

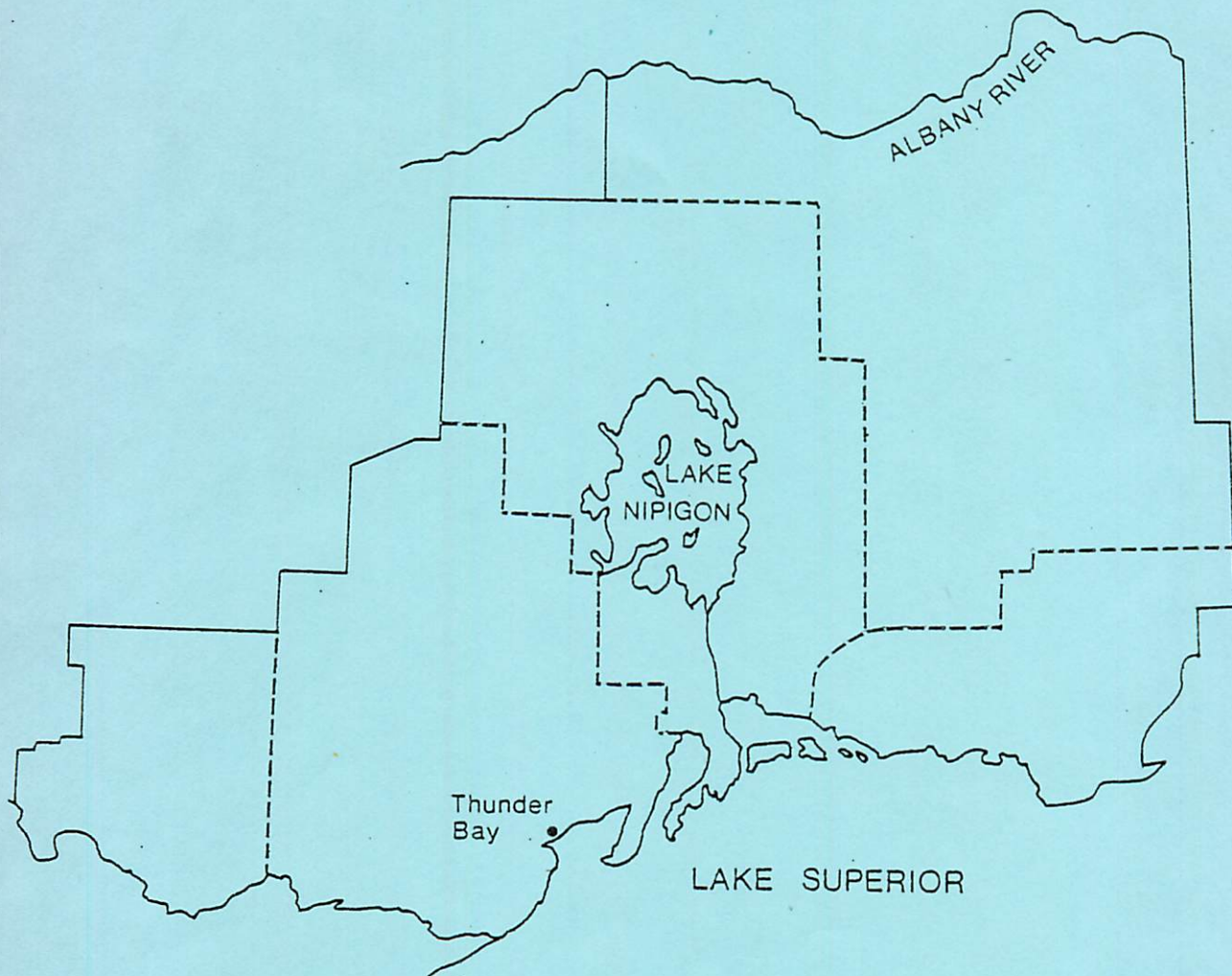
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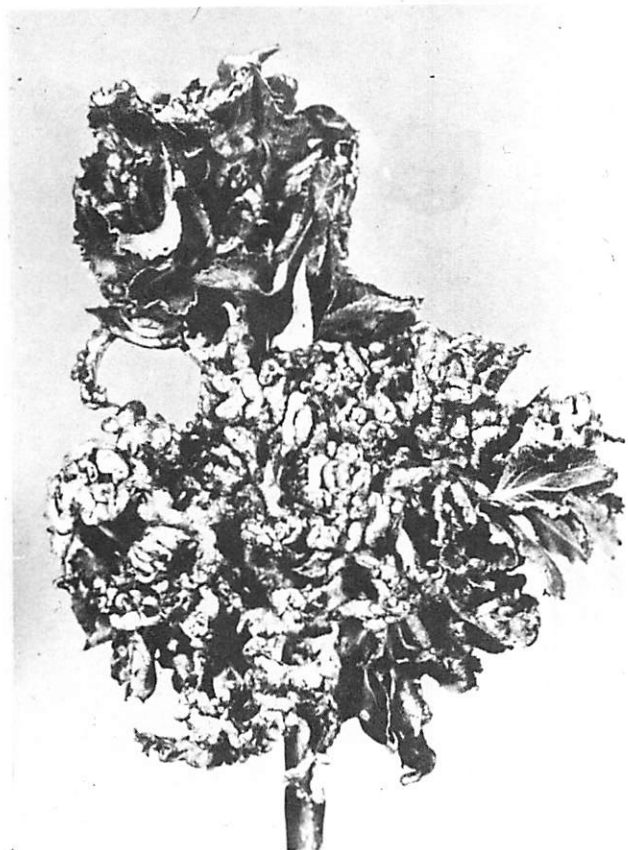
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Results of forest insect and disease surveys in the NORTH CENTRAL REGION of Ontario, 1980



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

Frontispiece



Damage to trembling aspen
(*Populus tremuloides* Michx.)
foliage caused by a poplar
gall mite, *Aceria* nr. *dispar*.

