FOREST INSECT AND DISEASE SURVEYS IN THE NORTHEASTERN REGION OF ONTARIO, 1977

K. C. HALL, W. D. BIGGS and L. S. MACLEOD

GREAT LAKES FOREST RESEARCH CENTRE

SAULT STE. MARIE, ONTARIO

CANADIAN FORESTRY SERVICE

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Information Office,
Great Lakes Forest Research Centre,
Canadian Forestry Service,
Department of the Environment,
Box 490, Sault Ste. Marie, Ontario.
P6A 5M7

Frontispiece. Trembling aspen shoot showing typical damage caused by leaf and twig blight, *Venturia macularis* (Fr.) Müller & Arx.

SURVEY HIGHLIGHTS

The following report deals with the status of forest insects and diseases in the Northeastern Region in 1977.

Spruce budworm populations continued to spread north and west and now infest virtually all the northern part of Wawa District. Infestation intensities declined in the older infestations in Sudbury, Wawa, Blind River and Sault Ste. Marie districts and tree mortality has increased substantially in these areas (see Report O-X-280). Forest tent caterpillar populations fluctuated and major declines occurred in Sudbury and North Bay districts, whereas in the Espanola and Sault Ste. Marie districts populations increased, especially in trembling aspen stands. Populations of the linden looper declined to low levels except in Blind River District where several small pockets of heavy infestation persist. Infestations of oak leaf shredder and saddled prominent declined in size and intensity. Heavy defoliation caused by the larch sawfly was evident in four districts. Very high populations of the red pine needle midge caused extensive damage to current growth of larger diameter red pine throughout the Kirkwood Management Unit.

A heavy frost during the week of June 6 caused extensive damage to new growth of spruce and balsam fir throughout a large area. A special survey was carried out in aspen regeneration stands to determine the status of leaf and twig blight, leaf spot disease, hypoxylon canker and root diseases.

K. C. Hall
Supervisor

ACKNOWLEDGMENTS

The authors of this report gratefully acknowledge the excellent cooperation and assistance of personnel of the Ontario Ministry of Natural Resources.

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INSECTS

Birch Tubemaker, *Acrobasis betulella* Hlst.

Medium-to-heavy population levels of this insect were found on white birch (*Betula papyrifera* Marsh.) in Laird Township, Sault Ste. Marie District and on fringe trees north of Lafoe Creek in Dagle Township, Blind River District. Moderate damage occurred in Law, Harris, Aston, Best, and Briggs townships in the Temagami District. Elsewhere in the Region populations were low.

Luna Moth, *Actias luna* Linn.

For the third consecutive year this insect continued to infest white birch, yellow birch (*Betula alleghaniensis* Britton), and ironwood (*Ostrya virginiana* [Mill.] K. Koch) at one location in Rose Township, Blind River District. Although populations were sufficient to cause moderate defoliation to small diameter trees the numbers of larvae were lower than in 1976.

Pine Spittlebug, *Aphrophora parallela* (Say)

A heavy infestation of this insect persisted on Scots pine (*Pinus sylvestris* L.) reproduction in Kirkwood Township, Blind River District and was moderate throughout the remainder of the Kirkwood Management Unit. On Manitoulin Island, Espanola District, reductions in populations in all plantations surveyed resulted in low numbers in Billings, Carnarvon, Dawson, Gordon, and Sandfield townships. Trace levels occurred elsewhere in the Region.

Large Aspen Tortrix, *Choristoneura conflictana* Wlk.

The heavy defoliation recorded on trembling aspen (*Populus tremuloides* Michx.) in the Temagami and Espanola districts in 1976 declined to endemic levels in 1977. The only noticeable infestation was on Barrie Island off Manitoulin Island in the Espanola District, where defoliation was light. Occasional larvae were collected at other locations in the Temagami, North Bay, Sudbury, and Espanola districts.

Spruce Budworm, *Choristoneura fumiferana* (Clem.)

The results of damage surveys, population sampling, and egg-mass counts have been included with those of other survey regions in a special report by Howse et al. (Report O-X-280). This report provides a complete description and analysis of developments in the spruce budworm situation in Ontario in 1977 and gives infestation forecasts for the province for 1978.

Larch Casebearer, *Coleophora laricella* Hbn.

