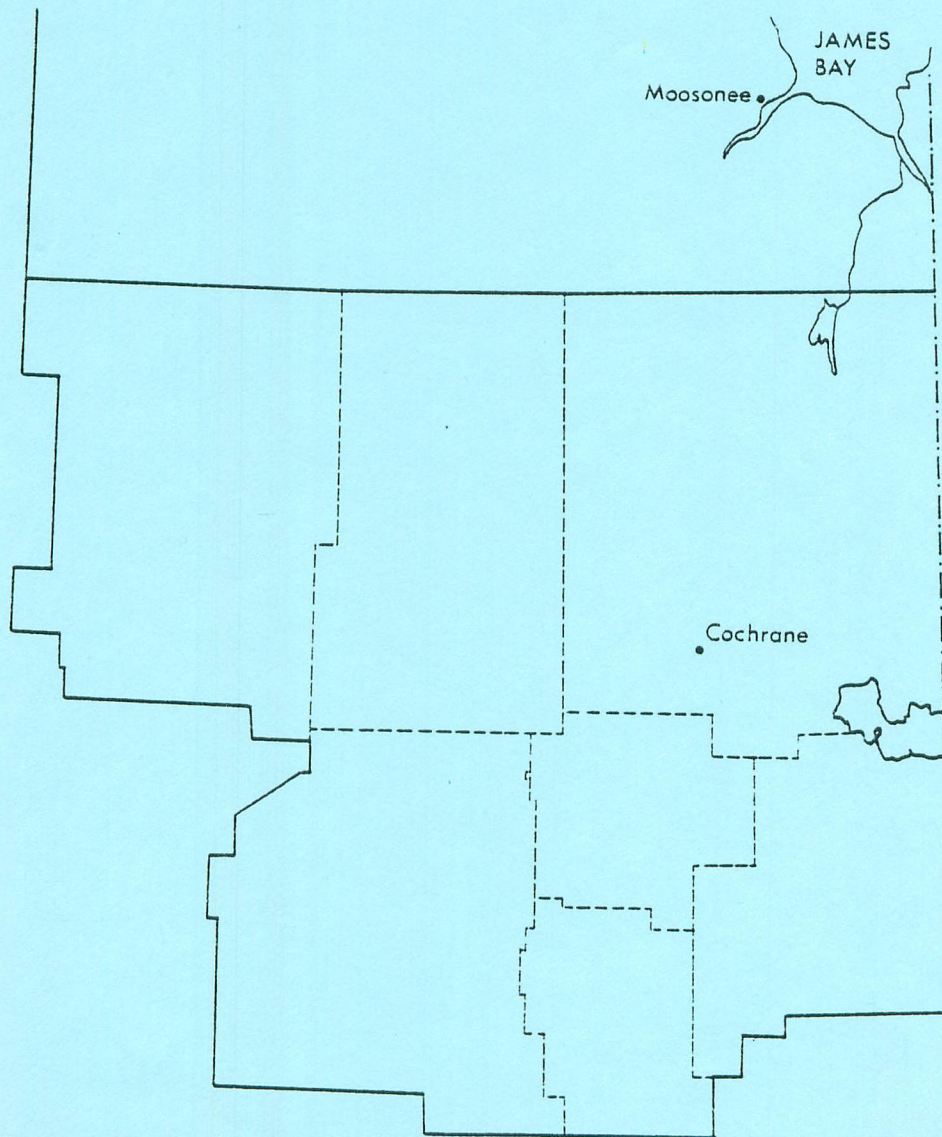


Results of forest insect and disease surveys in the NORTHERN REGION of Ontario, 1981



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

SURVEY HIGHLIGHTS

The 1981 field season was highlighted by a pronounced reduction in spruce budworm populations in several districts of the Northern Region. Since the decline generally followed the geographic boundaries of the weather extremes experienced in June, 1980, the diminution was attributed largely to larval mortality caused by the low temperatures and snowfall. Egg-mass counts were much lower than in 1980 and light-to-moderate defoliation will prevail throughout much of the Region in 1982. Ground and/or aerial spraying operations of high-value stands, tree nurseries, plantations and seed-production areas were carried out by the Ontario Ministry of Natural Resources in several districts.

Forest tent caterpillar infestations continued to decline and egg-band sampling indicated that further decreases may be expected in 1982. Heavy infestations of birch skeletonizer and spearmarked black moth caused severe damage to white birch foliage over large parts of the Region. Sawyer beetles continued to cause problems in the vicinity of harvesting operations and an increase in the Swaine jack pine sawfly in the southern part of the Kirkland Lake District posed a threat to jack pine stands near Elk Lake.

The format of this report has been revised slightly so that pest problems are listed according to their damage potential and to their current status in the Region.

Major Insects or Diseases

Capable of causing serious injury to or death of living trees or shrubs (formerly categories A and B)

Minor Insects or Diseases

Capable of sporadic or localized injury but not usually a serious threat to living trees or shrubs (formerly category C)

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 known 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 1981.

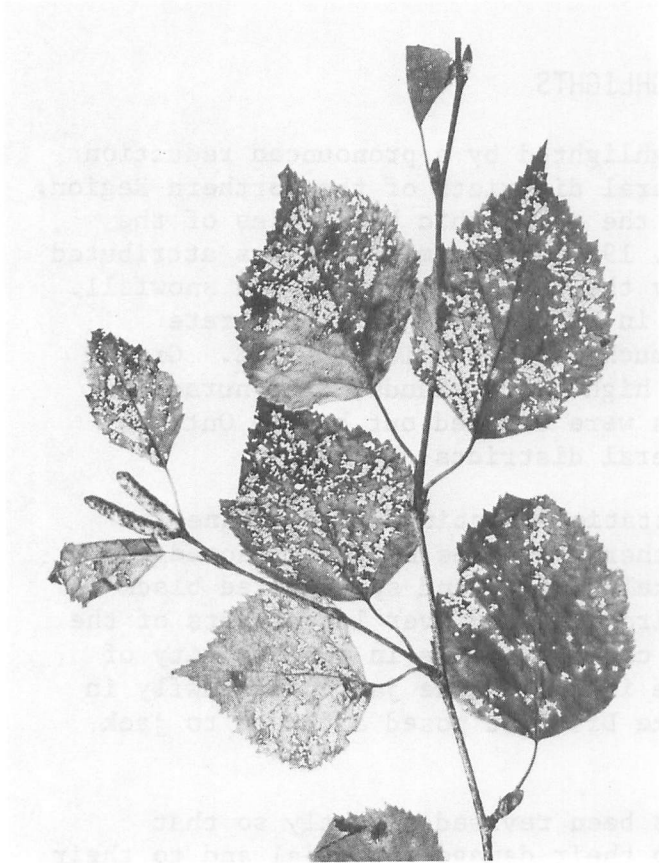
The generous assistance and cooperation extended by personnel of the Ontario Ministry of Natural Resources in all districts of the Region are gratefully acknowledged.