Typical of stands examined in a
high value black spruce (*Picea*
mariana [Mill.] B.S.P.) survey.



SURVEY HIGHLIGHTS

This report summarizes data collected on insect and disease conditions during the 1980 field season in the North Central Region. The information, assistance and cooperation provided by the Ontario Ministry of Natural Resources, forest industry and Parks Canada played an important part in the compilation of this report and are gratefully acknowledged.

Weather was an important contributing factor in the development of insects and diseases. Hot weather during late April and early May in Atikokan District hastened forest tent caterpillar activity. Cold weather followed, causing an almost complete collapse of the five-year infestation. This hot dry weather was also unfavorable to the development of foliage diseases and as a result few foliar problems were found. Frost during early June caused widespread damage in the eastern half of Geraldton and Terrace Bay districts and parts of Thunder Bay District.

As expected, the spruce budworm infestation increased significantly in four districts in the Region. New areas of moderate-to-severe defoliation were as follows: along the eastern border of Terrace Bay District; west of the Pagwa infestation, Geraldton District; along the north and east side of the large infestation in the southwest corner of Thunder Bay District and over a large area south and east of Poshkokagan Lake in Thunder Bay District; and over an area between Beaverhouse and Wolseley lakes in Atikokan District. In the Thunder Bay District weather conditions did not affect the forest tent caterpillar, and the infestation increased by almost one third. Enough overwintering eggs are present to prolong the infestation.

In a continued effort to evaluate high-value conifer stands, a special survey of black spruce regeneration was carried out. No insects or diseases were found causing appreciable leader or stem damage, or enough defoliation to cause detectable growth reduction.

Increases were noted in larch sawfly and larch casebearer populations in the eastern part of the Region and widespread, high populations of spruce bud moths and shootworms resulted in severe defoliation at numerous points in four districts. Conifer defoliators that showed population decreases were the eastern pineshoot borer, white pine weevil and redheaded jack pine sawfly. Damage by feeding of adult sawyer beetles in the previous year showed up in numerous cutover areas within the Region.

A few aspen defoliators and ornamental pests were also common. Aside from frost damage, diseases were less apparent than in previous years, with foliage diseases, when present, usually occurring only at trace-to light levels.

As a result of the lack of viable black spruce seed in some regions a survey of black spruce cones was conducted to establish which insects were present and what was the resultant damage.

The format of this report has been changed slightly. Insects and diseases are rated with respect to the importance of their impact and are reported within the appropriate group. The category ratings are as follows:

- A - of major importance, capable of killing or severely damaging trees or shrubs;
- B - of moderate importance, capable of sporadic or localized injury to trees or shrubs;
- C - of minor importance, not known to present a threat to living trees or shrubs.

OMNR districts affected by individual insect or disease conditions are listed under each pest name in the Table of Contents.

H. D. Lawrence

W. D. Biggs

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INSECTS

Category A

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. This report provides a complete description and analysis of developments in the spruce budworm situation in Ontario in 1980 and gives infestation forecasts for the province for 1981.

Forest Tent Caterpillar, *Malacosoma disstria* Hbn.

Residents of Atikokan, who have been plagued with forest tent caterpillar larvae for the past five summers, welcomed the collapse of the infestation that covered more than 2 590 km² (1,000 mi²) of the Atikokan District in 1979. Weather played a significant role in the collapse of the infestation. The warm weather during the latter part of April and early May caused early hatching and was followed by eight nights of frost, which killed the majority of young larvae. However, some light defoliation of trembling aspen (*Populus tremuloides* Michx.) was observed at scattered points throughout the old infestation.



In the Thunder Bay District, numbers were generally higher as weather patterns were more favorable for larval survival, with fewer extremes in temperature than were experienced by Atikokan District. The infestation increased to 544 km² (210 mi²) from 414 km² (160 mi²) in 1979 (Fig. 1). The main increases were along the north edge in Oliver and McIntyre townships and along the south edge in Blake and Scoble townships.

In the Thunder Bay infestation, parasitism by the flesh fly (*Sarcophaga aldrichi* Park.) increased from 61% to 69%.

Even though the infestation collapsed in Atikokan District, low numbers of adult moths were observed during July in the town of Atikokan. Also, numerous moths were retrieved from a light trap located at French Lake Park. However, of six locations checked, egg bands were found only in the town of Atikokan where light defoliation is forecast for 1981 (Table 1). The infestation in Thunder Bay District is expected to recur, but with little increase in total area.

NORTH CENTRAL REGION

Fig. 1. FOREST TENT CATERPILLAR
Areas within which severe defoliation
occurred in 1980.

