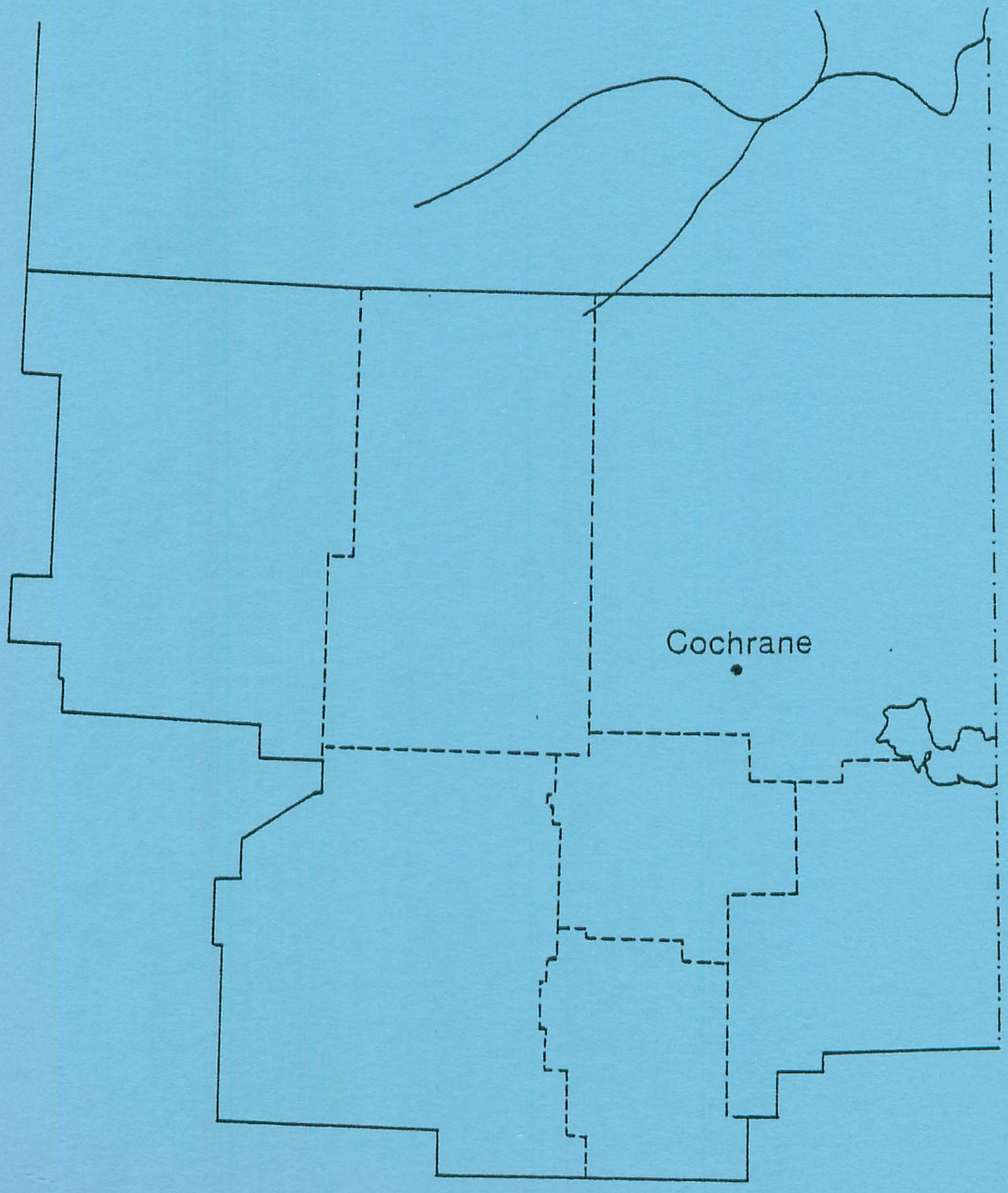
Results of forest insect and disease surveys in the NORTHERN REGION of Ontario, 1979



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

SURVEY HIGHLIGHTS

The 1979 field season in the Northern Region was highlighted by the continued expansion of the spruce budworm infestation in the northern districts. Severe defoliation was mapped as far north as Fort Albany in the Moosonee District and mortality, particularly of balsam fir, continued to increase in the southern districts. Ground and aerial spraying operations of seed production areas, plantations and other high-value stands were carried out against the budworm by the Ontario Ministry of Natural Resources in several districts. Heavy infestations are again forecast for 1980.

Several factors, including heavy parasitism and disease, precipitated the collapse of the forest tent caterpillar infestation in the Hearst, Kapuskasing, Cochrane and Moosonee districts. Forecasts indicate that defoliation will be limited to the area around Smooth Rock Falls in 1980.

Sawyer beetle feeding again caused substantial damage in mature pine and spruce stands in several districts. Unusually high numbers of the spiny elm caterpillar attracted considerable attention through the Region (see Frontispiece). Although not affecting forest trees, heavy infestations of armyworm caused concern in urban areas in several districts and huge flights of a species of flying ant were observed in the Matheson area of the Kirkland Lake District. Gypsy moth attractant traps placed in provincial parks failed to establish the presence of this insect in the Region.

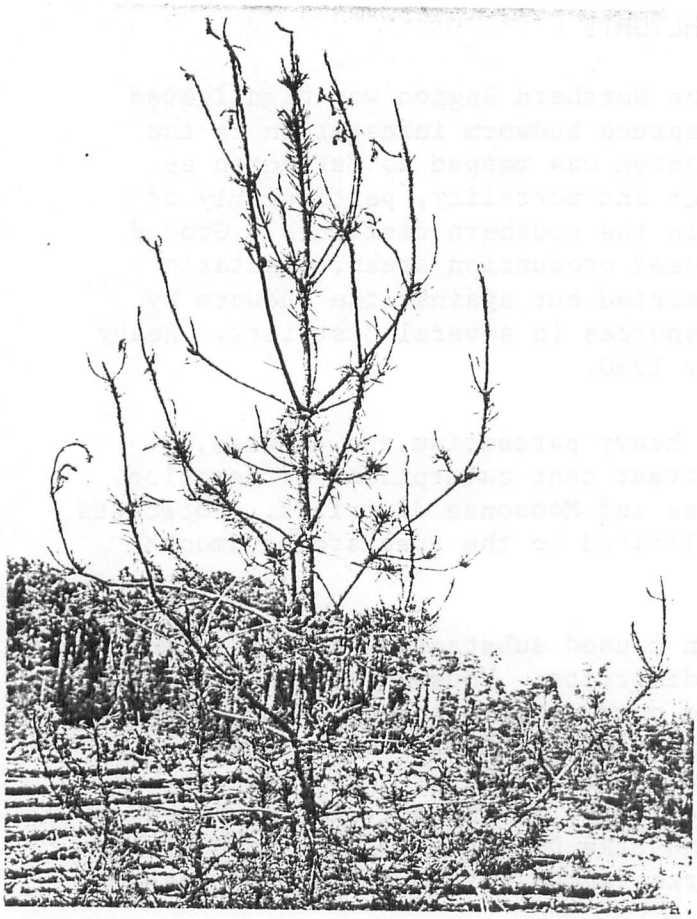
The regular surveillance for diseases was supplemented by a special survey of jack pine plantations. This was part of a province-wide examination of randomly selected, high-value stands to determine the presence of specific insects and diseases in various age classes at widely separated geographic locations.