L. S. MacLeod

D. C. Constable

W. A. Ingram

Frontispiece



Damage by birch skeletonizer
(*Bucculatrix canadensisella*
Cham.)



Damage by spearmarked black moth
(*Rheumaptera hastata* [Linn.])

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INSECTS

Major Insects

Birch Skeletonizer, *Bucculatrix canadensisella* Cham.

Birch skeletonizer infestations in the Region subsided in 1974 and no damage by the insect has been detected since then. In 1981 there were heavy infestations in white birch (*Betula papyrifera* Marsh.) stands over huge areas of the Hearst, Kapuskasing, Cochrane, Chapleau and Timmins districts which totalled approximately 28,045 km² of severe defoliation (Fig. 1). Smaller areas of severe skeletonizing (approximately 370 ha) were mapped outside the main body of infestation in the Kirkland Lake and Chapleau districts. Lightly infested stands were found throughout the southern part of 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 1981 and will give infestation forecasts for the province for 1982.

Larch Casebearer, *Coleophora laricella* (Hbn.)

This casebearer was more prevalent than in 1980 in Hearst and Kapuskasing districts, where approximately 425 ha of tamarack (*Larix laricina* [Du Roi] K. Koch) were lightly defoliated. Counts of larval cases in Cochrane District ranged from 1.7 to 3.4 per 46 cm branch tip and defoliation was negligible. No damage was observed in other districts of the Region.

Eastern Pine Shoot Borer, *Eucosma gloriola* Heinr.

These borers caused appreciable leader mortality in jack pine (*Pinus banksiana* Lamb.) plantations at many locations in the four southernmost districts of the Region (Table 1).

Birch Leafminer, *Fenusa pusilla* (Lep.)

Extremely high populations of the birch leafminer were found on white birch in all districts of the Region except Moosonee. Damage to ornamental trees was particularly severe and resulted in numerous extension calls. Trees at many locations in the towns of Chapleau, Kapuskasing and Cochrane sustained 100% foliar damage. High numbers of heavily

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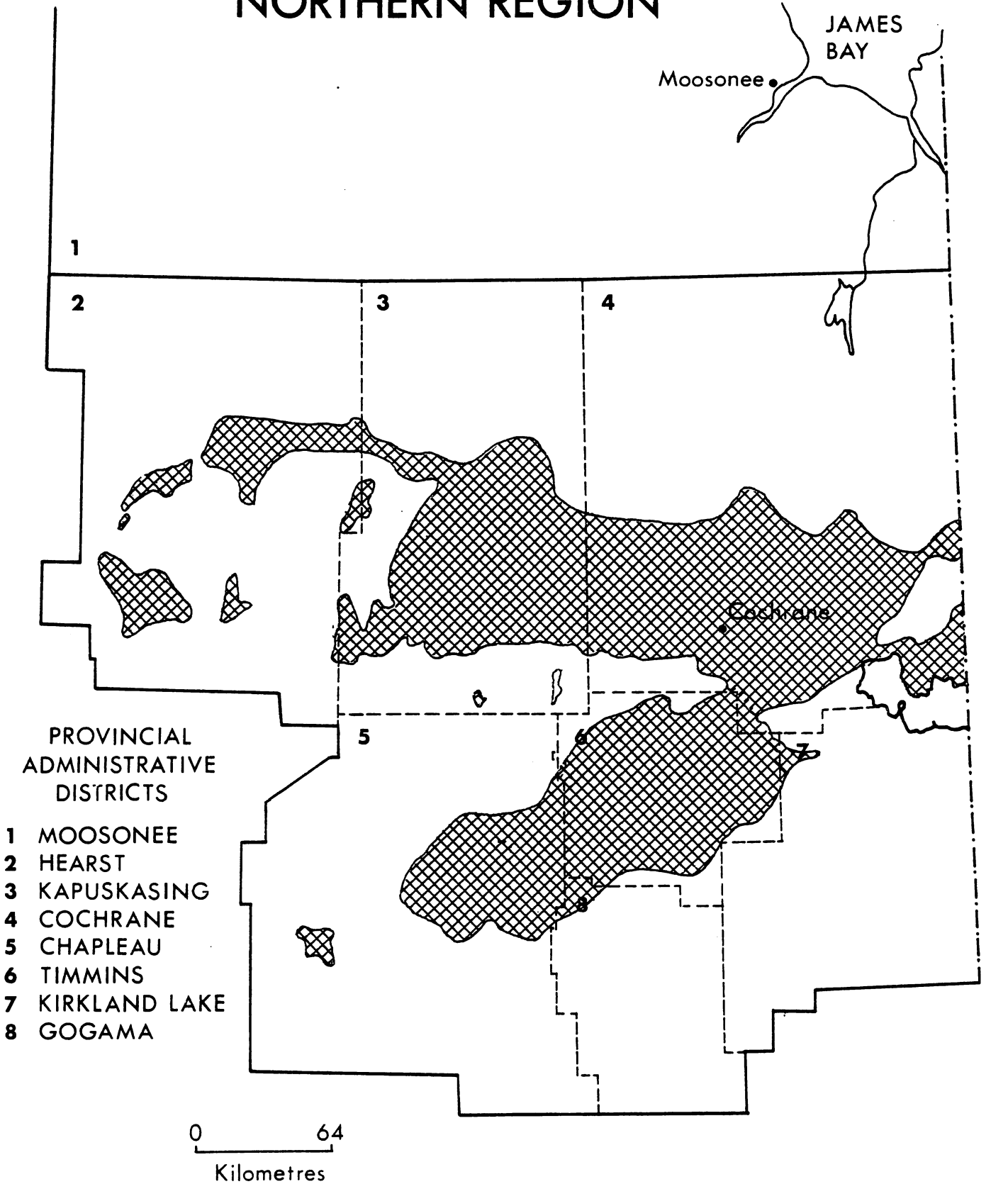


Figure 1. Birch skeletonizer (*Bucculatrix canadensisella* Cham.)

Areas within which moderate-to-severe defoliation occurred in 1981 . . .



damaged trees were observed in the Ivanhoe Provincial Park, Chapleau District and in the urban areas of Timmins, South Porcupine, Matheson, Kirkland Lake, Gowganda, Englehart and New Liskeard.

Table 1. Summary of tree damage caused by the eastern pine shoot borer in four districts in 1981 (counts based on the examination of 150 jack pine trees at each location).