Severe defoliation 
Egg-band count sample points 

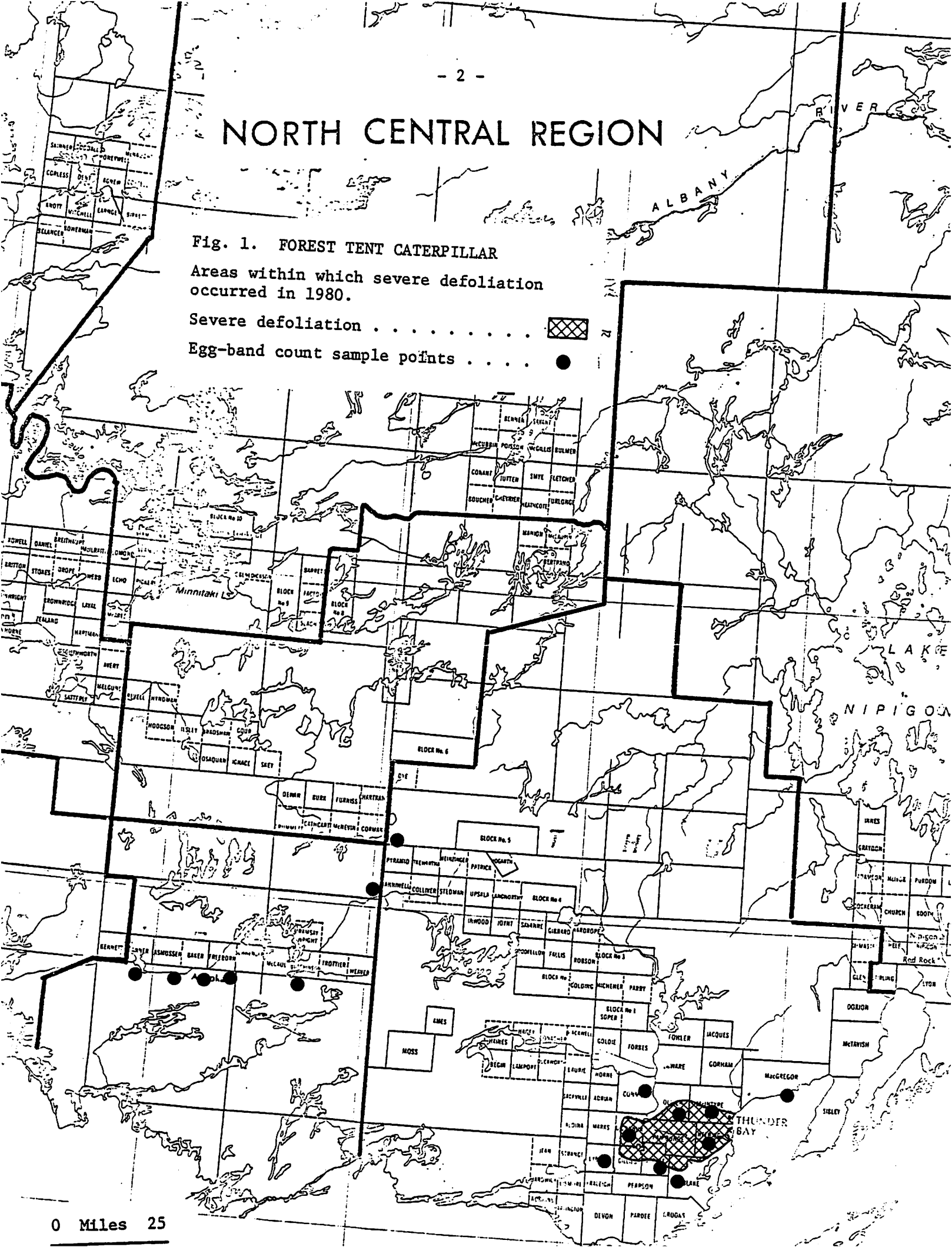


Table 1. Summary of forest tent caterpillar egg-band counts on trembling aspen in Atikokan and Thunder Bay districts in 1980, with infestation forecasts for 1981.

Location	Avg DBH of trees (cm) ^a	Avg no. of egg bands per tree	Infestation forecast for 1981
Atikokan District			
Atikokan, south side Hwy 11, 8 km (5 mi)	9	1.0	light
west of Atikokan Hwy 11, 24 km (14 mi)	12	0.0	nil
west of Atikokan Hwy 11, 40 km (25 mi)	14	0.0	nil
west of Atikokan	13	0.0	nil
East of Old Man Lake	10	0.0	nil
Niobe Lake	10	0.0	nil
Thunder Bay District			
Blake Twp	11	3.0	moderate ^b
Conmee Twp	13	0.7	light ^b
Southeast of English River	15	0.0	nil ^b
Lybster Twp	12	1.0	light ^b
MacGregor Twp	13	1.5	light ^b
McIntyre Twp	9	13.0	severe
Neebing Twp	11	27.0	severe
O'Connor Twp	12	20.0	severe
Oliver Twp	10	17.0	severe
Scoble Twp	14	7.0	severe ^b

^a 1 cm = 0.39 in.

^b Stands outside of the 1980 infestation.

Sawyer Beetles, *Monochamus* spp.

More interest has been shown over the past several years in damage caused by the feeding of adult sawyer beetles. Increased populations of these beetles may be due to fires, previous droughts, spruce budworm-associated tree mortality or harvesting practices. The presence of damaged trees in cutover areas was much more apparent this summer than in previous years in the Atikokan and Thunder Bay districts.

In most stands damaged, considerable slash and cut residue was present. This serves as an attraction to flying adults which will first feed on healthy fringe trees and then breed on recently cut material.

Scattered individuals and pockets of residual jack pine (*Pinus banksiana* Lamb.) and black spruce (*Picea mariana* [Mill.] B.S.P.) trees within or adjacent to cut areas were killed or sustained heavy branch mortality as a result of 1978, 1979 and 1980 feeding at the following locations (the approximate area attacked is given in each case): 25 ha (62 acres) west of Stanton Lake and 20 ha (49 acres) through the Fredrickson-Lindgren Lake area in Atikokan District; and 15 ha (37 acres) south of Windigoostigwan Lake, .5 ha (1 acre) north of Picklepuss Lake, 1 ha (2.5 acres) west of Kerfoot Lake and 10 ha (25 acres) east of McWhinney Lake in the Thunder Bay District. Less extensive damage (branch and some top mortality) of jack pine as a result of 1979 feeding was observed at Little Harry Lake in Thunder Bay District, and near Springwater Lake and off the Castlebar Road in Geraldton District. Light flagging was seen at a few other locations in all three districts (i.e., Atikokan, Thunder Bay and Geraldton).

Populations of adults were reported to be very high in some of the large burned areas that resulted from spring and summer forest fires in the western half of the Region. As a result, salvage operators found considerable larval activity in burned material. In cutting operations outside the fire areas adults were seen, but generally in low numbers.

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

Population levels of this sawfly fluctuated across the Region: fewer insects were seen in the west but increased damage was found in the three eastern districts. High numbers persisted on the few remaining black spruce and white spruce (*Picea glauca* [Moench] Voss) trees of a small hedgerow at Klotz Lake Provincial Park in the Geraldton District. Moderate-to-heavy damage was noticeable at various locations along Highway 17 from Nipigon east to Marathon in the Nipigon and Terrace Bay districts, including Rainbow Falls Provincial Park, where it was found on open-grown black spruce trees. This pest is still a problem on ornamental spruce in the city of Thunder Bay and in the towns of Nipigon, Schreiber, Terrace Bay, Marathon and Geraldton. Only light defoliation was found at scattered locations in the Atikokan District, where widespread moderate-to-severe defoliation has occurred over the past five years. Low numbers were observed at other locations in the eastern part of the Region.