L. S. MacLeod

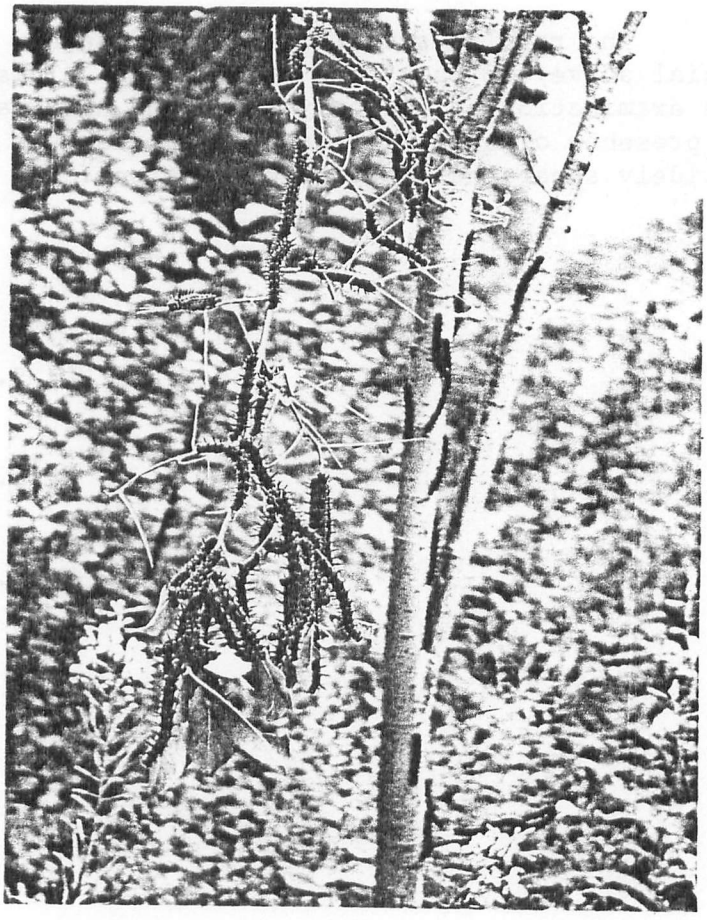
H. J. Evans

W. A. Ingram

Frontispiece



Damage by sawyer beetles
(*Monochamus* spp.)



Spiny elm caterpillar
(*Nymphalis antiopa* L.)

INSECTS

Fruit Tree Leafroller, *Archips argyrospilus* (Wlk.)

Although population levels of this defoliator varied widely from district to district, an overall decline was evident through the Region. Light-to-moderate defoliation of single trees and small groups of white birch (*Betula papyrifera* Marsh.), red maple (*Acer rubrum* L.), and trembling aspen (*Populus tremuloides* Michx.) was common at many locations in the Timmins and Kirkland Lake districts and in Dundonald Township, Cochrane District. The insect was widely distributed through stands in the remaining districts of the Region but no significant defoliation was observed.

Poplar Leaf Beetle, *Chrysomela* sp.

Minor fluctuations in populations of this poplar defoliator were recorded at several points. Moderate defoliation of balsam poplar (*Populus balsamifera* L.) occurred through Penhorwood, Barclay and Strathearn townships, Chapleau District; along the Chain of Lakes Road and in Remi Lake Provincial Park, Kapuskasing District; and in Keefer, Denton, Robb, Hillary and Hoyle townships, Timmins District. Light defoliation was common through the Kirkland Lake, Gogama, Cochrane and Hearst districts.

Spruce Budworm, *Choristoneura fumiferana* (Clem.)

The results of damage surveys, population sampling, and egg-mass counts have been included with those of other regions in a special report by G.M. Howse et al. (Report O-X-310). This report provides a complete description and analysis of developments in the spruce budworm situation in Ontario in 1979 and gives infestation forecasts for the province for 1980.

Larch Casebearer, *Coleophora laricella* Hbn.

Little change in population levels of this insect occurred in 1979. Slight increases were recorded at monitoring plots in Kapuskasing District and in Calder Township, Cochrane District. Low numbers were also observed in Chappise Township, Chapleau District but few casebearers were found in other districts of the Region.

Jack Pine Tip Beetle, *Conophthorus banksianae* McPherson

This beetle again caused conspicuous damage in jack pine (*Pinus banksiana* Lamb.) plantations at many points in Timmins and Kirkland Lake districts. In Thorneloe Township, Timmins District,

41% of the trees were infested with an average of seven attacks per tree and 6% of the leaders were killed. In Dunmore Township, Kirkland Lake District, incidence of attack was 42% with 3% of the leaders destroyed. Quantitative sampling in the Chapleau and Gogama districts showed that leader mortality ranged from 1% to 5%. In Hearst, Kapuskasing and Cochrane districts damage was generally light except in one plantation in Dundonald Township where 7% of the leaders were attacked.

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

Quantitative sampling for spruce budworm revealed that high numbers of this coneworm persisted in both white spruce (*Picea glauca* [Moench] Voss) and black spruce (*Picea mariana* [Mill.] B.S.P.) stands in most districts of the Region. Populations varied considerably at sampling locations but generally averaged approximately 25% of the total insects recovered from white spruce. At the Bonner Tree Improvement Centre, Kapuskasing District, pre-spray samples from black spruce trees contained 8% coneworm larvae. A check of black spruce cones at several points in the Chapleau District showed that approximately 25% of the cones were damaged by *D. reniculelloides* feeding.

Poplar Gall Mite, *Eriophyes* sp.

As in 1978 high populations of gall mites caused conspicuous distortion of aspen foliage through the southeastern part of the Kirkland Lake District and at several points east of Matheson. Moderate damage was noted at several points in Hearst and Kapuskasing districts, particularly in Buchan and Staples townships, where willow (*Salix* sp.) was also attacked.

