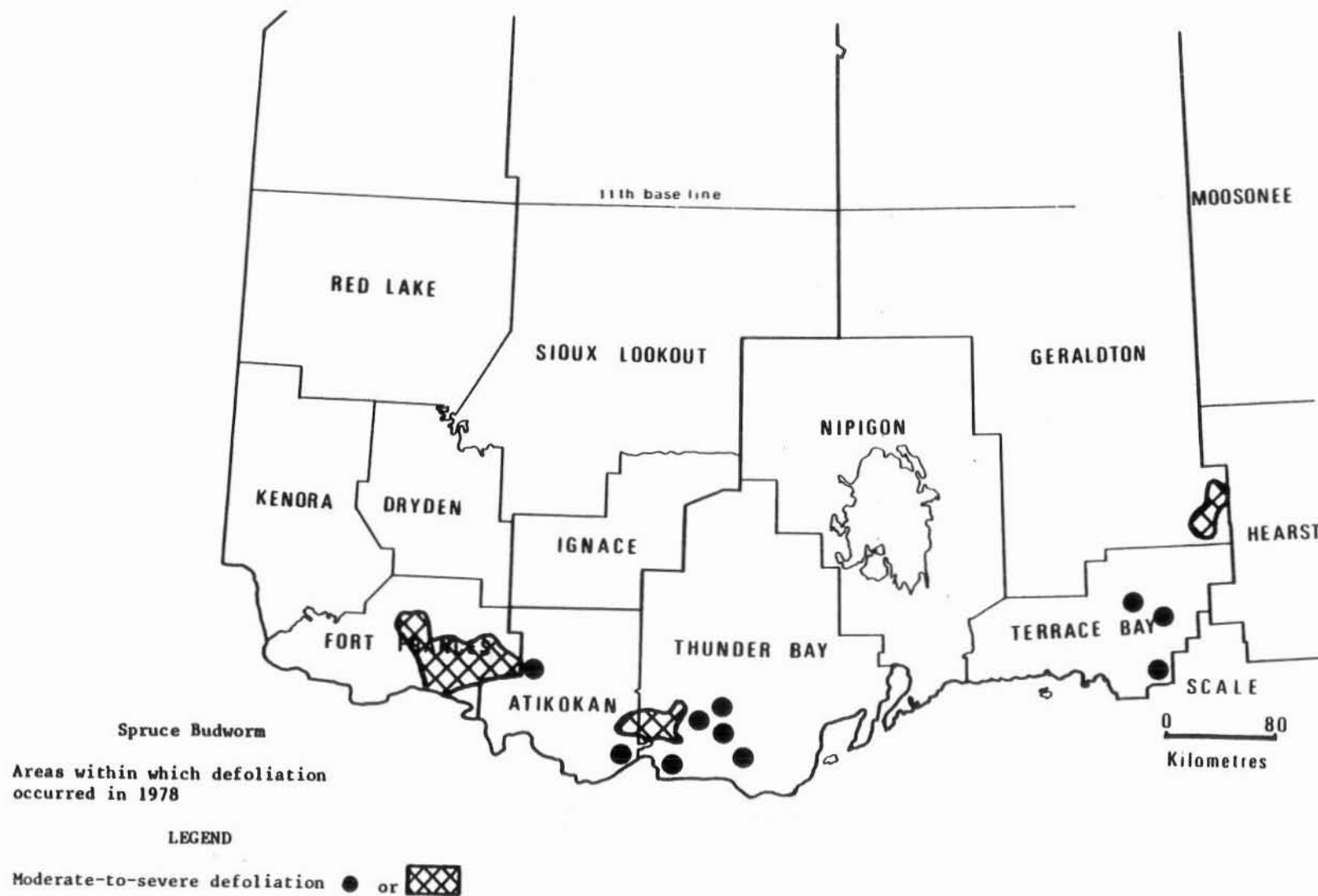
NORTHWESTERN ONTARIO



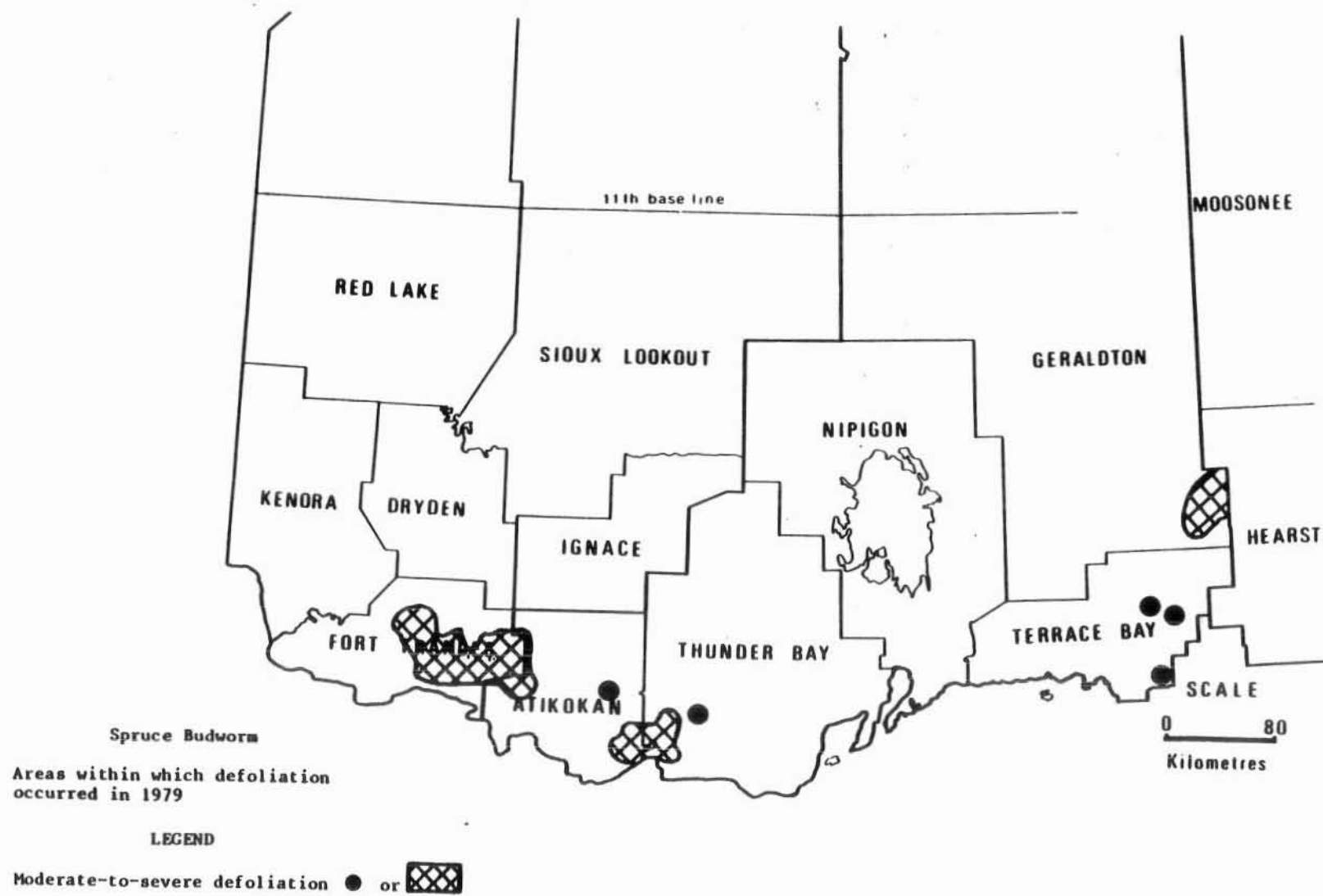
NORTHWESTERN ONTARIO



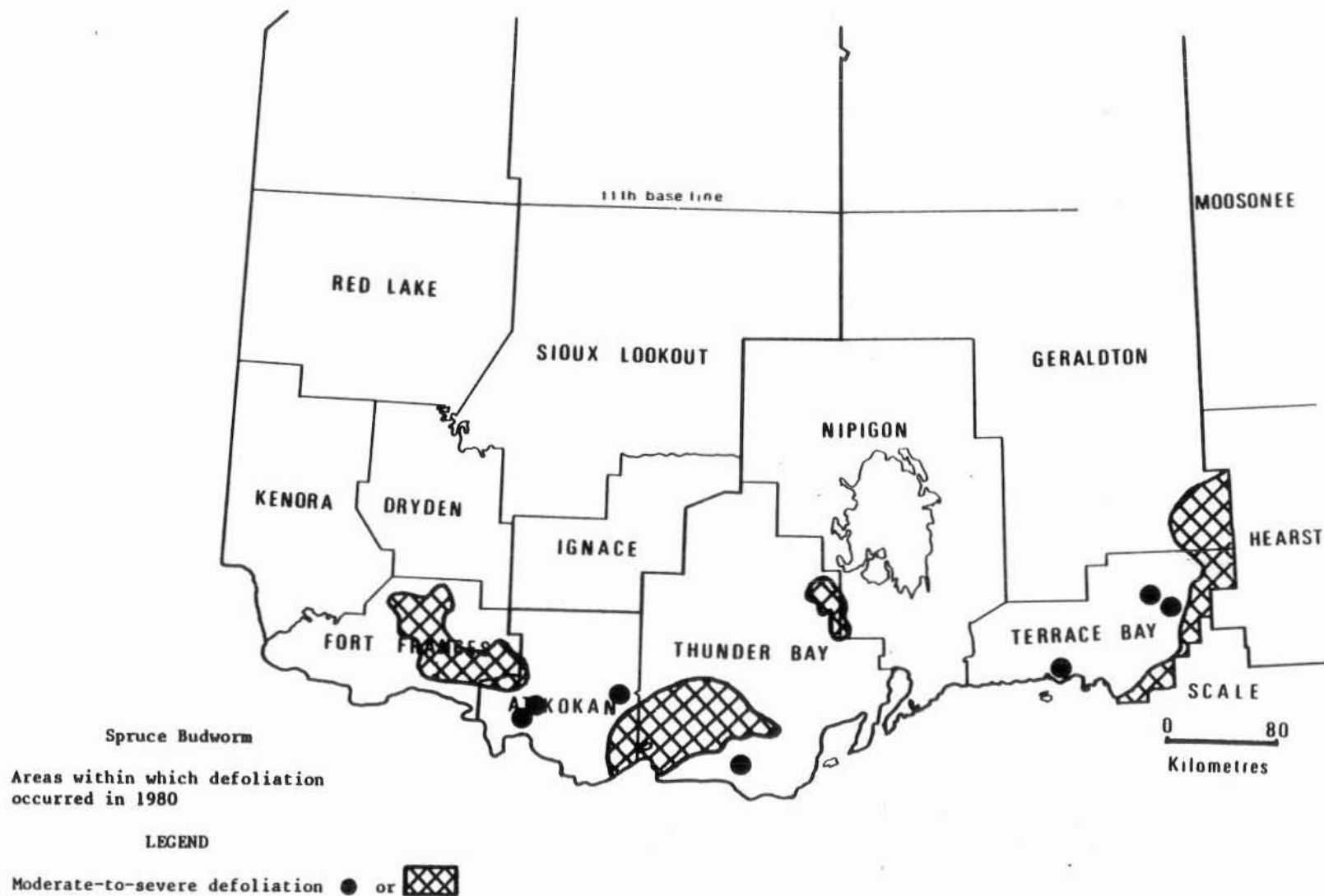
NORTHWESTERN ONTARIO



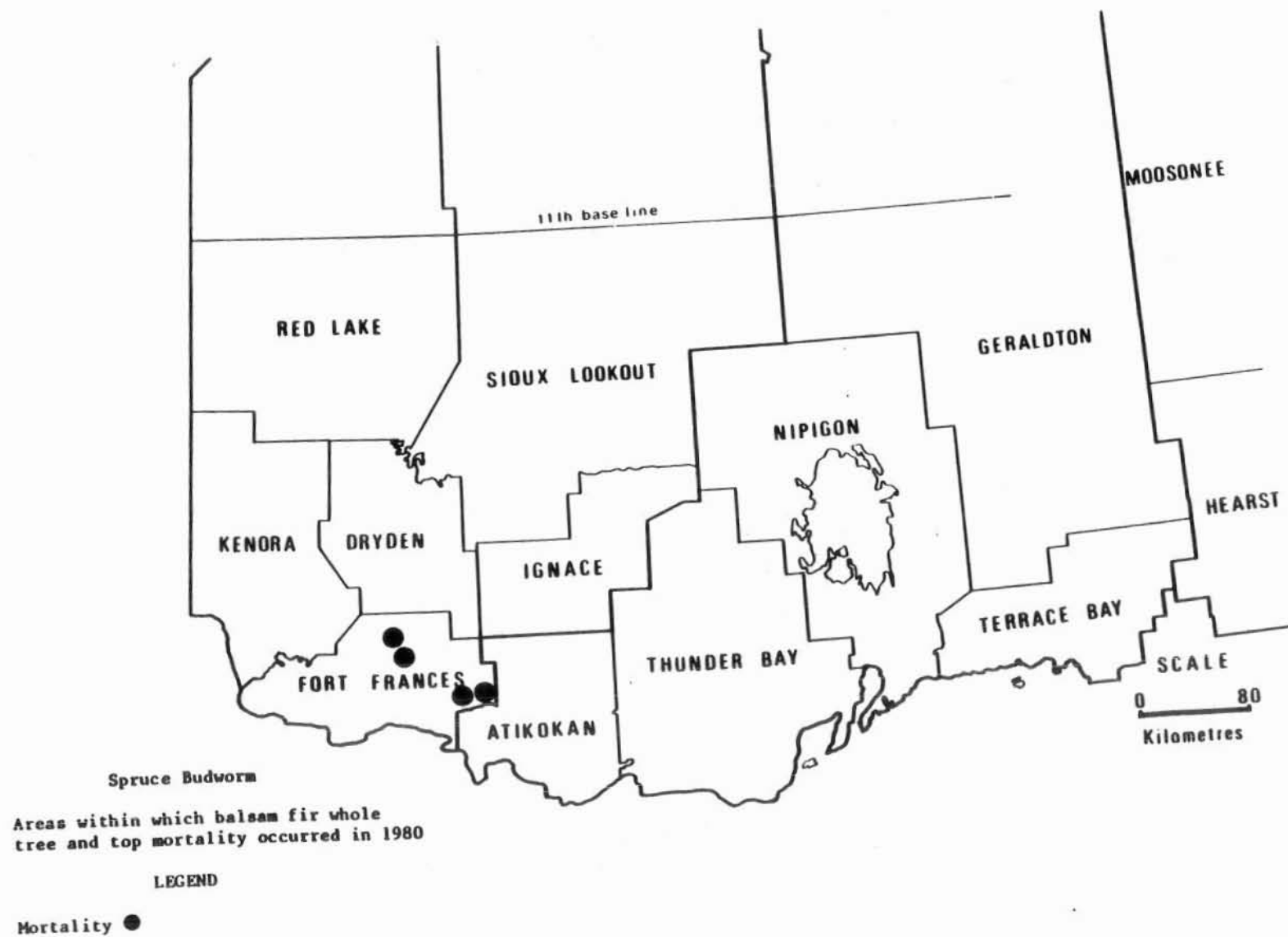
NORTHWESTERN ONTARIO



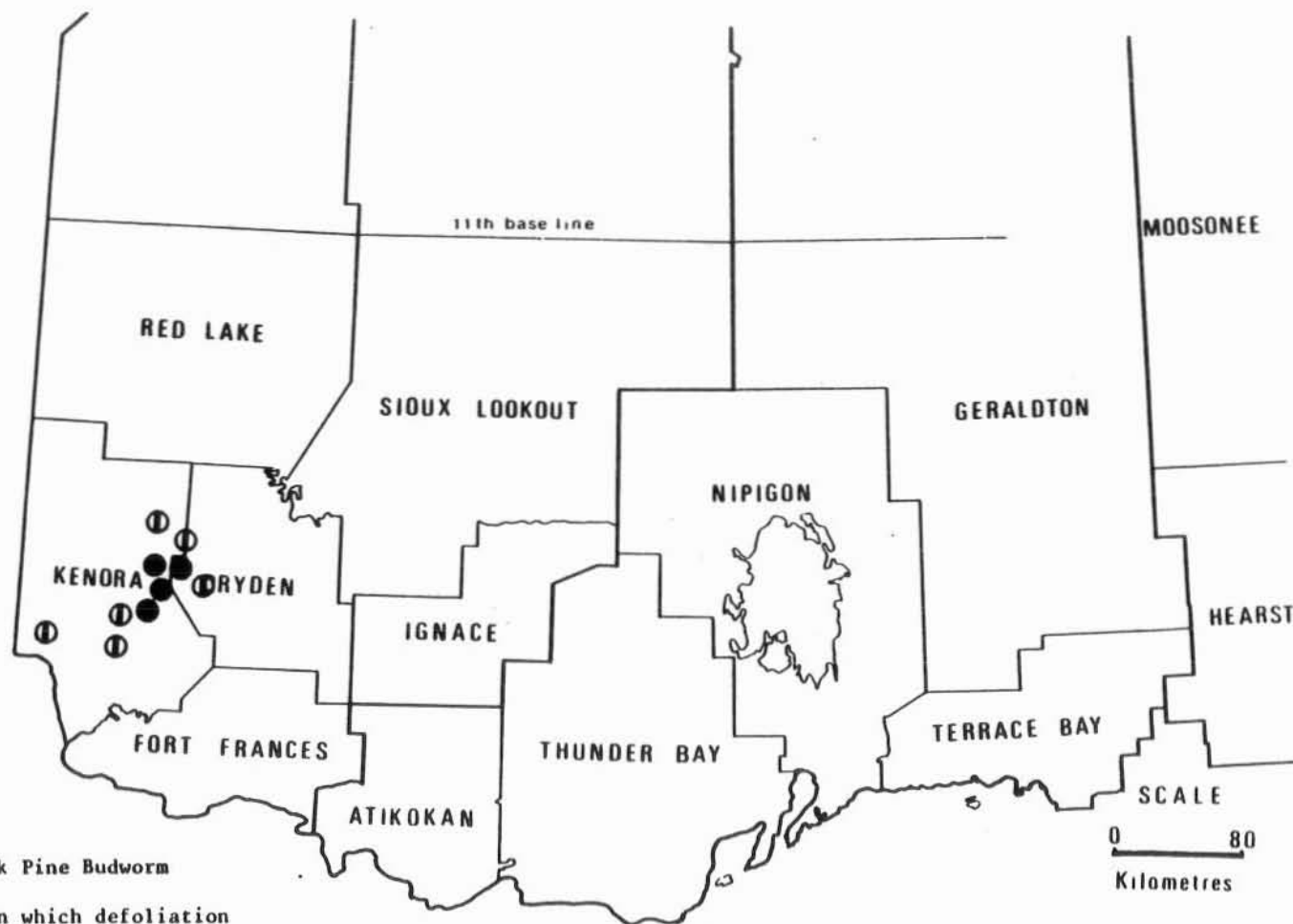
NORTHWESTERN ONTARIO



NORTHWESTERN ONTARIO



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Jack Pine Budworm

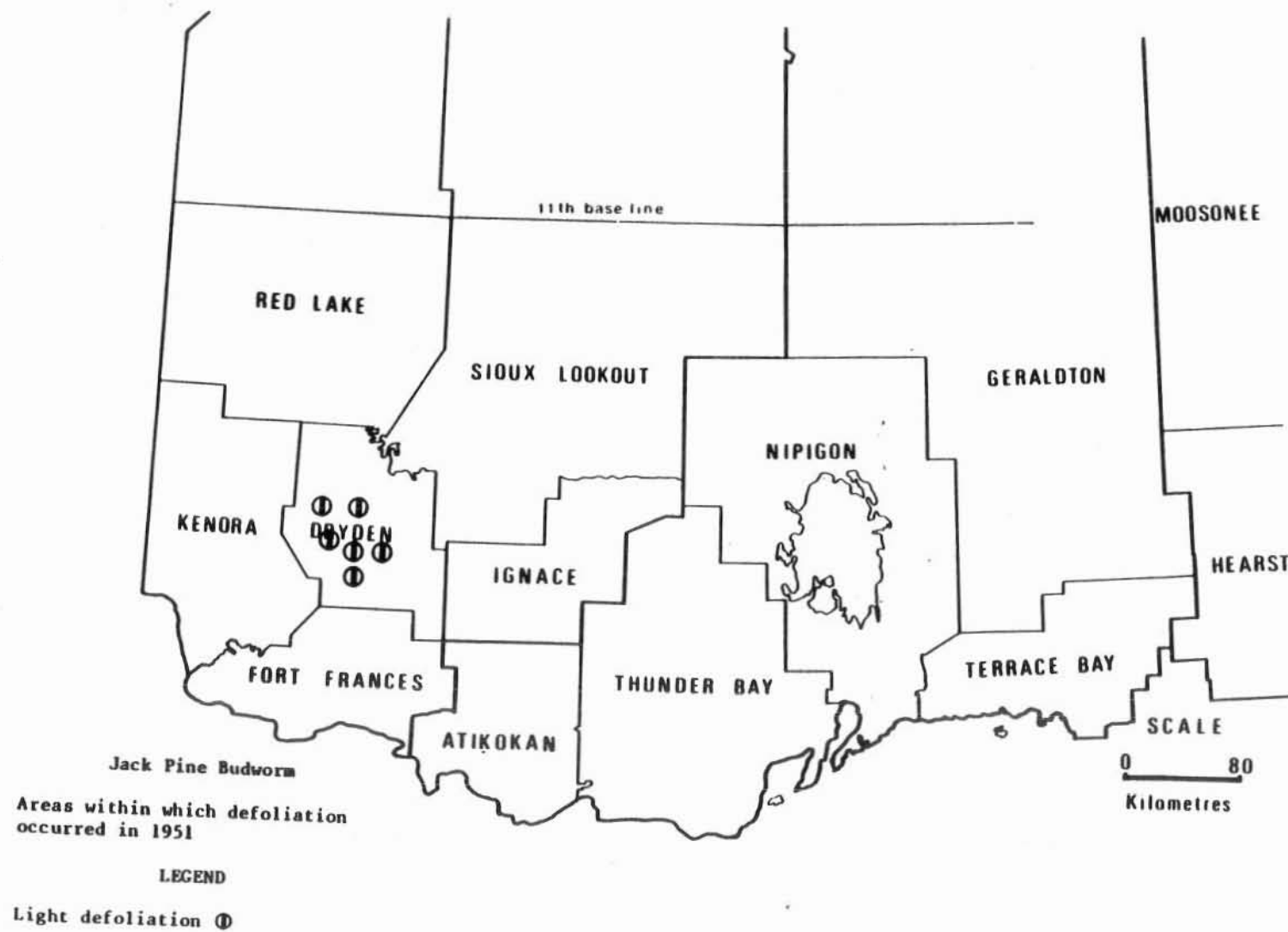
Areas within which defoliation
occurred in 1950