Population levels in the Garden River Indian Reserve declined to an average of 2.7 larvae per 45.7 cm (18 in.) branch tip in 1977 compared with 7.7 recorded in 1976. The declining trend was also evident on St. Joseph Island. West of Iron Bridge in Blind River District light damage occurred at a level comparable to 1976 on small diameter trees.

Oak Leaf Shredder, *Croesia semipurpurana* (Kft.)

Populations of this hardwood defoliator decreased along the North Shore area east to Manitoulin Island. Scattered pockets of heavy defoliation on red oak (*Quercus rubra* L.) occurred throughout the southern parts of the Sault Ste. Marie, Blind River, and Espanola districts. Moderate-to-severe damage was observed in the townships of Gordon, Dawson, and Indian Reserve No. 4 on Manitoulin Island, and pockets of light-to-moderate damage occurred in Servos and Killarney townships in the Sudbury District.

Greenstriped Mapleworm, *Dryocampa rubicunda rubicunda* Fabr.

High populations in Jocelyn Township, Sault Ste. Marie District and moderate populations in Carnarvon Township, Espanola District declined to endemic and low levels, respectively, in 1977. Light defoliation of maple (*Acer* sp.) was observed in Humboldt Township, Sudbury District; in Cameron and Stewart townships, North Bay District, and in Rose Township, Blind River District.

Linden Looper, *Erannis tiliaria* Harr.

For the past four years pronounced fluctuations in the population levels have occurred in the Region. High populations, present in the Wawa District in 1974, increased and infested a much larger area in 1975, but collapsed to endemic levels in 1976. In contrast, marked increases occurred in 1976 in several areas of Blind River, Sault Ste. Marie, and Espanola districts, causing severe defoliation to overstory yellow and white birch, sugar maple (*Acer saccharum* Marsh.), and oak (*Quercus* sp.) and a wide variety of understory deciduous hosts. In 1977 pockets of high populations were found in Striker, Scarfe, Kirkwood, Dagle, and Sturgeon townships in Blind River District. Defoliation ranged from 40% to 80% and was confined for the most part to understory trees. The insect occurred commonly in many other areas but defoliation was generally trace-to-light. A nuclear polyhedrosis virus found in areas of high larval density over the past three years caused considerable larval mortality and was a contributing factor to the declines which occurred.

Birch Leafminer, *Fenusa pusilla* (Lep.)

Severe defoliation caused by first generation leafminers recurred at Granite Lake Park, Temagami District and along the Veuve River in Hagar and Dunnet townships in Sudbury District. Severe discoloration by early miners was evident in many urban and rural areas and also by second generation miners in Best, Strathy, Gillies Limit, and Coleman townships in Temagami District. Individual trees suffered severe defoliation in Crerar, Papineau, and Widdifield townships in North Bay District. Moderate damage occurred on open-grown hosts in Gordon Township, Espanola District and light damage on small exposed birch trees (*Betula* sp.) at numerous locations in the Wawa, Blind River and Sault Ste. Marie districts.

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

Increased populations of this insect on small regeneration trembling aspen caused heavy damage in the Chiblow Lake area north of the town of Iron Bridge and moderate damage along Highway 557 in Blind River District. Medium-to-heavy populations recurred at several points in the northern part of the Temagami District. Light-to-moderate defoliation was observed in Indian Reserve No. 10 and Badgerow Township, North Bay District; Antrim and Fraleck townships, Sudbury District; and Strain Township, Espanola District. Trace levels were found elsewhere in the Region.

Saddled Prominent, *Heterocampa guttivitta* Wlk.

A marked reduction of populations of this insect occurred on Cockburn Island, Espanola District and on St. Joseph Island, Sault Ste. Marie District. On Cockburn Island populations declined to endemic levels whereas on St. Joseph Island scattered small pockets of light-to-medium infestation were present. Early sampling indicated a continuation of the heavy infestation on St. Joseph Island; however, later sampling showed a decline of populations. This reduction can in part be attributed to the presence of an entomophthora fungus in the 1976 and 1977 populations. This insect was present on a number of deciduous hosts.

Fall Webworm, *Hyphantria cunea* Dru.

Declines in the amount of damage were observed on a number of deciduous hosts at Beaucage Point on Lake Nipissing, North Bay District in 1977. Damage was generally light with occasional small trees having moderate defoliation. Individual colonies were scattered across portions of Manitoulin Island, Espanola District.