Location (Twp)	Avg ht of trees (m)	Estimated trees per ha	Leaders killed (%)	Area affected (ha)
Chapleau District				
Pattison	2.6	2,500	4.6	40
Nimitz	4.0	4,000	2.7	20
Fawn	2.1	4,444	8.7	52
Esther	1.7	3,000	8.7	38
Abney	2.0	2,500	1.3	40
Lipsett	1.9	1,600	3.3	40
Gogama District				
Invergarry	1.4	2,990	7.3	40
Jack	2.1	2,990	8.0	16
Benneweis	3.0	2,990	12.7	40
Timmins District				
Denton	1.2	3,000	10.6	50
Sewell	2.0	3,000	12.6	20
Macklem	1.5	3,000	9.3	10
Kirkland Lake District				
Sharpe	2.5	4,000	2.2	20
Burt	2.5	4,000	12.0	50
Dunmore	3.5	2,990	6.0	50
McEvay	3.5	2,990	12.2	100
Cane	1.5	3,000	12.2	100

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

These beetles were widely dispersed in trembling aspen (*Populus tremuloides* Michx.) stands in the Region. Highest populations were found in regeneration-type stands in cut-over areas where defoliation averaged 25%. Damage was more severe in similar stands in Arnott Township, Hearst District, and in Leitch Township, Cochrane District where approximately 7,000 ha sustained 60% defoliation. Severely defoliated trees were also observed in Ivanhoe Provincial Park and in Floranna Township, Chapleau District.

Forest Tent Caterpillar, *Malacosoma disstria* Hbn.

The general decline in the forest tent caterpillar infestation noted in 1980 accelerated in 1981. The reduction in numbers was caused by a failure of the eggs to hatch at many locations. This was confirmed by observations of overwintering egg bands at the Great Lakes Forest Research Centre which showed emergence failures from corresponding areas.

In Shackleton Township, Kapuskasing District, the infestation was reduced to 4 ha of moderate defoliation. In the Kirkland Lake District severe defoliation was confined to approximately 93 km² in Dack Township, near Englehart. Occasional colonies and wandering larvae were observed at several points in the Timmins and Kirkland Lake districts but there was no damage to aspen stands.

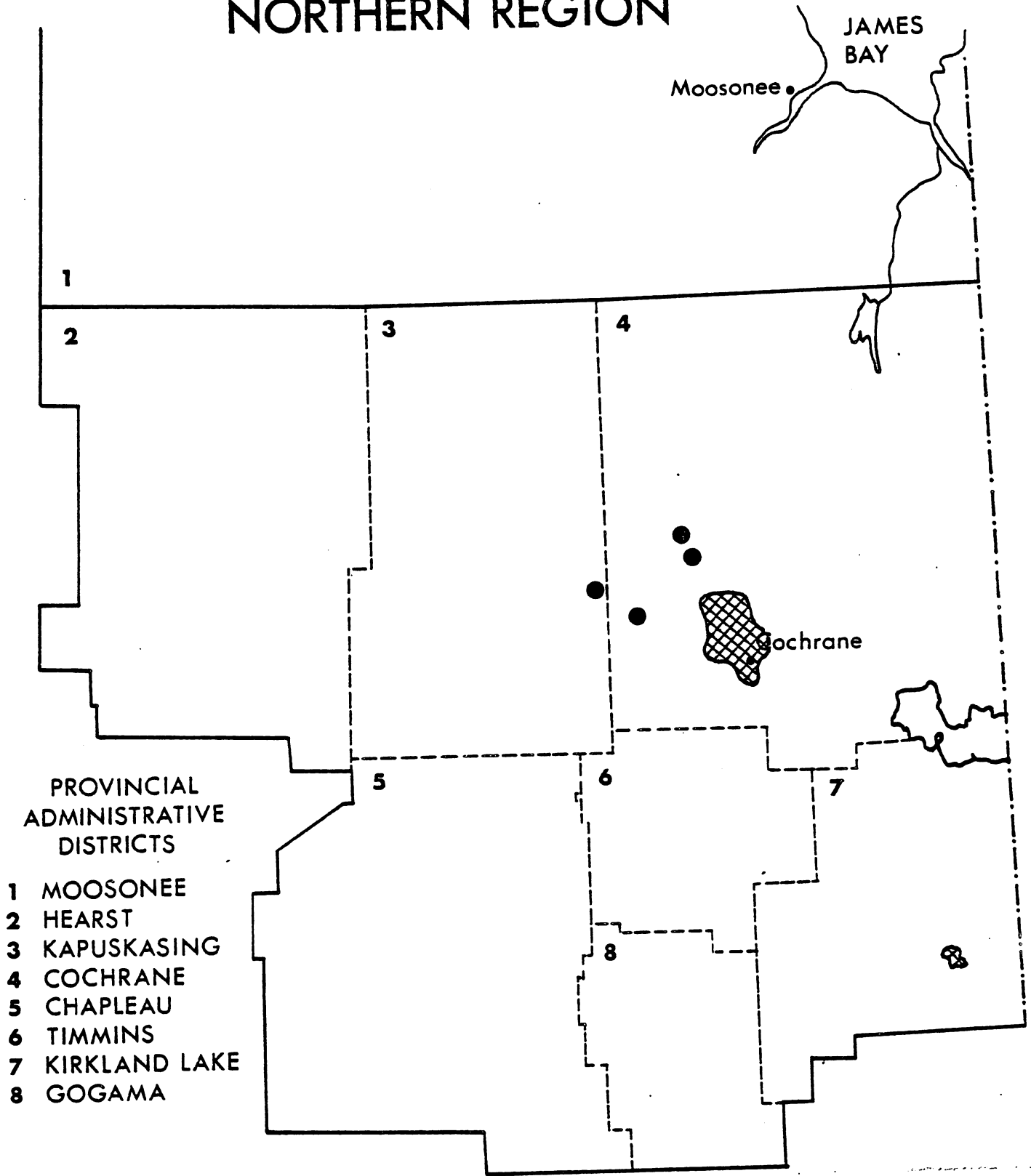
High numbers persisted from Greenwater Provincial Park to the Abitibi River in the Cochrane District where 839 km² of aspen were severely defoliated (Fig. 2).

Egg-band sampling showed only two areas in which heavy infestations are forecast for 1982. It is expected that defoliation at other locations in the Region will be generally light (Table 2).