LEGEND

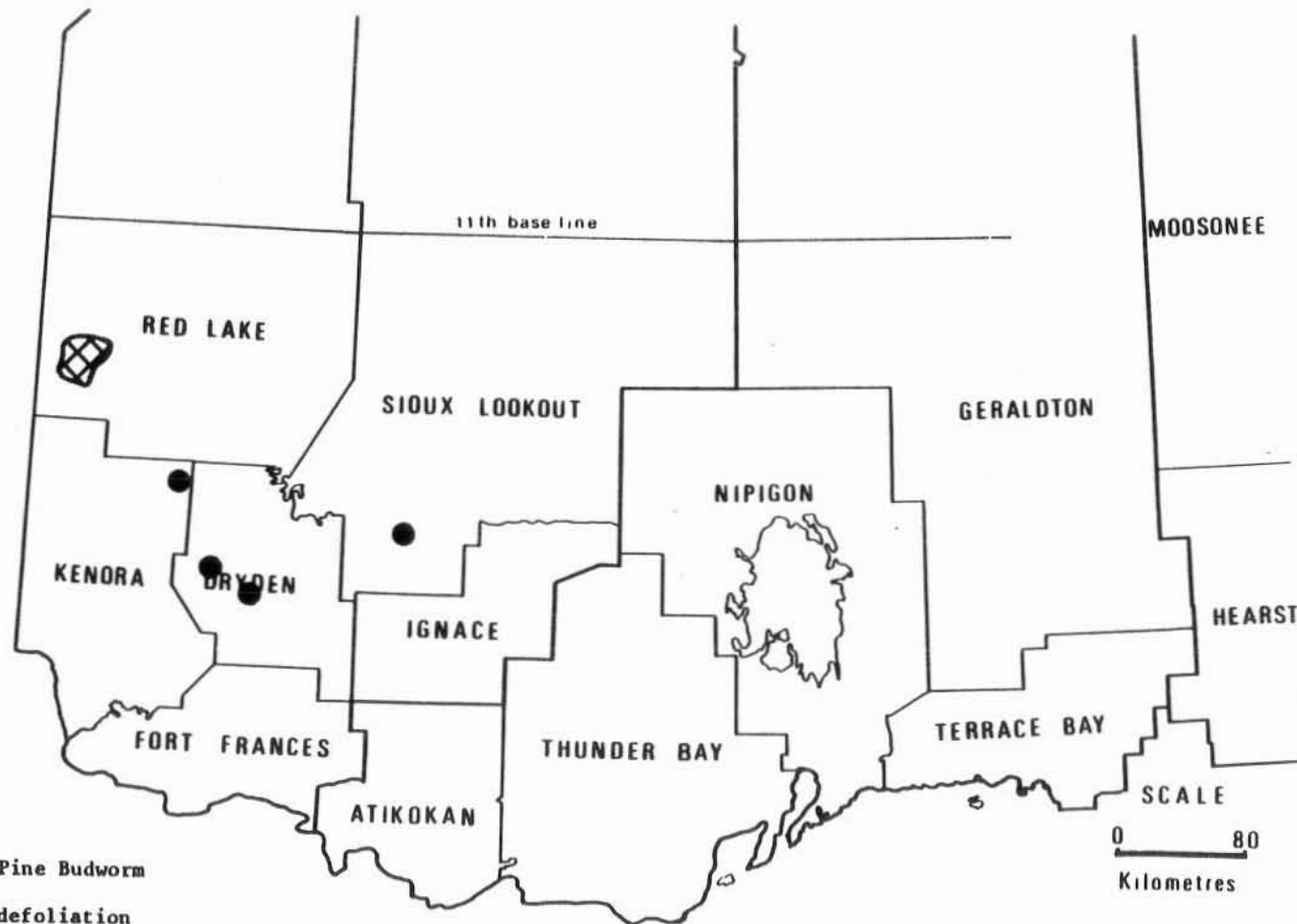
Light defoliation ○

Moderate-to-severe defoliation ●

NORTHWESTERN ONTARIO




NORTHWESTERN ONTARIO



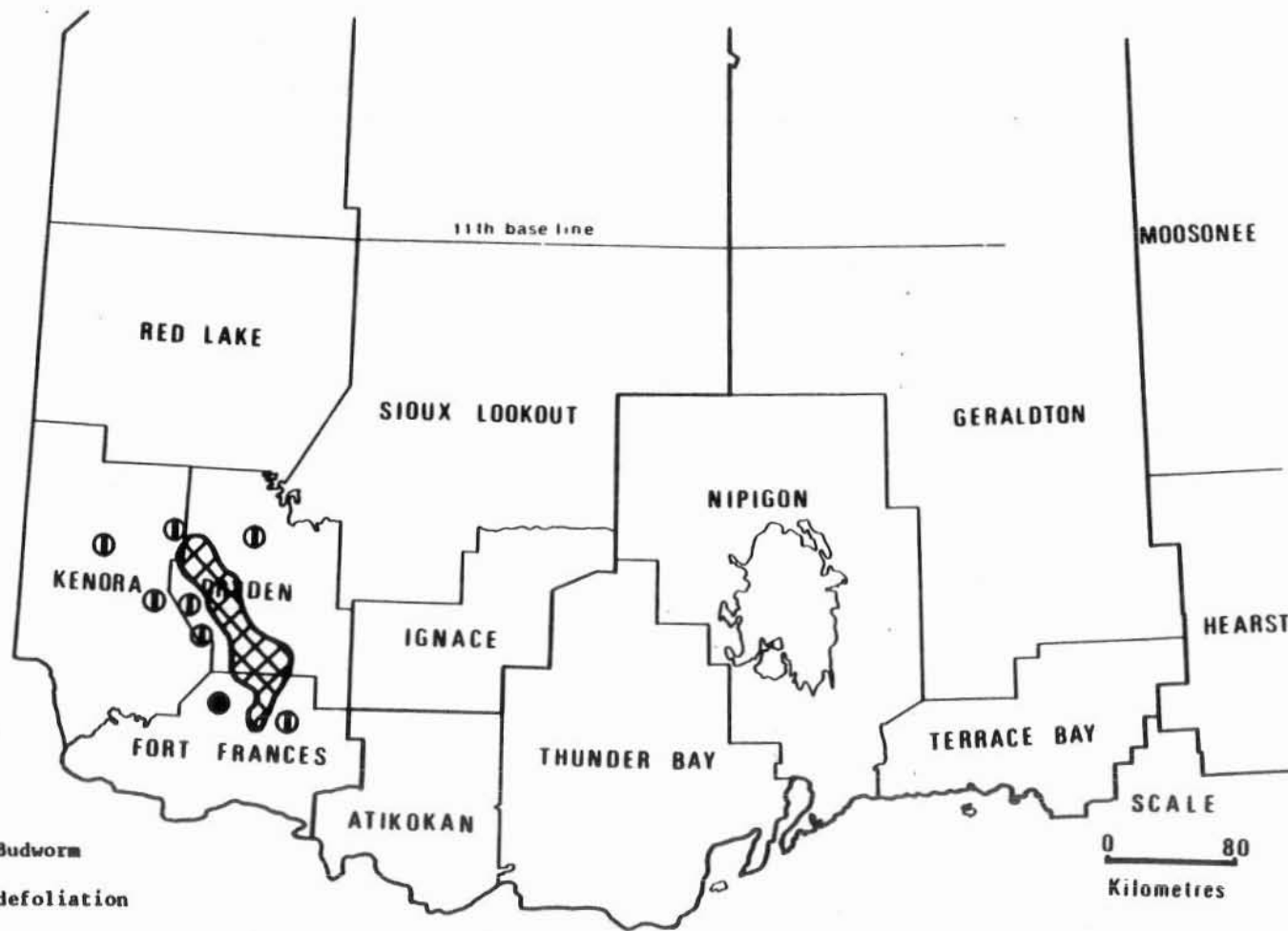
Jack Pine Budworm

Areas within which defoliation
occurred in 1954

LEGEND

Moderate-to-severe defoliation ● or 


NORTHWESTERN ONTARIO



Jack Pine Budworm

Areas within which defoliation
occurred in 1961

LEGEND

Light defoliation ① or
Moderate-to-severe defoliation ● or 

NORTHWESTERN ONTARIO



Jack Pine Budworm
Areas within which defoliation
occurred in 1962

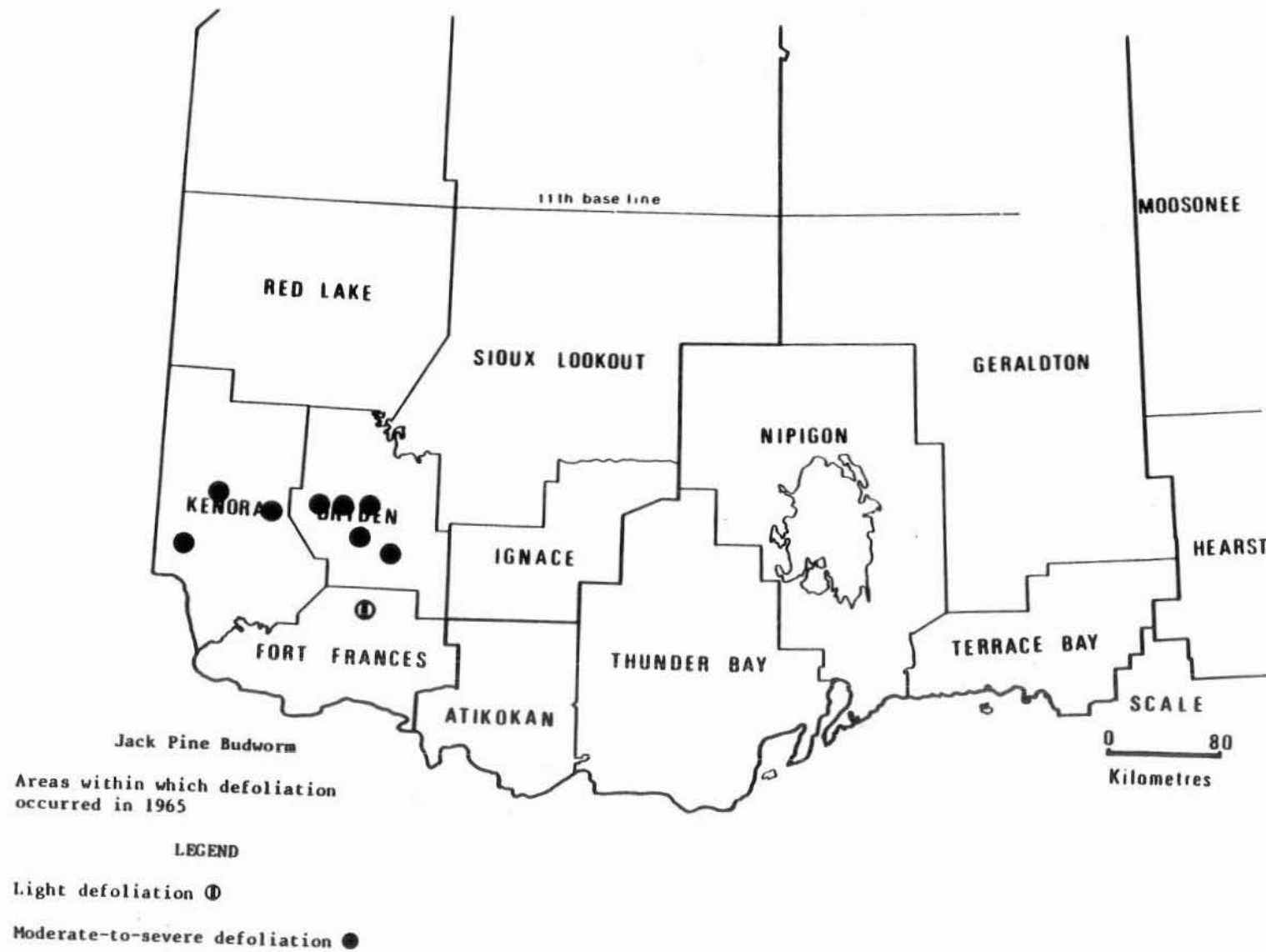
LEGEND

Light defoliation ①

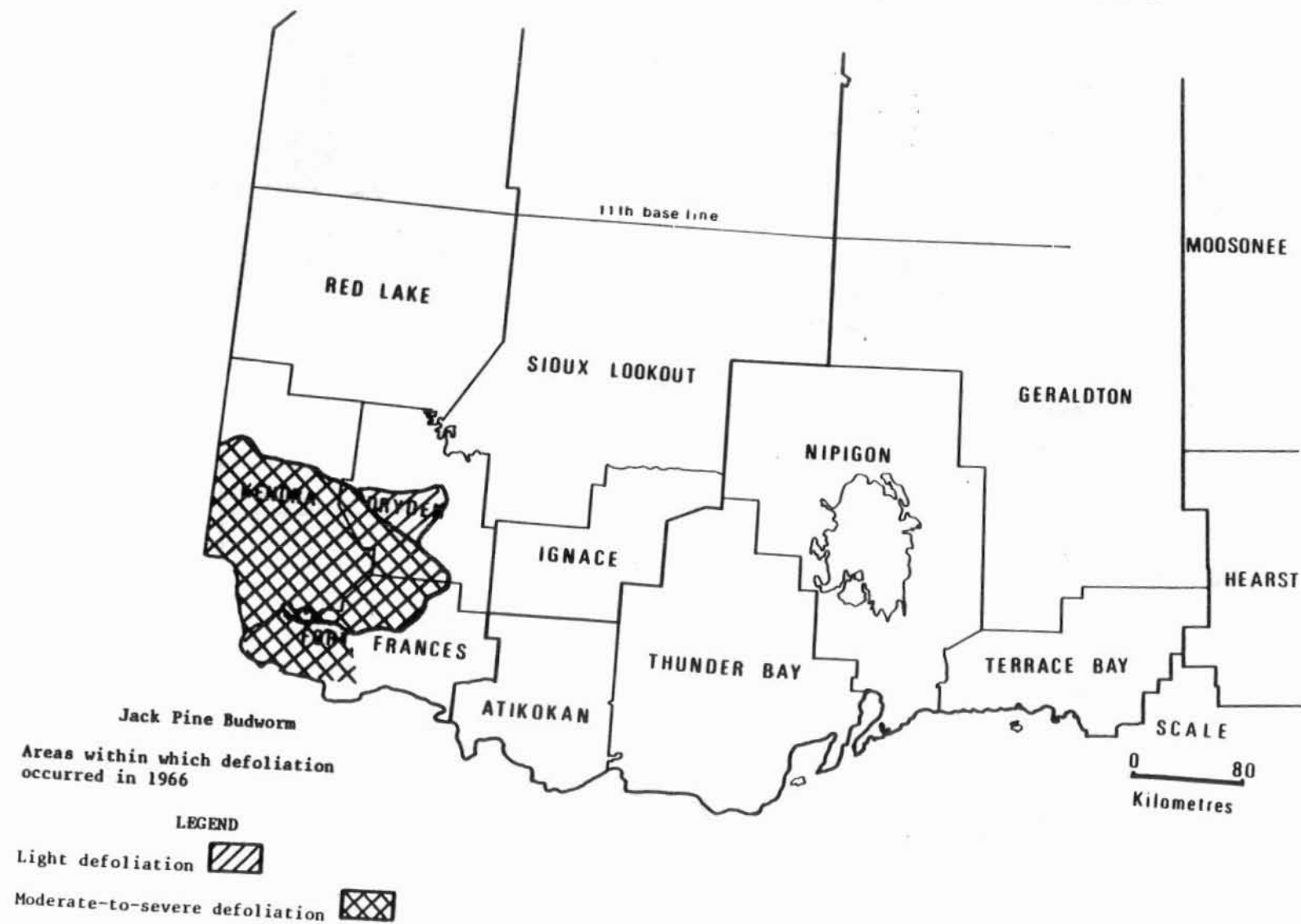
Moderate-to-severe defoliation



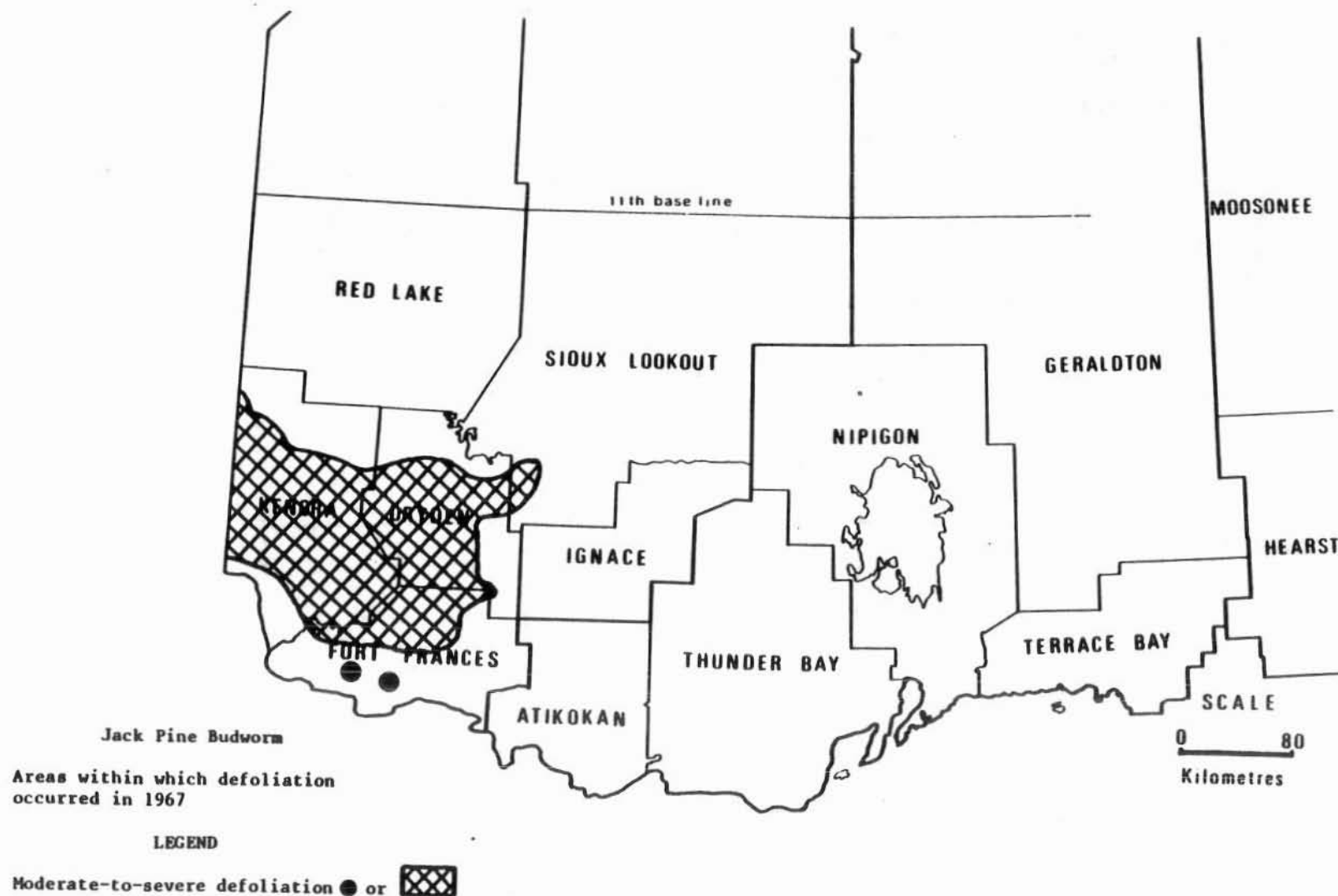
NORTHWESTERN ONTARIO



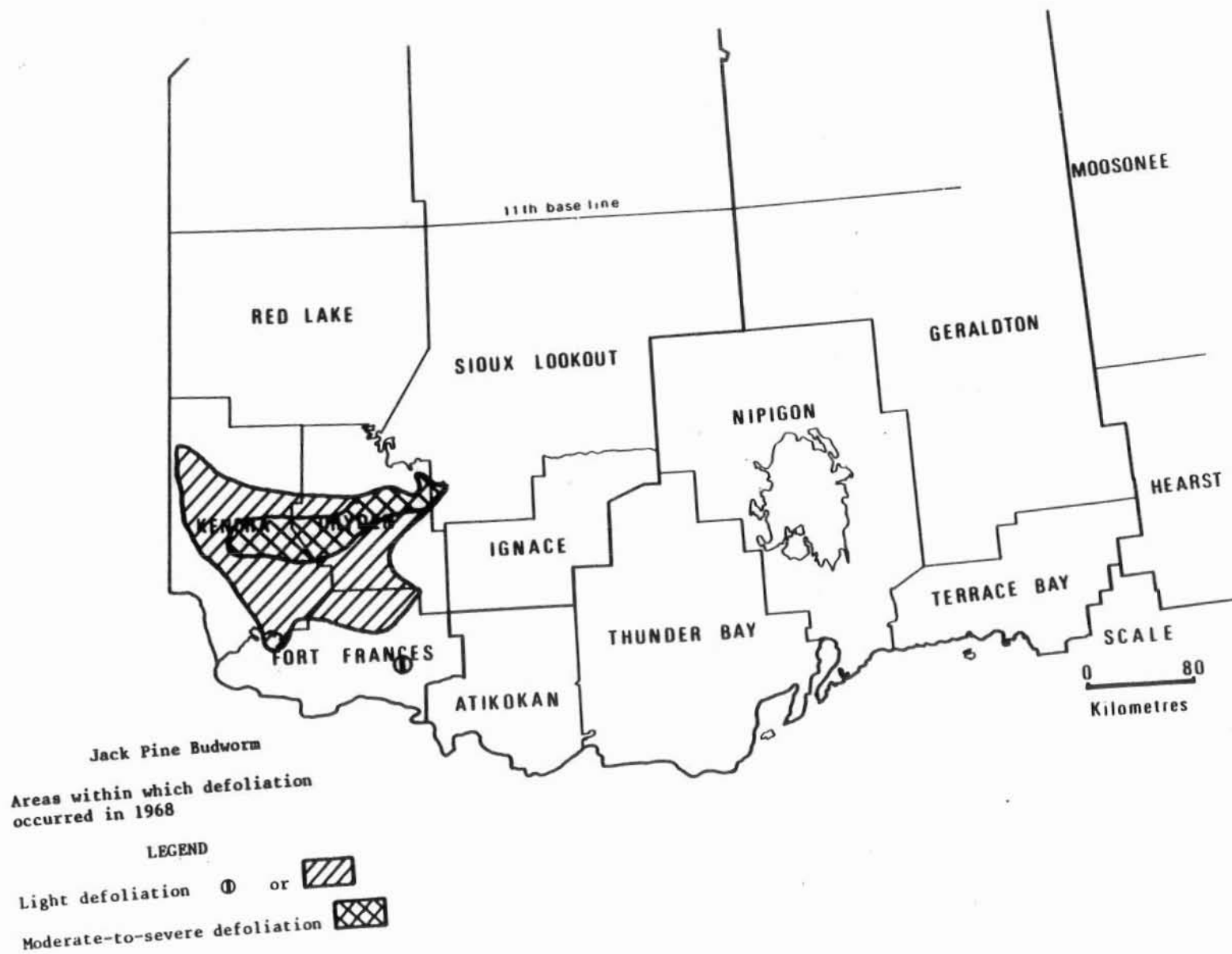
NORTHWESTERN ONTARIO



