

**GREAT LAKES FOREST RESEARCH CENTRE  
CENTRE DE RECHERCHE FORESTIÈRE DES GRANDS LACS**

# **Results of forest insect and disease surveys in the NORTH CENTRAL REGION of Ontario, 1982**

CARRIED OUT BY THE GREAT LAKES FOREST  
RESEARCH CENTRE IN COOPERATION WITH  
THE ONTARIO MINISTRY OF NATURAL RESOURCES

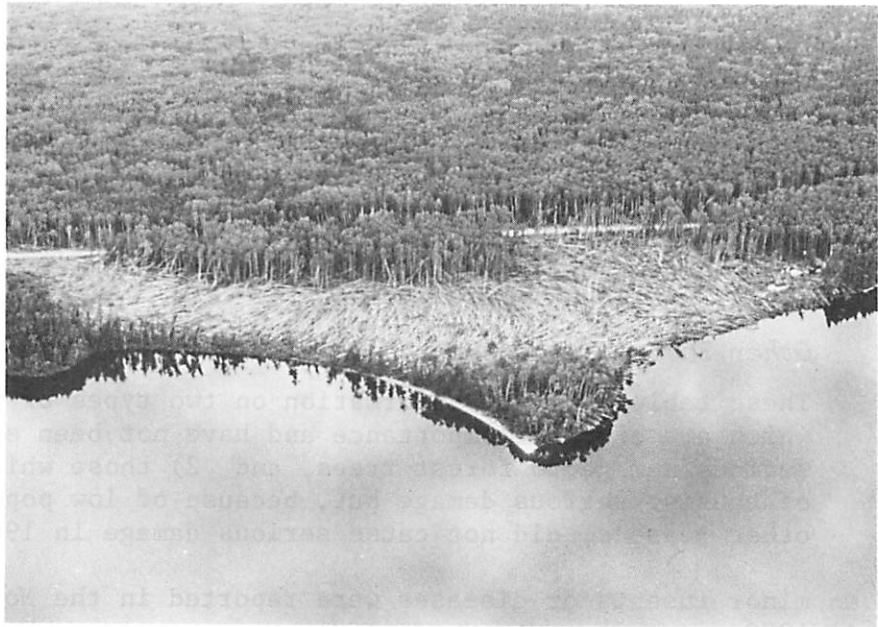


Frontispiece



Jack pine (*Pinus banksiana* Lamb.) terminal exhibiting damage caused by the eastern pine shoot borer, *Eucosma gloriola* Heinr.

Blowdown damage at  
Obonga Lake,  
Nipigon District



## SURVEY HIGHLIGHTS

This report summarizes information collected on various insect, disease and abiotic conditions found in the North Central Region in 1982. The cooperation and assistance provided by the Ontario Ministry of Natural Resources (OMNR), forest industry, Parks Canada and the Ontario Ministry of Culture and Recreation (maintenance staff at old Fort William) are gratefully acknowledged.

The area within which the spruce budworm caused moderate-to-severe defoliation of spruce and balsam fir increased by approximately 23% in the Region. Whole-tree and top mortality of balsam fir was mapped in the Atikokan, Thunder Bay and Terrace Bay districts and covered an area of about 49,400 ha. The area infested by the birch skeletonizer quintupled in size compared with the 1981 infestation. The forest tent caterpillar infestation decreased by about half, but will persist with marginal expansion in 1983. Population levels of the whitespotted sawyer, aspen leafblotch miner, yellowheaded spruce sawfly and larch sawfly increased at various locations in the Region.

Decreased levels of damage were the trend this year with diseases. While *Armillaria* root rot and *Scleroderris* canker remained much the same as they had been in 1981, damage by the various foliage diseases in the Region decreased. Blowdown damage caused by high winds during early July was mapped over an area of approximately 560 ha in Thunder Bay and Nipigon districts.

Special surveys were carried out on Dutch elm disease and the insect vectors that transmit the fungus; pests of jack pine cones; and insects, diseases and abiotic damage found in jack pine plantations. Results of these surveys can be found in the last section of this report.

The same format was followed in categorizing pests as in the 1981 North Central Region report.

### *Major Insects or Diseases*

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

### *Minor Insects or Diseases\**

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

### *Other Forest Insects/Diseases (Tables)*

These tables provide information on two types of pest: 1) those which are of minor importance and have not been shown to cause serious damage to forest trees, and 2) those which are capable of causing serious damage but, because of low populations or for other reasons, did not cause serious damage in 1982.

\* No minor insects or diseases were reported in the North Central Region in 1982.

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## INSECTS

### *Major Insects*

#### Birch Skeletonizer, *Bucculatrix canadensisella* Cham.

Population levels of this insect increased substantially, particularly in the Thunder Bay, Nipigon and Geraldton districts, where moderate-to-severe damage to white birch (*Betula papyrifera* Marsh.) expanded to approximately 10,470 km<sup>2</sup>. In the western part of Atikokan District high populations caused severe browning of foliage from Pekagoning Lake in the north to the Ontario-Minnesota border in the south and east to Lerome Lake (Fig. 1). A large infestation was observed in the Lake Nipigon area, extending from East Bay on Dog Lake in Thunder Bay District northeast to the Black Sturgeon Lake area and east across the south end of Lake Nipigon, including all of the southwest part of the Nipigon District and narrowing east of Lake Nipigon to Croll Township in Geraldton District. Small pockets of light-to-moderate damage occurred in the Longlac area and along the Catlonite and Goldfield roads, Geraldton District; in Corrigan, Patience and Wiggins townships, Nipigon District; east of the town of Atikokan, Atikokan District; and in MacGregor and McTavish townships, Thunder Bay District. Light populations were observed in Pic and Lecours townships in Terrace Bay District, and at various other isolated points in the Region.

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



The results of damage surveys, population sampling, and egg-mass counts will be included with those of other regions in a special report to be published later this year. That report will provide a complete description and analysis of developments in the spruce budworm situation in Ontario in 1982 and will give infestation forecasts for the province for 1983.

#### Eastern Pine Shoot Borer, *Eucosma gloriola* Heinr.

Generally, population levels remained much the same as in 1981. Damage to the terminal shoots was observed in jack pine (*Pinus banksiana* Lamb.) regeneration throughout the western half of the Thunder Bay District and most of the Atikokan District. Damage levels in the Region did not exceed 4%, the percentage present in a small plantation near Sawmill Bay in Thunder Bay District (Table 1). Damage was observed in two stands in the Thunder Bay District, but was not encountered on the trees sampled. Broken leaders (see Frontispiece) were common during July and August at low levels at various other locations in the Thunder Bay and Atikokan districts.

Fig. 1. Birch Skeletonizer,  
*Bucculatrix canadensisella*  
Cham.

Areas within which defoliation  
occurred in 1982

Moderate-to-severe . . . . .   
Light-to-moderate . . . . . 