Eastern Pineshoot Borer, *Eucosma gloriola* Heinr.

Little change in the incidence of damage by this shootborer was observed in 1979. Varying degrees of leader mortality occurred in most jack pine plantations in Timmins and Kirkland Lake districts and white pine (*Pinus strobus* L.) in natural stands was frequently attacked. Similar damage was observed through the Chapleau and Gogama districts and to a lesser extent in the Cochrane District. Trees under 5 m high were more susceptible to attack. The results of quantitative sampling are shown in Table 1.

Table 1. Summary of leader damage on jack pine by the eastern pineshoot borer in six districts in 1979 (counts based on the examination of 100 or 150 trees at each location).

Location (Twp)	Avg height (m)[a]	Leaders affected (%)	
		1978	1979
Chapleau District			
Dalmas	1.6	22	22
Nimitz	7.7	-	1.5
Silk	1.1	-	2
Neelands	5.1	12	4
Lipsett	1.5	-	3.5
Muskego	1.6	2	7
Arbutus	2.5	20	17
Fawn	1.9	17	20
Pinogami	1.5	-	12
Pattinson	1.5	-	5
Gogama District			
Roblin	2.2	15	16
Jack	1.4	7	9
Kemp	3.0	-	20
Vrooman	2.5	-	23
Kirkland Lake District			
Burt	2.1	9	10
Dunmore	2.1	19	16
Bowman	2.2	7	11
McEvay	2.3	9	12
Sharpe	2.3	7	6
Timmins District			
Timmins	2.2	6	10
Hearst District			
Studholme	4.8	-	2
Cochrane District			
Dundonald	3.1	-	2
Berry	1.3	-	6

[a] 1 m = 3.28 ft

Birch Leafminer, *Fenusa pusilla* (Lep.)

White birch trees in rural, urban and forested areas again suffered extensive and severe foliar damage by first generation leafminers in several districts. At several points near Stimson Diamond, Cochrane District, defoliation of trees 2.5 m high was as much as 97%. Severe defoliation occurred along Highway 631 from Nagagamisis Provincial Park to Gourlay Township, Hearst District; on ornamentals in Timmins and South Porcupine, Timmins District and in Kirkland Lake, Swastika, Gowganda and New Liskeard, Kirkland Lake District. Moderate damage was recorded at numerous points through the Chapleau and Gogama districts. Plots to monitor deterioration of birch stands by primary agents such as this leafminer and subsequent attack by secondary causes were established at eight locations in the Region.

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

Damage caused by this beetle was common in aspen stands in all districts and regeneration-type stands were severely defoliated at numerous locations. In several instances in jack pine plantations the insect acted as a conifer release agent by severely reducing the amount of aspen foliage overtopping the young pines. The heaviest defoliation occurred in the townships of Lynch, Kalen and Genier, Chapleau District; in Noble Township, Gogama District and in the central and western parts of the Kirkland Lake District. In Kapuskasing District overstory trees sustained 15-25% defoliation at several points.

Aspen Leafblotch Miner, *Lithocolletis ontario* Free.

A marked increase in population levels of this leafminer was evident in the northern and western parts of the Region. Moderate-to-severe damage was noted through regeneration-type stands in Bernier, Langlois, Marshall, Halsey and Daoust townships, Chapleau District and in Marshay, Beulah and Hodgetts townships, Gogama District. In Hearst District severe discoloration of aspen foliage occurred along Highway 631 from Gourlay Township north to Highway 11 and west to Clavet Township. In this area virtually 100% of the foliage of smaller trees was affected. In Kirkland Lake and Timmins districts light-to-moderate infestations were general but no extensive areas of severe leaf damage were observed. In these districts relatively high numbers of the miner *L. nipigoni* Free. were present in balsam poplar stands at many locations.

Forest Tent Caterpillar, *Malacosoma disstria* Hbn.

A major decline in population levels was recorded throughout the main body of the infestation in Kapuskasing, Cochrane, Hearst and Moosonee districts. Increased numbers were noted in Kap-Kig-Iwan

Provincial Park in Kirkland Lake District where the infestation has persisted for several years (Fig. 1).

The Cochrane area suffered the most severe defoliation; complete defoliation of overstory trees was general in young aspen stands from Strickland through the Greenwater Park area to Clute. Numerous small pockets of moderate-to-severe defoliation were found throughout the remainder of this infestation.

The main body of infestation around Kapuskasing was reduced to pockets of moderate-to-severe defoliation; the largest remaining area was located between the Kapuskasing Airport and Remi Lake. Two smaller pockets were recorded, one near Strickland (which extended into the Cochrane District) and one near Griffin Lake in Griffin Township.

In the Hearst District the infestation diminished to light levels interspersed with small pockets of moderate-to-heavy infestation. Severe defoliation was noted for the first time along the Nagagagmi and Kenogami rivers in the northern part of the district. The largest area of severe defoliation remaining was bounded by the town of Hearst, Fushami Provincial Park and Lac Ste. Therese.

In the Moosonee District the infestation declined to several pockets of moderate defoliation along the Moose River.

Heavy defoliation is forecast for the Smooth Rock Falls area, Cochrane District and the Kap-Kig-Iwan Provincial Park in the Kirkland Lake District. The remainder of the Region should be relatively free of this defoliator in 1980 (Table 2).

Although the reason for the collapse of the infestation is not known, field observations suggest that poor hatch percentages and heavy larval and pupal parasitism were contributing factors.

Sawyer Beetles, *Monochamus* spp.

Adult sawyer beetle feeding again caused considerable damage in several districts of the Region. Although damage was widespread its occurrence was sporadic as infestations were concentrated in areas where recent or current cutting operations provided brood materials. Heavy flagging of trees bordering cutover stands adjacent to log decks and storage dumps and to residuals in harvested areas was general (see Frontispiece).