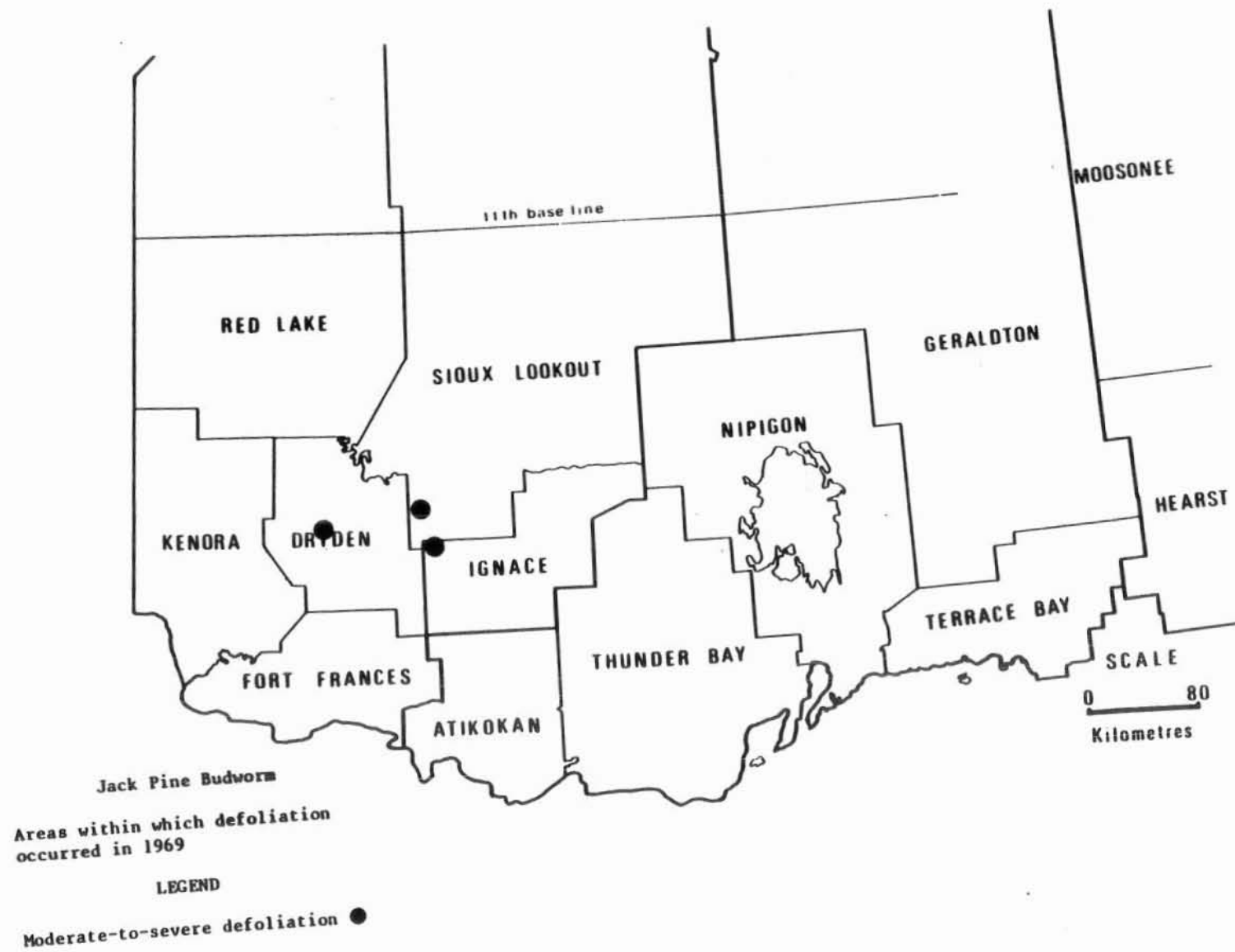
NORTHWESTERN ONTARIO



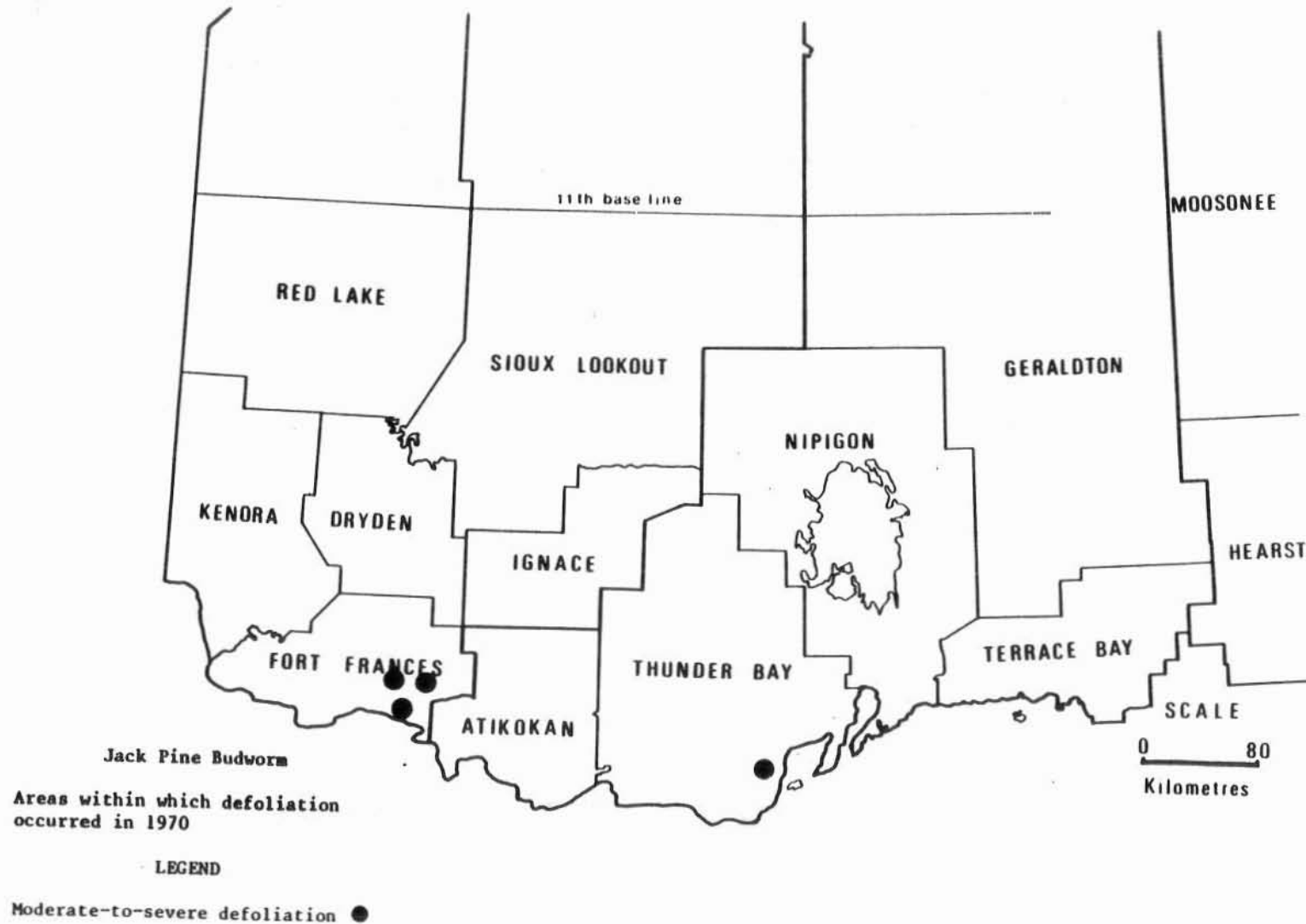
NORTHWESTERN ONTARIO



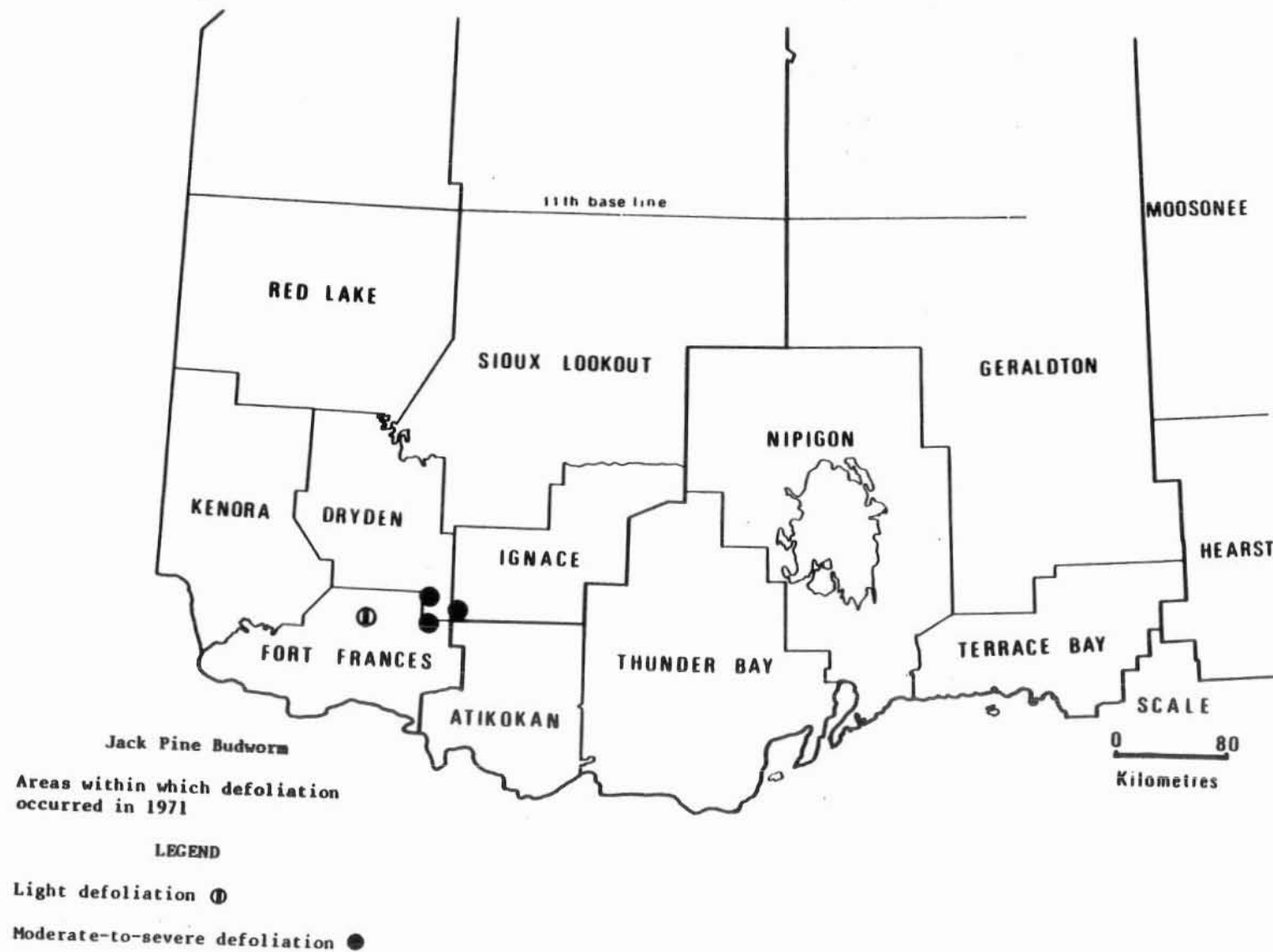
NORTHWESTERN ONTARIO



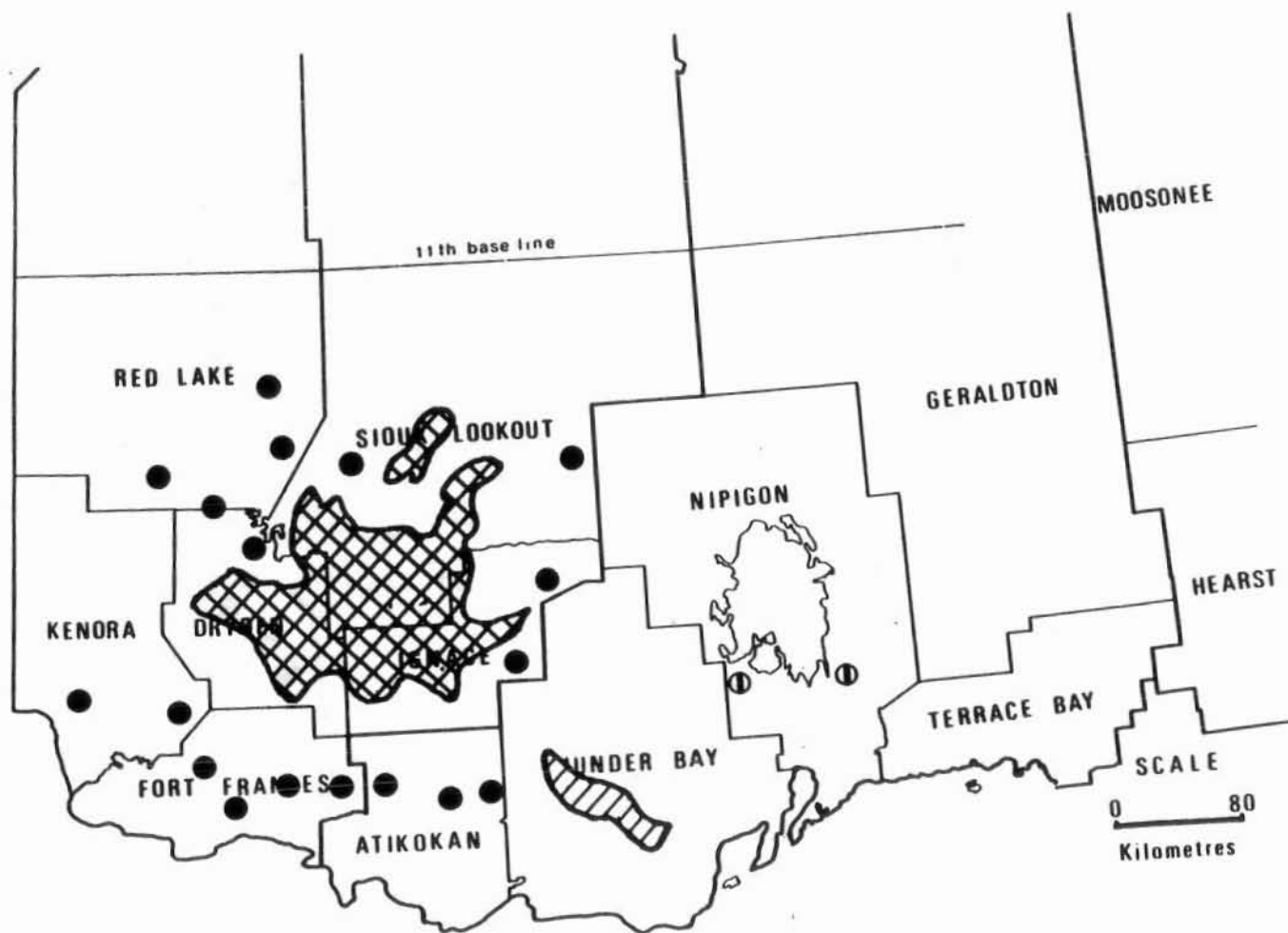
NORTHWESTERN ONTARIO



NORTHWESTERN ONTARIO



NORTHWESTERN ONTARIO



Forest Tent Caterpillar

Areas within which defoliation occurred in 1950

LEGEND

Light defoliation

①

or



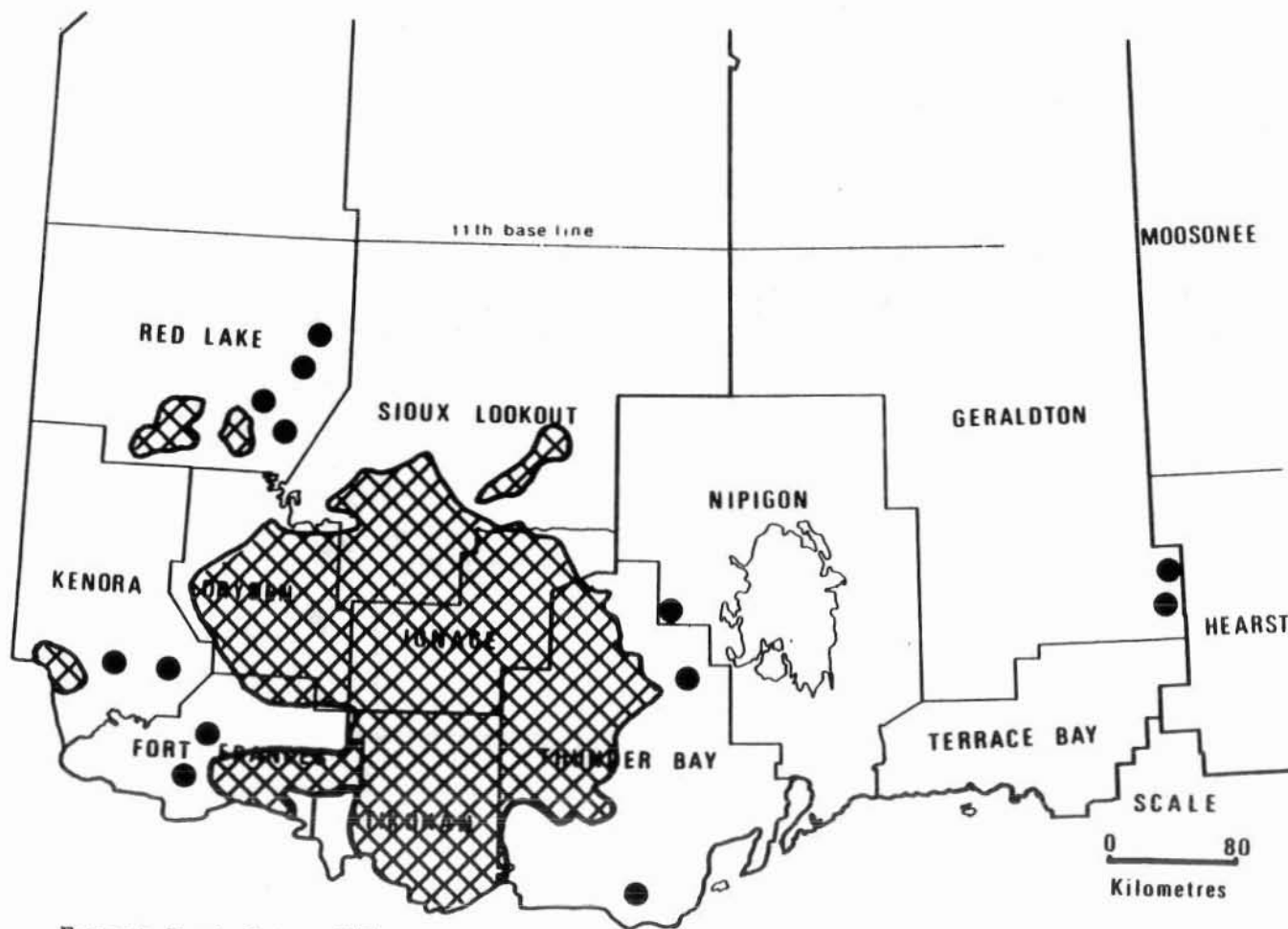
Moderate-to-severe defoliation

●

or



NORTHWESTERN ONTARIO



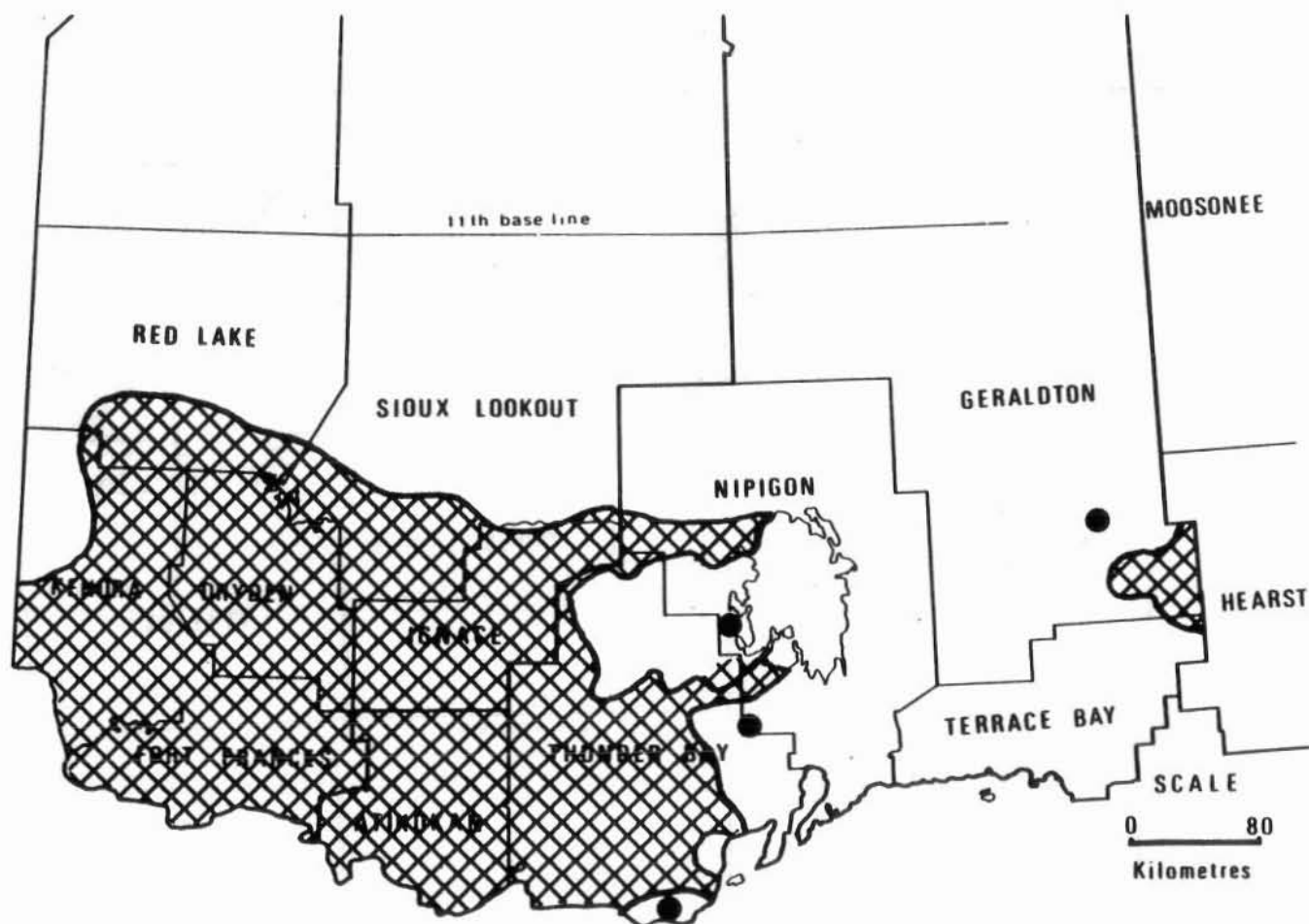
Forest Tent Caterpillar

Areas within which defoliation occurred in 1951

LEGEND

Moderate-to-severe defoliation ● or 

NORTHWESTERN ONTARIO



Forest Tent Caterpillar

Areas within which defoliation occurred in 1952

LEGEND

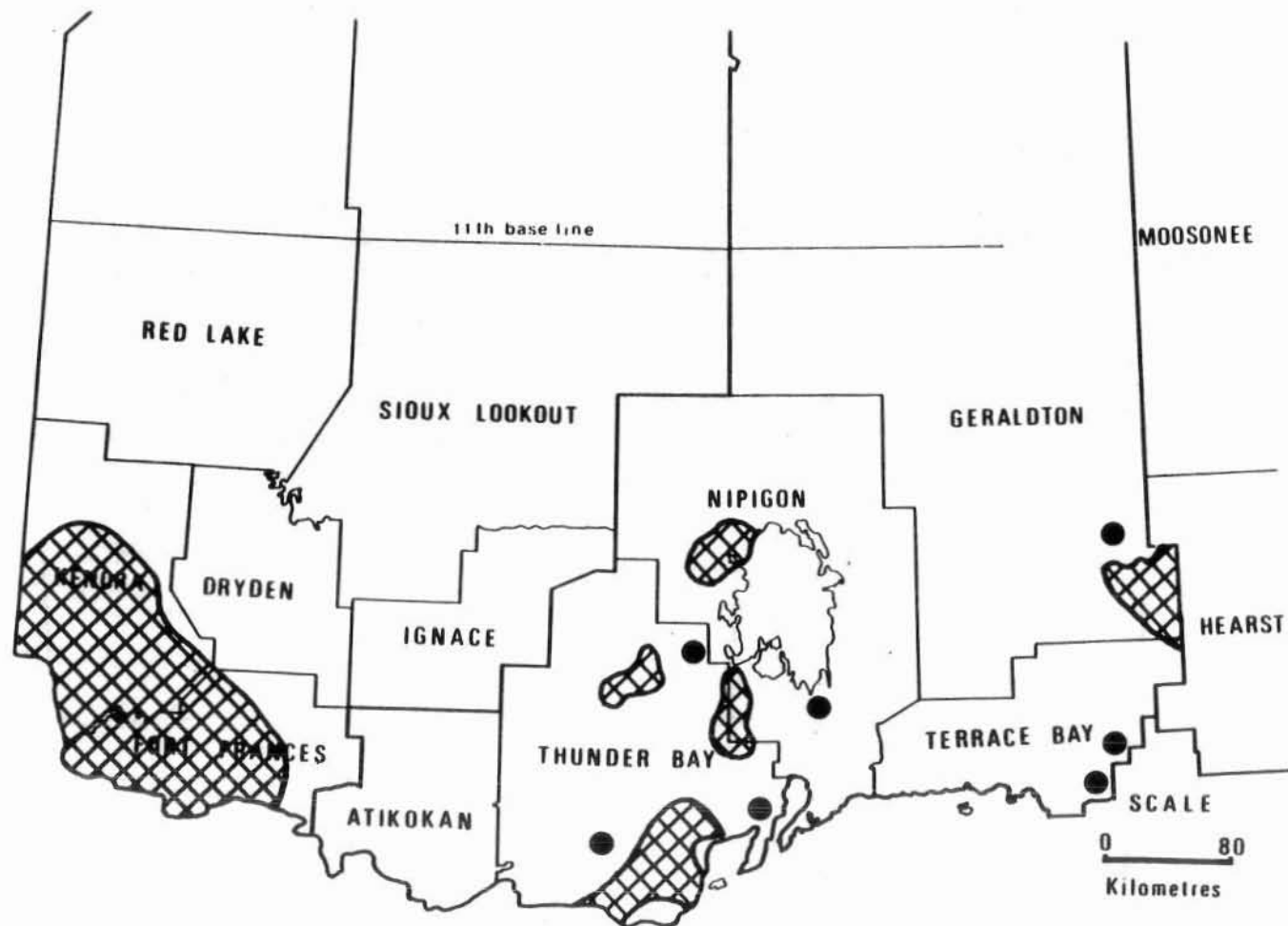
Moderate-to-severe defoliation