**PROVINCIAL ADMINISTRATIVE  
DISTRICTS**

- 1 ATIKOKAN
- 2 THUNDER BAY
- 3 NIPIGON
- 4 GERALDTON
- 5 TERRACE BAY

# NORTH CENTRAL REGION

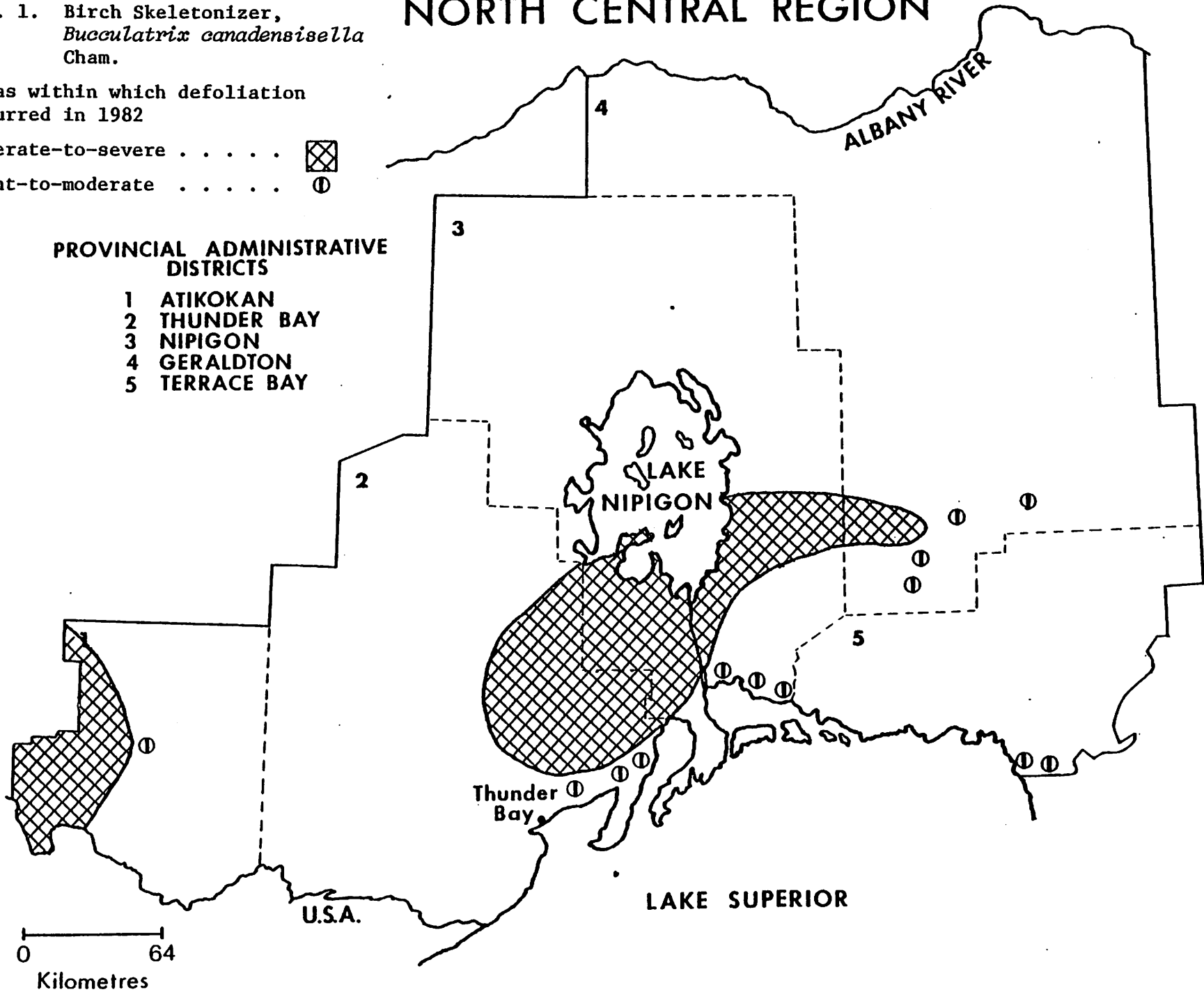


Table 1. Summary of leader damage on jack pine caused by the eastern pine shoot borer in Atikokan and Thunder Bay districts in 1982 (counts based on the examination of 150 trees at each location).

Location	Area affected (ha)	Estimated trees per ha	Avg ht of trees (m)	Trees damaged (%)
<b>Atikokan District</b>				
Flanders Rd	20	4,000	2.6	3
Seine River Rd	40	4,500	1.6	1
<b>Thunder Bay District</b>				
Hanniwell Twp	40	4,300	1.8	0*
Hogarth Twp	40	4,500	1.6	1
Sawmill Bay Rd	16	2,500	2.0	4
Wardrope Twp	50	3,000	2.1	0*

\* Damage present in the plantation but not encountered on sample trees.

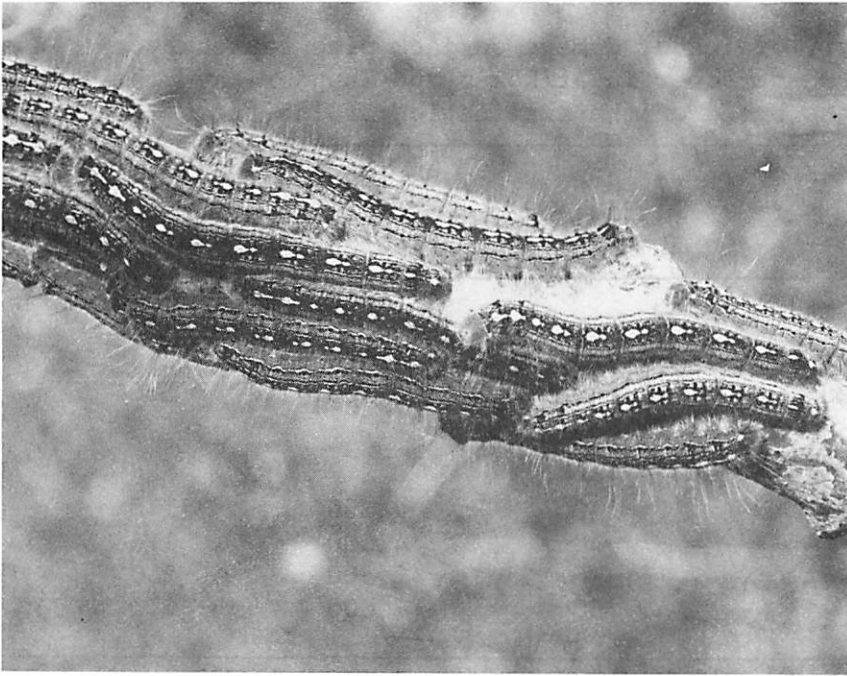
#### Birch Leafminer, *Fenusa pusilla* (Lep.)

Population levels of this pest increased in the Thunder Bay and Geraldton districts in comparison with those of 1981. Heavy leaf mining was observed on ornamentals throughout the urban area of the city of Thunder Bay and in numerous other small stands in rural areas of Oliver, Conmee, O'Connor and Paipoonge townships, Thunder Bay District. Moderate-to-high populations were also observed on individual trees and small clumps of trees in the area from Jellicoe to Longlac in Geraldton and Nipigon districts. Low damage levels were noted at various other locations in the Region.

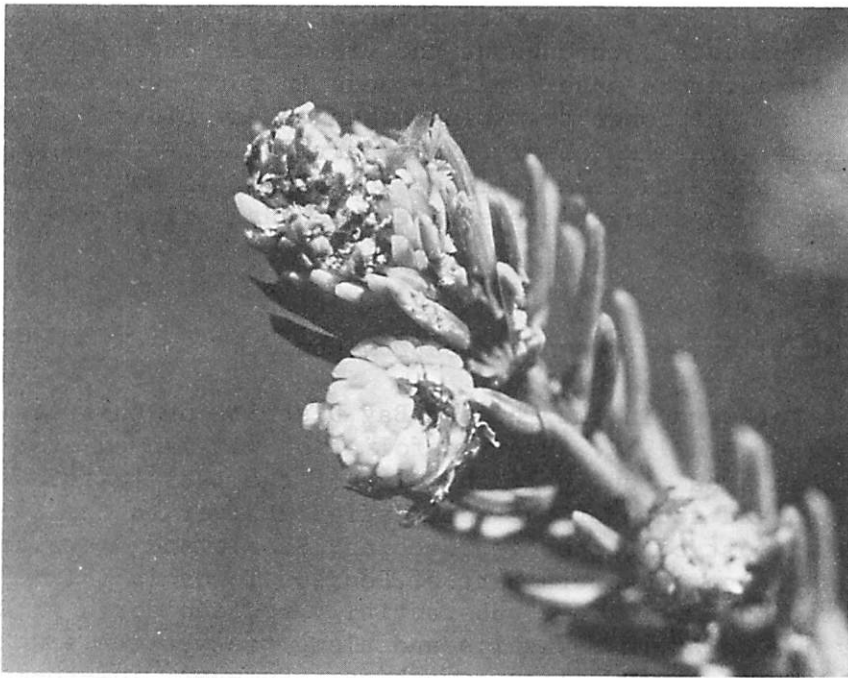
#### Forest Tent Caterpillar, *Malacosoma disstria* Hbn.