Aspen Leafblotch Miner, *Lithocolletis ontario* Free.

High populations of this miner persisted on small diameter, open-grown trembling aspen trees in Rose, Kirkwood, Thessalon, Bridgland, and Galbraith townships in Blind River District. Light-to-moderate damage was found on regeneration trees in Merritt and Curtain townships, Espanola District; Antrim Township, Sudbury District; and at many points in the Temagami District.

Eastern Tent Caterpillar, *Malacosoma americanum* F.

The numbers of tents spun by this pest increased across Manitoulin Island, Espanola District and the southern parts of the Sudbury and North Bay districts. Although no infestations of this insect were found, population levels also increased in many areas of Blind River and Sault Ste. Marie districts. Elsewhere populations were low.

Forest Tent Caterpillar, *Malacosoma disstria* Hbn.

Fluctuations in damage levels of this insect on trembling aspen occurred across the Region. Within the total area of 814 200 ha (approximately 2 011 900 acres) of moderate-to-severe damage, increased areas were mapped between the towns of Echo Bay and Bruce Mines and in St. Joseph Township, Sault Ste. Marie District; on Manitoulin Island and west of the town of Espanola, Espanola District; and in the townships of Humboldt, Travers, Kilpatrick, Struthers, and Indian Reserve No. 3 in the Sudbury District (see Appendix, Fig. A1). All other areas remained much the same except for a reduction in damage in the Chelmsford Valley area south to Burwash and northeast towards the town of Hagar in the Sudbury District. Reductions of a lesser degree were recorded in Henry, Crerar and Hugel townships, North Bay District and Patton Township, Blind River District. In the Temagami District moderate-to-severe damage recurred in Lorrain Township.

Egg-band counts made in 1977 indicate some spread of moderate-to-severe damage in a westerly direction towards the town of Massey and encompassing the central and southern parts of Manitoulin Island. Medium-to-heavy infestation is also anticipated in the area around Hagar in the Sudbury District, and north of Lake Nipissing around Verner and west of the city of North Bay into Commanda Township in the North Bay District (Table 1). Moderate-to-severe damage will persist within the boundaries of the 1977 infestation with some spread of light defoliation at various scattered locations.

Table 1. Summary of forest tent caterpillar egg-band counts and infestation forecasts for 1978 in Northeastern Region (counts based on the examination of one to three trees per location).

Location	Host	Avg DBH (cm)[a]	No. of trees sampled	Avg no. of egg bands per tree	1978 infestation forecast[b]
Espanola District					
Carnarvon Twp	tA	13	3	3.0	M
Foster Twp	tA	13	1	24.0	S
Gordon Twp	tA	10	3	6.0	S
Howland Twp	tA	15	3	10.7	S
Salter Twp (Chutes Prov. Park)	tA	10	3	2.0	M
Shakespeare Twp	tA	13	3	6.3	S
Sheguiandah Twp	tA	13	1	13.0	S
Tehkummah Twp	tA	13	3	4.7	M
North Bay District					
Bastedo Twp	tA	10	3	0.3	L
Boulter Twp	tA	13	3	0.0	Nil
Butler Twp	tA	13	3	2.0	M
Caldwell Twp	tA	10	3	2.0	M
Calvin Twp (Samuel de Champlain Prov. Park)	tA	15	3	0.0	Nil
Clarkson Twp	tA	13	3	1.3	L
Commanda Twp	tA	15	1	24.0	S
Parkman Twp	tA	18	3	0.7	L
Patterson Twp (Restoule Prov. Park)	tA	10	3	6.0	S
Sisk Twp (Marten River Prov. Park)	tA	13	3	0.3	L
Stewart Twp	tA	23	1	30.0	S
West Ferris Twp	tA	13	3	12.3	S
Sault Ste. Marie District					
Johnson Twp	tA	10	3	4.0	M
Laird Twp	tA	10	3	11.0	S
Meredith Twp	tA	10	3	0.0	Nil
Plummer Twp	tA	10	3	0.0	Nil
Plummer Add'l Twp	tA	10	3	1.0	L
St. Joseph Twp	tA	8	3	2.6	M
Tarbutt Add'l Twp	tA	8	3	1.0	L

(continued)

Table 1. Summary of forest tent caterpillar egg-band counts and infestation forecasts for 1978 in Northeastern Region (counts based on the examination of one to three trees per location).