or



NORTHWESTERN ONTARIO



Forest Tent Caterpillar

Areas within which defoliation occurred in 1953

LEGEND

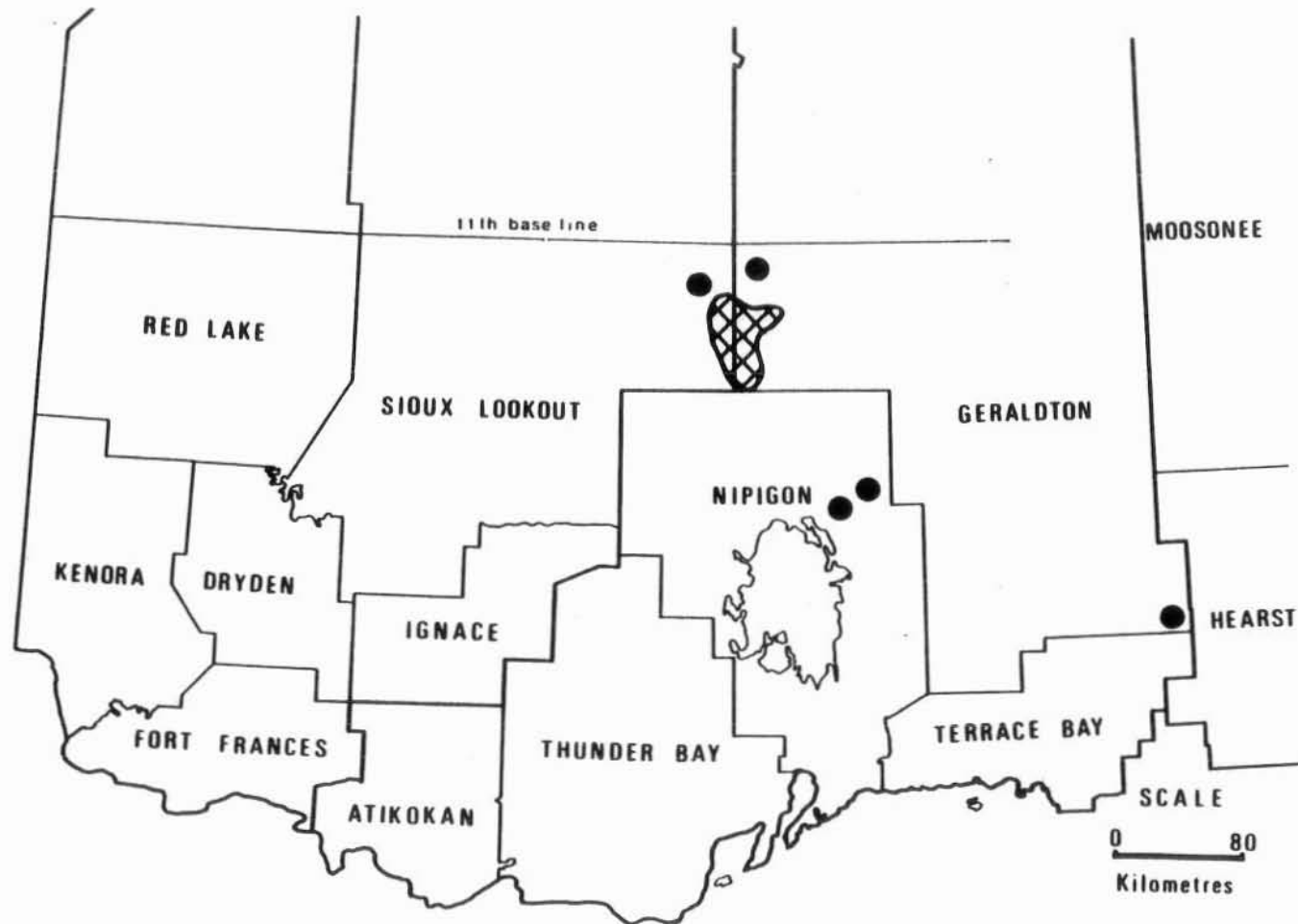
Moderate-to-severe defoliation



or



NORTHWESTERN ONTARIO



Forest Tent Caterpillar

Areas within which defoliation occurred in 1954

LEGEND

Moderate-to-severe defoliation



or



NORTHWESTERN ONTARIO



Forest Tent Caterpillar

Areas within which defoliation occurred in 1956

LEGEND

Moderate-to-severe defoliation



or



NORTHWESTERN ONTARIO



Forest Tent Caterpillar

Areas within which defoliation occurred in 1957

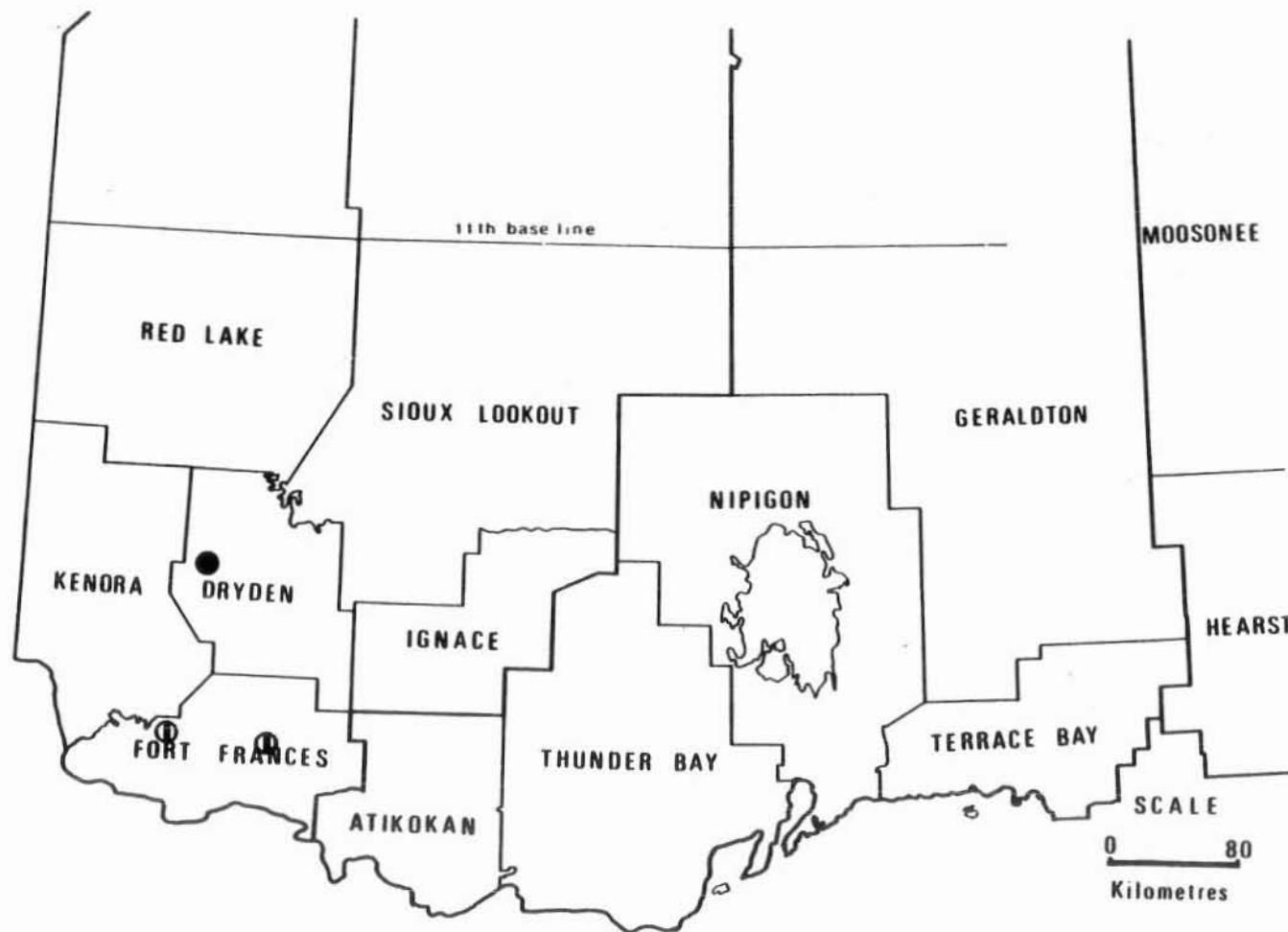
LEGEND

Light defoliation ①

Moderate-to-severe defoliation



NORTHWESTERN ONTARIO



Forest Tent Caterpillar

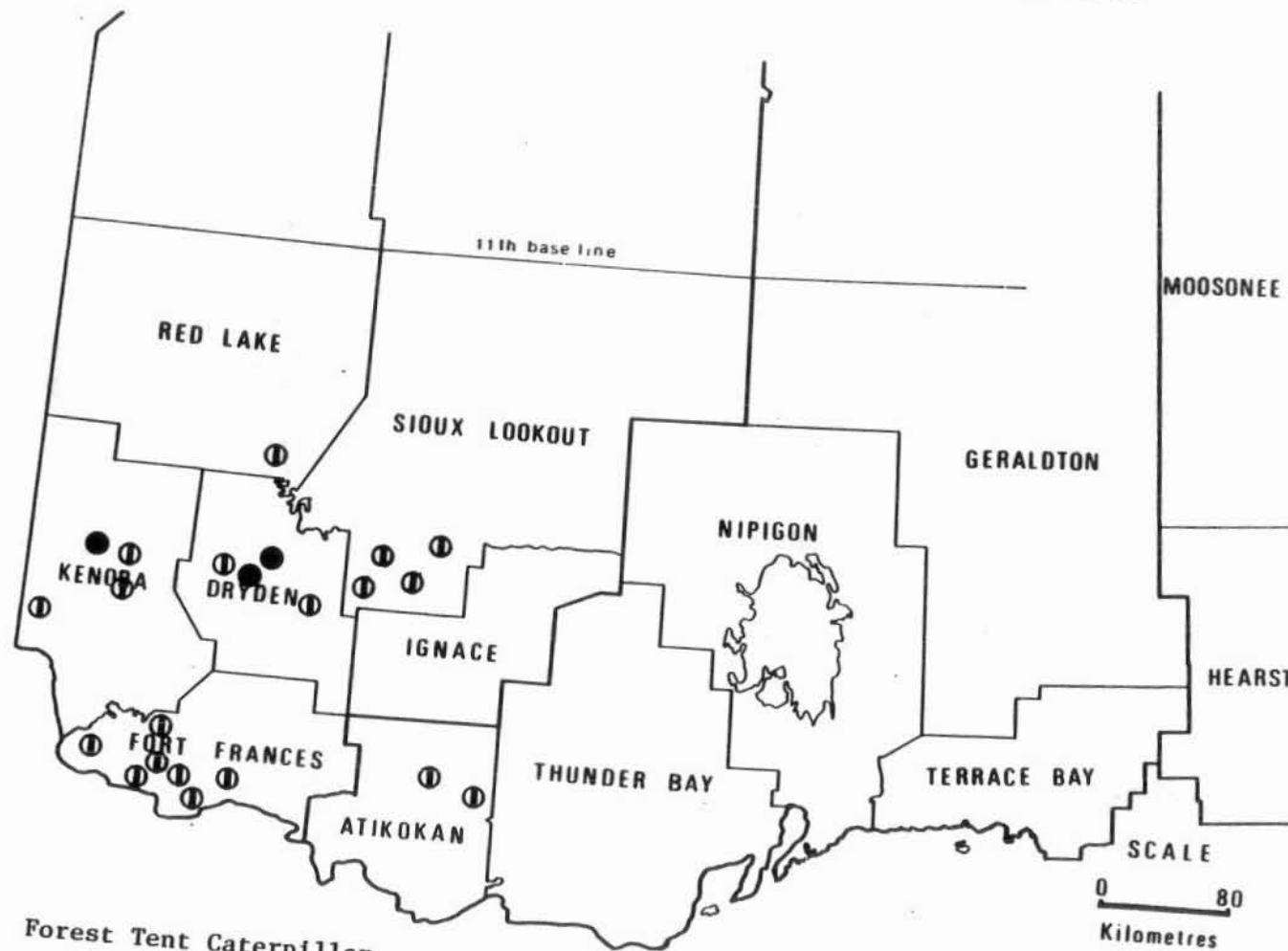
Areas within which defoliation occurred in 1959