Conspicuous damage, a result of adult feeding in 1978, was observed in Eisenhower, Ivy and Esther townships, Chapleau District. Numerous areas of current damage (1979) were recorded in Chapleau and Gogama districts; in Davidson and Gross townships, Kirkland Lake

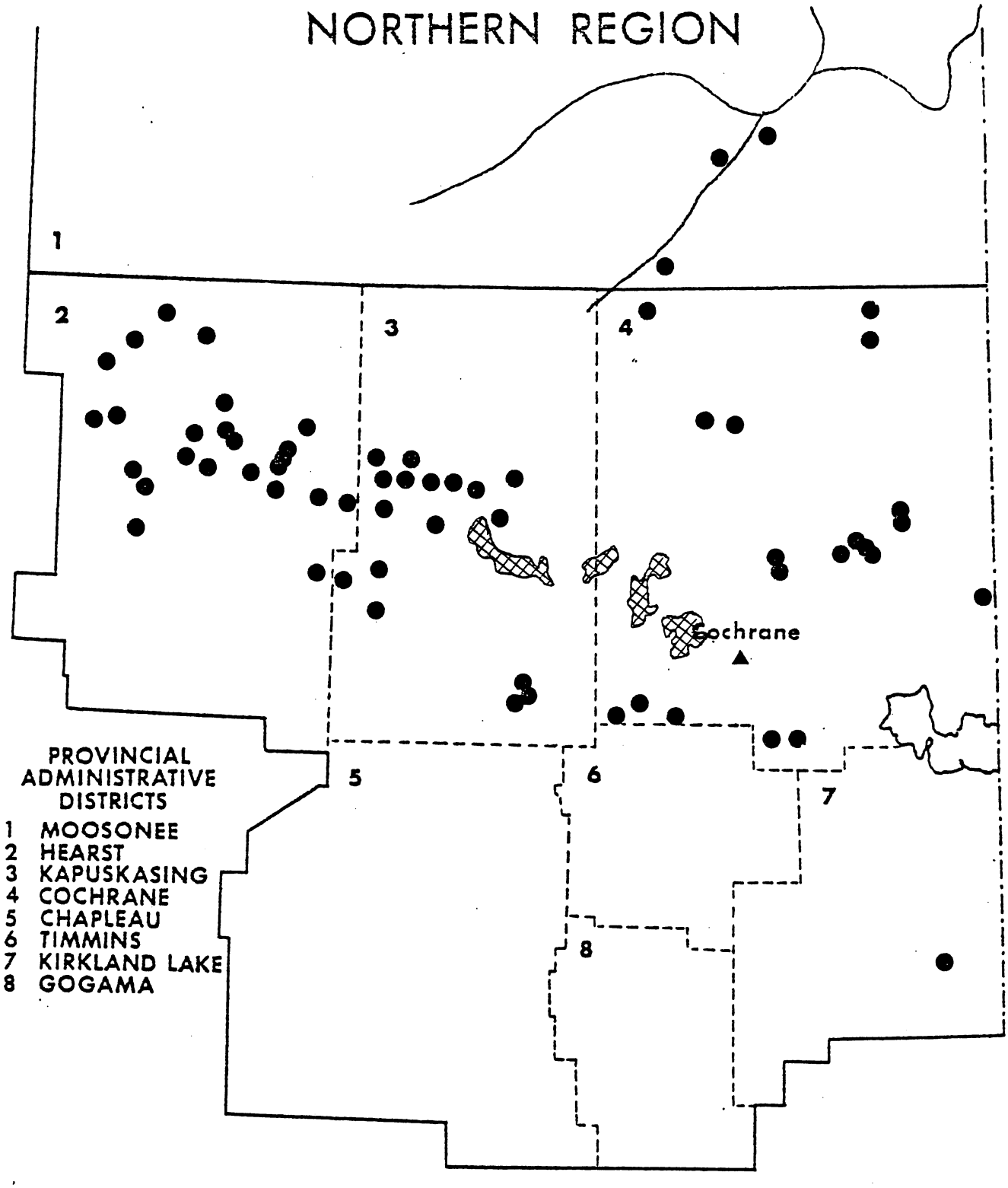


Fig. 1. FOREST TENT CATERPILLAR

Areas within which moderate-to-severe defoliation of trembling aspen occurred in 1979.

or

District; at a log storage dump in Murphy Township, Timmins District; at the Bonner Tree Improvement Centre, Kapuskasing District; at log dumps near Wade Lake, Cochrane District and in seed trees in Larkin Township, Hearst District.

Feeding adults were observed from June 21 to August 1 with peak numbers occurring in the period July 17-27. Observations and collections indicate that the white spotted sawyer beetle *M. scutellatus* (Say) was the principal species involved. *M. notatus* (Drury) was also present at several locations but numbers were relatively low. Jack pine was the species most frequently attacked but black spruce, white spruce and balsam fir (*Abies balsamea* [L.] Mill.) sustained heavy damage in several areas. In Carty Township, Chapleau District, eastern white cedar (*Thuja occidentalis* L.) growing along a recently built road was heavily attacked.

Redheaded Jack Pine Sawfly, *Neodiprion virginianus* complex

Although population levels of this sawfly declined abruptly in 1978, small pockets of infestation persisted in 1979. Heaviest defoliation occurred on open-growing jack pine at the Nagagami River in McMillan Township, Hearst District. Appreciable defoliation was also noted in Reeves Township, Chapleau District and in Noble Township, Gogama District, and light defoliation was recorded at many locations in these districts.

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

Substantial variations in infestation intensities of this sawfly were observed in the Region. A definite decline in numbers occurred in spruce plantations and natural stands in the northern and western districts, particularly in Sankey Township, Kapuskasing District and in the Driftwood area of the Cochrane District. Moderate numbers were noted at Ramsay and at Ivanhoe Provincial Park in the Chapleau District. High populations persisted on snowhedges, windbreaks, plantations and ornamentals in Timmins and Kirkland Lake districts and many trees were severely defoliated.

White Pine Weevil, *Pissodes strobi* (Peck)

Monitoring plots showed a wide variation in weevil populations in the Region, ranging from 0 in some jack pine plantations to a high of 26 in planted white pine (Table 3).

Table 2. Summary of forest tent caterpillar egg-band counts on trembling aspen in four districts in 1979 and infestation forecasts for 1980.

Location (Twp)	Avg DBH of trees (cm)[a]	No. of trees sampled	Total no. of egg bands	Infestation forecasts for 1980
Hearst District				
Studholme	13	3	0	nil
Kohler	13	3	"	"
Arnott	15	3	"	"
Hanlan	13	3	"	"
Kapuskasing District				
McCowan	15	3	0	nil
Williamson	16	3	3	light
Slack	15	3	0	nil
Cochrane District				
Hanna	13	3	0	nil
Bonis	10	3	0	"
Laughton	13	3	1	light
Kendry	10	1	7	severe
Calder	10	1	44	severe
Kirkland Lake District				
Evanturel Con. 1	10	3	16	severe
Kap-Kig-Iwan	10	3	22	"
Casey	13	3	0	nil
Harley	13	3	"	"
Chamberlain	13	3	"	"

[a] 1 cm = 0.39 in.

Larch Sawfly, *Pristiphora erichsonii* (Htg.)