Location	Host	Avg DBH (cm)[a]	No. of trees sampled	Avg No. of egg bands per tree	1978 infestation forecast[b]
Sudbury District					
Appleby Twp	tA	13	3	10.0	S
Bigwood Twp	tA	15	3	13.3	S
Cascaden Twp (Windy Lake Prov. Park)	tA	13	3	0.0	Nil
Cherriman Twp	tA	13	3	3.3	M
Drury Twp (Fairbank Prov. Park)	tA	10	1	26.0	S
Graham Twp	tA	10	3	15.7	S
Killarney Twp (Killarney Prov. Park)	tA	13	3	18.7	S
Waldie Twp	tA	15	3	0.3	L
Temagami District					
Coleman Twp	tA	10	3	0.0	Nil
Gillies Limit Twp	tA	10	3	0.0	Nil
Lorrain Twp	tA	5	1	14.0	S
South Lorrain Twp	tA	13	3	0.0	Nil
Strathcona Twp (near Finlayson Point Prov. Park)	tA	13	3	0.0	Nil

[a] 1 cm = .36 in.

[b] L = light, M = moderate, S = severe

Balsam Fir Sawfly, *Neodiprion abietis* complex

Little increase in damage was apparent in 1977. Moderate-to-severe damage recurred on balsam fir (*Abies balsamea* [L.] Mill.) in the townships of Papineau, Calvin, West Ferris, Commanda, Beaucage, Pedley, and Indian Reserve No. 10 and there was a small amount of moderate defoliation in Cameron Township, North Bay District. Scattered pockets of light-to-moderate damage remained south of Lake Nipissing and north of the city of North Bay to Lyman Township, North Bay District.

Redheaded Pine Sawfly, *Neodiprion lecontei* (Fitch)

Population levels of this sawfly decreased across the Region. Control measures were taken in the Blind River District wherever the insect was observed feeding in plantations. Small numbers were found near the village of Heyden, Sault Ste. Marie District; in a small red pine (*Pinus resinosa* Ait.) plantation in May Township, Espanola District; and in Cameron Township. North Bay District. In several plantations in Patton Township, Blind River District, eggs did not develop, and consequently populations were reduced. Elsewhere populations were at endemic levels.

European Pine Sawfly, *Neodiprion sertifer* (Geoff.)

Increased numbers of this insect caused moderate-to-severe damage at numerous locations in the city of Sault Ste. Marie. For the second consecutive year populations decreased at all Scots pine colony count locations on Manitoulin Island with the exception of a very minor increase at one small plantation in Gordon Township, Espanola District (Table 2). Control measures were carried out in 1976 at a plantation near Thessalon in Blind River District and apparently were successful as no colonies were found in 1977.

Table 2. Summary of colony counts of European pine sawfly in Scots pine plantations on Manitoulin Island in 1976 and 1977.

Location (Twp)	Tree height (m)[a]	No. of trees examined		Total no. of colonies		Avg no. of colonies per tree	
		1976	1977	1976	1977	1976	1977
Billings	5.4	200	200	22	10	.11	.05
Carnarvon	4.2	100	100	1	0	.01	.00
Carnarvon	5.4	100	100	16	7	.16	.07
Carnarvon	2.3	50	50	14	0	.28	.00
Carnarvon	5.1	50	50	42	3	.84	.06
Dawson	4.2	100	100	13	3	.13	.03
Dawson	4.2	300	300	17	4	.06	.01
Dawson	4.2	100	100	6	0	.06	.00
Gordon	4.5	100	100	25	8	.25	.08
Gordon	4.2	50	50	0	1	.00	.02
Sandfield	2.9	100	100	19	7	.19	.07

[a] 1 m = 3.28 ft

Swaine Jack Pine Sawfly, *Neodiprion swainei* Midd.

Sporadic infestations of this sawfly have caused appreciable defoliation and mortality of jack pine (*Pinus banksiana* Lamb.) in the northern part of the Temagami District since the 1940s. Populations usually were highest on islands and shoreline stands and tree mortality was more severe on these sites. In 1958 and 1959 a 4.0 ha (10 acre) stand of jack pine averaging 20 cm (8 in.) DBH was heavily infested in Law Township south of Temagami, and subsequent mortality was 100%.