White Spotted Sawyer, *Monochamus scutellatus* (Say)

Damage by adult sawyer beetle feeding was less extensive in the Region than in 1980. In Neelands Township, Chapleau District approximately 5 ha of fringe jack pine trees were heavily damaged adjacent to a "checker-board" cutting operation. Conspicuous flagging of white cedar (*Thuja occidentalis* L.) trees was observed at log storage areas in Potter and Thorning townships, Cochrane District. Nearly 4 ha of black spruce (*Picea mariana* [Mill.] B.S.P.) group seed trees were killed in Hopkins Township, Kapuskasing District. Early deterioration of winter roads left several log piles stranded and high numbers of adults caused severe flagging of jack pine trees over an area of 12 ha in Wallis Township, Kirkland Lake District.

NORTHERN REGION



PROVINCIAL ADMINISTRATIVE DISTRICTS

- 1 MOOSONEE
- 2 HEARST
- 3 KAPUSKASING
- 4 COCHRANE
- 5 CHAPLEAU
- 6 TIMMINS
- 7 KIRKLAND LAKE
- 8 GOGAMA

0 64
Kilometres

Figure 2. Forest tent caterpillar (*Malacosoma disstria* Hbn.)


Areas within which moderate-to-severe defoliation occurred in 1981 . . . ● or 

Table 2. Summary of forest tent caterpillar egg-band counts on trembling aspen in two districts in 1981 and infestation forecasts for 1982.

Location (Twp)	Avg DBH of trees (cm)	No. of trees sampled	Total no. of egg bands	Infestation forecast for 1982
Cochrane District				
Calder	16	3	2	light
"	17	3	1	light
"	17	3	2	light
Colquhoun	16	3	1	light
Clute	12	3	6	moderate
Glackmeyer	21	3	4	light
"	17	3	11	light
"	15	1	37	heavy
Hanna	19	3	0	nil
Lamarche	13	3	8	moderate
Laughton	22	3	0	nil
Kennedy	15	3	0	nil
Leitch	13	3	0	nil
"	15	3	2	light
"	23	3	3	light
"	20	1	39	heavy
Kirkland Lake District				
Armstrong	8	3	0	nil
Beatty	9	3	0	nil
Beauchamp	10	3	0	nil
Chamberlain	10	3	0	nil
Dack	12	3	11	light
Evanturel	10	3	0	nil
Kerns	7	3	0	nil

Swaine Jack Pine Sawfly, *Neodiprion swainei* Midd.

The status of this sawfly was reported previously as part of the Northeastern Region results. Since the infestation has expanded to encompass part of the Kirkland Lake District the current situation is included in this report.

There was a further increase in extent and intensity of the Swaine jack pine sawfly infestation in the Elk Lake Management Unit, Temagami and Kirkland Lake districts. The larger sector of the infestation along the

Makobe River in Banks and Wallis townships (about 325 ha in 1980) spread north and east to encompass an area of approximately 4,663 ha. The northern apex of this infestation was located about 1.5 km south of Alexander Lake in Willet Township. The infested area included parts of the townships of Banks, Wallis, Willet and Roadhouse as well as a small section of Whitson on the east shore of Banks Lake. A relatively small infestation (approximately 20 ha) was also observed east of the Makobe River in James Township, about 3 km northwest of Sunday Lake. Scattered colonies of the sawfly were found in jack pine stands and plantations in Mickle, Corkill, Brewster, Gamble and McGiffin townships.

At Big Boot Lake north of Lady Evelyn Lake the increase was more modest. Approximately 450 ha in area in 1980, this segment now totals about 1,036 ha and extends along the north shore of Lady Evelyn Lake from east of Slade Lake to Waswaning Narrows. The infestation includes parts of the townships of Van Nostrand, Klock, Leo and Dane. Light-to-moderate defoliation was also observed on islands and in shoreline stands at several locations on Lake Temagami.

Redheaded Jack Pine Sawfly, *Neodiprion virginianus* complex

Pockets of severely defoliated jack pine trees were observed commonly along the road from Ramsay to Biscotasing and along Highway 101 in Gilliland, Hoey and Caouette townships, Chapleau District. A total of 265 ha were infested in these areas. Light defoliation was observed at several points in Kettle Lakes Provincial Park, Timmins District, and in Esker Lakes Provincial Park and the Elk Lake-Matachewan area, Kirkland Lake District.

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

No extensive damage by this sawfly was observed in the Region. Some ornamental and roadside spruces in the Timmins-South Porcupine area were severely defoliated and approximately 50 trees in a mixed spruce snow hedge along Highway 11 in Taylor Township, Kirkland Lake District were completely stripped. Light-to-moderate damage to single trees and small groups of trees was observed in the Charlton-Englehart area, Kirkland Lake District, in Kendrey and Calder townships, Cochrane District, and at Biscotasing and Ivanhoe Provincial Park, Chapleau District.

White Pine Weevil, *Pissodes strobi* (Peck)

Quantitative sampling in pine and spruce plantations showed widespread leader mortality in the Region (Table 3).

Table 3. Summary of damage caused by the white pine weevil in seven districts in 1980 and 1981 (counts based on the examination of 150 trees at each location).

Location (Twp)	Host	Avg ht of trees (m)	Esti- mated trees/ha	Trees weeviled (%)		Area affected (ha)
				1980	1981	
Chapleau District						
Esther	jP	1.8	3,000	4	10	38
Pattison	jP	2.6	2,500	-	3.3	40
Nimitz	jP	4.0	4,000	-	0.7	20
Ivanhoe	wP	1.7	1,000	-	23.0	4
Abney	jP	2.0	2,500	-	2.0	40
Oates	wS	1.0	1,000	-	1.3	16
Neelands	jP	2.5	2,500	-	5.3	40
Gilliland	jP	1.6	4,300	-	6.0	20
Pinogami	jP	2.1	4,000	4	2.7	20
Sewell	jP	3.0	8,000	-	2.7	40
Fawn	jP	2.6	4,444	3	5.3	52
Cosens	jP	1.3	3,000	4	2.0	80
Gilliland	rP	1.0	4,444	-	0.7	20
Lipsett	jP	2.0	1,600	-	1.3	40
Cochrane District						
Calder	wS	2.6	2,691	2	3.3	2
"	wS	6.7	3,445	-	1.3	4
Clute	wS	1.6	4,306	-	2.0	40
"	bS	1.2	4,306	-	1.3	100
Sargeant	jP	1.7	6,000	-	2.7	20
Dundonald	jP	2.3	4,306	5	1.3	25
Gogama District						
Benneweiss	jP	3.0	2,990	-	9.3	40
Invergarry	jP	1.4	2,990	4	6.0	40
Jack	jP	2.1	2,990	2	3.3	16
Vrooman	jP	3.0	4,500	2	9.3	40
Hearst District						
Stoddart	bS	1.4	4,306	-	1.3	100
"	wS	1.7	4,306	-	2.7	100
Studholme	wS	5.9	1,400	-	0.7	45
Way	wS	0.7	2,093	-	0.7	4