No major change in the status of larch sawfly populations was observed in 1979. Severe defoliation of tamarack (*Larix laricina* [Du Roi] K. Koch) occurred near the Fraser River in McCoig Township and at several other points in the Hearst District. Light defoliation was general at widely separated locations through the Chapleau and Gogama districts but the insect was of little consequence elsewhere in the Region.

Table 3. Summary of tree damage caused by the white pine weevil in six districts in 1978 and 1979 (counts based on the examination of 100 or 150 trees at each location).

Location (Twp)	Host	Avg height of trees (m)[a]	Trees weeviled (%) 1978	1979
Gogama District				
Vrooman	jP	2.5	-	3
Jack	"	1.4	2	3
Roblin	"	2.2	1	0
Kemp	"	3.0	-	2
Chapleau District				
Dalmas	"	1.6	2	3
Nimitz	"	7.7	-	1
Neelands	"	5.1	0	2
Muskego	"	1.6	0	2
Arbutus	"	2.5	2	2
Fawn	"	1.9	2	4
Pinogami	"	1.5	-	4
Timmins District				
Thorneloe	"	3.2	6	8
Timmins	"	2.1	12	14
Kirkland Lake District				
Burt	"	2.2	13	9
Dunmore	"	2.8	9	10
Bowman	"	2.3	4	8
McEvay	"	3.0	5	9
Evanturel	wP	2.1	22	26
Sharpe	jP	2.8	6	11
Hearst District				
Studholme	jP	2.1	-	2
Studholme	bS	1.5	-	3
Cochrane District				
Blount	bS	1.2	-	2
Dundonald	jP	3.1	-	0
Calder	wS	1.3	-	3

[a] 1 m = 3.28 ft

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

This noxious pest of ornamental trees persisted at high population levels throughout the range of mountain ash (*Sorbus* spp.) in the Region. Severe defoliation was general in both forested and urban areas and resulted in numerous requests for information on control.

Aspen Leafroller, *Pseudexentera oregonana* Wlshm.

Infestations of this leafroller continued to decline in all districts. Although the insect was relatively abundant in aspen stands near Frederick House Lake in the Cochrane District and in the Porcupine area in Timmins District no extensive defoliation was observed. High numbers persisted in the southeastern part of the Kirkland Lake District and pockets of severe defoliation occurred regularly through this area (Fig. 2). Moderate defoliation was general as far north as Englehart and in Bowman and Hislop townships near Matheson. Within these stands many individual trees were completely defoliated.

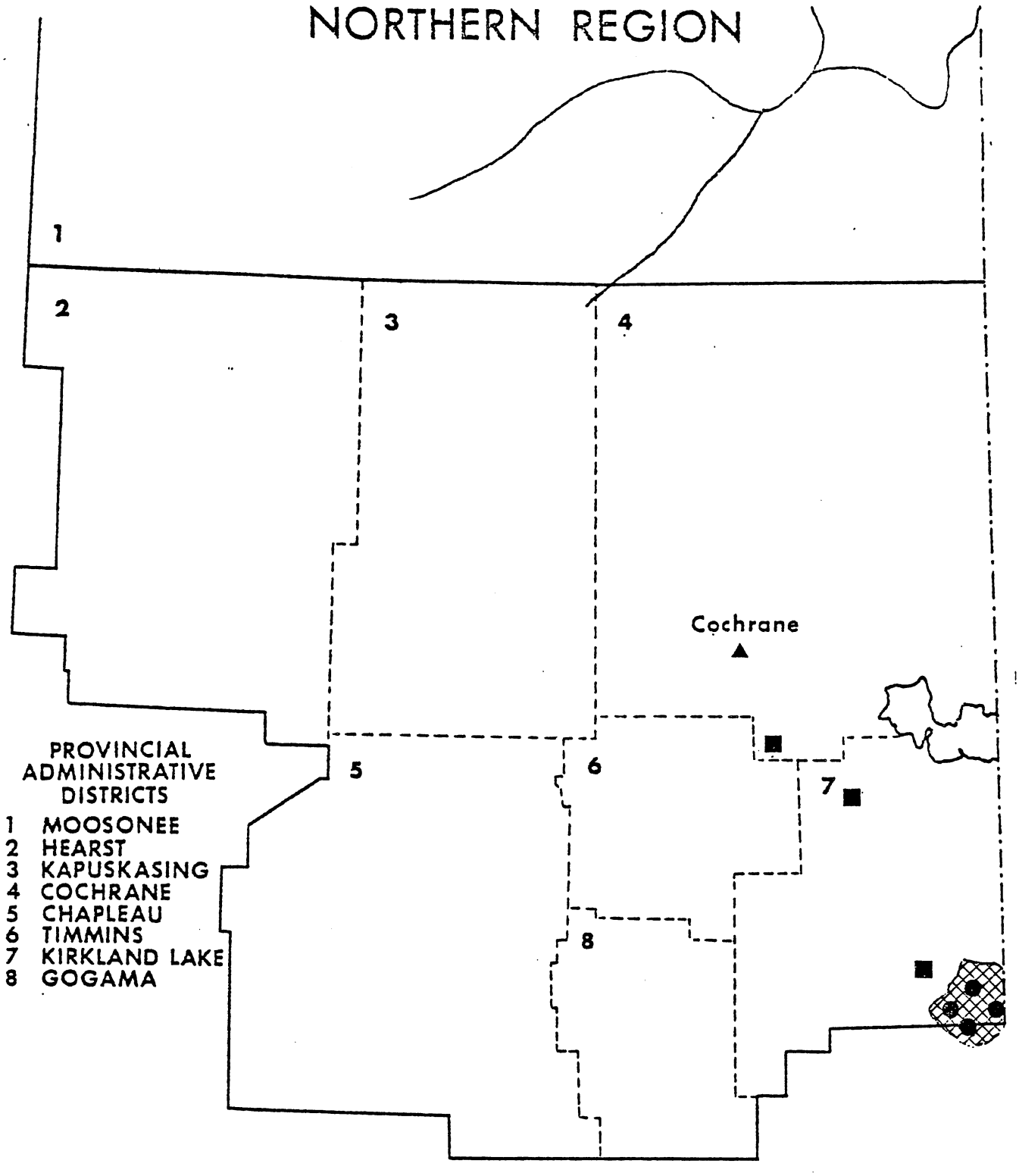


Fig. 2. ASPEN LEAFROLLER

Areas within which moderate-to-severe defoliation of trembling aspen occurred in 1979.

▨ or ■

● Areas of complete defoliation

Table 4. Other forest insects.