LEGEND

Light defoliation ①

Moderate-to-severe defoliation ●

NORTHWESTERN ONTARIO



Forest Tent Caterpillar

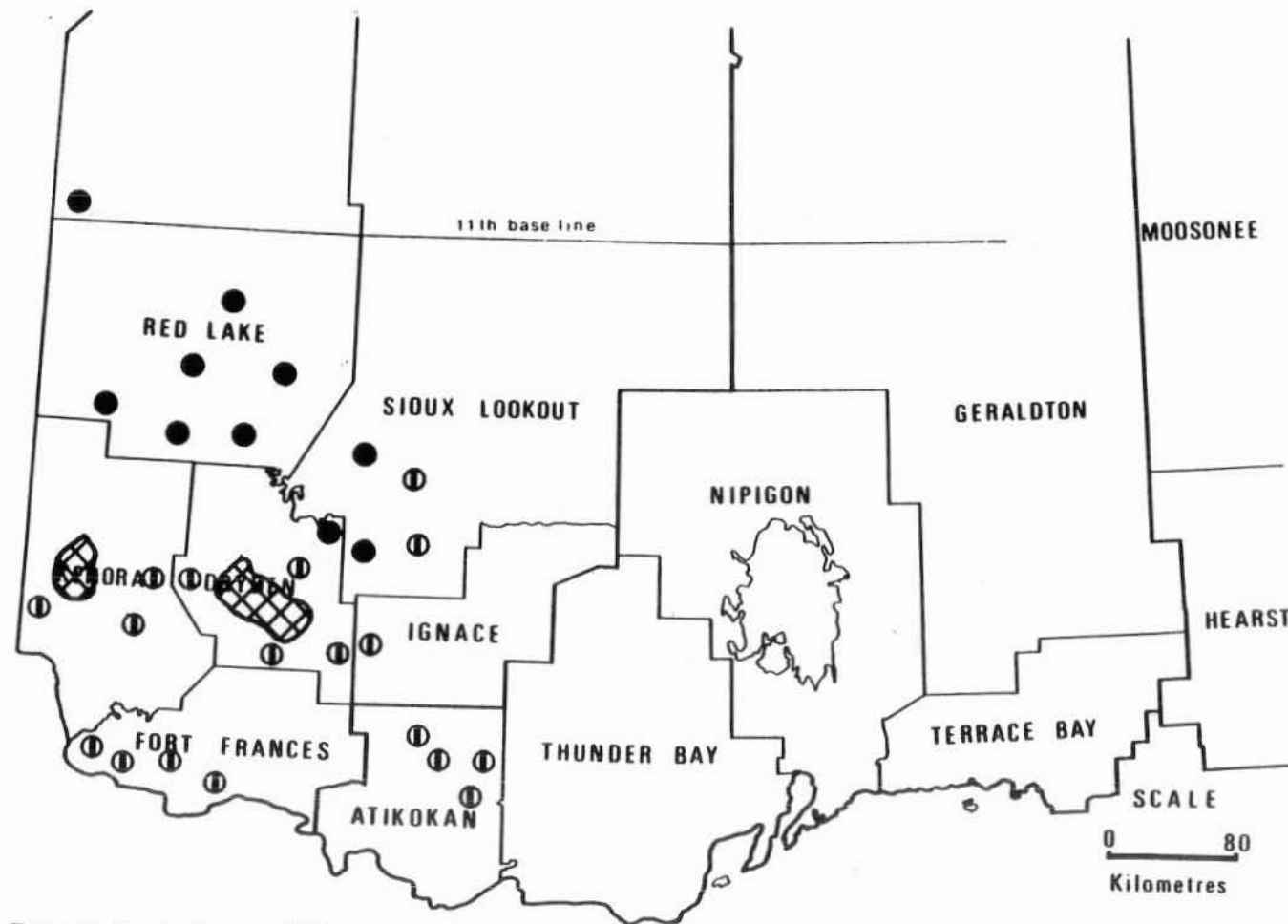
Areas within which defoliation occurred in 1960

LEGEND

Light defoliation ○

Moderate-to-severe defoliation ●

NORTHWESTERN ONTARIO



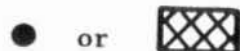
Forest Tent Caterpillar

Areas within which defoliation occurred in 1961

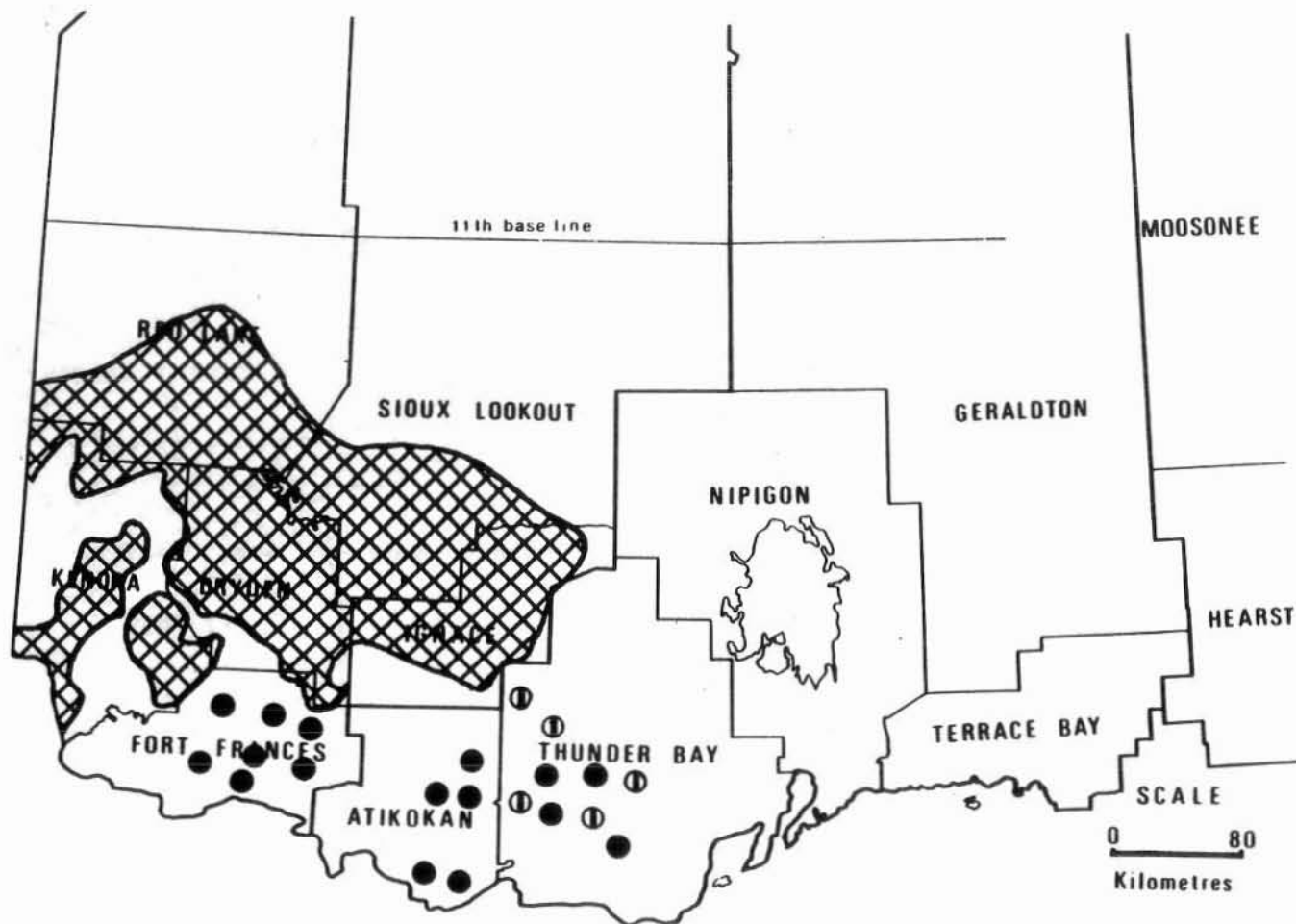
LEGEND

Light defoliation ○

Moderate-to-severe defoliation



NORTHWESTERN ONTARIO



Forest Tent Caterpillar

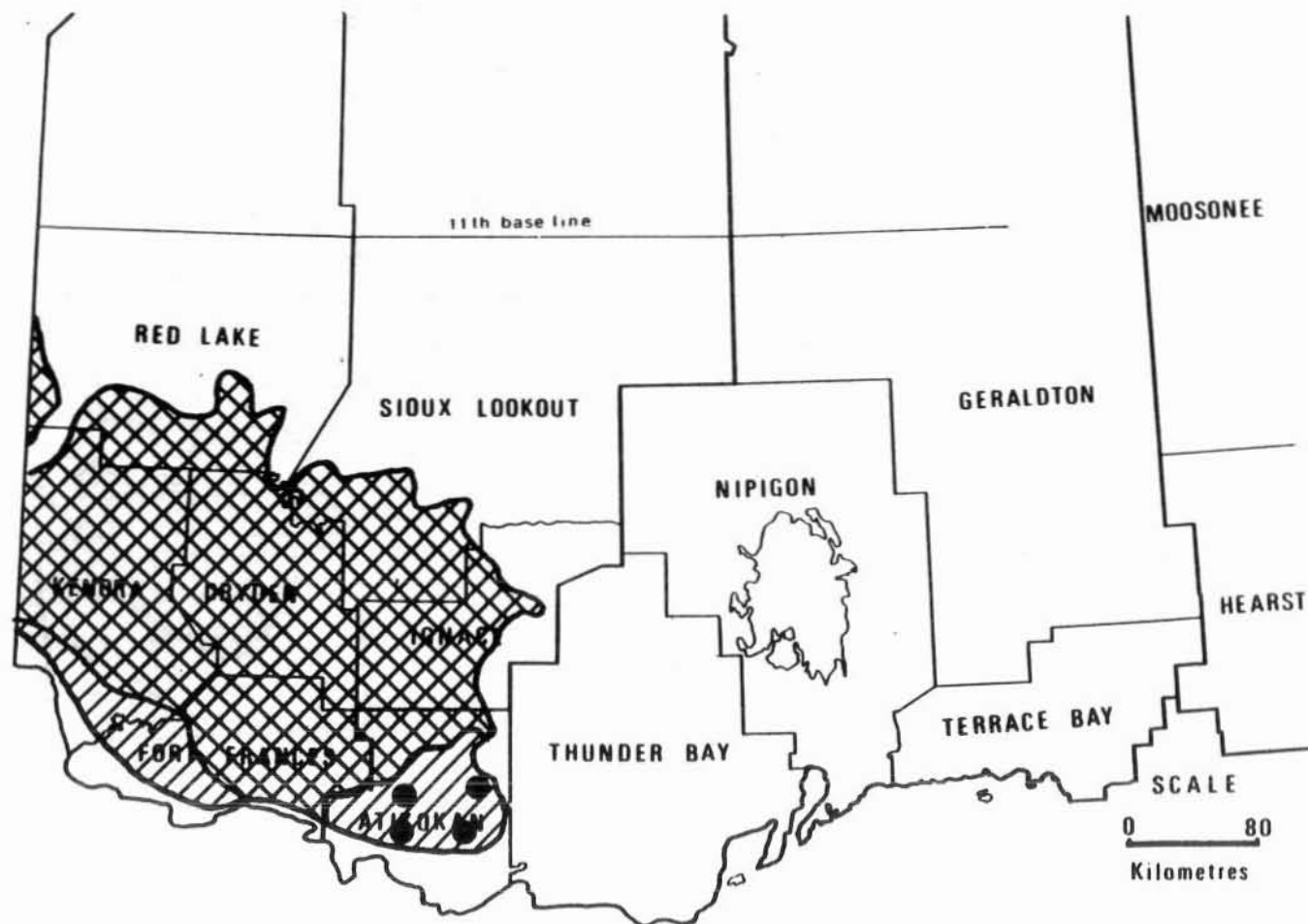
Areas within which defoliation occurred in 1962

LEGEND

Light defoliation ①

Moderate-to-severe defoliation ● or 

NORTHWESTERN ONTARIO



Forest Tent Caterpillar

Areas within which defoliation occurred in 1963

LEGEND

Light defoliation



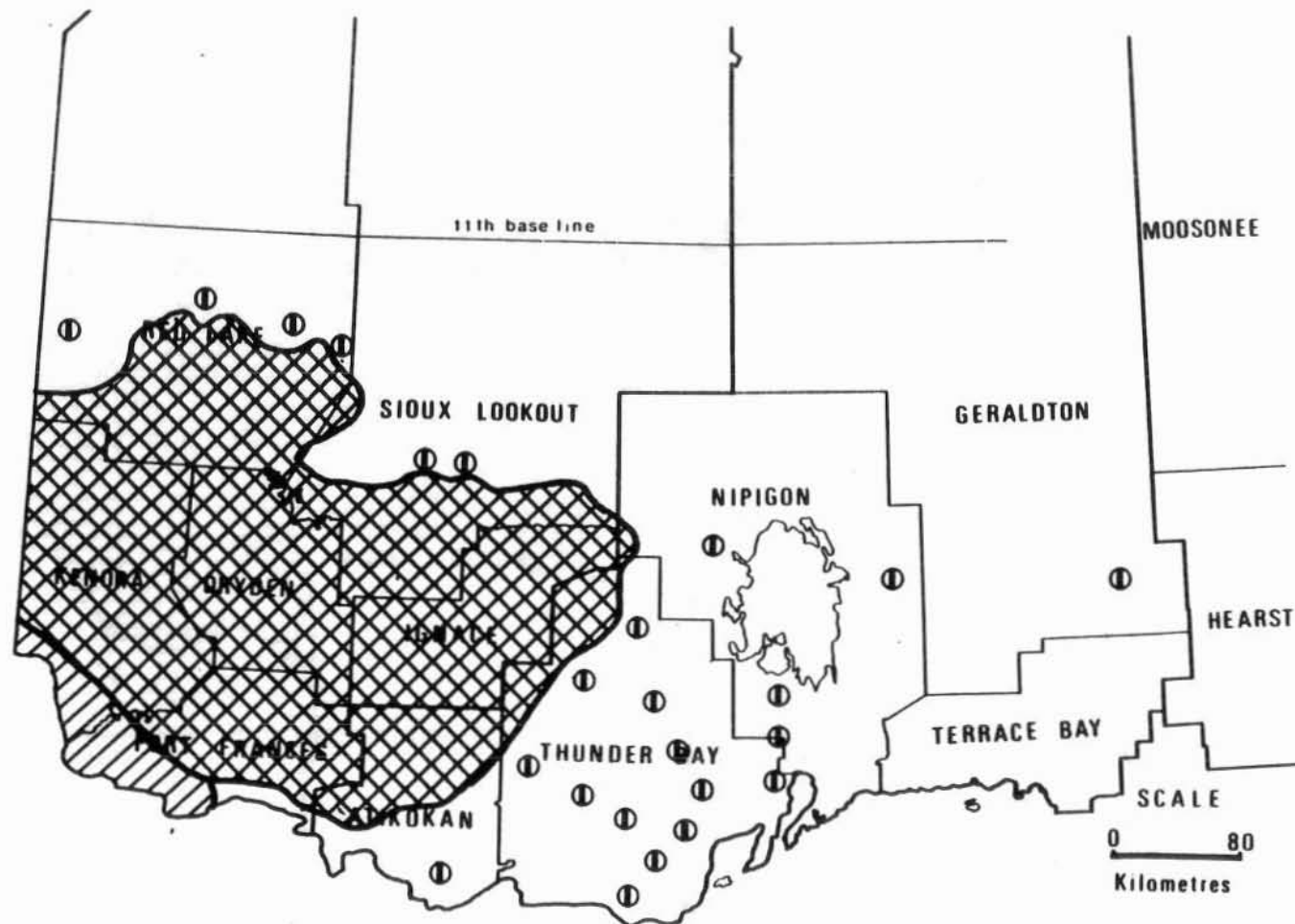
Moderate-to-severe defoliation



or




NORTHWESTERN ONTARIO




Forest Tent Caterpillar

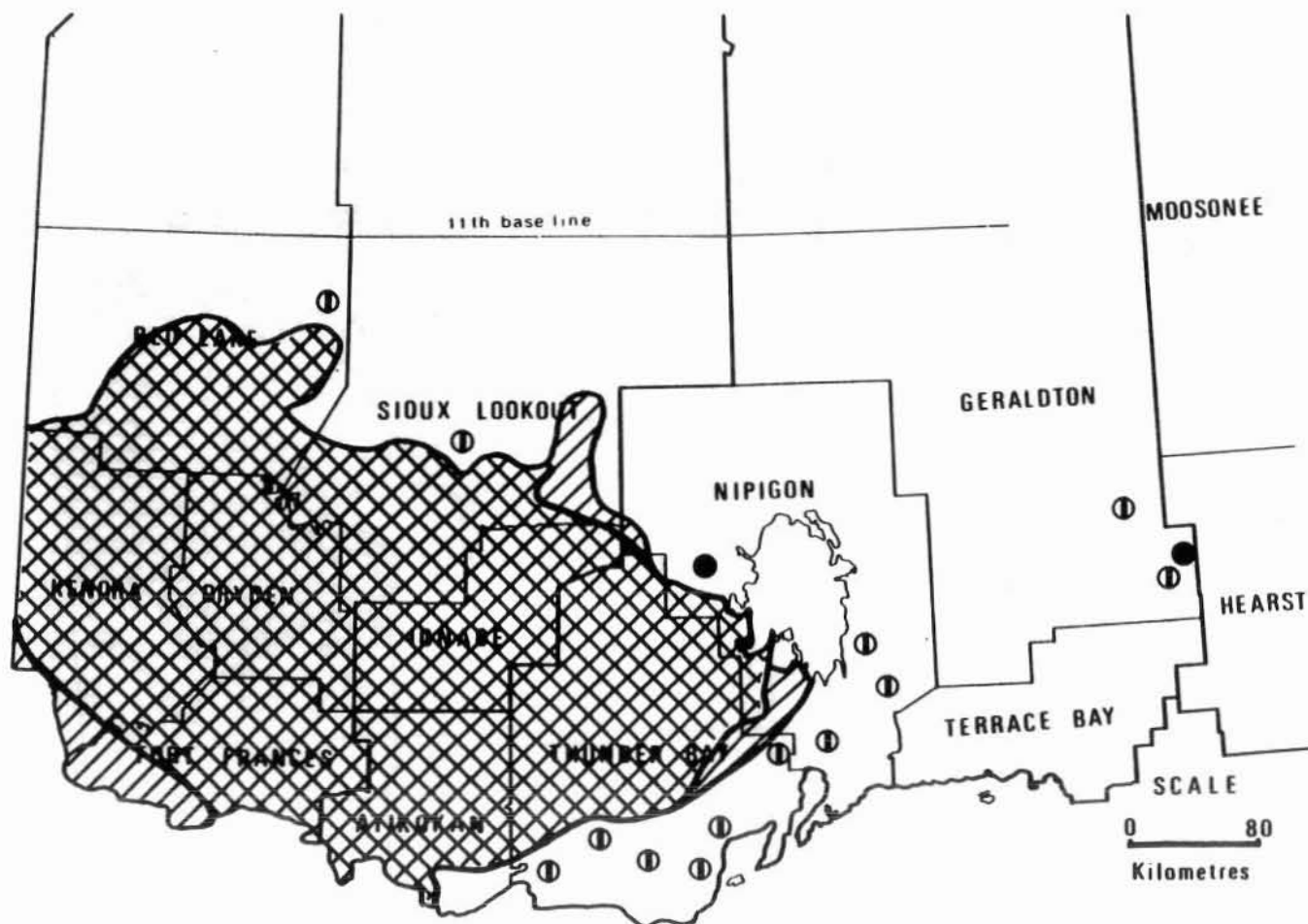
Areas within which defoliation occurred in 1964