(continued)

Table 3. Summary of damage caused by the white pine weevil in seven districts in 1980 and 1981 (counts based on the examination of 150 trees at each location). (concluded)

Location (Twp)	Host	Avg ht of trees (m)	Esti- mated trees/ha	Trees weeviled (%)		Area affected (ha)
				1980	1981	
Kapuskasig District						
Fauquier	wS	3.4	3,014	-	4.4	4
"	wS	1.6	2,584	-	6.0	3
Idington	bS	3.1	2,870	1	0.7	40
Opasatika	wS	2.4	1,794	-	2.7	6
Shearer	bS	2.0	3,962	9	4.7	40
Kirkland Lake District						
McElroy	jP	2.5	3,000	-	6.6	25
Skead	jP	2.0	2,990	-	1.3	75
Cane	jP	1.5	3,000	-	9.3	100
Bowman	jP	2.5	3,000	7	6.0	20
McEvay	jP	3.5	2,990	8	11.3	100
Dunmore	jP	3.5	2,990	12	3.3	50
Burt	jP	2.5	4,000	10	8.0	50
Sharpe	jP	3.5	4,000	12	6.6	20
Timmins District						
Macklem	jP	1.5	3,000	-	4.6	10
Evelyn	jP	3.0	4,000	-	2.0	10
Sewell	jP	2.0	3,000	-	9.3	20
Denton	jP	1.2	3,000	-	6.6	50

Larch Sawfly, *Pristiphora erichsonii* (Htg.)

Only one small infestation of this sawfly was detected in the Region. Light-to-moderate defoliation recurred over 5 ha of tamarack along the Fraser River in McCoig Township, Hearst District.

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

Severe defoliation of mountain-ash (*Sorbus* sp.) trees was common in seven districts of the Region. Although this defoliation was of little concern in forest stands, the unusually heavy damage to ornamentals resulted in numerous requests for information on control of the sawfly.

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

This insect was reported in 1961 south of Beardmore in the Geraldton District where moderate damage to white birch was observed over approximately 160 km², and in 1962 around Cowan and Poshkokagan lakes in Port Arthur (now Thunder Bay) District where damage was observed over 260 km².

In 1981 heavy moth flights were observed between 16 and 26 June at widely scattered points in the Chapleau District. By the middle of August severe discoloration of white birch foliage was noted over an area of 4,568 km² (Fig. 3) and by the end of August many trees had lost all their foliage. In the Gogama District only light damage to birch was observed but roadside alder (*Alnus* sp.) was heavily infested at many locations. In Cochrane and Kapuskasing districts two small pockets of severe defoliation totalling 4 ha were mapped but there was no damage elsewhere in the Region.

Microsporidia infection ranged from 10 to 40% in larval samples, and this suggests a possible reduction in population levels in 1982.

Minor Insects

Jack Pine Tip Beetle, *Conophthorus banksianae* McPherson

Conspicuous damage by these beetles was again common in jack pine plantations and natural stands at numerous locations in the Region (Table 4).

Table 4. Summary of leader damage caused by the jack pine tip beetle in four districts in 1981 (counts based on the examination of 150 trees at each location).

Location (Twp)	Avg ht of trees (m)	Estimated trees/ha	Area affected (ha)	Leaders killed (%)
Chapleau District				
Esther	1.8	3,000	38	5
Fawn	2.6	3,000	52	7
Topham	1.9	4,000	19	6
Gogama District				
Jack	1.9	2,900	16	12
Vrooman	2.9	4,500	40	1
Vrooman	1.4	2,500	4	5
Kirkland Lake District				
Dunmore	3.5	2,990	50	9
Burt	2.5	4,000	30	9
Sharpe	3.5	4,000	20	6
Timmins District				
Evelyn	3.0	4,000	10	6

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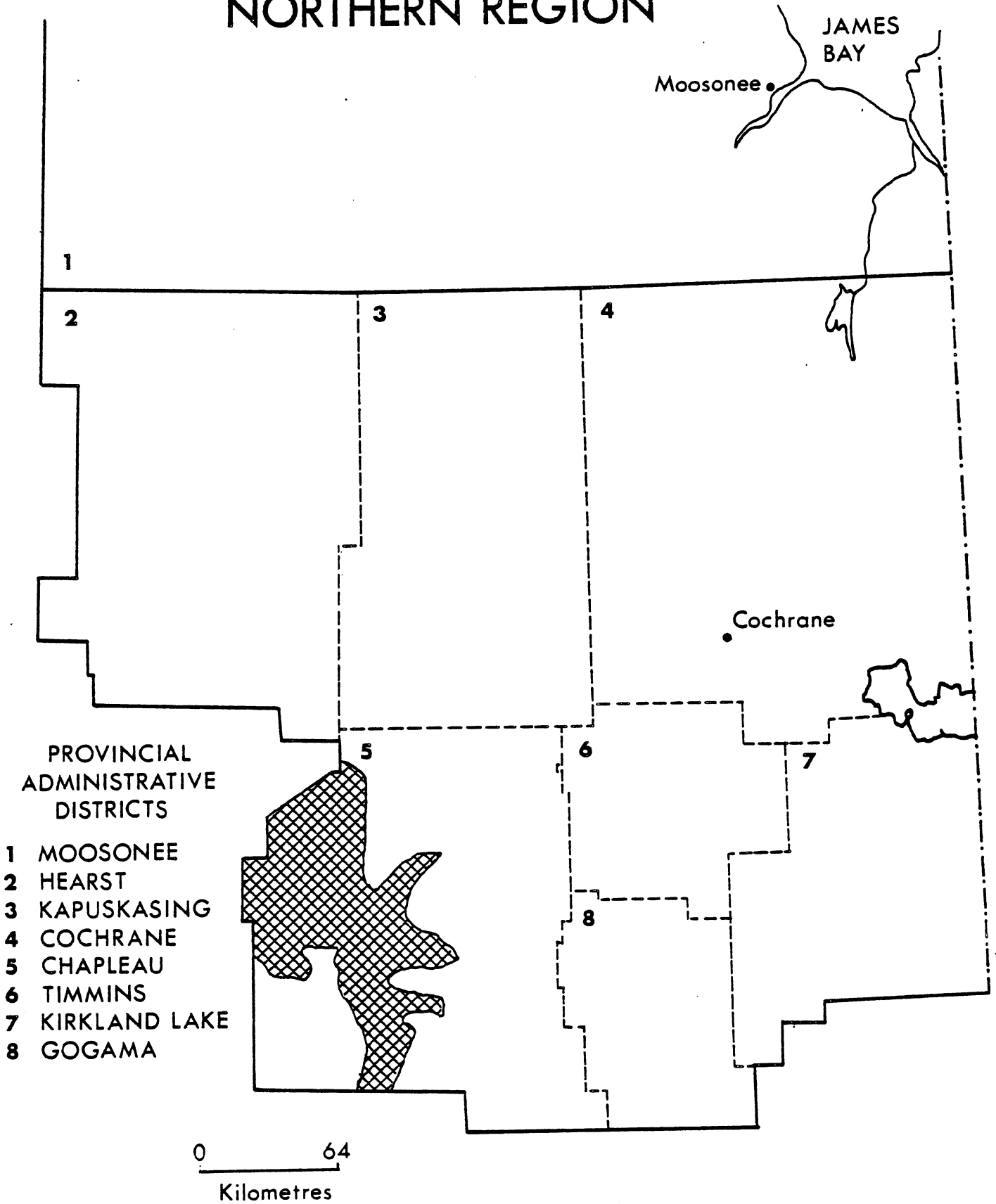