The area infested in the Thunder Bay District by this insect (see photo) decreased in 1982. Heavy defoliation was mapped over 352 km<sup>2</sup>, which represents an area about half the size of the 1981 infestation. The infestation spread south of the Kaministiquia River to the Cloud Lake area, encompassing most of Paipoonge, Neebing, Scoble and Blake townships as well as the northeastern part of Pearson Township (Fig. 2). In contrast, infestation levels were substantially reduced north of Highway 11/17 in Oliver and McIntyre townships and along the western side of the infestation in O'Connor and Gillies townships. However, low-to-moderate populations were observed at scattered locations in the southern parts of Oliver and McIntyre townships and within the urban area of the city of






Full-grown forest tent caterpillar, *Malacosoma disstria* Hbn., larvae



Feeding by whitespotted sawyer, *Monochamus scutellatus* (Say), on a black spruce (*Picea mariana* [Mill.] B.S.P.) shoot

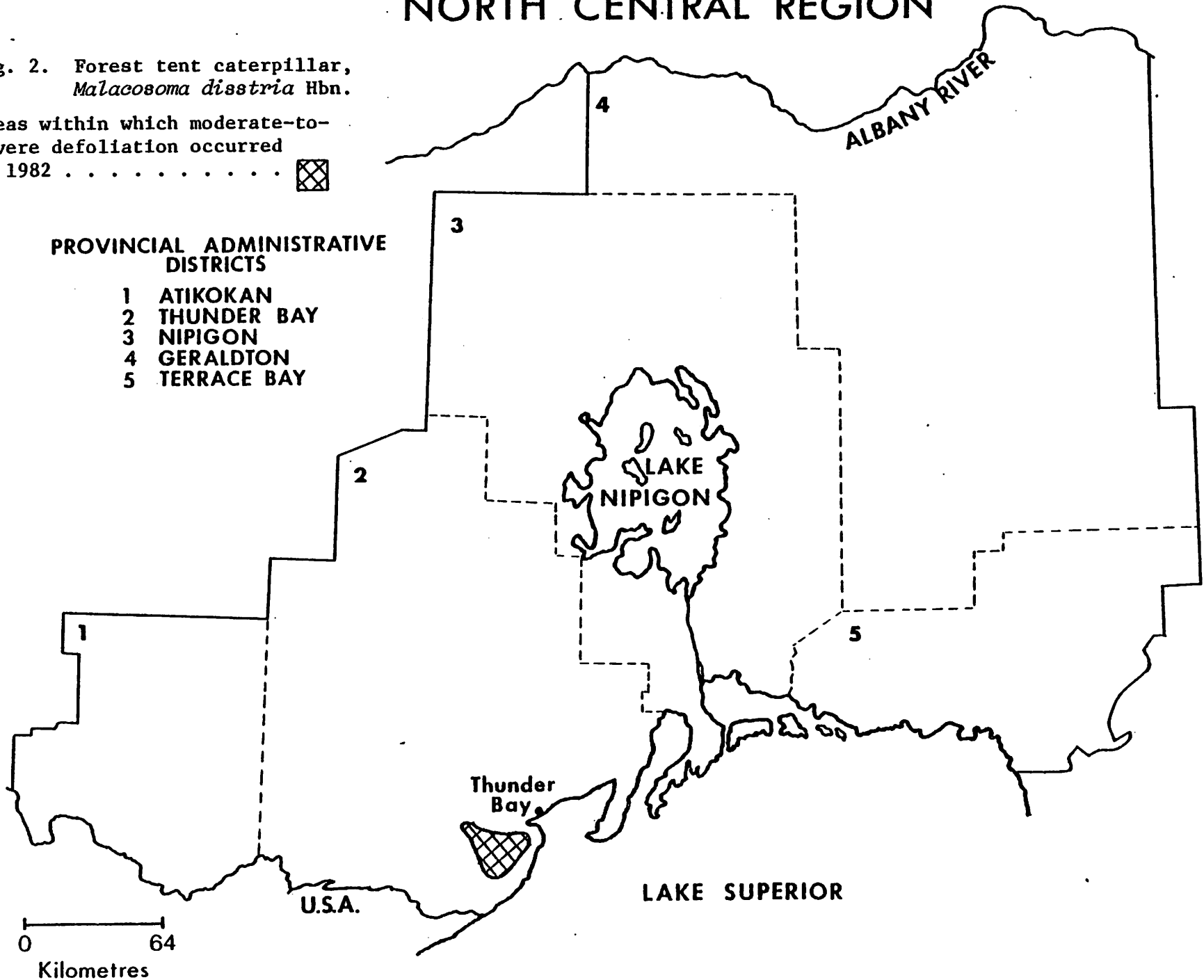
# NORTH CENTRAL REGION

Fig. 2. Forest tent caterpillar, *Malacosoma disstria* Hbn.

Areas within which moderate-to-severe defoliation occurred in 1982 . . . . . 

## PROVINCIAL ADMINISTRATIVE DISTRICTS

- 1 ATIKOKAN
- 2 THUNDER BAY
- 3 NIPIGON
- 4 GERALDTON
- 5 TERRACE BAY



Thunder Bay. The preferred host of this pest is trembling aspen (*Populus tremuloides* Michx.) but it will feed on other hardwood species such as white birch. Larvae were not detected at any other location in the Region.

A total of 49 moths were captured in a light trap located at the French Lake Ranger Station in Atikokan District. This is a minor increase over the 44 captured in 1981 and probably does not represent a population high enough to cause noticeable damage.

Heavy forest tent caterpillar infestations of varying sizes have been present in the same general area of the Thunder Bay District since 1977. Egg-band counts in and around the existing infestation indicate that damage will persist in 1983 (Table 2). Moderate-to-severe defoliation is forecast for the area currently infested, as well as some spread to the north into Conmee, Oliver and McIntyre townships and to a lesser extent west into Gillies Township.

Table 2. Summary of forest tent caterpillar egg-band counts on trembling aspen in Thunder Bay District in 1982, with infestation forecasts for 1983.

Location (Twp)	Avg DBH of trees (cm)	Avg no. of egg bands per tree	Infestation forecast for 1983
Thunder Bay District			
Blake	12	40	severe
Conmee	12	5	moderate
Crooks	12	1	light
Gillies	12	6	moderate
McIntyre	11	21	severe
Neebing	11	34	severe
Oliver	13	23	severe
Oliver-Town Line Rd	10	6	moderate
Pardee	12	2	light

Whitespotted Sawyer, *Monochamus scutellatus* (Say)

Increased populations of this sawyer beetle were observed in the Thunder Bay District. Moderate-to-heavy damage was present on fringe trees along cutovers throughout the Chisamore and Lac des Isles lakes area. This northern part of the district represents one of the most active areas where harvesting operations are taking place. At one location adult beetles were seen feeding on the new shoots of young residual

black spruce (*Picea mariana* [Mill.] B.S.P.) (see photo) and on the bark on branch tips of jack pine and spruce (*Picea* spp.). A noteworthy number of complaints about adult beetles were received from residents of the northeastern part of the city of Thunder Bay. The insects were probably attracted to the urban area by the odor of fresh wood from the woods industries; however, this also indicates a general increase in beetle populations. The only other occurrence of this insect in the Region was within a prescribed burn near Wintering Lake, Geraldton District, where numerous fire-killed trees were infested with larvae; also light branch tip mortality was observed on white spruce (*Picea glauca* [Moench] Voss) in the Barbara Lake Seed Production Area (SPA) in Terrace Bay District. This insect was observed elsewhere in the Region but not at damaging levels.

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

Population levels of this insect increased substantially across the Region. Trembling aspen regeneration along roadsides and in cut-overs was the hardest hit, with virtually every leaf infested, in most cases with more than one insect. At a few locations in the Atikokan District damage was present in the larger overstory trees, which usually do not become infested. It was indeed uncommon to see young trees with leaves not mined by this pest throughout the Region in 1982.