Insect	Host(s)	Remarks
Acrobasis betulella Hlst. Birch tubemaker	wB, dwarf B	found commonly throughout the Region in low numbers; heavy defoliation recorded in the Kirkland Lake District
Acrobasis comptoniella Hlst. Pyralid moth	Sweetfern	high numbers recorded on open growing sweetfern in the Gogama area
Argilus anxius Gory Bronze birch borer	wB	contributed to dieback problems in two of three birch plots in Chapleau and Gogama districts; also reported on ornamental trees in the towns of Kapuskasing and Hearst
Anathix puta G. & R. Dagger moth	tA	common in new bud clusters on large aspen trees throughout the area from Hornepayne, Hearst District to Cochrane
Aphrophora cribrata (Wlk.) Pine spittlebug	jP, wS, bF	general throughout Region with larger numbers recorded in Kirkland Lake, Timmins, Kapuskasing and Chapleau districts
Archips cerasivoranus (Fitch) Uglynest caterpillar	cCh	numerous tents in rural area north of New Liskeard, Kirkland Lake District; occasional collection in Dundonald Twp, Cochrane District and Studholme Twp, Hearst District
Cecidomyia banksianae Vock. Jack pine midge	jP	common in one plantation in Thorneloe Twp, Timmins District

(continued)

Table 4. Other forest insects (continued).

Insect	Host(s)	Remarks
Choristoneura rosaceana Harr. Obliquebanded leafroller	wB, rM, tA, wS, wP	numerous throughout the Region, often contributing substantially to defoliation by other leafrollers; also recorded feeding on new shoots of understory wS and wP in the Marne Lake area, Gogama District
Chrysomela laurentia Brown Willow and poplar leaf beetle	W	moderate numbers along the Chapleau River in Panet Twp, Chapleau District
Chrysomela mainensis mainensis Bech. Alder leaf beetle	Al	common throughout Chapleau and Gogama districts, and at one location in Haggart Twp, Cochrane District
Cinara sp. Aphid	rP, jP	common in individual plantations in Cochrane, Chapleau and Gogama districts
Conophthorus resinosae Hopk. Red pine cone beetle	rP	conspicuous shoot damage at Halliday Lake, Gogama District
Deuteronomus magnarius Gn. Maple spanworm	N.A.	large adult flight peaked on September 12 at Remi Lake in Kapuskasing District
Dimorphopteryx melanognathus Roh. Birch-and-alder sawfly	wB	light population of this potentially hazardous insect recorded in Hodgetts Twp, Gogama District
Disonycha alternata Ill. Willow leaf beetle	W	moderate numbers recorded near Lesage Lake in Chapleau District
Enargia decolor Wlk. Aspen twinleaf tier	tA	widespread throughout Kirkland Lake, Timmins, Chapleau and Gogama districts; seems to be on increase in both Kirkland Lake and Timmins districts

(continued)

Table 4. Other forest insects (continued).

Insect	Host(s)	Remarks
Gracillaria invariabilis Braun. Cherry leafroller	pCh	numerous light-to-moderate pockets of defoliation recorded in Gogama and Chapleau districts
Hemichroa crocea (Four.) Striped alder sawfly	Al	heavy defoliation confined to lakeshore area at Remi Lake
Lithocolletis nipigon Free. Balsam poplar leafblotch miner	bPo	high numbers at scattered locations in the Kirkland Lake and Timmins districts; regeneration in McMillan Twp, Hearst District, recorded 100% incidence with an average of 1.7 miners per leaf
Malacosoma californicum pluviale Dyar Western tent caterpillar	Deciduous	widely distributed throughout Kirkland Lake and Timmins districts, especially in cutover areas; high incidence also recorded on wB in Garnet Twp, Chapleau District and on pin cherry in the Marne Lake area of the Gogama District
Messa populifoliella Town. Poplar leafmining sawfly	bPo	low populations recorded on regeneration in Nansen and Fauquier twp, Kapuskasing District and in Calder Twp, Cochrane District
Micurapteryx salicifoliella Cham. Willow leafblotch miner	W	high numbers persisted in the Hornepayne area of Hearst District from Hornepayne up Highway 631 to Highway 11 and west to the district boundary around the Pagwa River
Mindarus abietinus Koch. Balsam twig aphid	wS	high numbers necessitated control measures in the Chapleau nursery

(continued)

Table 4. Other forest insects (continued).

Insect	Host(s)	Remarks
Neodiprion abietis complex Balsam fir sawfly	bF	heavy single tree defoliation observed in Kohler and McCoig twp, Hearst District
Neodiprion nanulus nanulus Schedl Red pine sawfly	rP	light damage to ornamental trees at Biscotasing in Chapleau District
Neodiprion pratti banksianae Roh. Jack pine sawfly	jP	low numbers observed in Esker Lake Park, Kirkland Lake District and in Asquith Twp, Gogama District
Neurotoma inconspicua (Nort.) Plum webspinning sawfly	pCh	widespread throughout Gogama and Chapleau districts with moderate damage in Ivanhoe Twp, Chapleau District
Nymphalis antiopa L. Mourningcloak butterfly (Spiny elm caterpillar)	W, tA, wB, bPo	a dramatic rise in population levels over previous years; single roadside or fringe trees suffered the most damage -- often completely defoliated; large adult flights also observed throughout the Region in early September
Petrova albicapitana (Busck.) Northern pitch twig moth	jP	branch mortality common on younger jP plantations throughout the region; 14% of the main stems affected in Shipley Twp, Chapleau District
Phratora americana canadensis Brown Willow leaf beetle	W	heavy damage to specific willow species in Halsey Twp, Chapleau District
Phratora purpurea purpurea Brown Aspen leaf beetle	tA	high incidence and moderate foliage discoloration were recorded in Kirkland Lake, Timmins and Chapleau districts

(continued)

Table 4. Other forest insects (continued).

Insect	Host(s)	Remarks
Phyllocnistis populiella Cham. Poplar serpentine miner	bPo, tA	observed frequently on regeneration in the Cochrane District
Phyllocolpa sp. Leaffolding sawfly	bPo	high numbers on regeneration along forest openings throughout Kapuskasing and Cochrane districts
Profenusa thomsoni (Konow) Ambermarked birch leafminer	wB	observed occasionally throughout Region; general decline in numbers through the Kirkland Lake and Timmins districts
Pseudaletia unipuncta Haw. Armyworm	Grass	heavy infestation at several locations in Timmins and Matheson areas; common throughout towns and grassy areas in the remainder of the Region
Psylla floccosa Patch An alder psyllid	Alder	common on alder branch tips throughout Cochrane and Kapuskasing districts
Pyrrhalta decora (Say) Gray willow leaf beetle	W	severe damage occurred in Kemp and Hazen twp, Gogama District and in Calder Twp, Cochrane District
Rhyacionia busckana Heinr. Red jack pine shoot borer	jP	appreciable shoot damage in Kirkland Lake and Timmins districts; low numbers recorded in Cochrane and Kapuskasing districts
Rhyacionia sonia Miller Yellow jack pine shoot borer	jP	moderate infestation on 11% of sample trees in Freele Twp, Cochrane District
Tetralopha aplastella Hlst. Aspen webworm	tA	low numbers common in the southern part of both the Gogama and Chapleau districts and in McCowan Twp in the Kapuskasing District

(continued)

Table 4. Other forest insects (concluded).