Figure 3. Spearmarked black moth (*Rheumaptera hastata* [Linn.]

Areas within which moderate-to-severe defoliation occurred in 1981 . . .



Table 5. Other forest insects.

Insect	Host(s)	Remarks
<i>Aceria</i> sp. nr. <i>dispar</i> Nalepa A poplar gall mite	tA	common throughout the northern and eastern portions of the Region; particularly noticeable in Kirkland Lake and Hearst districts where the characteristic "balls" of darkened shrunken foliage were very conspicuous
<i>Acrobasis betulella</i> Hlst. Birch tubemaker	wB	common in most stands throughout Kirkland Lake and Timmins districts
<i>Adelges strobilobius</i> (Kalt.) Pale spruce gall adelgid	tL	common at many locations throughout Kirkland Lake and Timmins districts
<i>Altica ambiens alni</i> Harr. Alder flea beetle	Alder	severe defoliation recorded throughout the Region, particularly on alder adjacent to creek beds
<i>Altica corni</i> Woods Dogwood flea beetle	Do	heavy defoliation along lake-shores in Leitch Twp, Cochrane District and in Fauquier Twp, Kapuskasing District
<i>Archips argyrospilus</i> (Wlk.) Fruittree leafroller	Po, wB, eCo	further decline in insect numbers throughout Kirkland Lake and Cochrane districts
<i>Archips cerasivoranus</i> (Fitch.) Uglynest caterpillar	ecCh pCh	more conspicuous on cherry (<i>Prunus</i> sp.) in rural areas of the Region, particularly on open-grown trees, generally at low levels
<i>Argyresthia pygmaeella</i> Hbn. Willow leaf-tier	W	common throughout Gogama and Chapleau districts
<i>Choristoneura rosaceana</i> (Harr.) Obliquebanded leafroller	tA, mM, wB	observed frequently at low levels throughout Kirkland Lake, Timmins and Cochrane districts

(continued)

Table 5. Other forest insects (continued).

Insect	Host(s)	Remarks
<i>Chrysomela</i> sp. A leaf beetle	bPo, W	Light-to-moderate defoliation persisted at widely scattered locations throughout Chapleau, Gogama and Kapuskasing districts.
<i>Cinara strobi</i> (Fitch) White pine aphid	wP	heavy egg deposits observed on needles throughout Wakami Provincial Park
<i>Compsolechia niveopulvella</i> Chamb. Paleheaded aspen leafroller	tA	low numbers throughout Hearst and Cochrane districts; heavy over an area of 1 ha in Fauquier Twp, Kapuskasing District
<i>Dichelonyx</i> sp. A leaf chafer	tA	light defoliation to upper crowns of trees in Black Twp, Kirkland Lake District
<i>Dimorphopteryx melanognathus</i> Roh. Fringed birch sawfly	Alder	low levels recorded on fringe trees in wet areas in Stimson Twp, Cochrane District
<i>Disonycha alternata</i> Ill. Striped willow leaf beetle	W	moderate-to-severe defoliation along Highway 101 in Cosens Twp, Chapleau District
<i>Epinotia solandriana</i> Linn. Birch-aspen leafroller	bPo, tA, wB	low levels recorded throughout the northern portion of the Region adjacent to Hwy 11
<i>Eriophyes</i> sp. Mites	mM	light-to-moderate defoliation throughout the town of Chapleau
<i>Eupareophora parca</i> (Cress.) (= <i>minuta</i> MacG.)	bAs	lightly defoliated upper crowns in several stands in Timmins and Kirkland Lake districts

(continued)

Table 5. Other forest insects (continued).

Insect	Host(s)	Remarks
<i>Fenusa dohrnii</i> (Tischb.) European alder leafminer	Alder	widespread distribution throughout the Region; 4 ha heavily defoliated on Moose Factory Island, Moosonee District
<i>Filatima demissae</i> Keif. Leafroller	Serviceberry	high levels recorded in Lloyd Twp, Chapleau District
<i>Halysidota maculata</i> (Harr.) Spotted tussock moth	wB, W	light defoliation on white birch throughout Kirkland Lake and Timmins districts, and on willow (<i>Salix</i> spp.) in Kapuskasing and Cochrane districts
<i>Hemichroa crocea</i> (Geoff.) Striped alder sawfly	Alder	heavy defoliation adjacent to waterways at many locations
<i>Malacosoma californicum pluviale</i> Dyar Northern tent caterpillar	pChe, Ch, tA, W	common along roadsides and in open fields at low levels throughout Kirkland Lake, Timmins, Chapleau, Gogama and Cochrane districts
<i>Micurapteryx salicifoliella</i> Cham. Willow leafminer	W	Heavy populations persisted in the area west of Hearst around Hornepayne and north into Rogers and Shannon Twps, Hearst District.
<i>Neodiprion abietis</i> complex Balsam fir sawfly	wS, bF	low levels on large white spruce (<i>Picea glauca</i> [Moench] Voss) trees on Anderson Island at the mouth of the Albany River
<i>Neodiprion nanulus nanulus</i> Schedl. Red pine sawfly	jP	scattered colonies observed near Matachewan in Kirkland Lake District
<i>Neurotoma inconspicua</i> (Nort.) Plum web-spinning sawfly	pCh	moderate-to-severe defoliation throughout Ivanhoe Provincial Park, Chapleau District

(continued)

Table 5. Other forest insects (concluded).