White Pine Weevil, *Pissodes strobi* (Peck)

Leader damage was less noticeable than in previous years and quantitative counts were the lowest recorded over the last decade. The highest populations recurred in the Limestone Lake Management Area,

Nipigon District where the 6% leader damage (Table 2) on black spruce regeneration was lower than that in 1979. However, low numbers appear to be more common in this area as the result of a release program carried out by the Ontario Ministry of Natural Resources. In a special survey of planted black spruce (see Special Surveys), damage was found only in two of 10 locations checked.

The heaviest damage observed on young jack pine (Table 2) was south of Sawmill Lake and northwest of Pug Lake in Atikokan and Thunder Bay districts, respectively.

Table 2. Summary of damage caused by the white pine weevil in three districts in the Region in 1980 (counts based on the examination of 100 trees at each location).

Location	Host	Avg ht of trees (m) ^a	Trees weeviled (%)
Atikokan District			
Crooked Pine Lake	jP	1.7	1
Sawmill Lake	jP	2.9	6
Sawmill Lake	jP	3.5	1
Southeast of Darby Lake	jP	2.0	1
Nipigon District			
Limestone Lake, hydro line	bS	3.0	6
Limestone Lake, airstrip	bS	3.5	2
Thunder Bay District			
Hogarth Twp	jP	0.9	1
Matawin River Road km 23 (mi 14)	jP	2.6	2
Matawin River Road, east of Camp 510	jP	1.9	2
Pug Lake	jP	1.8	5

^a 1 m = 3.28 ft

Larch Sawfly, *Pristiphora erichsonii* (Htg.)

Increased amounts of defoliation of tamarack (*Larix laricina* [Du Roi] K. Koch) were observed in the Geraldton District in 1980, while population levels remained relatively unchanged throughout the remainder of the Region. Heavy defoliation was present for the third

consecutive summer in a 1-ha (2.47-acre) area in Tuuri Township, Terrace Bay District, with some low levels of tree mortality present. Heavy defoliation on young roadside trees was seen occasionally in the Thunder Bay and Atikokan districts. In the Geraldton District moderate-to-heavy damage was found between Jellicoe and Geraldton, just east of Longlac in Daley Township and on scattered tamarack at the Ontario Ministry of Natural Resources Fire Centre in Ashmore Township. Low levels of feeding were found at other locations in the Region.

Mountain Ash Sawfly, *Pristiphora geniculata* (Htg.)

This introduced insect continued to move to the north and west. Larvae were found for the first time in Atikokan District at French Lake, 65 km (39 mi) west of previous records. In the Thunder Bay District light defoliation of mountain ash (*Sorbus americana* Marsh.) was found, for the first time, through a large area south of a line running from Windigoostigwan Lake northeast through Savanne Township to Gull Bay in Nipigon District.

Heavy defoliation was evident from the town of Terrace Bay in Terrace Bay District, west along Highway 17 through the south portion of Nipigon District, to the Whitefish Lake area in the southwest section of Thunder Bay District. Numbers were as high as, or higher than, those in 1979 throughout this area (including the Limestone Lake area and the city of Thunder Bay), so that stripped trees were again a common occurrence.

Light-to-moderate damage was observed at other points in the Nipigon, Terrace Bay and Geraldton districts.

Category B

Larch Casebearer, *Coleophora laricella* Hbn.

There has been no mention in Regional reports since 1975 of this introduced insect. In 1980 two small pockets of moderate damage on tamarack were found in Ashmore and Oakes townships in the Geraldton District. Feeding by the larvae causes the tips of the needles to bend and turn brown.

An isolated pocket of low population was found at Savanne River in Robson Township, Thunder Bay District; this represents a northwestern extension in the range of this insect.

Eastern Pineshoot Borer, *Eucosma gloriola* Heinr.

Numerous areas of planted jack pine between 1.5 m (4.9 ft) and 4.0 m (13.1 ft) in height have suffered attack by this shoot borer for

the past five years in the Atikokan District and, to some extent, over the past couple of years in the Thunder Bay District. This year average leader attack decreased in both districts (Table 3). The highest percentages of leader attack were 14% southeast of Crystal Lake, Atikokan District and 8% in Hanniwell Township, Thunder Bay District. Many stands damaged over the past years are reaching a height that seems unfavorable to insect attack and damage appears to have decreased considerably in these stands. No damaged leaders were observed in any of the other districts within the Region.

Table 3. Summary of leader damage on jack pine caused by the eastern pineshoot borer in Atikokan and Thunder Bay districts in 1979 and 1980 (counts based on the examination of 100 trees at each location).

Location	Avg ht of trees (m) ^a	Leader damage (%)	
		1979	1980
Atikokan District			
Sawmill Lake	2.9	18	11
Sawmill Lake	3.5	14	7
South of Crooked Pine Lake	1.7	-	13
Southeast of Crystal Lake	2.0	-	14
Southeast of Darby Lake	2.0	8	8
Southwest of Day Lake	2.2	-	3
Thunder Bay District			
Hanniwell Twp	2.0	-	8
Hogarth Twp	0.9	-	4
Matawin River Road km 23 (mi 14)	2.6	12	5
Matawin River Road east of Camp 510	1.9	11	7
Northwest of Pug Lake	1.8	-	5
Quinlan Lake Road	1.4	-	0

^a 1 m = 3.28 ft

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

Populations of this leaf beetle showed general increases in the early 1970s. Since then, high numbers have been recorded only in a few isolated stands or trees. This pattern continued in 1980 with moderate-to-heavy defoliation occurring on numerous large trembling aspen trees

between Kaministikwia and Shabaqua Corners, Thunder Bay District. Heavy defoliation was also seen on young trembling aspen in Goldie, Oliver and Blake townships in Thunder Bay District. However, low numbers were infrequently observed in other districts in the Region.