Insect	Host(s)	Remarks
Vanessa cardui Linn. Painted lady	Thistle	heavy defoliation of only host appearing in prescribed burn area in Abbott Twp, Kapuskasing District
Vasates quadripes Shim. Maple bladdergall mite	siM	extremely heavy on open growing silver maple in Leitch Twp, Cochrane District
Zellaria haimbachi Busck Pine needle sheathminer	jP	numbers continue to decline throughout Kirkland Lake and Timmins districts

TREE DISEASES

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

These foliage rusts of spruce, though extensive in range, occurred at negligible levels in 1979. Usually understory regeneration and lower crowns of larger trees were more seriously affected. For most trees or stands only trace defoliation levels prevailed.

A small number of rising 1-0 white spruce seedlings were affected at the Swastika Tree Nursery.

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

This foliar disease of aspen was widespread throughout the Region. In the northern and eastern parts of the Region damage declined from 1978 but small areas of moderate discoloration did occur at scattered locations. In the Chapleau and Gogama districts the leaf browning was much more prevalent. Numerous stands of aspen showed varying amounts of ink spot foliar damage. Observations made during routine aerial surveys indicated that the foliar damage was present in a mosaic of patches. Damage levels varied from inconspicuous to moderate and the pattern of damage suggested that aspen clones vary in susceptibility to ink spot. Certainly this seemed the case this year. Quantitative data are given in Table 5.

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

Damage caused by this stem and branch rust of white pine is generally present at a fairly constant level. This year damage appeared to be significantly greater than that observed in previous years. Severe infections in the form of stem cankers caused by this organism were recorded in the following locations: Kap-Kig-Iwan Provincial Park and Beauchamp Township, Kirkland Lake District; in Kapuskasing District on windbreak trees in the Tree Improvement Centre; and in the Chapleau District throughout a planted area near Wrong Lake. Heavy fruiting of the rust on the alternate hosts, gooseberries and currants (*Ribes* spp.) also occurred at numerous locations, particularly in Reeves Township, Chapleau District and in Fenton Township, Kapuskasing District.

Table 5. Summary of ink spot of aspen evaluations in seven districts in 1979.

Location (Twp)	Area affected (ha)[a]	Trees affected (%)	Defoliation level (%)
Timmins District			
McBride	1	25	10
Robb	1	100	25
Denton	10	100	25
Kirkland Lake District			
Gauthier	2	100	20
Tudhope	2	10	20
Harker	10	100	20
Clifford	5	100	20
Truax	3	100	10
Argyle	1	100	10
Pense	1	100	10
Arnold	1	50	10
Hearst District			
Studholme	300	15	13
Benton	2	100	8
Gourlay	1	100	65
Kapuskasing District			
Casselman	2	100	5
Lisgar	4	100	2
Cochrane District			
Hepburn	20	45	6
Leitch	2	80	4
Gogama District			
Noble	5	40	25
Garvey	10	25	5
Kemp	1	80	30
Churchill	1	75	15
*Mond	1	high	moderate

(continued)

Table 5. Summary of ink spot of aspen evaluations in seven districts in 1979 (concluded).

Location (Twp)	Area affected (ha)[a]	Trees affected (%)	Defoliation level (%)
Chapleau District			
Caouette	15	87	25
Deans	2	75	12
Chapleau	30	70	20
Manning	25	55	30
Lloyd	5	90	35
Muskego	5	70	25
Halsey	5	55	35
*Reeves	1	high	moderate
*D'Arcy	1	high	moderate
*Dukszta	1	high	moderate

[a] 1 ha = 2.47 ac

* Estimates based on aerial inspection.

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

Scleroderris (Gremmeniella) canker disease, a serious problem of pine regeneration in the late 1960s and early 1970s, is still present over much of the Region. The disease kills seedlings and young trees, and causes branch mortality and stem cankers on older trees. Red pine (*Pinus resinosa* Ait.) seems to be the most susceptible native species, but both jack pine and Scots pine (*Pinus sylvestris* L.) are also affected. In recent years an emphasis on planting species other than red pine combined with regular checks of nurseries and newly planted areas has substantially reduced losses. Quantitative data collected in 1979 are included in Table 6.

To date, damage in Ontario has been caused by the North American race of the disease. The European race is much more virulent and is at present a problem in some of the eastern provinces and in the northeastern United States. Thus far the European race has not been detected in Ontario.

Leaf and Twig Blight, *Venturia macularis* (Fr.) E. Muell. & Arx

Recent research conducted at the Great Lakes Forest Research Centre indicates that leaf and twig blight has its greatest impact on

trees by repeatedly killing shoot terminals. The uppermost terminal is especially prone to infection and estimates of terminal kill (Table 7) are based on FIDS survey data for 1978. Usually over a third of the height growth is lost when terminals are killed.

Special Survey of Jack Pine Plantations

A special survey was performed throughout northern Ontario to review jack pine plantation pest problems. In the Northern Region 18 high-value jack pine stands were randomly selected with equal representation in the 0-2, 2-6 and over 6 m height classes. The stands were then examined during midsummer using a standard sample and appraisal technique to determine the distribution and extent of damage caused by insects and diseases.

The results of the insect survey are included under their appropriate headings in the previous section of this report. Insects involved were the jack pine tip beetle, eastern pineshoot borer, Swaine jack pine sawfly and white pine weevil. Four diseases were included in the survey:

1) Shoestring root rot (*Armillaria mellea* [Vahl ex Fr.] Kummer) which is probably the most serious root rot problem of planted jack pine in the north.

2) Needle cast (*Davisomycella ampla* [J.J. Davis] Darker) a foliage disorder that causes needles to die and drop from the tree.

3) Stem and butt rusts (*Cronartium* spp.) cause cankers that usually result in the death of young trees and cause cull and growth loss as trees mature. Sweetfern rust (*Cronartium comptoniae* Arth.) likely caused most of the cankers detected. Specific identification was not possible in midsummer, but past records indicate that comandra rust (*C. comandra* Pk.) and stalactiform rust (*C. coleosporioides* Arth.) are present in the Region. These latter rusts are generally less important than sweetfern rust.