Insect	Host(s)	Remarks
<i>Nymphalis antiopa</i> (L.) Mourningcloak butterfly	Deciduous	single trees stripped of all new foliage at widely scattered points in Chapleau and Gogama districts; more frequently observed in Kirkland Lake and Timmins districts than in previous years
<i>Petrova albicapitana</i> (Busck.) Northern pitch twig moth	jP	commonly found at low levels in most jack pine stands in the Region
<i>Phyllocnistis populiella</i> (Chamb.) Poplar serpentine leafminer	tA	generally low levels throughout Hearst District; 4 ha of trees 25 cm DBH moderately defoliated in Larkin Twp
<i>Phyllonorycter</i> sp. Leafblotch miner	W, tA, bPo	heavier than usual population of blotch miners recorded throughout the Region in 1981
<i>Profenusa thomsonii</i> (Konow) Ambermarked birch leafminer	wB	common throughout the Region at low levels; light-to-moderate damage along the Albany River at Albany Forks and Cheepay Island
<i>Pseudaletia unipuncta</i> (Haw.) Armyworm	general	generally low levels throughout the Region, with heavier damage recorded throughout Chapleau and Gogama districts
<i>Psylla floccosa</i> (Patch) False woolly alder aphid	Alder	moderate-to-heavy populations recorded on alder swales throughout Kapuskasing and Hearst districts
<i>Pyrrhalta decora decora</i> (Say) Grey willow leaf beetle	W	pockets of severe skeletonizing along Hwy 144 in Hazen, Stetham and Noble Twps, Gogama District
Scolytidae Bark beetle	wS, jP	bark beetle population recorded on recently dead trees in Chappise and Neelands Twps, Chapleau District

TREE DISEASES

Major Diseases

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

In 1981, these foliar diseases were much more prevalent throughout the Hearst, Cochrane, and Kapuskasing districts. At one location in Studholme Township, Hearst District, 23% of the 5.9 m trees were affected and foliar damage amounted to 11% over an area of 45 ha. Elsewhere in the Region, trace levels prevailed and there was no apparent damage to host trees.

A Needle Cast, *Davisonmycella ampla* (Davis) Darker

This needle cast fungus which attacks jack pine trees was more commonly observed in several locations in the Region than in previous years. In several areas, 100% of the trees were affected with varying degrees of foliar damage (Table 6).

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

No major changes were detected in the status of this disease in the Region. As in the past, varying degrees of damage were observed at scattered locations, with only small isolated pockets of mortality among younger trees. On older trees, damage usually caused lower branch mortality and stem cankers. This damage is being caused by the North American race and as yet the much more virulent European race has not been detected in Ontario.

Table 6. Summary of foliar damage by *Davisomycella ampla* in five districts in 1981.

Location (Twp)	Avg ht of trees (m)	Estimated trees/ha	Trees affected (%)	Foliar damage (%)	Area affected (ha)
Cochrane					
Colquhoun	4.8	1,682	18	10	7
Kapuskasing					
Kipling	5.0	1,682	10	27	3
Hearst					
Studholme	6.0	4,306	2	12	2
Chapleau					
Strathern	1.9	4,444	100	2	16
Brutus	2.3	3,000	0	0	16
Lipsett	2.0	2,500	25	5	16
Lloyd	5.4	4,444	100	10	16
Dalmas	5.7	2,900	100	5	16
Gogama					
Jack	1.9	2,900	0	0	20
Vrooman	1.4	2,500	0	0	6
Vrooman	1.9	4,444	10	2	20

Table 7. Other forest diseases.

Organism	Host(s)	Remarks
<i>Arceuthobium pusillum</i> Pk. Eastern dwarf mistletoe	bS	12% of the trees affected in McMillan Twp, Hearst District
<i>Armillaria mellea</i> (Vahl ex Fr.) Kumm. Armillaria root rot	bS, wS, jP	commonly found in the Region causing light mortality
<i>Ceratocystis ulmi</i> (Buism.) C. Moreau Dutch elm disease	wE	continued mortality through- out the range of elm in the Region
<i>Ciborinia whetzellii</i> (Seaver) Seaver Ink spot of aspen	tA	trace-to-low levels of foliar damage at widely scattered locations through- out the Region
<i>Coleosporium asterum</i> (Diet.) Syd. Needle rust of jack pine	jP	heavy foliar damage levels in Arnott Twp, Hearst District and trace levels elsewhere in the Region
<i>Drepanopeziza populorum</i> (Desm.) Hoehn. Leaf spot of poplar	tA	approximately .8 ha of heavy infection at Sideburned Lake, Caouette Twp, Chapleau District and low levels else- where in the Region
<i>Hypoxyylon mammatum</i> (Wahl.) J.H. Miller Stem canker of aspen	tA	continues to kill trees at widely scattered points in the Region
<i>Isthmiella crepidiformis</i> (Darker) Darker Spruce needle cast	bS	heavy foliar damage observed in McCrea Twp, Kapuskasing District and in Studholme Twp, Hearst District
<i>Lophodermium pinastri</i> (Schrad. ex Hook.) Chev. A needle cast	jP	causing 12% foliar damage in Fawn Twp, Chapleau District
<i>Melampsora epitea</i> Thuem. Willow leaf rust	W	common throughout the Region, especially in Oates Twp, Chapleau District

(continued)

Table 7. Other forest diseases (concluded).

Organism	Host(s)	Remarks
<i>Melampsora medusae</i> Thuem. Needle rust	tA, tL	widespread in the Region with only trace levels observed
<i>Pucciniastrum epilobii</i> Otth Fir needle rust	bF	light foliar damage at many points in the Region
<i>Rhytisma punctatum</i> (Pers.) Fr.	mM	heavy foliar damage in Dalmas Twp, Chapleau District and low levels at many locations in the Region
<i>Venturia macularis</i> (Fr.) Müller & Arx Leaf and twig blight	tA	light-to-moderate leader damage throughout the Region

Abiotic Damage

Rodent Damage

Jack pine plantations sustained appreciable mortality as a result of animal feeding during the winter of 1980-1981 at several locations in the Region, but damage was most significant in the Kirkland Lake District. Trees were girdled from ground level to approximately 0.5 m, and this suggests that rodents were responsible for the damage. The results of quantitative sampling are shown in Table 8.

Table 8. Summary of tree mortality caused by rodents in two districts in 1981 (counts based on the examination of 150 jack pine trees at each location).

Location (Twp)	Avg ht of trees (m)	Estimated trees/ha	Area affected (ha)	Trees killed (%)
Kirkland Lake District				
McElroy	2.5	3,000	25	15.3
Skead	2.0	2,990	75	33.3
Cane	1.5	3,000	100	32.6
Harker	1.5	2,990	100	28.2
Chapleau District				
Dalmas	1.0	2,990	10	18.0

Squirrel Damage

Much flagging and tip mortality of jack pine were observed at numerous locations in the Region.