Aspen Leafblotch Miner, *Lithocolletis ontario* Free.

Population levels fluctuated across the Region this summer. Numbers declined in the Atikokan and Thunder Bay districts. In contrast, reasonably high numbers were again present on young trembling aspen in the eastern part of the Geraldton District and along Highway 11 north of Nipigon, particularly in Kilkenny Township, Nipigon District. Generally, light damage was noticeable on small trees along Highway 801 in Nipigon District, throughout most of Atikokan District and in the southwest portion of Thunder Bay District.

Redheaded Jack Pine Sawfly, *Neodiprion virginianus* complex

A marked decrease in population levels of this insect was observed in the Region this year. This is the first decline in populations since 1975. Only occasional colonies could be found in and around the Kimberly-Clark Tree Nursery, Geraldton District. Light feeding was found in pole-sized jack pine in Bain Township, Geraldton District. This sawfly was scarce at other locations in the Region.

Spruce Bud Moths and Shootworms, *Zeiraphera canadensis* Mut. & Free.,
Z. destitutana (Walker) and *Z. fortunana* Kft.

The last widespread defoliation by these insects was recorded during the years 1974 to 1976. Since then high numbers have occurred only on individual ornamentals, scattered trees or pockets of trees. This year, like 1975 and 1976, was a very heavy cone year for white spruce. Severe damage to current shoots by spruce bud moths and shootworms was also quite widespread. Moderate-to-severe defoliation of large white spruce was common from the northern half of Atikokan District throughout most of Thunder Bay District and the southern portion of Nipigon District east to Yesno Township in Terrace Bay District.

The most noteworthy occurrences, in which some ground checks showed up to 90% current shoots attacked, were as follows: north of Graham, the Upsala area, south of Bedivere Lake, in and around the city of Thunder Bay and on Sibley Peninsula in Thunder Bay District; and the French Lake and White Otter Lake areas in Atikokan District.

Within the area from the town of Nipigon east to Yesno Township, Terrace Bay District and north past Ledger Township, Nipigon

District, lower defoliation levels were observed but only on scattered trees.

Although *Zeiraphera canadensis* was the main defoliator, the other two insects as well as *Eucordylea blastovora* McLeod and *Dioryctria reniculelloides* Mut. & Mun. were quite often present in low numbers.

Category C

A Poplar Gall Mite, *Aceria* near *dispar* (Nalepa)

This is the first time that heavy, widespread mite damage has been observed in the Region. Similar damage was recorded previously in other Regions under the family name Eriophyidae. This summer, galled trembling aspen leaves (see Frontispiece) were commonly observed from Nym Lake west to Seine River in the Atikokan District. Through this area it was common to see trembling aspen up to 18 cm (7 in.) DBH with over half their foliage attacked. Damage occurred in late May and the infested foliage eventually turned black but remained on the tree until the fall. Therefore, the trees would be affected by this foliage loss for the majority of the growing season.

The only collection of this mite outside the Atikokan District was in Oliver Township, Thunder Bay District.

Table 4. Other forest insects.

Insect	Host(s)	Remarks	Rating
<i>Archips argyrospilus</i> (Wlk.) Fruit tree leafroller	deciduous trees	2500 adults caught in light trap over five nights at French Lake Park, Atikokan District	C
<i>Archips cerasivoranus</i> (Fitch) Uglynest caterpillar	ecCh	moderate-to-heavy defolia- tion of roadside and open- grown shrubs west of Thunder Bay to Kaministikwia; low numbers near Jellicoe, Nipigon District	B
<i>Cecidomyia reeksi</i> Vock. Jack pine resin midge	jP	flagging common on small trees north of Graham, Thunder Bay District	C

(continued)

Table 4. Other forest insects (continued)

Insect	Host(s)	Remarks	Rating
<i>Conophthorus banksianae</i> McPherson Jack pine tip beetle	jP	damaged twigs in Jordain Twp and frequent along Hwy 11 west of Burchell Lake to Windigoostigwan Lake, Thunder Bay District	C
<i>Datana ministra</i> Dru. Yellownecked caterpillar	wB	light defoliation on scattered trees along Hwy 593, Thunder Bay District	C
<i>Dioryctria reniculelloides</i> Mut. & Mun. Spruce coneworm	wS	commonly associated with bud moth defoliation throughout most of the Region; low-to-moderate numbers in Clavet Twp with lower levels in the Kimberly-Clark seed orchard, Geraldton District	C
<i>Fenusa pusilla</i> (Lep.) Birch leafminer	wB	generally lower numbers in all districts but Thunder Bay, where high populations continued in the city of Thunder Bay and area, and moderate defoliation on roadside trees in the Loon Lake and Shebandowan areas	A
<i>Gonioctena notmani</i> (Schaeff.) Willow leaf beetle	W	defoliation common near Savanne Lake, Thunder Bay District	C
<i>Lithocolletis nipigon</i> Free. Balsam poplar leafblotch miner	bPo	high numbers recurred through the southwestern portion of Thunder Bay District; sporadic mining throughout the remainder of the Region	B
<i>Micrapteryx salicifoliella</i> Cham. Willow blotch miner	W	high numbers frequent in Geraldton District and northern part of Nipigon District	C
<i>Neodiprion nanulus nanulus</i> Schedl Red pine sawfly	jP	individual colonies in Ashmore Twp, Geraldton District, and near Kingstone Lake, Thunder Bay District	B

(continued)

Table 4. Other forest insects (concluded)