LEGEND

Light defoliation ① or 

Moderate-to-severe defoliation 



NORTHWESTERN ONTARIO



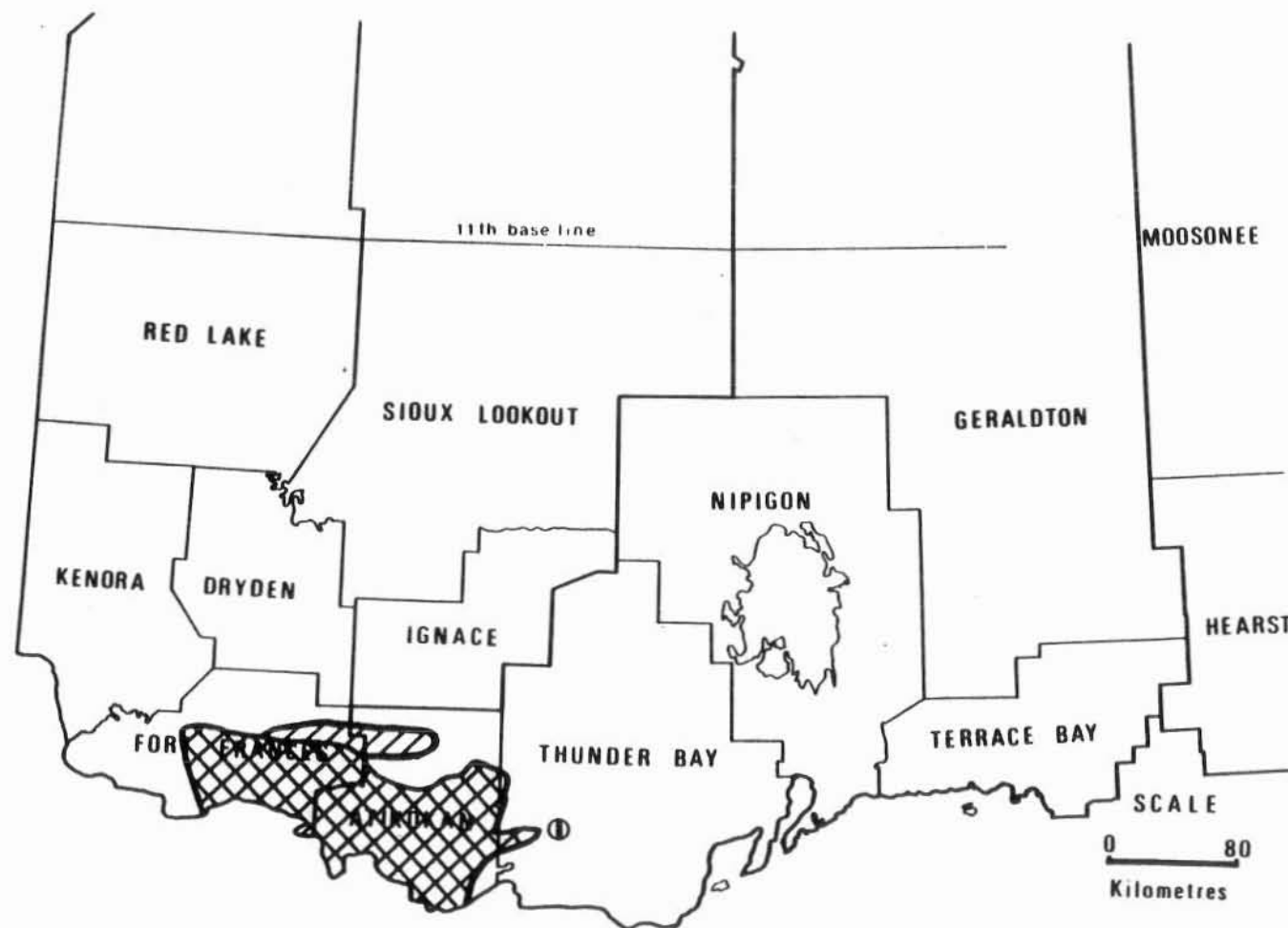
Forest Tent Caterpillar

Areas within which defoliation occurred in 1965

LEGEND

Light defoliation	⊙	or	
Moderate-to-severe defoliation	●	or	


NORTHWESTERN ONTARIO




Forest Tent Caterpillar

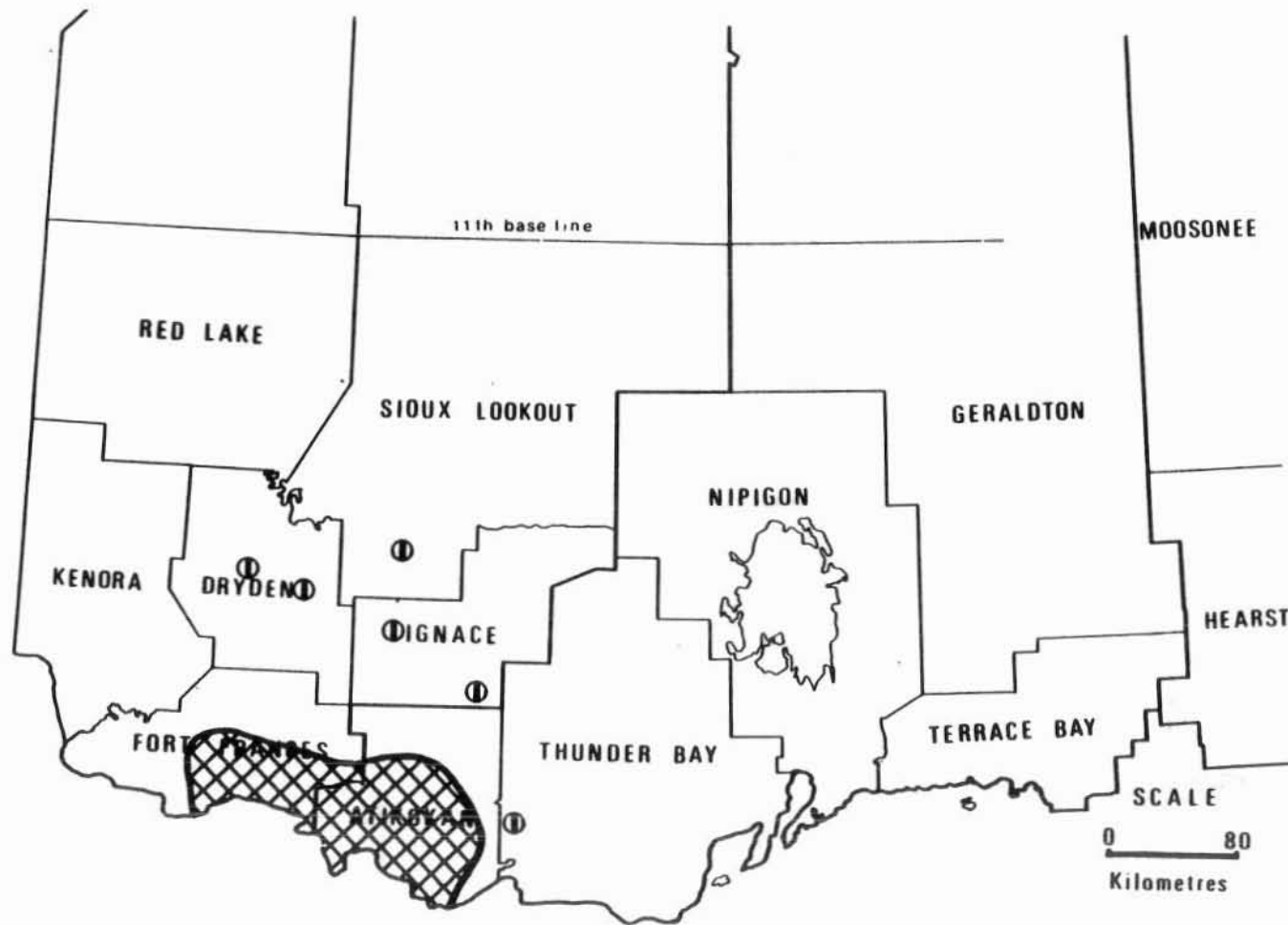
Areas within which defoliation occurred in 1966

LEGEND

Light defoliation ① or 

Moderate-to-severe defoliation 

NORTHWESTERN ONTARIO



Forest Tent Caterpillar

Areas within which defoliation occurred in 1967

LEGEND

Light defoliation ①

Moderate-to-severe defoliation



NORTHWESTERN ONTARIO



Forest Tent Caterpillar

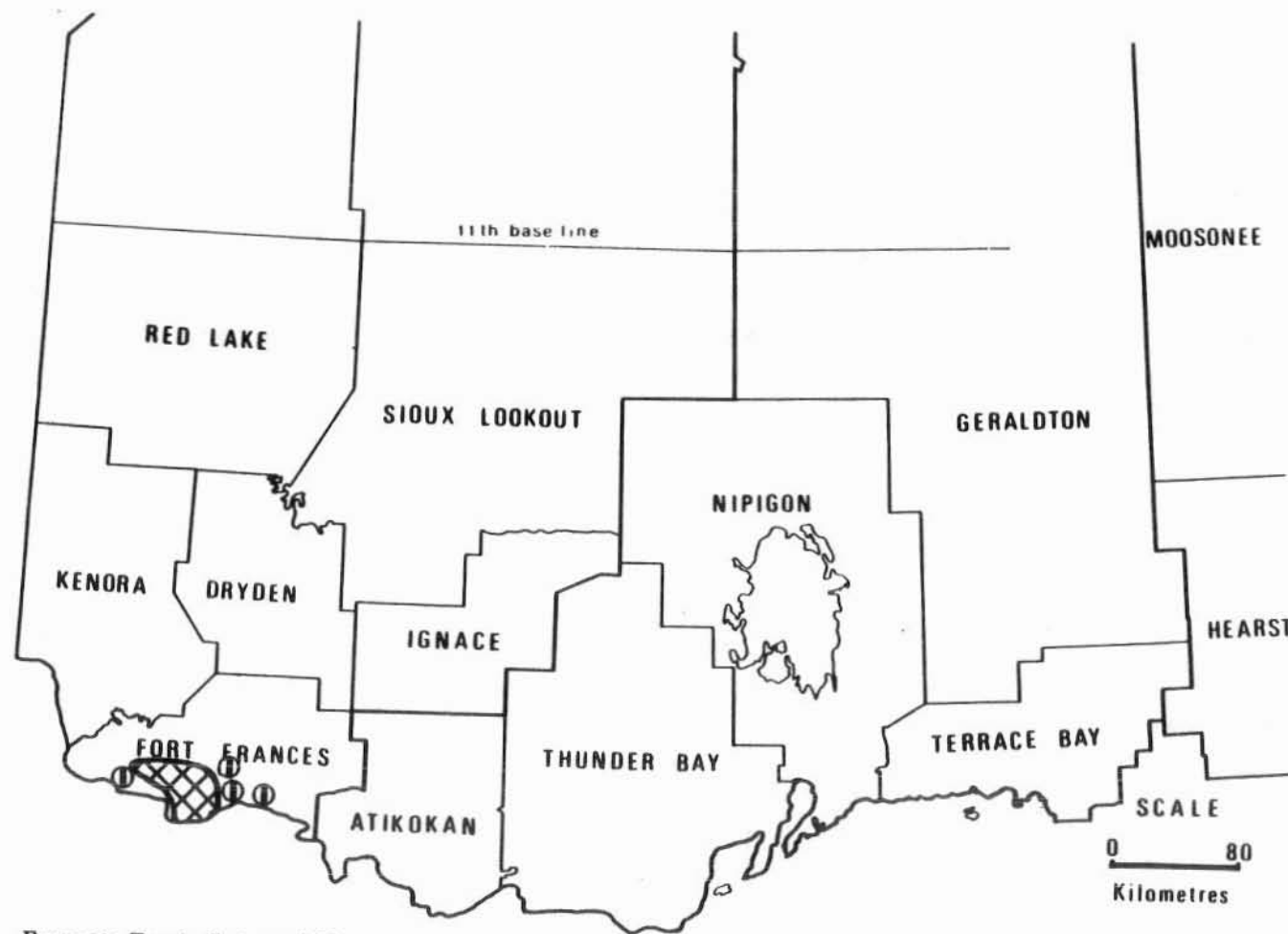
Areas within which defoliation occurred in 1968

LEGEND

Moderate-to-severe defoliation



NORTHWESTERN ONTARIO



Forest Tent Caterpillar

Areas within which defoliation occurred in 1969

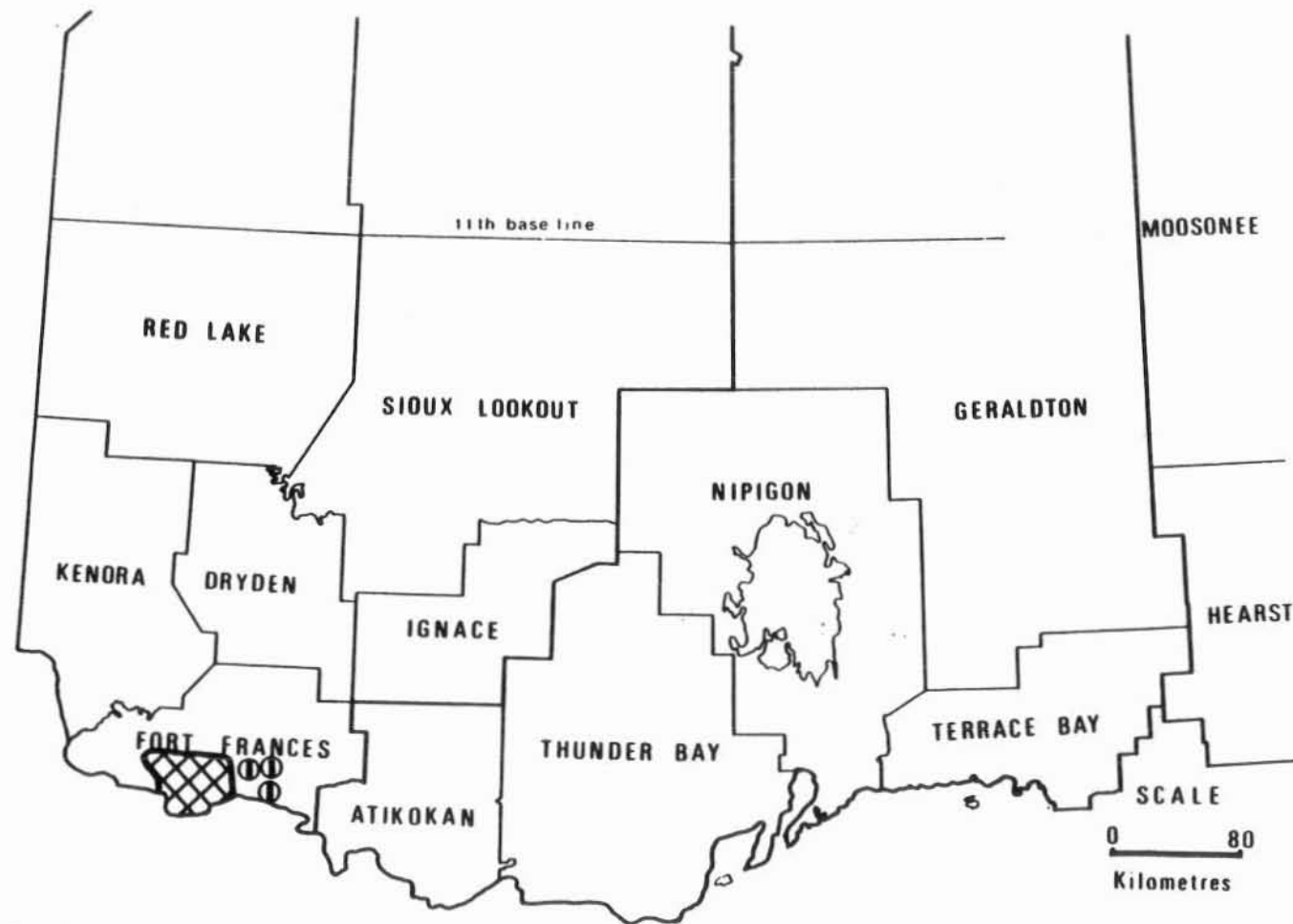
LEGEND

Light defoliation ①

Moderate-to-severe defoliation



NORTHWESTERN ONTARIO



Forest Tent Caterpillar

Areas within which defoliation occurred in 1970

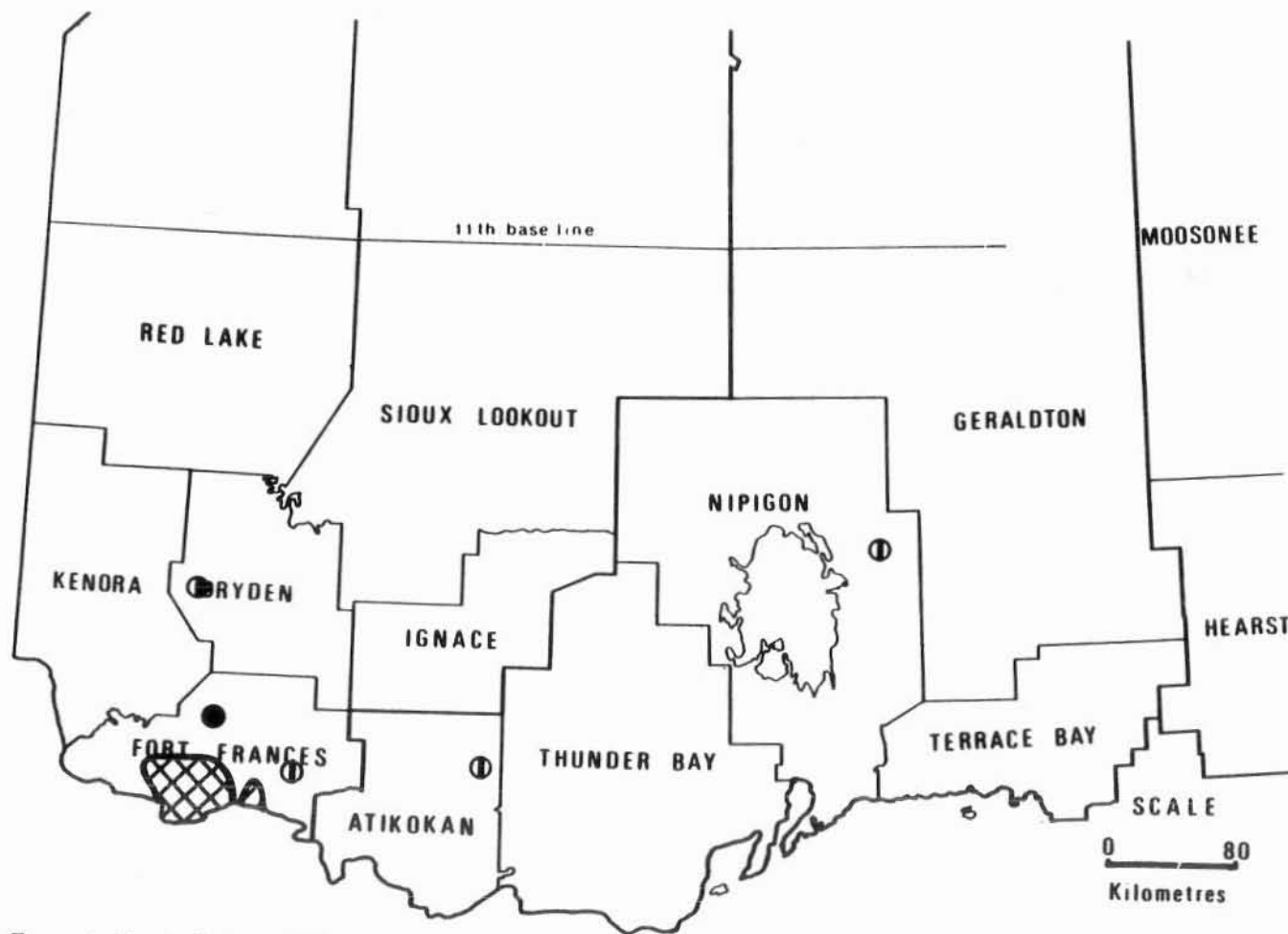
LEGEND

Light defoliation ①

Moderate-to-severe defoliation




NORTHWESTERN ONTARIO



Forest Tent Caterpillar

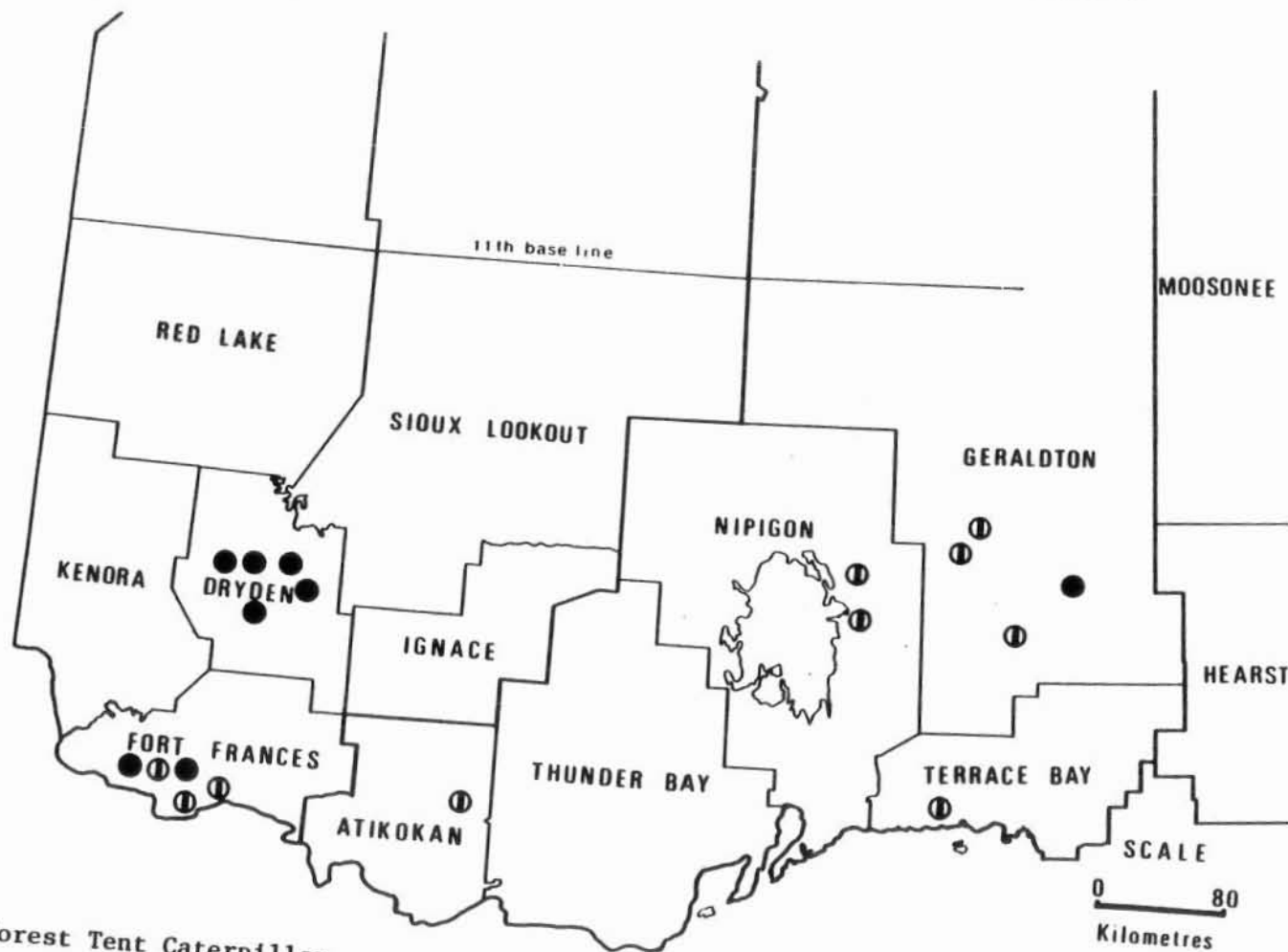
Areas within which defoliation occurred in 1971