Frost Damage

Trace levels were noted on conifers throughout the Region.

Winter Drying

Severe damage to red pine (*Pinus resinosa* Ait.) was noted in Kettle Lakes Provincial Park, Timmins District, and light-to-moderate damage in Gilliland Township, Chapleau District.

Storm Damage

Conspicuous breakage of tops and limbs was observed in jack pine stands south and east of Matheson in the Kirkland Lake District (Table 9). The damage was caused by winter storms when heavy snow deposits became saturated with moisture formed by unseasonably high temperatures. In many instances the entire crown was severed or trees were blown over. Lesser damage to other species was observed at many other points in the Timmins and Kirkland Lake districts.

Table 9. Summary of tree mortality caused by storm breakage in 1981 (counts based on the examination of 150 trees at each location).

Location (Twp)	Avg ht of trees (m)	Estimated trees/ ha	Area affected (ha)	Tops broken (%)
Kirkland Lake District				
McCool	12.7	1,100	25	42
Michaud	17.6	1,500	20	38
Black	15.2	850	50	24
McCann	18.2	3,000	50	24

Special Surveys

White Spruce Cone Survey

In response to concern expressed by Ontario Ministry of Natural Resources (OMNR) personnel about seed production problems, the Forest Insect and Disease Survey Unit undertook a survey of cone and seed damage by insects and diseases in 1981.

Two samples were taken, one of female flowers on 2 June and one of cones on 4 August. Since 1981 was an extremely poor year for seed production, female flowers were found at only one location in the Timmins District. The cones were found in the Kirkland Lake District (Table 10).

Table 10. A summary of the percentages of damaged female white spruce flowers and cones in two districts in 1981.

Location	No. of flowers examined	Flowers damaged (%)	Developed cones examined	Developed cones damaged (%)	Flowers damaged by Lepidoptera (%)	Cones damaged by Lepidoptera (%)
Timmins District						
OMNR airbase	185	14.6			8.6	
Kirkland Lake District						
Harris Twp			100	20		15

In the sample of female flowers, 14.6% were damaged. Of these damaged flowers 4.3% were fed on by the orange spruce needleminer (*Pulicalvaria piceaella* [Kearfott]) and 1.6 by the spruce budworm, and the remaining flowers were damaged by other Lepidopterous insects that were not identified as they had fallen off the conelets.

The cone sample revealed 20% damage. Lepidopterous larvae were responsible for 15% of the damage but again the insects had left the cones. The remaining 5% of the damage was caused by the spruce cone maggot (*Hylemya anthracina* [Czerny]) (2%), the spruce seed moth (*Laspeyresia youngana* [Kearfott]) (2%), and the fir seed midge (*Dasineura canadensis* Felt) (1%).

At a later date, a more comprehensive report will be published in which various insects causing damage to flowers and cones in Ontario will be described in detail.

There was no evidence of damage caused by diseases.

Survey of White Spruce Plantations

Twelve stands in the Region were examined to determine the presence and impact of insect and disease problems in white spruce plantings. Selections were from 0.5 - 2.0, 2.1 - 6.0 and 7.6 m height classes. Evaluations were performed according to standard sampling techniques between 10 and 30 June and 15 and 31 July. Positive results are summarized in Tables 11 and 12. Yellow witches' broom (*Chrysomyxa arctostaphyli* Diet.) and spruce cone rust (*C. pirolata* Wint.) were not detected.

During the second series of visits, increment borings were obtained from stands > 6 m high. Cores were taken at ground level, 30 cm above ground level and at a height of 1.3 m to detect internal rot. Three stands were sampled with 10 trees from each area selected. No internal rot was present in the sampled stands.

Table 11. Summary of insect damage in a special survey of planted white spruce in the Region (percentage based on the examination of 150 trees at each location).

Location (Twp)	Avg ht of trees (m)	Area of plan- tation (ha)	Esti- mated trees/ ha	Percentage of trees affected by:				Avg defolia- tion by: spruce budworm and spruce coneworm (%)	Yellowhead spruce sawfly	
				spruce budworm	spruce coneworm	spruce shootworm	white pine weevil		trees attacked (%)	defolia- tion (%)
Chapleau District										
Caverley	.93	4	2,000	2.0	0.1	0.4	-	trace	-	-
Manning	1.40	16	1,682	11.8	0.1	0.5	.1	2	-	-
Lloyd	4.00	8	2,900	10.5	0.5	5.5	.1	2	-	-
Nimitz	14.20	20	100	100.0	12.6	0.0	-	75	-	-
Gilliland	.20	12	2,900	6.0	0.0	0.0	-	0	-	-
Cochrane District										
Calder	6.80	2	2,691	96.0	-	-	.2	9.7	-	-
Calder	3.60	1.6	3,445	94.0	-	-	.5	9.5	3.3	.9
Kapuskasing District										
Opasatika	3.30	3.6	1,794	99.0	-	-	2.7	5.5	-	-
Fauquier ^a	3.40	0.6	3,014	50.0	-	-	.8	3.6	-	-
Fauquier	1.60	1.4	2,584	25.0	-	-	.9	1.6	-	-
Hearst District										
Studholme	5.90	45	1,400	93.0	-	-	-	3.9	-	-
Way	.83	2.0	2,093	29.0	-	-	.1	1.4	.7	trace

^a Based on 90 trees only at this location.

Table 12. Summary of disease damage in a special survey of planted white spruce in the Region (percentage based on the examination of 150 trees at each location).

Location (Twp)	Chlorosis		<i>Armillaria mellea</i> Trees affected (%)	Frost		<i>Chrysomyxa ledi</i> and <i>C. ledicola</i>	
	Trees affected (%)	Defolia- tion (%)		Trees affected (%)	Defolia- tion (%)	Trees affected (%)	Defolia- tion (%)
Chapleau District							
Caverley	.7	trace	-	-	-	4.3	trace
Manning	-	-	-	-	-	9.8	trace
Lloyd	-	-	-	-	-	3.3	trace
Nimitz	-	-	0.1	-	-	-	-
Gilliland	-	-	-	-	-	4.9	trace
Cochrane District							
Calder	10.7	23.2	-	-	-	2.3	trace
Calder	-	-	-	2	.7	1.1	trace
Kapuskasing District							
Opasatika	-	-	-	-	-	-	-
Fauquier ^a	5.6	12.3	-	-	-	0.6	trace
Fauquier	4.7	39.1	-	-	-	0.6	trace
Hearst District							
Studholme	-	-	-	-	-	-	-
Way	-	-	-	-	-	-	-

^a Based on 90 trees only at this location.