Insects	Host(s)	Remarks	Rating
<i>Oligonychus ununguis</i> Jac. Spruce spider mite	tL	yellowing of small scattered trees near French Lake, Atikokan District; in Colliver Twp and along Muskrat Lake Road, Thunder Bay District; and in Walters Twp and along Hwy 11 near Jellicoe, Nipigon District	B
<i>Phratora hudsonia</i> Brown Birch leaf beetle	wB	low numbers in RosSPORT Provincial Campgrounds, Terrace Bay District	C
<i>Physokermes piceae</i> Schr. Spruce bud scale	bs	scales common on branches of young black spruce near Squeers Lake, Thunder Bay District	C
<i>Pineus similis</i> Gill. Ragged spruce gall aphid	wS	galls numerous on individual trees at scattered points in Geraldton and Nipigon districts	C
<i>Profenusa thomsoni</i> (Konow) Ambermarked birch leafminer	wB	severe browning in Bicknell and Boyce twp, Geraldton District	B
<i>Pyrrhalta decora</i> (Say) Gray willow leaf beetle	W, tA	common on young trees in Atikokan, Nipigon and Thunder Bay districts; heavy on willow at scattered locations in northwestern Thunder Bay District	C
<i>Rheumaptera hastata</i> Linn. Black looper	wB	leafrollers common through southern half of Thunder Bay District	C
<i>Schizura concinna</i> J.E. Smith Redhumped caterpillar	tA	scattered colonies along Hwy 593, Thunder Bay District	C
<i>Sciaphila duplex</i> Wlshm. Poplar leafroller	tA	low numbers at a few points in Nipigon and Thunder Bay districts	B

TREE DISEASES

Category A

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

This root rot attacks trees that usually are under some form of stress, e.g., from insect defoliation, drought or unfavorable environmental conditions. From general observations made across the North Central Region the levels of infection were relatively unchanged from those of 1979. The disease was present in numerous stands but those rated had 3% mortality or less.

A special survey in black spruce regeneration was carried out this year. One stand had 1% mortality associated with *Armillaria* root rot. Data for this survey can be found under the heading 'High-value Black Spruce Survey'.

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

For the second consecutive year this needle rust occurred at very low levels across the Region. The disease, infrequently observed, was generally found at the trace-to-light defoliation level. The one exception consisted of a few scattered young white spruce northeast of Crystal Lake, Atikokan District where high foliar damage occurred. Pole-sized black spruce in the same area were disease free.

Category B

A Needle Rust of Pine, *Coleosporium asterum* (Diet.) Syd.

This foliage disease was seen only in Atikokan and Thunder Bay districts and less frequently than in 1979. The disease was present at a moderate level of defoliation in two of five areas evaluated (Table 5). These two areas of regeneration jack pine were south of Windigoostigwan Lake and in Golding Township, Thunder Bay District where similar damage occurred last year. Defoliation was variable throughout these two plantations, averaging 30% but ranging from 5% to 90%.

Leaf and Twig Blight of Aspen, *Venturia macularis* (Fr.) Müll. & Arx

Infection levels of this shoot blight declined across the Region in 1980. The most noteworthy area of damage was a small stand of young trembling aspen south of the village of Caramat in Terrace Bay District, where 90% of the trees were affected, but only 20% of the shoots were damaged. Trace-to-low levels of damage were detected at the following

locations: near Burrows Lake and in Esnagami Township, Geraldton District; along the Bound Lake Road, Terrace Bay District; in Michener Township, Thunder Bay District; and at one location along the Peck Lake Road, Nipigon District. Elsewhere in the Region infection was at endemic levels.

Table 5. Summary of trees affected and defoliation caused by the needle rust on jack pine in Atikokan and Thunder Bay districts in 1980.

Location	Area affected (ha) ^a	Avg ht of trees (m) ^b	Trees affected (%)	Defoliation level (%)
Atikokan District				
Bickford Lake area	20	1.0	75	25
Thunder Bay District				
Golding Twp	40	1.1	80	30
Titmarsh Lake	50	0.9	30	8
Wardrope Twp	16	1.5	5	2
Windigoostigwan Lake	30	1.2	85	30

^a 1 ha = 2.47 acres

^b 1 m = 3.28 ft

Table 6. Other forest diseases

Organism	Host(s)	Remarks	Rating
<i>Chrysomyxa pirolata</i> Wint. Cone rust of spruce	bS	infection of cones minimal at Limestone Lake, Nipigon District and Kimberly-Clark seed orchard, Geraldton District	B
<i>Ciborinia whetzellii</i> (Seav.) Seav. Ink spot of aspen	tA	disease not observed above a trace level in the Region	A

(continued)

Table 6. Other forest diseases (continued)

Organism	Host(s)	Remarks	Rating
<i>Cronartium coleosporioides</i> Arth. Stalactiform rust canker	jP	a few stem cankers near McLeish Lake, Thunder Bay District	B
<i>Cronartium comandrae</i> Pk. Comandra blister rust	jP	numerous galls on young trees in Goldie Twp, Thunder Bay District	B
<i>Cytospora chrysosperma</i> (Pers.) Fr. Cytospora canker	hybrid poplar	a few windbreak trees with stem cankers, Thunder Bay Forest Station	B
<i>Davisomycella ampla</i> (Davis) Darker Needle cast	jP	not as common as in previous years; trace defoliation at a few locations in Region	B
<i>Endocronartium harknessii</i> (J.P. Moore) Y. Hirat. Western gall rust	jP	no change in status; common in Region; particularly noticeable near Kimberly- Clark Nursery, Geraldton District	B
<i>Isthmiella faullii</i> (Darker) Darker Needle cast of balsam fir	bF	heavy needle cast on scattered semimature trees between Dorion and Black Sturgeon Lake, Nipigon and Thunder Bay districts	B
<i>Lophomerium darkeri</i> Ouell. Needle disease of spruce	wS	low infection in Barbara Lake seed production area, Terrace Bay District	C
<i>Melampsora medusae</i> Thuem. Larch & poplar leaf rust	tA	infection of small trees north of Graham, Thunder Bay District	C
<i>Melampsoridium betulinum</i> (Fr.) Kleb. Leaf rust of birch	wB	scattered, individual trees heavily infected along the north shore of Lake Superior, Terrace Bay District	C
<i>Mycosphaerella populicola</i> G.E. Thompson Leaf spot of poplar	bPo	early foliage browning common in Thunder Bay and Atikokan districts; less noticeable in Nipigon and Geraldton districts	C