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

In 1982 increased amounts of damage were found at various locations in the Thunder Bay and Nipigon districts. Defoliation levels averaged 30% on 4% of the evaluated trees in a 10-ha white spruce plantation in Marks Township, Thunder Bay District. Moderate-to-severe defoliation was detected on scattered individuals and small groups of white spruce and black spruce along Highway 11 near Huronian Lake, north of Shabaqua along Highway 17, and at one location along the Northern Light Lake Road, Thunder Bay District. Planted white spruce suffered moderate-to-severe defoliation in McTavish Township, Thunder Bay District, and 15% of planted trees were severely defoliated at one location in Lyon Township, Nipigon District. In the eastern part of the Region populations of this sawfly declined in Rainbow Falls Provincial Park, Terrace Bay District, and at Klotz Lake in Geraldton District where high numbers had persisted on ornamentals for several years. Light damage levels were observed on open-grown white spruce and black spruce at other points throughout the Region, particularly on ornamental trees in urban areas.

White Pine Weevil, *Pissodes strobi* (Peck)

Damage to jack pine regeneration showed a marginal increase in the Thunder Bay and Atikokan districts. However, there was little change in the population levels of this insect in the eastern part of the Region. The highest numbers were again detected in the Limestone Lake Management Area, Nipigon District, where weeviled trees averaged 6.3% in two black spruce plantations evaluated. Damage levels averaged 4% in four areas evaluated in Thunder Bay District (Table 3). Increased populations were evident in the Flanders Unit; however, only about 2% of trees were weeviled in jack pine regeneration at Seine River, Atikokan District. Small numbers of open-grown trees were infested along Highway 17 in Patience Township, Nipigon District; in the Highway 11 area east of Longlac, Geraldton District; and along Highway 17 between Shabaqua and English River, Thunder Bay District.

Table 3. Summary of damage caused by the white pine weevil in four districts in the North Central Region in 1982 (counts based on the examination of 150 trees at each location).

Location	Area affected (ha)	Estimated trees per ha	Host	Avg ht of trees (m)	Trees weeviled (%)
Atikokan District					
Flanders Rd	60	4,000	jP	2.6	3.0
Seine River Rd	40	4,500	jP	1.6	2.0
Thunder Bay District					
Hanniwell Twp	40	3,000	jP	1.8	5.0
Hogarth Twp	25	3,000	jP	2.5	5.0
Sawmill Bay Rd	16	2,500	jP	2.0	2.0
Wardrope Twp	50	3,000	jP	2.1	5.0
Nipigon District					
Limestone Lake, hydro line	15	3,000	bS	3.0	7.3
Limestone Lake, airstrip	20	4,000	bS	3.5	6.0
Geraldton District					
McQuesten Twp	20	3,000	bS	3.5	0.7

Larch Sawfly, *Pristiphora erichsonii* (Htg.)

Population levels of this sawfly increased at various locations in the Thunder Bay District (Fig. 3). Moderate-to-severe defoliation was found in a 100-ha stand of tamarack (*Larix laricina* [Du Roi] K. Koch) east of the city of Thunder Bay, and also in 10-ha and 6-ha stands in Paipoonge and McTavish townships, respectively, in Thunder Bay District. In Geraldton District severe damage recurred in a 5-ha pole-size stand in Errington Township where numerous trees were completely denuded. In Colter Township, although defoliation was 25% in 1982, severe defoliation in previous years has caused some tree top mortality in a 2-ha stand. Light-to-moderate damage was observed in tamarack stands in Lindsay, Ashmore, McQuesten and Oakes townships, Geraldton District; at Polly Lake in Nipigon District; and along Highway 16 from Kakabeka Falls to English River in Thunder Bay District. Low levels were found elsewhere in the Region.

High numbers of late-instar larvae appeared to be parasitized in most of the stands examined in Geraldton District. The highest rate, 80% parasitism, was observed in Colter Township.

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

High populations of this insect continued, particularly through the southern part of the Region. Moderate-to-severe damage of mountain ash (*Sorbus americana* Marsh.) was observed in the Upsala area, at numerous locations through the southern part of the Thunder Bay District, and along Highway 17 in the Terrace Bay District. A new infestation was found in Neys Provincial Park, Terrace Bay District. However, a control program which consisted of removing early-instar colonies to prevent severe damage was initiated by park personnel. Light-to-moderate damage was observed at numerous other points through Atikokan, Nipigon and Geraldton districts. A high number of late-instar larvae examined on ornamental trees appears to be parasitized in the town of Longlac, Geraldton District.

# NORTH CENTRAL REGION

Fig. 3. Larch Sawfly, *Pristiphora erichsonii* (Htg.)

Areas within which defoliation occurred in 1982

Moderate-to-severe . . . . . ●  
Light-to-moderate . . . . . ⊙

## PROVINCIAL ADMINISTRATIVE DISTRICTS

- 1 ATIKOKAN
- 2 THUNDER BAY
- 3 NIPIGON
- 4 GERALDTON
- 5 TERRACE BAY

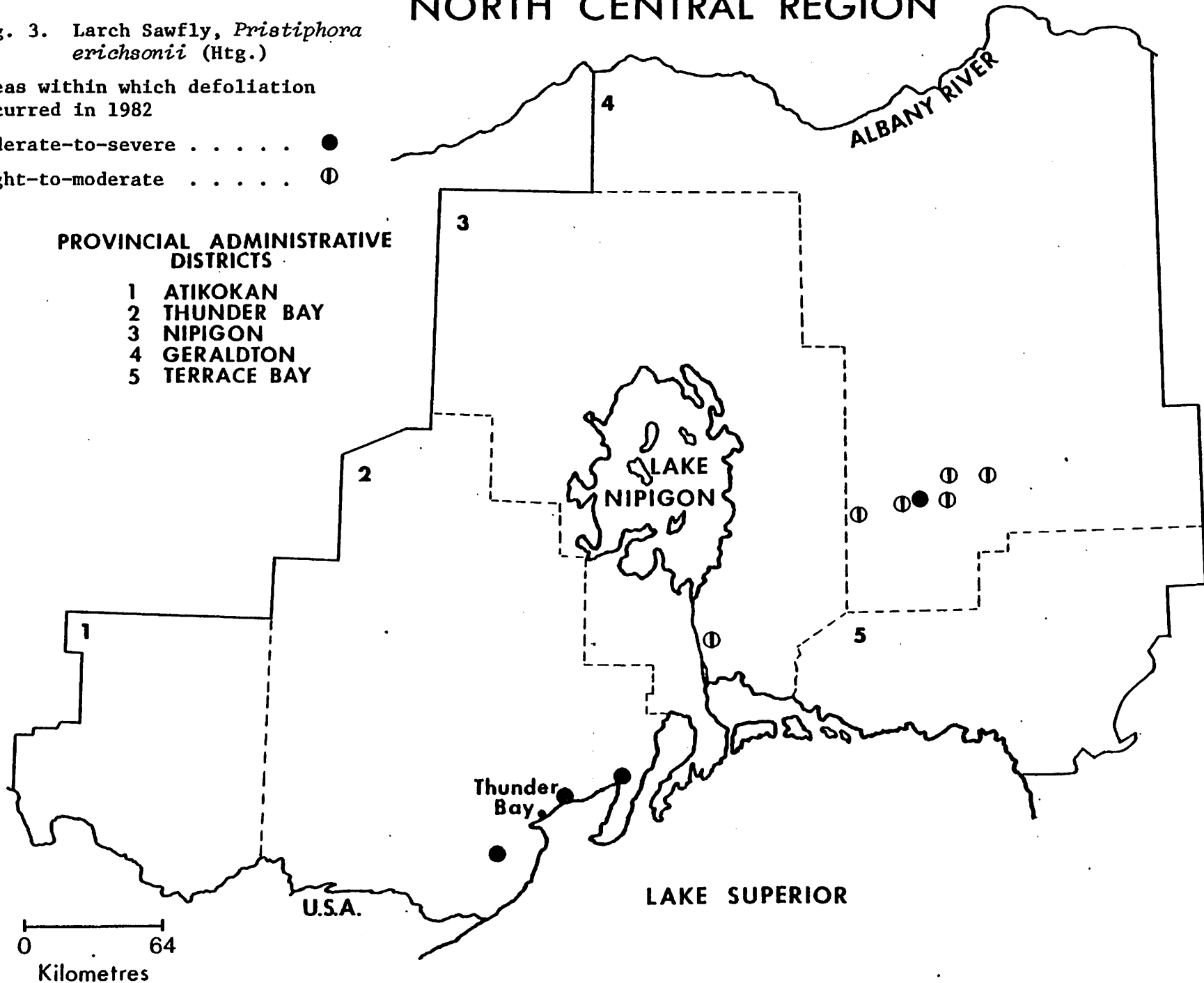


Table 4. Other forest insects.