LEGEND

Light defoliation ○ or 

Moderate-to-severe defoliation ● or 

NORTHWESTERN ONTARIO



Forest Tent Caterpillar

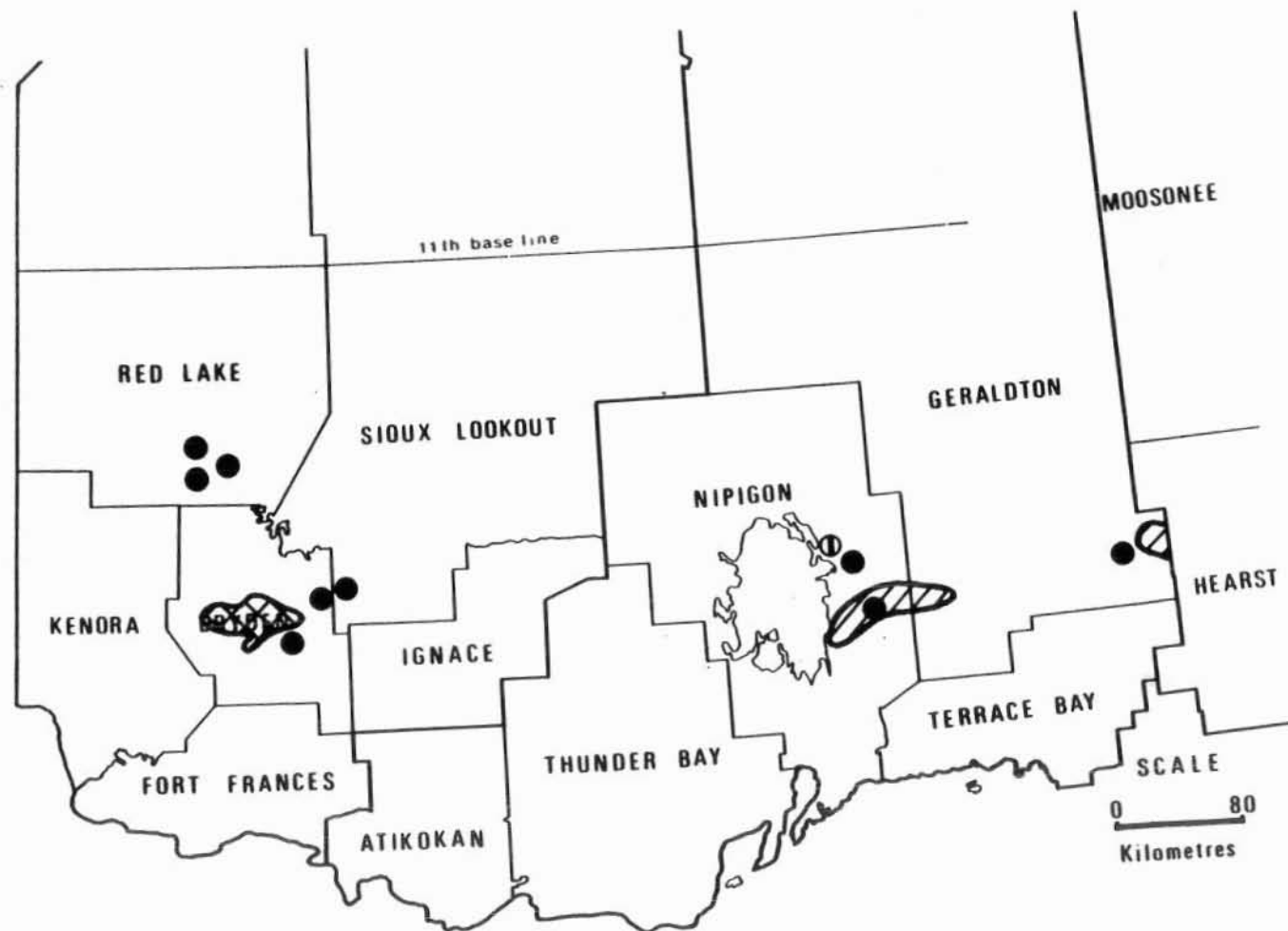
Areas within which defoliation occurred in 1972

LEGEND

Light defoliation ○

Moderate-to-severe defoliation ●


NORTHWESTERN ONTARIO




Forest Tent Caterpillar

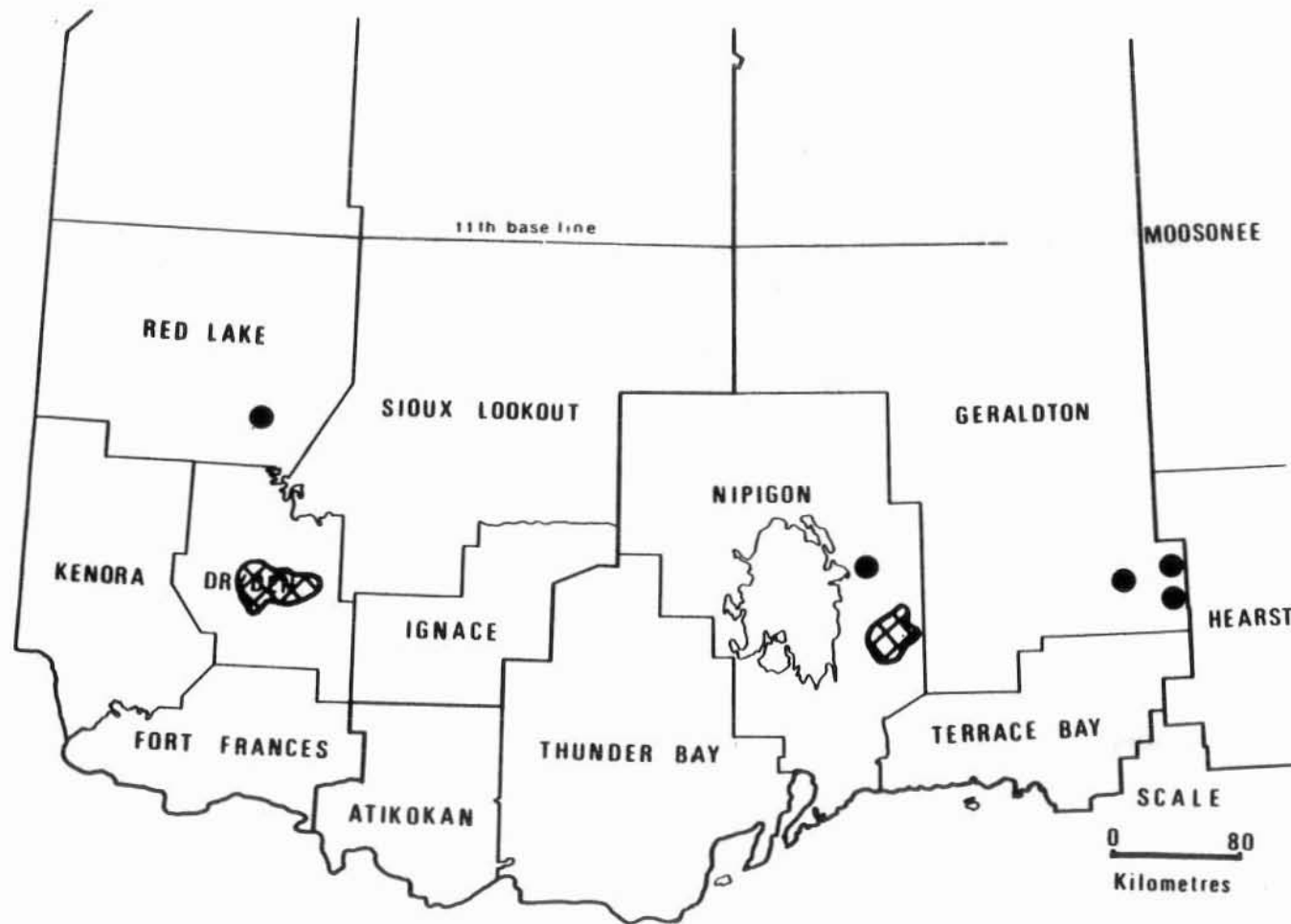
Areas within which defoliation occurred in 1973

LEGEND

Light defoliation ① or 

Moderate-to-severe defoliation ● or 


NORTHWESTERN ONTARIO



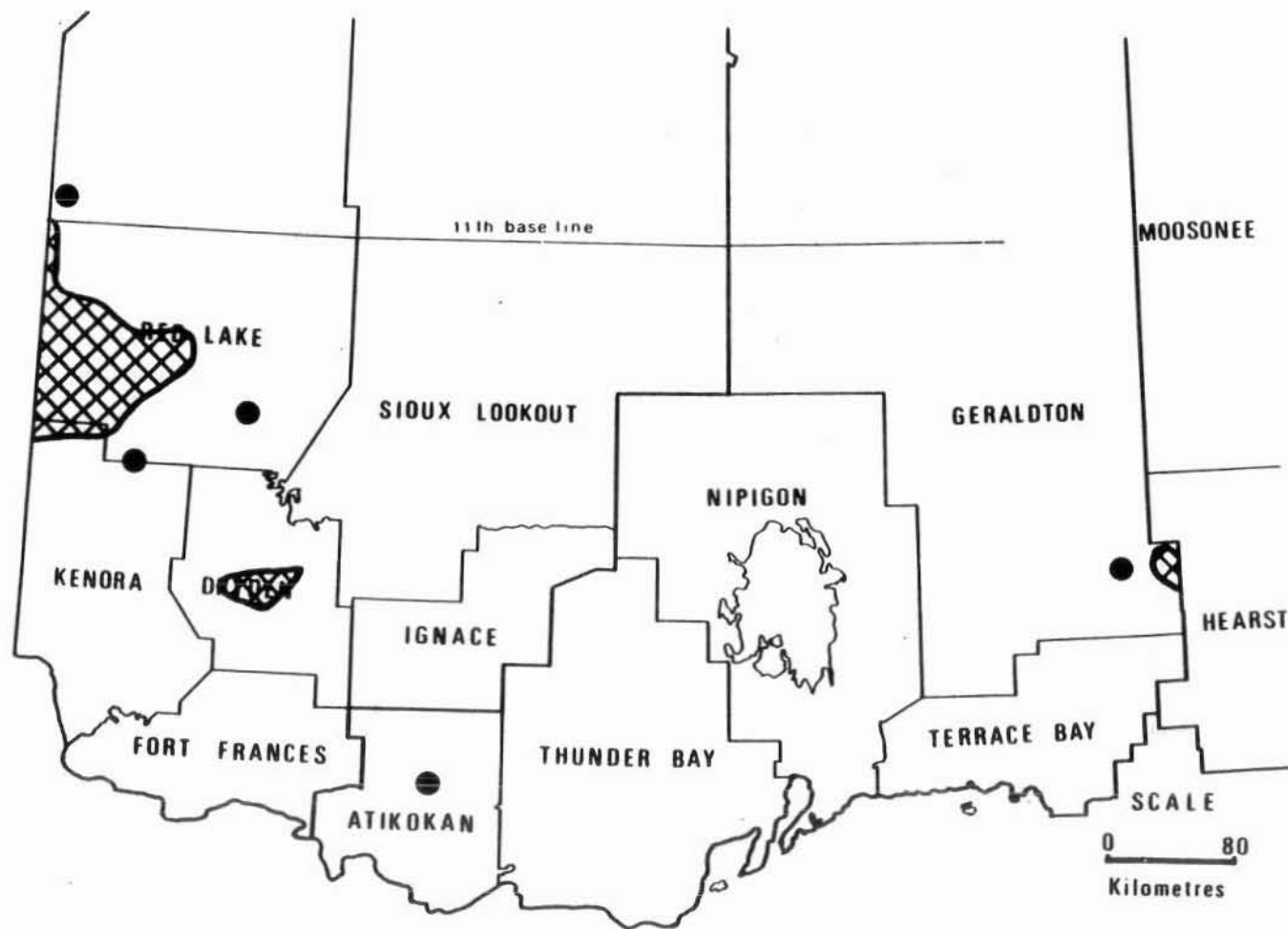
Forest Tent Caterpillar

Areas within which defoliation occurred in 1974

LEGEND

Moderate-to-severe defoliation ● or 

NORTHWESTERN ONTARIO



Forest Tent Caterpillar

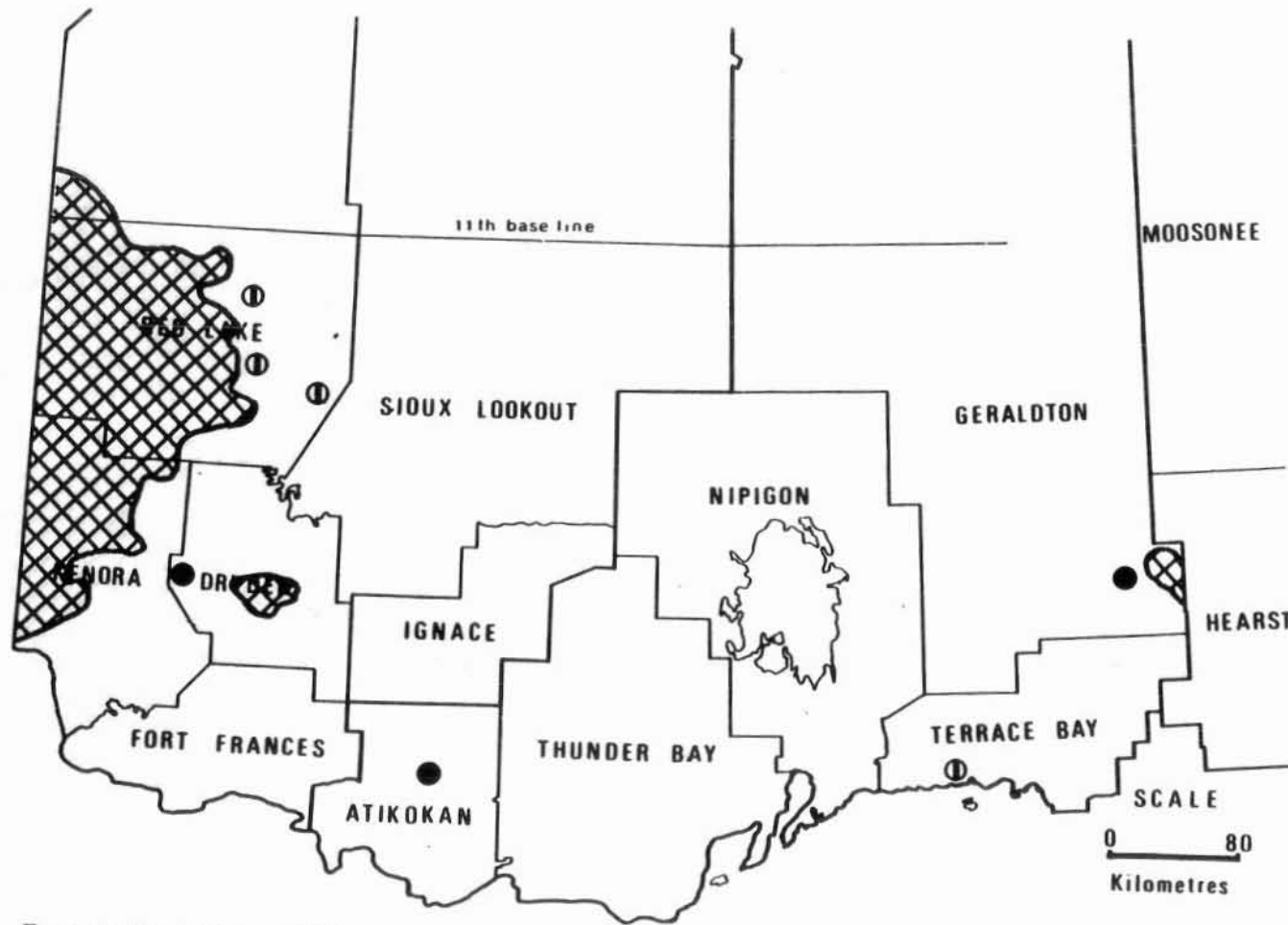
Areas within which defoliation occurred in 1975

LEGEND

Moderate-to-severe defoliation ● or



NORTHWESTERN ONTARIO




Forest Tent Caterpillar

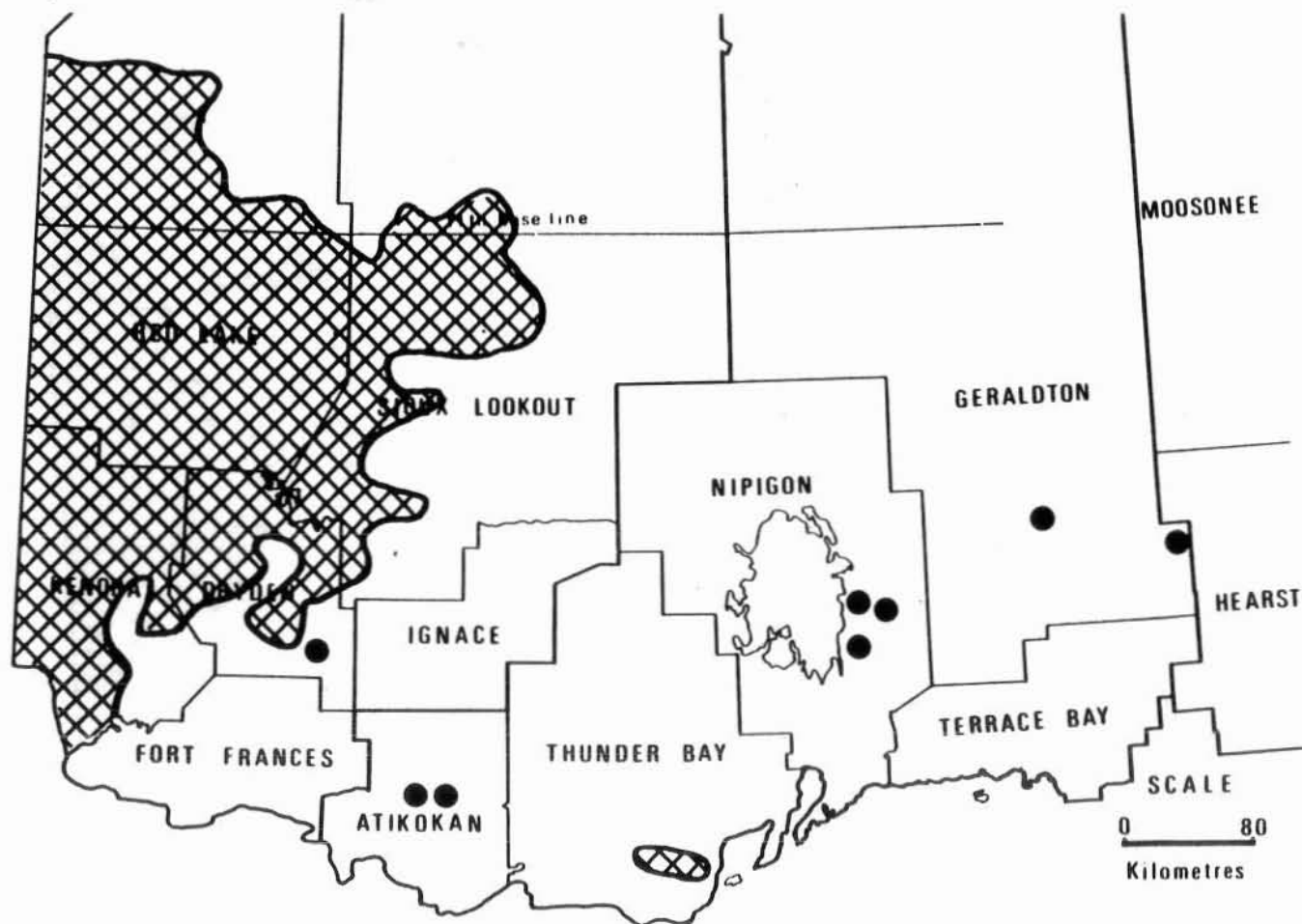
Areas within which defoliation occurred in 1976

LEGEND

Light defoliation ①

Moderate-to-severe defoliation ● or 

NORTHWESTERN ONTARIO



Forest Tent Caterpillar

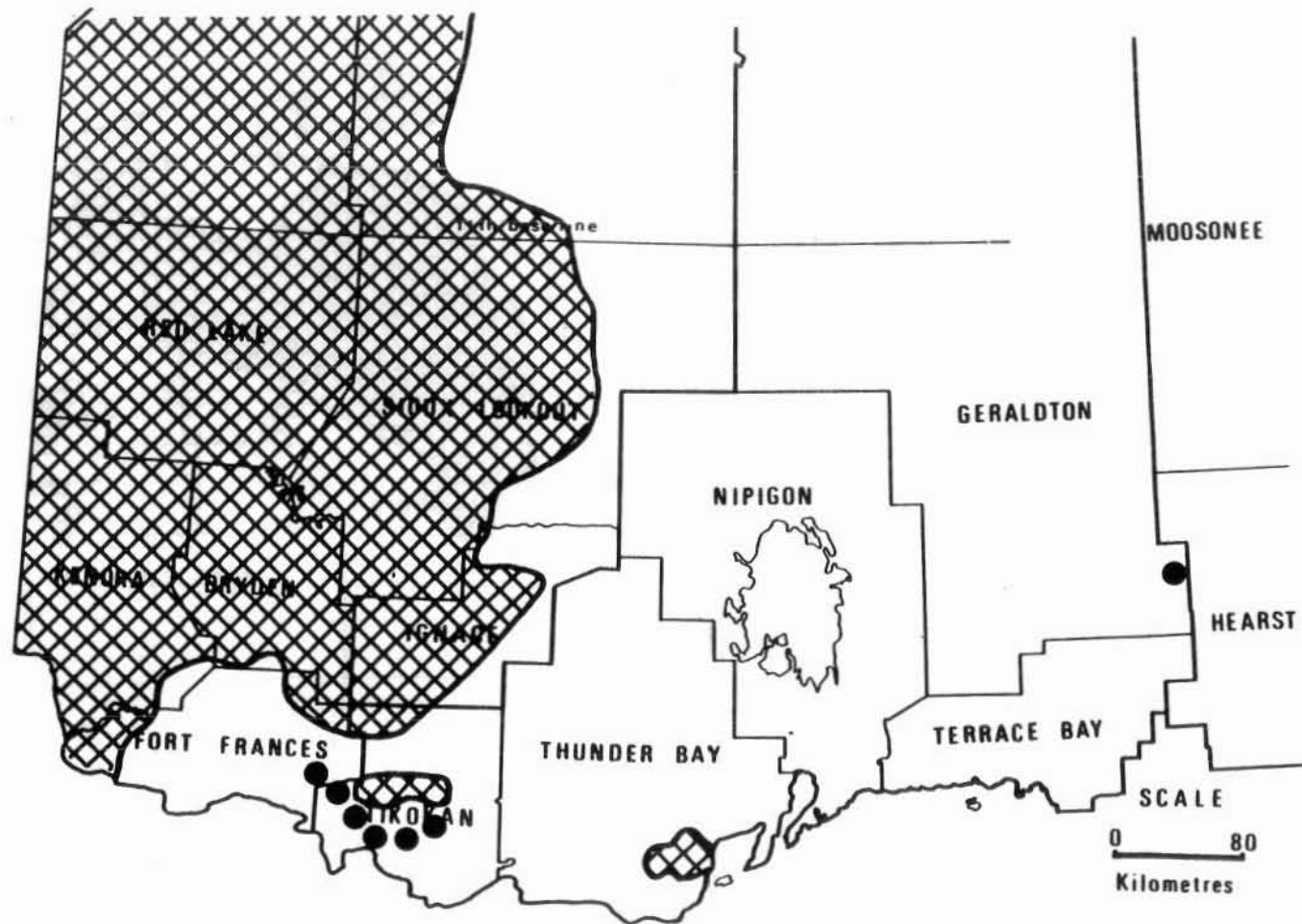
Areas within which defoliation occurred in 1977