4) Globose gall rust (*Endocronartium harknessii* [J.P. Moore] Y. Hiratsuka) produces round swellings or galls on branches and sometimes the main stems of trees.

Results of the survey are listed in Table 8. It should be emphasized that a negative value does not necessarily mean that a particular organism is completely absent from the stand. Rather, absence in the sample indicates that occurrence is relatively unimportant.

Table 6. Summary of Scleroderris canker evaluations in two districts in 1979.

Location (Twp)	Tree species	Tree ht (m)[a]	Trees affected (%)	Trees severely affected (%)
Cochrane District				
Dundonald	jP	3.1	8	5
Sargeant	jP	5.0	40	14
Hearst District				
Studholme	jP	4.8	3	3

[a] 1 m = 3.28 ft

Table 7. Leaf and twig blight evaluations in trembling aspen stands in six districts in 1979.

Location (Twp)	Area affected (ha)	Tree ht (m)[a]	Trees affected (%)	Terminals killed (%)	Foliar damage (%)
Chapleau District					
Gilliland	10	1.9	41	20	8
Ivy	5	2.0	40	12	5
Oswald	10	2.3	41	15	3
Murdock	5	1.5	50	20	3
Gogama District					
Baynes	15	2.8	17	10	2
Hearst District					
Studholme	300	2.4	26	10	10
Cochrane District					
Calder	2	2.0	6	3	5
Timmins District					
Hillary	50	2.4	50	25	20
Denton	100	2.7	30	12	20
Robb	100	7.0	100	95	25
Kirkland Lake District					
Nordica	100	2.4	50	25	20
Tudhope	2	1.9	10	5	10
Harker	10	1.9	10	5	30
Clifford	5	11.0	100	95	10

[a] 1 m = 3.28 ft

Table 8. Summary of disease organisms in the special survey of jack pine plantations.

Location (Twp)	Tree ht (m)[a]	*D. ampla* trees aff. (%)	*D. ampla* foliar damage (%)	*E. harknessii* Trees aff. (%)	*E. harknessii* trees severely aff. (%)	*Cronartium* spp. trees severely aff. (%)	*A. mellea* trees severely aff. (%)
Gogama District							
Vrooman	2.5	1	10	2	0	0	2
Chapleau District							
Nimitz	7.7	0	0	12	2	9	2
Silk	1.1	0	0	0	0	0	1
Neelands	5.1	2	4	23	3	4	0
Panet	7.3	0	0	0	0	2	1
Lipsett	1.5	5	1	1	1	9	2
Cochrane District							
Freele	1.4	0	0	0	0	0	1
Dundonald	3.1	4	1	0	0	0	0
Kapuskasing District							
Fauquier	9.0	0	0	0	0	2	0
Kipling	6.0	0	0	8	0	2	0
Hearst District							
Arnott	1.4	69	2	0	0	0	0
Studholme	4.8	3	1	0	0	0	1
Kirkland Lake District							
Beauchamp	7.5	0	0	0	0	1	0
Garrison	1.0	0	0	0	0	0	0
Dunmore	3.0	0	0	0	0	0	0
Catherine	1.5	0	0	0	0	0	0
McCool	7.5	0	0	2	0	0	0
Timmins District							
Thorneloe	3.0	0	0	0	0	0	0

[a] 1 m = 3.28 ft

Table 9. Other forest diseases.

Organism	Host(s)	Remarks
Arceuthobium pusillum Pk. Eastern dwarf mistletoe	jP	infrequent collection made on pine in Stetham Twp, Gogama District
Ceratocystis ulmi (Buism.) C. Moreau Dutch elm disease	wE	no extension of the present range but mortality continues within this area
Coleosporium asterum (Diet.) Syd. Needle rust of jack pine	jP	general reduction in frequency and extent of distribution; trace levels recorded in Chapleau and Cochrane districts
Hypoxylon mammatum (Wahl.) J.H. Miller Stem canker of aspen	tA	aspen stand in Hanna Twp, Cochrane District suffered moderate disease damage associated with wind snap
Isthmiella crepidiformis (Darker) Darker Needle cast of spruce	bS	common at many locations in both Timmins and Kirkland Lake districts
Lophodermium pinastri (Schrad. ex Hook.) Chev. Needle cast of pine	jP	low levels recorded in Dundonald Twp, Cochrane District and in Studholme Twp, Hearst District
Marssonina populi (Lib.) Magn. Leaf spot of poplar	tA	observed at many points in Hearst, Kapuskasing and Cochrane districts
Melampsora epitea Thuem. Willow leaf rust	W	common in cutover areas through Region, especially in Lipsett and Floranna twp, Chapleau District
Melampsora medusae Thuem. Needle rust	tA, tL	light infection levels in southern part of Kirkland Lake District
Phacidium abietis (Dearn.) Reid & Cain Snowblight of balsam fir	bF	common on regeneration in the Chapleau District

(continued)

Table 9. Other forest diseases (concluded).

Organism	Host(s)	
Physalospera miyabeana Fuk. Black canker of willow	W	notable at many points, Chapleau and Gogama districts
Pucciniastrum epilobii Otth Fir needle rust	bF	single trees heavily infected at many points in the Region
Rhizina undulata Fr. Rhizina root rot	ground	found at one location following a forest fire, Abbott Twp, Kapuskasing District
Septogloeum rhopaloideum Dearn & Bisby Leaf blight	tA	conspicuous browning of aspen, Beulah Twp, Gogama District
Taphrina robinsoniana Gies. Catkin hypertrophy	Al	general through Hearst, Cochrane, Moosonee and Kapuskasing districts; incidence was 26% in Abbott Twp, where 80% catkins were infected
Venturia populina (Vuill.) Fabric. Leaf and twig blight	bPo	heavy terminal damage in Buchan Twp, Kapuskasing District
Animal damage	rP, jP	damage by rabbits and squirrels common at many locations
Frost damage	bF, wS	light damage in low-lying areas in Chapleau and Kapuskasing districts
Winter drying	conifers	generally at much lower levels than in recent years

Other Important Diseases

No new information was recorded in 1979 on the following important tree diseases of the Region:

Chrysomyxa arctostaphyli Diet. - Spruce broom rust
Melampsorella caryophyllacearum Schroet. - Fir broom rust
Polyporus tomentosus Fr. - Red root and butt rot
Sirococcus strobilinus Preuss - Shoot blight