Insect	Host(s)	Remarks
<i>Aceria ulmi</i> (Garman) Elm leafgall mite	wE	light population on one tree, town of Longlac, Geraldton District
<i>Adelges strobilobius</i> (Kalt.) Pale spruce gall adelgid	wS,bS	low numbers of galls in Exton Twp, Geraldton District and in Sandra Twp, Nipigon Dis- trict
<i>Altica ambiens almi</i> Harr. Alder flea beetle	Al	heavy defoliation at scat- tered locations in Atikokan and Thunder Bay districts
<i>Datana ministra</i> (Dru.) Yellownecked caterpillar	W	found at one location in Atikokan District
<i>Eriosoma lanigerum</i> (Hausm.) Woolly apple aphid	wE	found in conjunction with elm leafgall mites, town of Longlac, Geraldton District
<i>Gilpinia hercyniae</i> (Htg.) European spruce sawfly	wS	small numbers, Wiggins Twp, Terrace Bay District
<i>Gonioctena americana</i> (Schaeef.) American aspen beetle	tA	light defoliation in a 5-ha pole-size stand at Barbara Lake SPA, Terrace Bay District
<i>Hyphantria cunea</i> (Dru.) Fall webworm	bAs	low populations in Paipoonge and Neebing twps, Thunder Bay District
<i>Lyonetia</i> sp. Willow leafminer	W	heavy damage common through the eastern half of the Region
<i>Neodiprion abietis</i> complex Balsam fir sawfly	bF	endemic population, Croll Twp, Geraldton District

(continued)



Table 4. Other forest insects (concluded).

Insect	Host(s)	Remarks
<i>Neodiprion nanulus nanulus</i> Schedl. Red pine sawfly	jP	numerous colonies on fringe trees, Huronian Lake, Thunder Bay District; light defoliation at numerous locations through the western part of the Region
<i>Neodiprion pratti banksianae</i> Roh. Jack pine sawfly	jP	small numbers of colonies, Kimberly-Clark Nursery, Longlac, Geraldton District
<i>Neodiprion virginianus</i> complex Redheaded jack pine sawfly	jP	a few completely defoliated trees, Soper Twp, Thunder Bay District; small numbers of colonies at French Lake, Atikokan District, and in Errington Twp, Geraldton District
<i>Nycteola cinereana</i> N. & D. Poplar leaf-tier	bPo	light damage to tips of numerous young trees in Croll Twp, Geraldton District
<i>Phyllonorycter nipigon</i> (Free.) Balsam poplar leafblotch miner	bPo	light-to-moderate at numerous locations through the western part of the Region
<i>Pineus similis</i> (Gill.) Ragged spruce gall adelgid	wS	low numbers on scattered trees, in a 5-ha plantation on McLeod Lake Rd, Geraldton District
<i>Profenusa thomsoni</i> (Konow) Ambermarked birch leafminer	wB	low numbers of damaged leaves in Boyce, Clavet and Oakes twps, Geraldton District

## TREE DISEASES

*Major Diseases*

Armillaria Root Rot, *Armillaria mellea* (Vahl ex Fr.) Kumm.

Damage levels caused by this disease remained much the same as they had been in 1981. Low-to-moderate levels of mortality were found in three jack pine plantations in Thunder Bay District. A 40-ha plantation in Hanniwel Township had 1% of the trees dead, and 25-ha and 16-ha plantations, respectively, in Hogarth Township and near Sawmill Bay each sustained a 2% mortality rate. Trace-to-low levels of infection were observed at various other locations in the Region.

Needle Rusts, *Chrysomyxa ledi* (Alb. and Schw.) d By. and  
*C. ledicola* Lagh.

Infection levels decreased in comparison with those of 1981. Damage occurred at scattered locations in plantations and natural regeneration in the Atikokan, Geraldton and Thunder Bay districts. Some of the areas examined had 100% of the trees infected, but actual foliage damage was negligible (Table 5). Trace levels of infection were observed at other points in the Region.

Table 5. Summary of black spruce trees affected and foliage damaged by needle rust in three districts in 1982 (counts based on the examination of 150 trees at each location).

Location	Area affected (ha)	Estimated trees per ha	Avg ht of trees (m)	Trees affected (%)	Foliage damaged (%)
<b>Atikokan District</b>					
Nydia Lake	100	3,000	0.9	100	5
Flanders Rd	200	2,000	1.2	100	5
<b>Geraldton District</b>					
Halfway Rd	10	1,000	0.7	100	1
McQuesten Twp	10	3,000	3.5	30	5
<b>Thunder Bay District</b>					
East Bay Rd	40	1,500	1.4	7	1

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

This disease continued to cause mortality of lower branches and a light incidence of stem cankers in isolated, young jack pine plantations in the eastern half of the Region. The heaviest damage was found in the Terrace Bay District. Moderate-to-severe branch mortality was rated on 43% of the evaluated trees, which averaged 3.8 m in height, in a 2-ha plantation along the Wintering Road. Also, 32% of the trees were affected in a 10-ha plantation along the Lemay Road. The average height of these trees was 2.1 m. In most situations lower branch infection on trees this size does not cause tree mortality and is not considered to be a serious problem. Other infection centres were detected, and the data are included under Jack Pine Plantation Survey.

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

The incidence of this disease declined in the Region in 1982. The highest damage level was found in a young 50-ha post-fire trembling aspen stand at the Osawin River, Terrace Bay District, where 34% of the trees were affected and 29% of the shoots were damaged. In the Thunder Bay District 75% of the trees were diseased, with 10% of the shoots killed in a 40-ha cutover at East Bay Road. Generally only light infection levels were detected at widely scattered locations in the Region.

Table 6. Other forest diseases.

Organism	Host(s)	Remarks
<i>Chrysomyxa arctostaphyli</i> Diet. Yellow witches' broom	bS	small numbers of infected trees in Wiggins Twp, Terrace Bay District and McKay Lake, Geraldton District
<i>Chrysomyxa pirolata</i> Wint. Cone rust	bS	small numbers of infected cones at one location in Pifher Twp, Nipigon District
<i>Ciborinia whetzellii</i> (Seaver) Seaver Ink spot	tA	trace levels at two locations in the Thunder Bay District
<i>Davisomycella ampla</i> (Davis) Darker Needle cast	jP	light damage on 14% of the trees in a 5-ha plantation in Elmhirst Twp, Nipigon District; general decline in the Region

(continued)

Table 6. Other forest diseases (concluded).

Organism	Host(s)	Remarks
<i>Endocronartium harknessii</i> (J.P. Moore) Y. Hirat. Globose gall rust	jP	common in all districts of the Region
<i>Fusarium</i> sp. Damping-off	bS	10% of seedlings affected in one compartment at the Thunder Bay Forest Station
<i>Hypoxylon mammatum</i> (Wahl.) Miller Hypoxylon canker	tA	stem cankers common through- out the Region
<i>Lirula mirabilis</i> (Darker) Darker Needle cast	bF	moderate damage on scattered small trees in Rainbow Falls Provincial Park, Terrace Bay District
<i>Lophodermium</i> sp. Needle cast	jP	light infection level on 14% of the trees in Colter Twp, Geraldton District; light incidence elsewhere in the Region
<i>Melampsorella caryophyllacearum</i> Schroet. Yellow witches' broom	bF	a few scattered trees affected at Pamela Lake, Geraldton District
<i>Monilia</i> sp. Twig blight	bCh	34% of branch tips killed on a clump of trees in Neys Provincial Park, Terrace Bay District
<i>Rhizosphaera kalkhoffii</i> Bub. Needle cast	bS	heavy infection in Haines Twp and at various points along the southern end of Highway 527, Thunder Bay District and in the Niobe Lake area, Atikokan Dis- trict
<i>Nectria cinnabarina</i> (Tode ex Fr.) Fr. Nectria dieback	Siberian elm	severe branch mortality on a hedgerow at Marathon, Terrace Bay District

## *Abiotic Damage*

### Blowdown

High winds swept through northwestern Ontario on 5 July causing blowdown damage to hardwood and softwood trees (see Frontispiece) in the Thunder Bay and Nipigon districts (Fig. 4). In the Nipigon District damage was greatest in three areas around Obonga Lake covering approximately 200 ha. Pockets of damage totalling about 360 ha were mapped near Harmon Lake and along the Thunder Bay-Ignace District boundary from Allan Water Lake to Duggan Lake in the northwestern corner of the Thunder Bay District.