(continued)

Table 6. Other forest diseases (concluded)

Organism	Host(s)	Remarks	Rating
<i>Rhizina undulata</i> Fr. Rhizina root rot	duff	no confirmation of disease affecting two 100-seedling plots established in burned areas, Geraldton and Terrace Bay districts; only scattered fruiting bodies found on some 1980 fire sites	C
Hail damage	tA, jP	damaged saplings in an area west of Kawene, Atikokan District	N/A

Abiotic Damage

Frost Damage

Frost damage on white spruce, balsam fir (*Abies balsamea* [L.] Mill.) and black spruce increased in the eastern half of the Geraldton and Terrace Bay districts where light-to-moderate damage was common. The most noteworthy area was in Davies Township, Terrace Bay District where 100% of 5-year-old white spruce were affected and defoliation averaged 66%. Frost was less frequently observed in Thunder Bay and Nipigon districts and seldom observed in Atikokan District. In the Thunder Bay District frost occurred mainly in small pockets that have been consistently frost-prone areas. The majority of these affected pockets were in the area between the Spruce and Dog rivers. In these low areas most of the young trees were affected but frost was seldom higher than 1.5 m (5 ft) on the trees.

Special Surveys

Black Spruce Cone Insect Survey

A large sample of male and female flowers was examined in early summer for the presence of insects. Spruce budworm and spruce cone-worm were the most important insects found feeding at that time. Heaviest damage to the flowers occurred within well established spruce budworm infestations (Table 7). The highest numbers of spruce coneworm were found in the Pagwa area, Geraldton District.

Table 7. A summary of the percentages of damaged male and female black spruce flowers collected between 28 May and 5 June and damaged black spruce cones collected between 28 July and 1 August in two districts in 1980.

Site and location	No. of flowers examined		Flowers damaged (%)		Developed cones examined	Developed cones damaged (%)	No. of cones damaged by*	
	Male	Female	Male	Female			Lepidoptera	Other insects
Lowland - not within spruce budworm infestation								
Geraldton District								
Ski Club Road	803	378	1	2	100	15	11	8
Thunder Bay District								
White Lily Lake	981	533	1	2	100	52	4	46
Average			1.0	2.0		33.5		
Upland - not within spruce budworm infestation								
Geraldton District								
Lukinto Lake	689	397	1	2	100	14	4	7
Thunder Bay District								
Hwy 527, km 18 (mi. 11)	337	288	2	11	100	20	10	15
Average			1.5	6.5		17.0		
Lowland - within spruce budworm infestation								
Geraldton District								
Pagwa Rd & Hwy 11	356	256	60	100	100	81	72	43
Thunder Bay District								
Swallow Lake Rd	306	249	32	85	100	95	88	16
**Nelson Lake	566	315	3	20	100	49	29	34
Average			31.7	68.3		75.0		
Upland - within spruce budworm infestation								
Geraldton District								
Clavet Twp	417	312	57	84	100	70	69	10
Thunder Bay District								
Sleigh Lake	283	292	32	89	100	100	99	1
Average			44.5	86.5		85.0		

* Damage to an individual cone may be caused by more than one insect.

** This sample was intended to be from budworm-free trees within a spruce budworm infestation. However, some budworm were present.

A second sample of semimature cones was collected in midsummer. The exterior of these cones was examined for signs of insect damage and the cones were rated as sound or damaged. A relationship exists between the percentage of damage in the first sample and the number of damaged cones in the second sample. Collections made within a spruce budworm infestation had a high percentage of damaged cones (Table 7) and in most cases this was due to surface feeding by spruce budworm and, to a lesser degree, by spruce coneworm. The spruce cone maggot (*Hylemya anthracina* [Czerny]), which constructs a spiral feeding tunnel around the cone axis and can cause considerable damage to scales and seeds, was also present. However, the percentage of cones damaged was generally low. The other most noteworthy insect present was the spruce cone axis midge (*Dasineura rachiphaga* Tripp). This insect feeds mainly in the cone axis and causes little direct damage to the seeds.

Other insects were found in both samples, but they were present at very low levels and most did little or no damage to the flowers and cones.

Cones have been further examined for an indication of the number of nonviable seeds as a result of insect damage. In the material examined there was a 37% (range 20-61%) seed loss due to insect activity.

High-value Black Spruce Survey

This year a special survey was conducted in 10 planted black spruce areas (see Frontispiece) of three height classes, namely, 0.5 to 2.0 m (2 to 7 ft), 2.1 to 6.0 m (7 to 20 ft) and >6.0 m (>20 ft) (Fig. 2). The insects and diseases listed in Table 8 were included in the survey because they have a history of causing mortality or reducing growth. Two visits were made to each plantation to accommodate all periods of pest activity. Spruce budworm and/or spruce coneworm defoliation was the only significant insect damage and frost caused the only significant damage under the disease portion of the survey. Other insects and diseases were not found at damaging levels. Table 9 summarizes those conditions present in the survey and the amounts of damage detected.

During the second visit black spruce cones were submitted, if present, to be examined for the presence of insect damage. Of cones submitted from seven upland sites that were outside of a spruce budworm infestation, an average of 10% were damaged. Of cones submitted from an upland site within a spruce budworm infestation in Herbert Township, Terrace Bay District, 73% were damaged.