LEGEND

Moderate-to-severe defoliation ● or



NORTHWESTERN ONTARIO



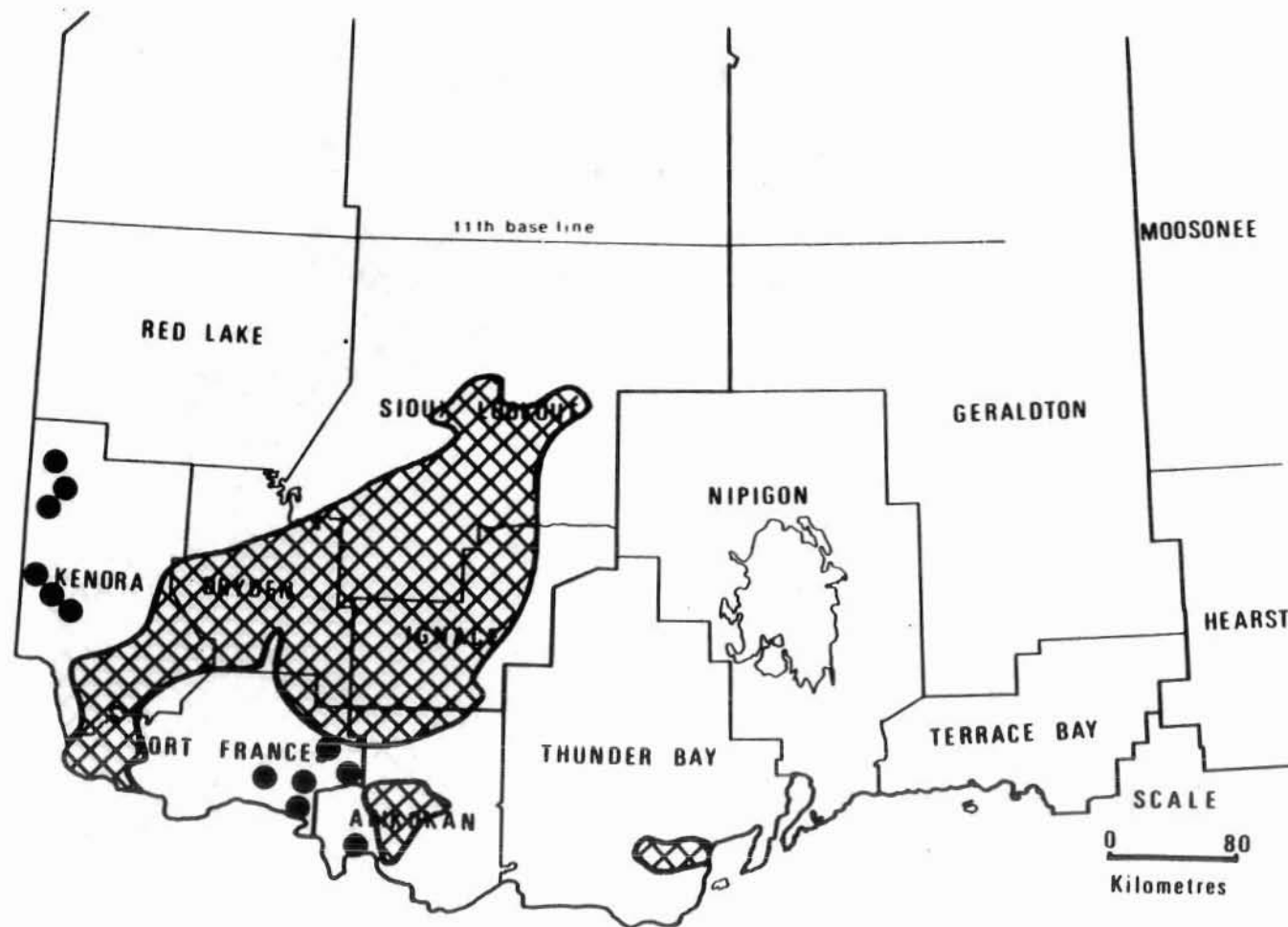
Forest Tent Caterpillar

Areas within which defoliation occurred in 1978

LEGEND

Moderate-to-severe defoliation ● or 

NORTHWESTERN ONTARIO



Forest Tent Caterpillar

Areas within which defoliation occurred in 1979

LEGEND

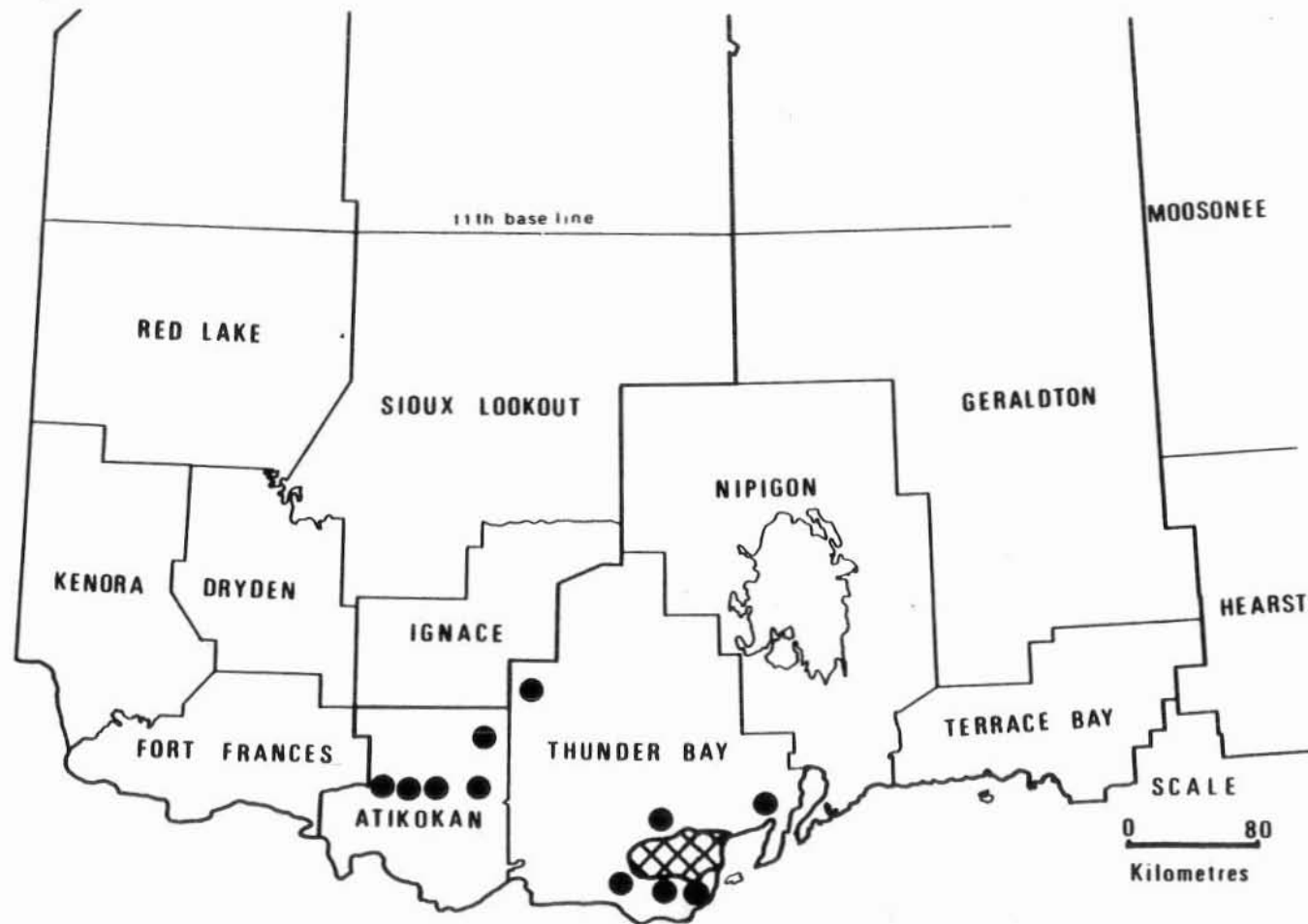
Moderate-to-severe defoliation



or



NORTHWESTERN ONTARIO



Forest Tent Caterpillar

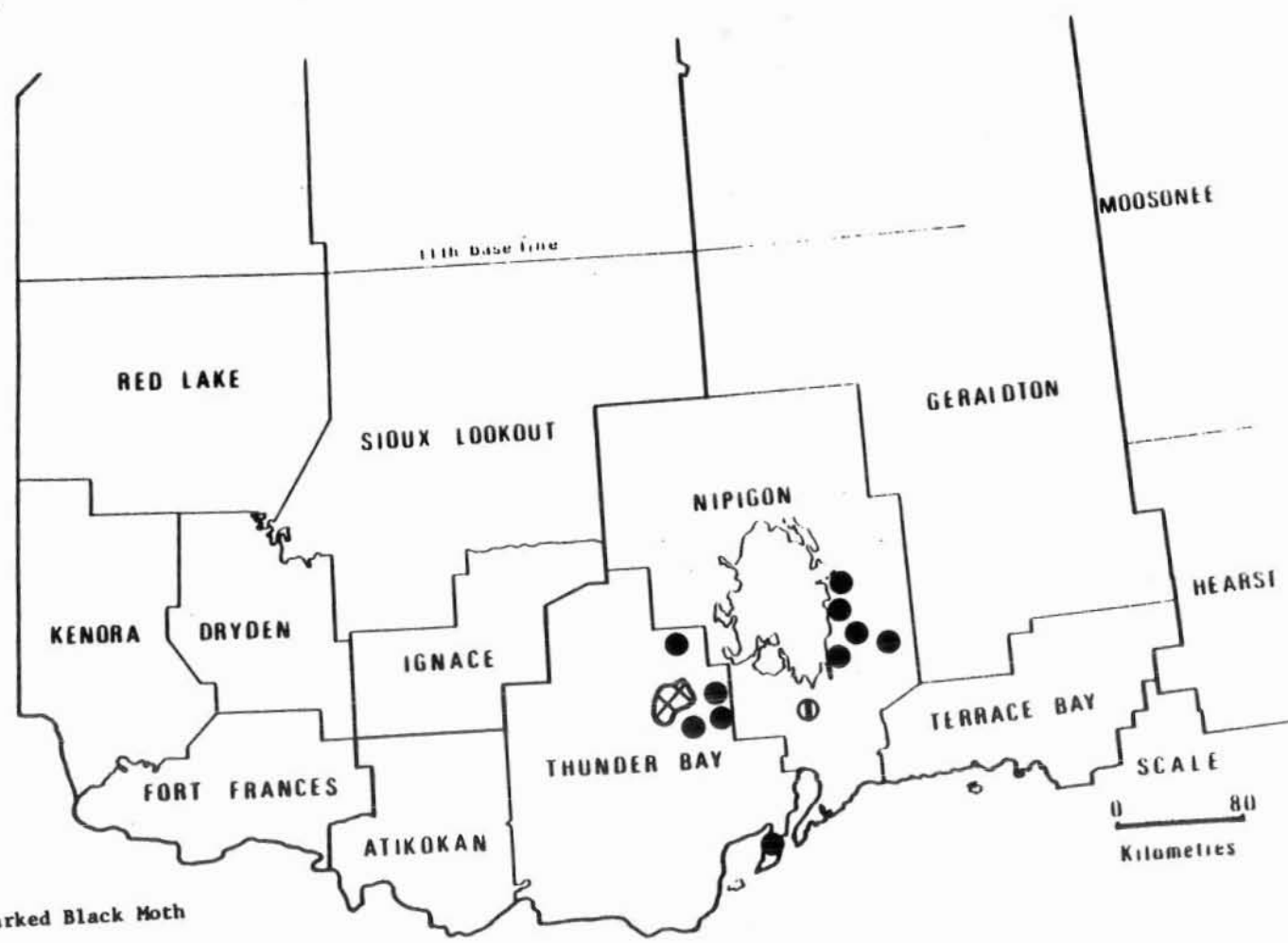
Areas within which defoliation occurred in 1980

LEGEND

Moderate-to-severe defoliation ● or



NORTHWESTERN ONTARIO



Spearheaded Black Moth

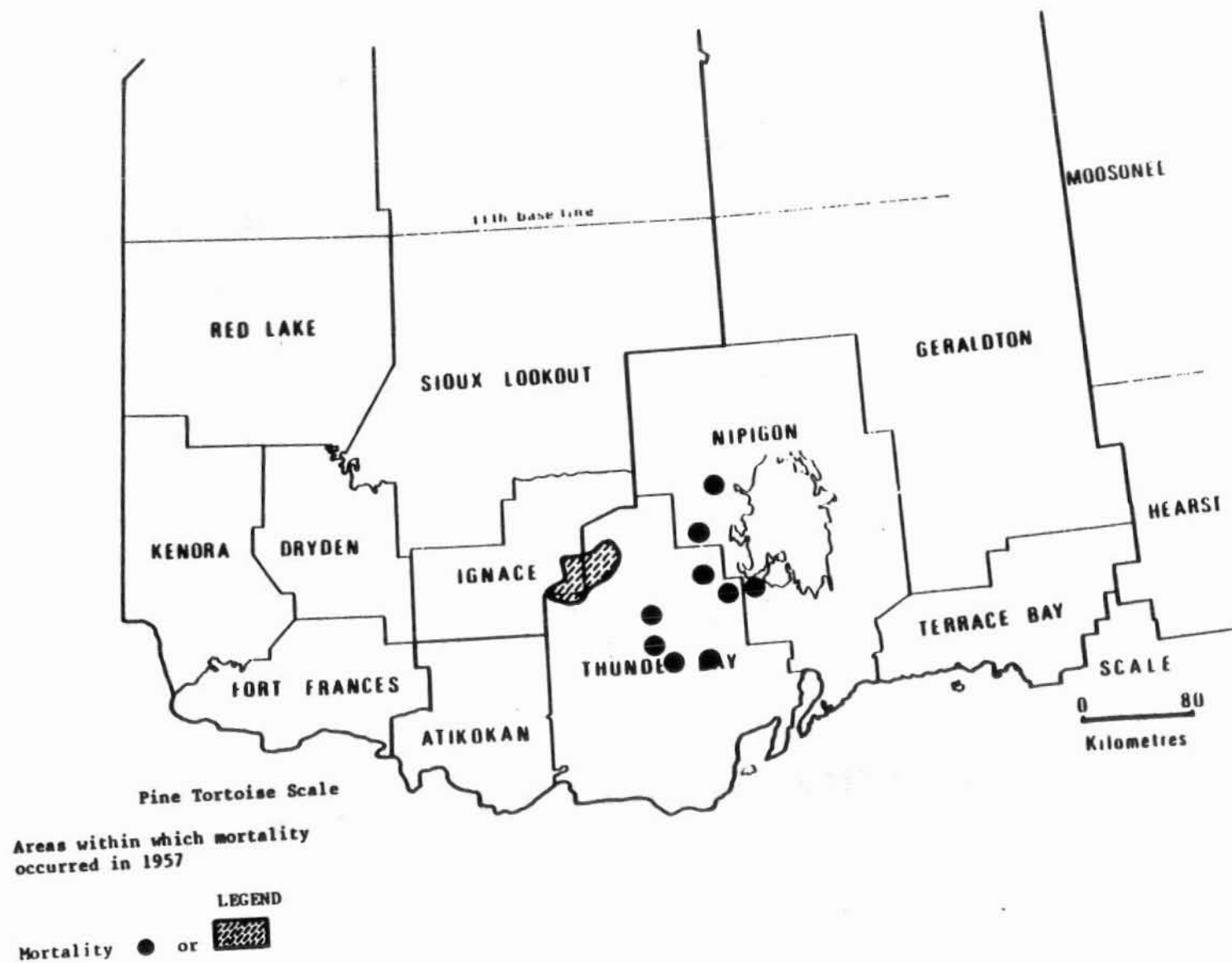
Areas within which defoliation occurred in 1962

LEGEND

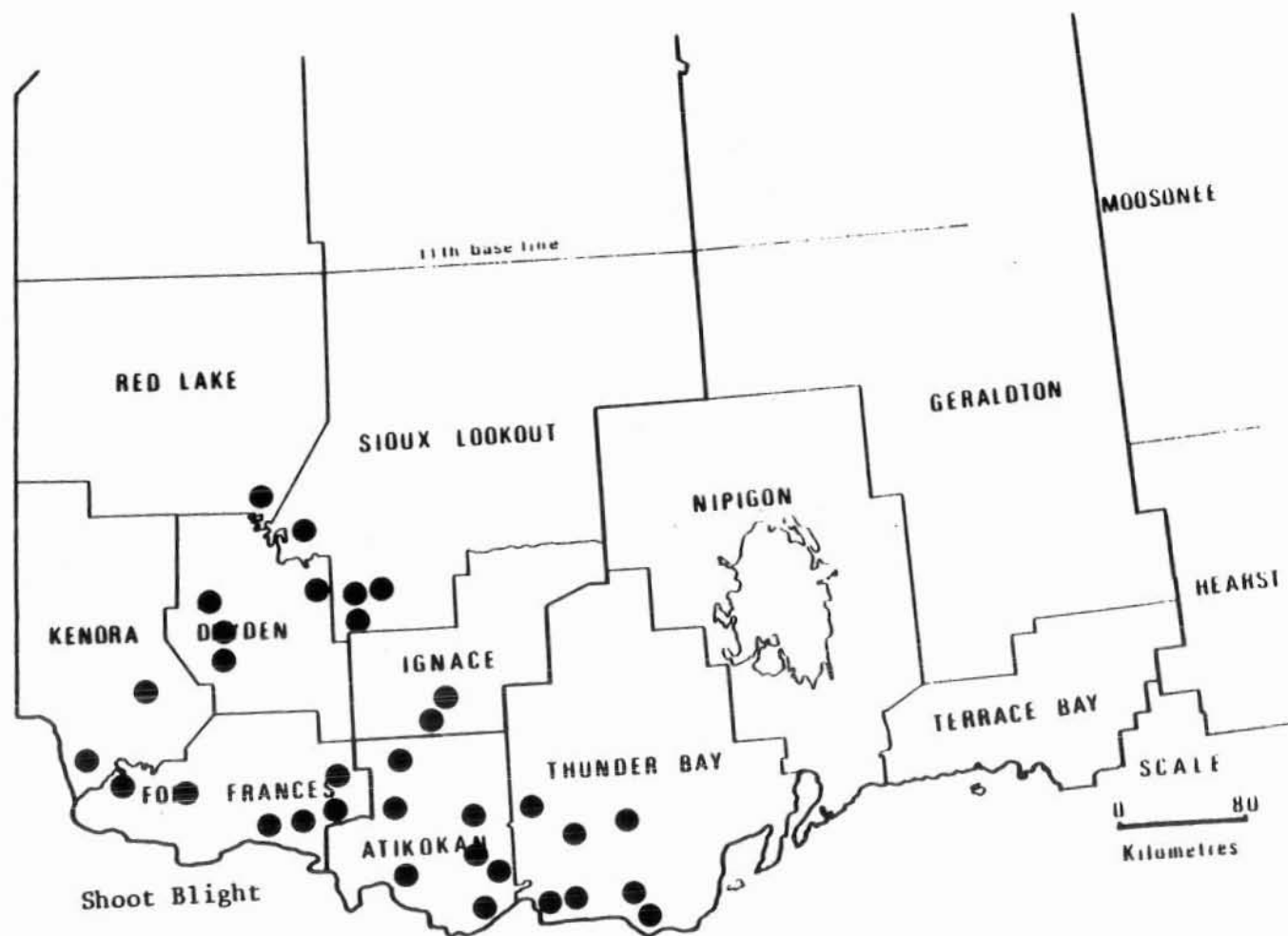
Light defoliation ①

Moderate-to-severe defoliation ● or 

NORTHWESTERN ONTARIO



NORTHWESTERN ONTARIO



Locations of infection centres
in 1973

LEGEND

Infection centres ●

NORTHWESTERN ONTARIO