### Frost Damage

Only a few small pockets of frost damage occurred in 1982. The highest incidence was detected in a 5-ha plantation in the Limestone Lake Management Area, Nipigon District, where 80% of white spruce and 37% of black spruce trees were affected. The percentage of damaged shoots was 10% on white spruce and 5% on black spruce. In Wardrope Township, Thunder Bay District, 100% of black spruce were affected in a 1-ha plantation; however, only 4% of shoots were damaged. Frost damage was not observed elsewhere in the Region.

### Snow Damage

A heavy, wet snowfall occurred on 30 September and 1 October, 1981 in parts of the western half of the Region. During these 2 days the total snowfall recorded at Atikokan was 17.4 cm, near Upsala it was 14.0 cm and at Thunder Bay it was 12.9 cm.<sup>1</sup> Various species of pole-size hardwood and softwood trees were bent over. They were particularly noticeable adjacent to fields and roadways.

### Winter Drying

Reddish-brown needles were found on young red pine (*Pinus resinosa* Ait.) trees at various locations in the southern part of the Thunder Bay District. This condition is called winter drying and is a result of plants becoming active on warm, sunny days and requiring water for their leaves to transpire. If the soil around the roots is still frozen, the vital water is not available and the needles dry out and die.

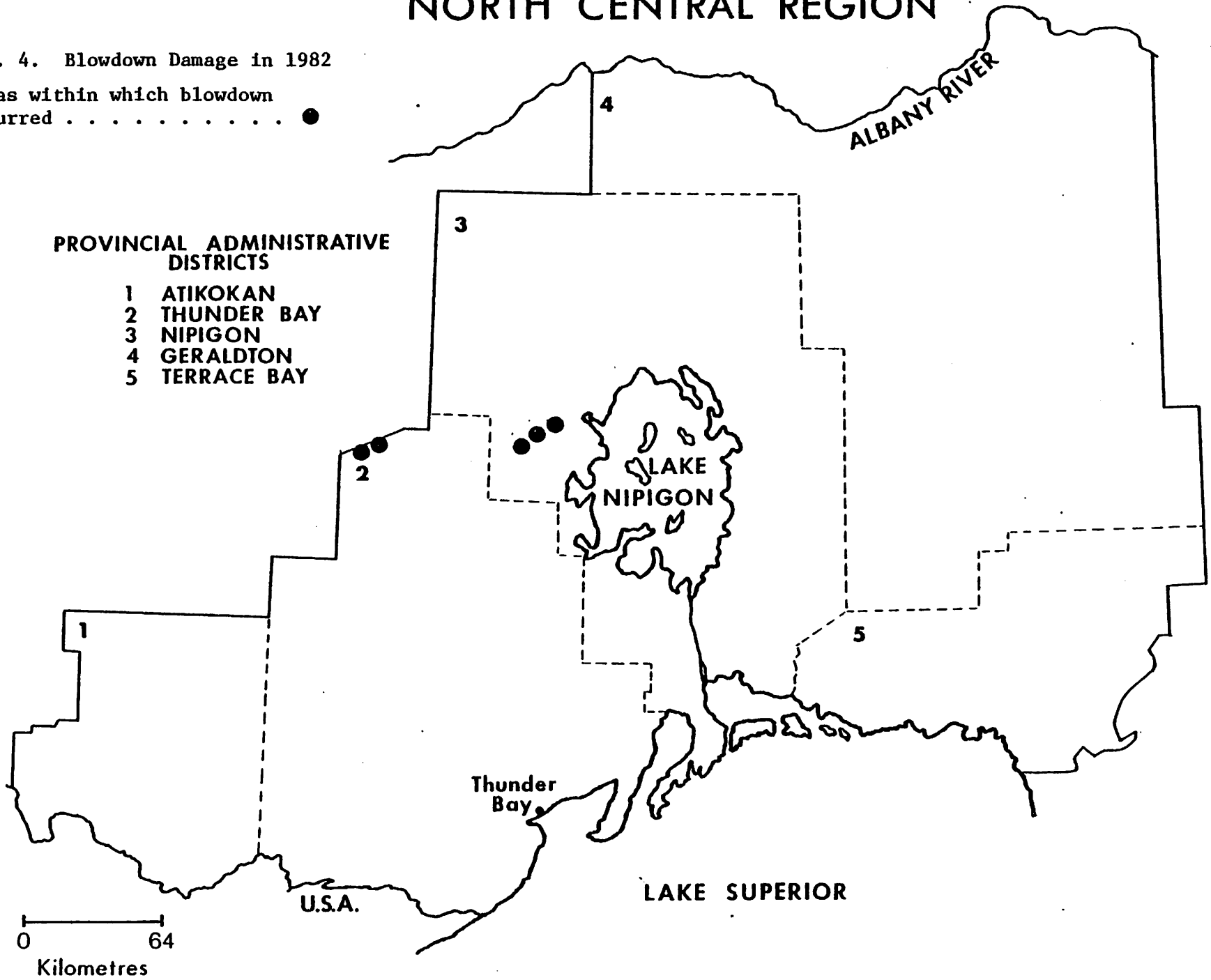
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<sup>1</sup> Data from Atmospheric Environment Service.

# NORTH CENTRAL REGION

Fig. 4. Blowdown Damage in 1982

Areas within which blowdown occurred . . . . . ●



### Special Surveys

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

In 1982 a special survey was carried out to determine the distribution and level of Dutch elm disease, and the distribution and/or presence of the major vectors of the Dutch elm disease fungus in Canada. The two vectors are the native elm bark beetle (N.E.B.B.), *Hylurgopinus rufipes* (Eich.), and the smaller European elm bark beetle (S.E.E.B.B.), *Scolytus multistriatus* (Marsh.). White elm (*Ulmus americana* L.) is not present in large quantities in the North Central Region.

Surveys were carried out in nine urban centres across the Region. Each town was examined for elm trees for up to a maximum of 1 hour; if no trees were encountered, the survey was finished. Elm were not found in the towns of Beardmore, Dorion, Marathon, Nakina, Nipigon, Schreiber and Terrace Bay. In the town of Atikokan, Atikokan District and in Neebing Township, Thunder Bay District 150 elm were examined and disease levels found were 5.3% and 14.7%, respectively; the latter site was classed as rural. Thirty-five ornamental elm in the town of Red Rock, Nipigon District were examined and none showed any symptoms of the disease. Scattered dead and diseased elm are a common sight along the rivers in the south-central part of the Thunder Bay District.

To help determine the presence of the two insect vectors of the fungus, 100-cm-long white elm trap logs and pheromone traps were set out where growing elm were present in the Region (Fig. 5). The trap logs, consisting of two logs at each site, were put out at four locations in the western half of the Region. The first logs were put out in late May and later examined for N.E.B.B. and S.E.E.B.B. galleries in mid-July. A second set of logs was then placed in the same location and examined in mid-September. There were low numbers of N.E.B.B. galleries found at two sites in Thunder Bay District. Results of this aspect of the survey are summarized in Table 7. The pheromone traps were put out in nine scattered locations across the Region, four in conjunction with the trap logs and the remainder in the towns of Red Rock, Geraldton, Longlac, Manitouwadge and Marathon. These traps were changed once in the middle of the summer, and because of the type of pheromone, would attract only the S.E.E.B.B., none of which were captured on any of the traps.