NORTH CENTRAL REGION

Fig. 2. SPECIAL BLACK SPRUCE SURVEY

Locations of stands surveyed . . . ●

PROVINCIAL ADMINISTRATIVE DISTRICTS

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

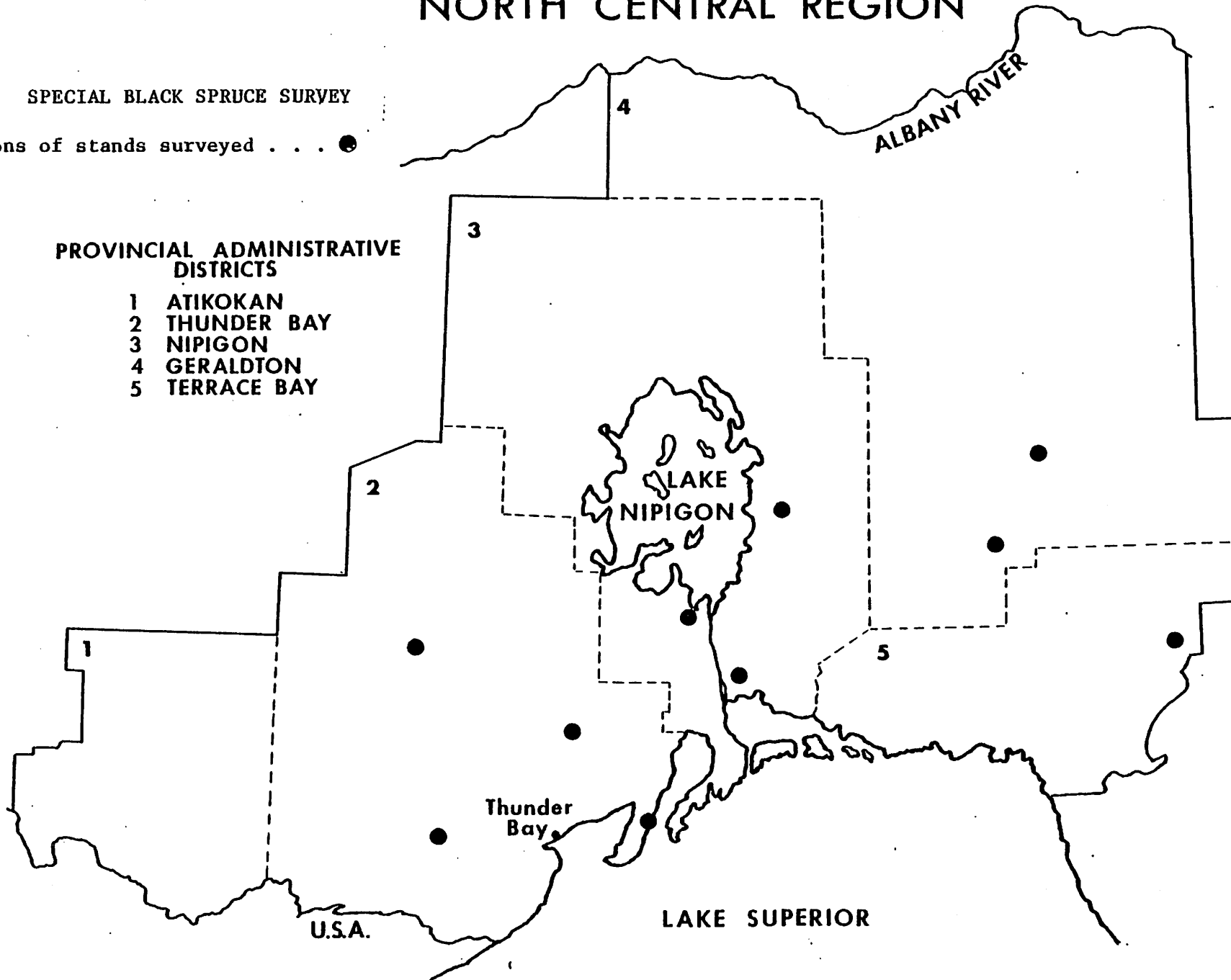


Table 8. Insects and diseases included in the special survey.

Insect	No. of plantations with insects present	Disease	No. of plantations with disease present
Sawyer beetles	0	Armillaria root rot	1
Spruce budworm	6	Eastern dwarf mistletoe	0
Spruce coneworm	5	Needle rust of spruce	1
White pine weevil	2	Frost	7
Yellowheaded spruce sawfly	0		

Table 9. Summary of insect and disease damage in a special 1980 survey of planted black spruce in the Region (percentages based on the examination of 150 trees at each location).

Location	Avg ht of trees (m) ^a	Area of plantation (ha) ^b	Trees/ha	Spruce budworm and/or coneworm defoliation (%)	White pine weevil leader attack (%)
Geraldton District					
Catlonite Road	2.6	20	1440	0	1
O'Meara Twp	7.0	16	2100	0	0
Nipigon District					
Lake Nipigon, South Bay	1.0	60	2900	2	0
Limestone Lake, air strip	3.5	20	4000	0	2
Pifher Twp	1.5	20	2500	0	0
Terrace Bay District					
Herbert Twp	1.1	10	3700	1	0
Thunder Bay District					
Macauley Lake	0.5	33	1000	3	0
Matawin River Road					
km 22 (mi 14)	4.2	24	2800	3	0
Sharp Lake Road	2.3	50	1500	3	0
Squaw Bay	2.9	30	800	5	0

(continued)

Table 9. Summary of insect and disease damage in a special 1980 survey of planted black spruce in the Region (percentages based on the examination of 150 trees at each location) (concluded).

Location	Armillaria root rot mortality (%)	Spruce needle rust		Frost	
		affected (%)	defoliation (%)	Trees affected (%)	defoliation (%)
Geraldton District					
Catlonite Road	0	0	0	0	0
O'Meara Twp	0	0	0	0	0
Nipigon District					
Lake Nipigon, South Bay	1	0	0	44	6
Limestone Lake, air strip	0	0	0	100	3
Pifher Twp	0	0	0	0	0
Terrace Bay District					
Herbert Twp	0	0	0	99	3
Thunder Bay District					
Macauley Lake	0	0	0	14	6
Matawin River Road					
km 22 (mi 14)	0	0	0	58	6
Sharp Lake Road	0	11	9	22	6
Squaw Bay	0	0	0	26	6

^a 1 m = 3.28 ft

^b 1 ha = 2.47 acres