Generally, because of the lack of significant numbers of host trees, this disease is not of any great concern in the Region, with the exception of a few locations where aesthetic values are high.

# NORTH CENTRAL REGION

Fig. 5. Dutch Elm Disease, *Ceratocystis ulmi* (Buism.) C. Moreau, vector survey 1982

Locations of trap logs and pheromone traps . . . . . ●  
 Locations of pheromone traps only . . . . . ①

## PROVINCIAL ADMINISTRATIVE DISTRICTS

- 1 ATIKOKAN
- 2 THUNDER BAY
- 3 NIPIGON
- 4 GERALDTON
- 5 TERRACE BAY

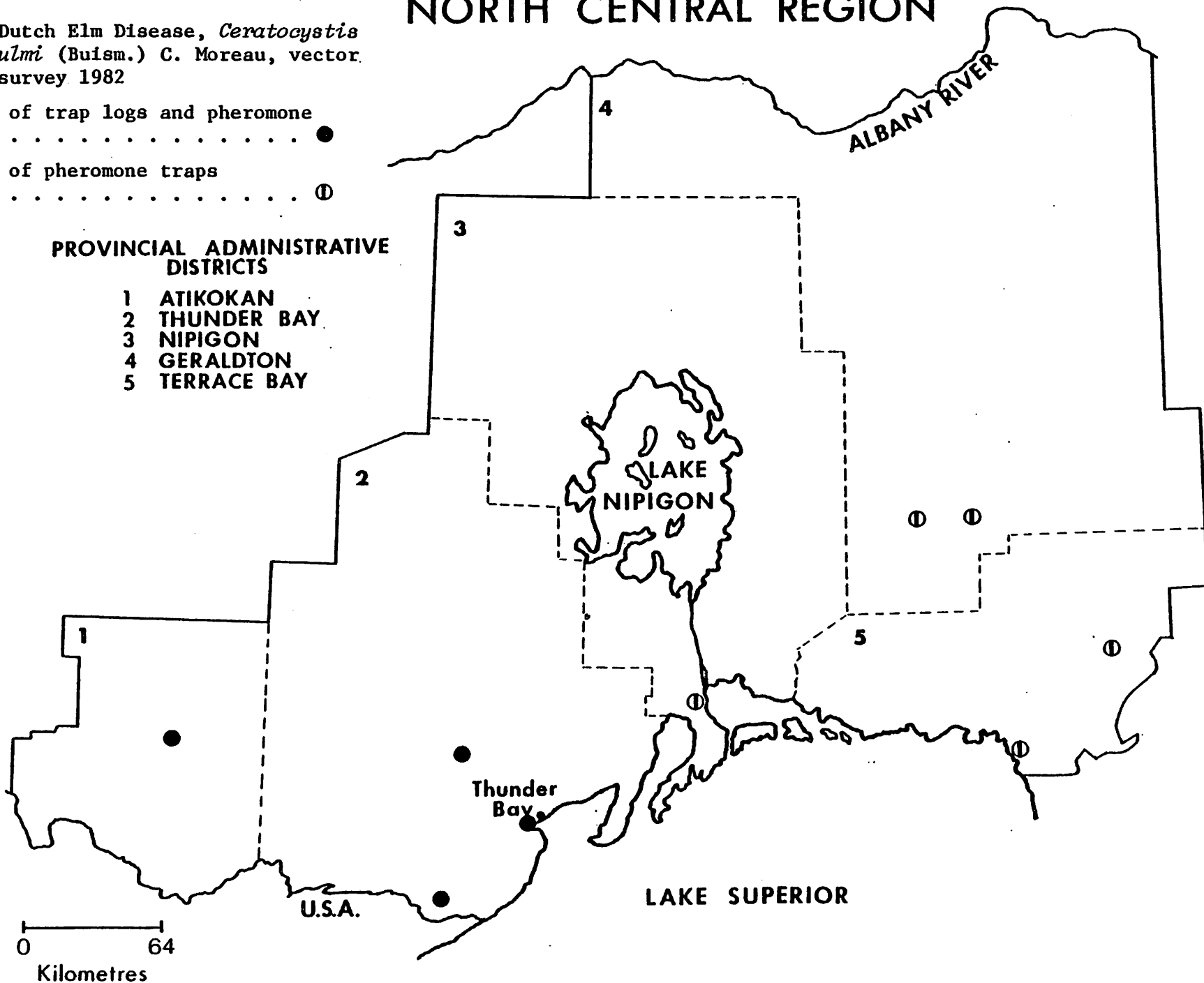




Table 7. Summary of data collected from elm trap logs set out in May and July at four locations in the Region (based on the examination of two 100-cm elm logs at each location).

Location	May - July				July - September	
	Avg log diam (cm)		1st set		2nd set	
	1st set	2nd set	Total no. of galleries <sup>a</sup>		Total no. of galleries <sup>a</sup>	
			N.E.B.B.	S.E.E.B.B.	N.E.B.B.	S.E.E.B.B.
<b>Atikokan District</b>						
Town of Atikokan	13.5	13.5	0	0	*	*
<b>Thunder Bay District</b>						
Devon Twp	12.5	15.0	0	0	6	0
Forbes Twp	12.5	14.5	0	0	0	0
Neebing Twp	14.5	16.0	4	0	2	0

<sup>a</sup> All galleries appeared to be aborted

\* Logs removed from sample area

#### Jack Pine Plantations

As part of a continuing survey of high-value trees, started in 1979, 12 jack pine plantations were examined in the Region in 1982 (Fig. 6). Over all, pest levels were lower this year than in a similar jack pine survey carried out in 1979.

For the most part there were no insects or diseases causing serious damage to the trees examined. The jack pine budworm, *Choristoneura pinus pinus* Free., and the Swaine jack pine sawfly, *Neodiprion swainei* Midd., two of the most important pests of jack pine in Ontario, were not detected in the areas sampled for this survey. In the plantation along the Kawene Road, Atikokan District, the white pine weevil and the northern pitch twig moth, *Petrova albicapitana* (Busck.), were present on 4.0% and 15.3% of the trees, respectively (Table 8). Population levels of the latter insect were low and the damage was minimal, usually affecting only a branch or two on the trees attacked.

More diseases than insects were found causing damage in the sample trees. The most important disease found was *Armillaria* root rot; however, moderate mortality levels were found only in two plantations (Table 8). The needle rust, *Coleosporium asterum* (Diet.) Syd., and needle cast, *Davisomycella ampla* (Davis) Darker, were present on 100% of the trees examined in three plantations; however, defoliation levels were relatively low. Heavy infection to lower branches caused by *Scleroderris* canker was observed in a 50-ha plantation near Lukinto Lake, Geraldton District. The gall rust, *Endocronartium harknessii* (J.P. Moore) Y. Hirat., was found at moderate-to-high levels in two

# NORTH CENTRAL REGION

Fig. 6. Jack Pine Plantation Survey 1982

Locations of plantations examined . . . ●

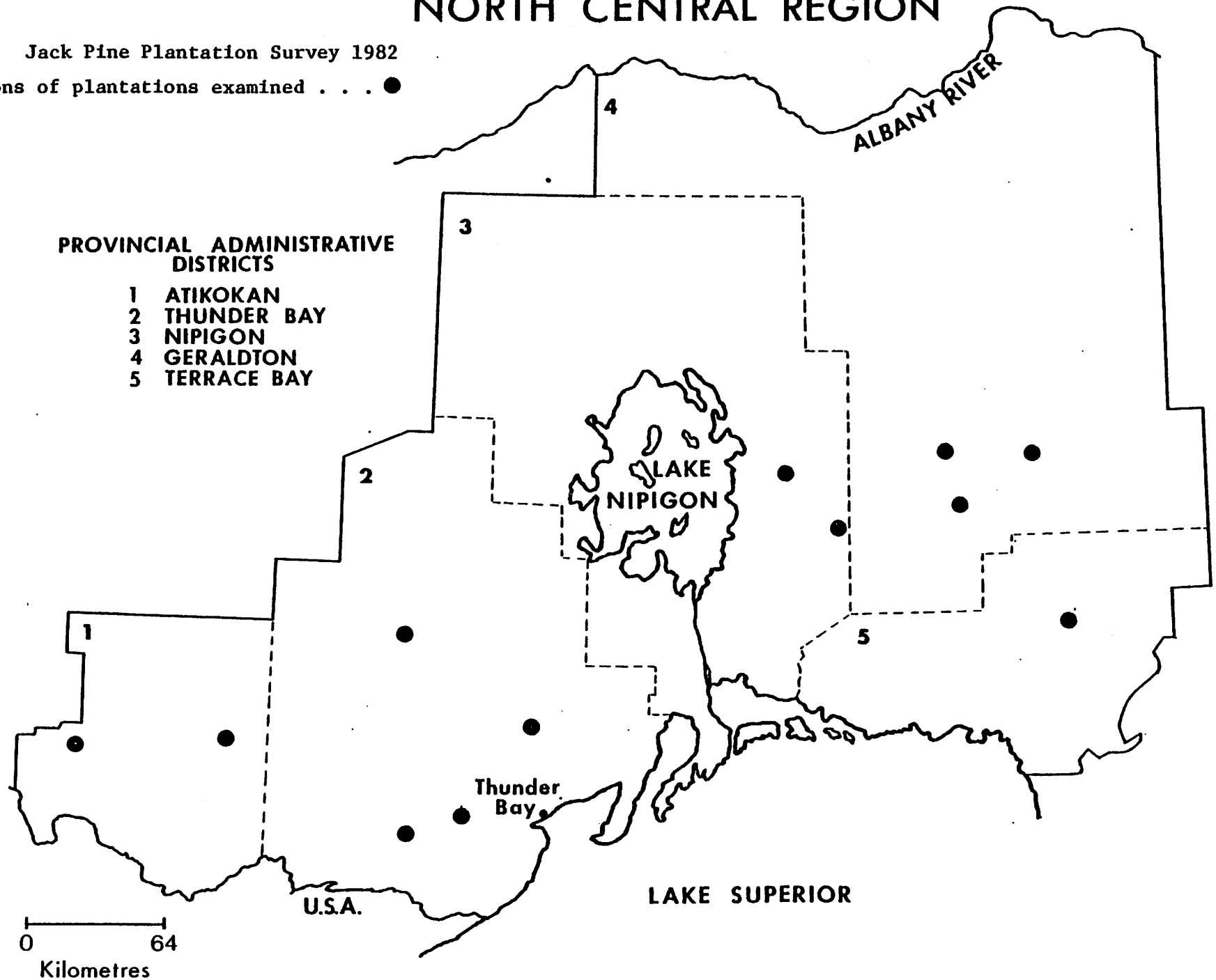


Table 8. A summary of insect and disease damage in a special survey of high-value jack pine in the North Central Region (percentages based on the examination of 150 trees at each location).

Location	Avg ht of trees (m)	Plantation area (ha)	Estimated trees/ha	Jack pine sawfly	Northern pitch twig moth	Aphids	Eastern pine shoot borer		White pine weevil
				Trees affected (%)	Trees affected (%)	Trees affected (%)	Leaders attacked (%)	Laterals attacked (%)	Leaders attacked (%)
<b>Atikokan District</b>									
Kawene Rd	4.5	100	7,000	0.0	15.3	0.7	0.7	0.7	4.0
Darby Lake	3.1	17	4,000	1.3	6.0	7.3	2.7	5.3	1.3
<b>Geraldton District</b>									
Greer Rd	2.4	20	2,990	0.0	0.0	0.0	0.0	0.0	0.0
Halfway Rd	3.4	5	4,000	0.0	0.0	0.0	0.0	0.0	0.0
Lukinto Lake <sup>a</sup>	1.2	50	2,500	0.0	0.0	0.0	0.0	0.0	0.0
<b>Nipigon District</b>									
Sturgeon River <sup>a</sup>	0.9	20	2,500	0.0	0.0	0.0	0.0	0.0	0.0
Tyrol Lake M.U.	9.0	50	2,500	0.0	0.0	0.0	0.0	0.0	0.0
<b>Terrace Bay District</b>									
Lemay Rd	6.0	5	2,990	0.0	0.0	0.0	0.0	0.0	0.0
<b>Thunder Bay District</b>									
Conmee Twp	15.0	12	1,600	0.0	0.0	0.0	0.0	0.0	0.0
East Bay <sup>a</sup>	0.8	61	4,500	1.0	0.7	0.3	0.3	0.3	0.0
Jct Boreal & Marks Lake Rds	7.0	25	1,500	0.0	0.0	0.0	0.0	0.0	0.0
Mack Rd <sup>a</sup>	0.8	14	4,300	0.3	1.3	2.0	2.0	0.0	0.7

(continued)

Table 8. A summary of insect and disease damage in a special survey of high-value jack pine in the North Central Region (percentages based on the examination of 150 trees at each location) (concluded).

Location	Needle rust		Scleroderris canker		Gall rust		Stem rust	Needle cast		Armillaria root rot
	Trees affected (%)	Defoliation (%)	Trees affected (%)	Mortality (%)	Trees affected (%)	Severely galled (%)	Trees affected (%)	Trees affected (%)	Defoliation (%)	Trees affected (%)
<b>Atikokan District</b>										
Kawene Rd	0.0	0.0	0.0	0.0	26.7	4.7	0.0	0.0	0.0	0.0
Darby Lake	100.0	1.0	0.0	0.0	9.3	5.3	0.0	3.3	1.0	0.0 <sup>b</sup>
<b>Geraldton District</b>										
Greer Rd	12.7	1.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.7
Halfway Rd	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.3	1.0	0.0
Lukinto Lake <sup>a</sup>	0.0	0.0	59.3	0.7	0.0	0.0	0.0	13.0	1.0	0.3
<b>Nipigon District</b>										
Sturgeon River <sup>a</sup>	0.0	0.0	2.7	0.0	0.0	0.0	1.0	0.0	0.0	0.0
Tyrol Lake M.U.	0.0	0.0	0.0	0.0	4.0	1.3	0.0	15.3	6.0	0.0
<b>Terrace Bay District</b>										
Lemay Rd	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Thunder Bay District</b>										
Conmee Twp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	13.0	0.0
East Bay <sup>a</sup>	3.3	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jct Boreal & Marks Lake Rds	0.0	0.0	0.0	0.0	33.0	3.3	0.0	100.0	27.0	0.0
Mack Rd <sup>a</sup>	0.0	0.0	0.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0

<sup>a</sup> Percentages based on the examination of 300 trees.

<sup>b</sup> Damage present in the plantation but not encountered on sample trees.

areas with moderate levels of severely galled trees. Trees with galls on the main stem were found at three sites. Moderate infection levels of a needle cast, *Lophodermium* sp., were observed along the Lemay and Halfway roads in Terrace Bay and Geraldton districts, respectively. A small number of bent-over trees, caused by a heavy snowfall during the fall of 1981, was found in a 25-ha plantation near the junction of the Boreal and Marks Lake roads, Thunder Bay District. The pest data relating to this survey are summarized in Table 8.

In the four youngest plantations, permanent sample plots, with 300 trees in each, have been established. These plots will be monitored during the next few years, with emphasis on the impact of insects, diseases and abiotic damage on the growth and survival of the trees.

#### Jack Pine Seed and Cone Pests

As a result of the implementation of a survey on insect and disease damage to jack pine cones, a collection was made in late June of cones in their second year of development at two locations in the Region. A sample of 100 green, succulent cones was taken from stands in Ashmore Township, Geraldton District, and Paipoonge Township, Thunder Bay District. Very little insect damage was found on the sample material and no disease damage was present. Surface feeding by an undetermined species of Lepidoptera was evident on cones from both samples. On the sample from Geraldton District only 6% of the cones were damaged, with a 20% seed loss in the damaged cones. While 20% of the cones from Thunder Bay District had minor amounts of surface feeding, there was no seed loss in these damaged cones.

A second sample of cones in the early woody stage was taken in September from the same locations previously sampled. Extraction and damage assessment of the seed will be done and reported on at a later date.