In late 1976 defoliation was noted immediately north of Makobe Lake. In 1977 a heavy infestation comprising approximately 161.9 ha (400 acres) of pure jack pine occurred in Banks and Wallis townships in this area. The stand is relatively accessible, but falls within a less than optimum diameter class for a salvage operation.

Light defoliation of pole-sized trees was observed on the north side of Lady Evelyn Lake in Klock and Van Nostrand townships. Severe defoliation of trees on islands and shorelines was observed at many points through the northern part of the Temagami District.

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

Increased populations of this insect were recorded in two districts. Severe defoliation was present on spruce (*Picea* sp.) snow hedges, ornamentals, and open-grown trees in the New Liskeard area in the northern part of the Temagami District. High numbers persisted in a Conservation Authority plantation in Neelon Township and for the first time on small planted trees in Denison Township, Sudbury District. Scattered open-grown trees suffered heavy damage in Lorne Township, Sudbury District; Baldwin and Merritt townships, Espanola District; and East Ferris and Bonfield townships, North Bay District. Elsewhere in the Region populations were low.

White Pine Weevil, *Pissodes strobi* (Peck)

Fluctuations in population levels of this pest occurred across the Region. Leader damage remained high in Kamichisitit and Patton townships, Blind River District; Foster, Merritt and Victoria townships, Espanola District; Delamere Township, Sudbury District; and Badgerow, Boulter, and Lauder townships, North Bay District (Table 3). New count locations were established in Oshell and Plourde townships, Espanola District; Burwash Township, Sudbury District; Papineau Township, North Bay District; and Hartle Township, Temagami District. The highest populations were found in Oshell Township where 38% of the leaders were weeviled (Fig. 1). Light-to-moderate damage was found at various other locations, particularly in Lefroy Township, Blind River District, where reduced populations resulted from a pruning operation.

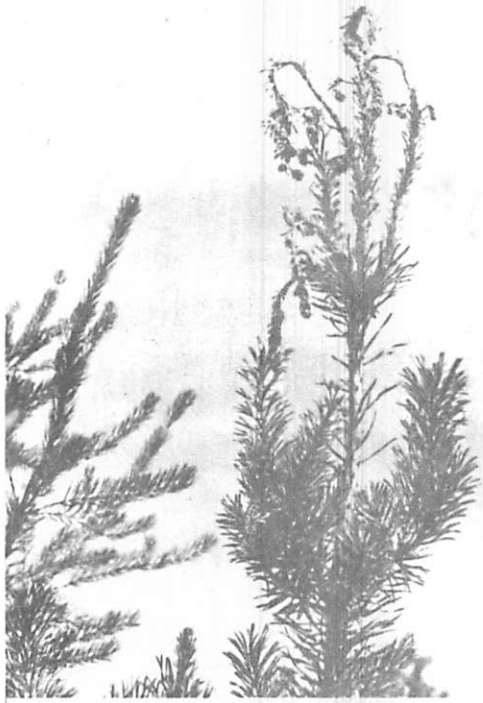

Figure 1

Jack pine leader showing damage caused by white pine weevil, *Pissodes strobi* (Peck).

Figure 2

Stand of tamarack severely defoliated by larch sawfly, *Pristiphora erichsonii* (Htg.)

Table 3. Summary of damage caused by the white pine weevil in five districts in 1976 and 1977

Location (Twp)	Host	No. of trees sampled	Trees weeviled (%) 1976	1977
Blind River District				
Kamichisitit	wP	500	24	61
Lefroy	wP	700	18	7
Patton	wP	100	26	29
Espanola District				
Foster	wP	100	34	44
Hallam	scP	100	0	0
Merritt	wP	100	46	46
Nairn	jP	100	0	6
Oshell	jP	100	-	38
Plourde	jP	100	-	5
Victoria	wP	100	46	34
North Bay District				
Badgerow	wP	100	37	25
Boulter	wP	100	27	32
Lauder	wP	100	10	17
Papineau	wP	100	-	7
Sudbury District				
Burwash	wP	100	-	7
Delamere	wP	100	27	20
Temagami District				
Firstbrook	jP	100	9	11
Hartle	jP	100	-	14

Larch Sawfly, *Pristiphora erichsonii* (Htg.)

Population levels of this tamarack (*Larix laricina* [Du Roi] K. Koch) defoliator increased, and defoliation was in excess of 75% in some areas (Fig. 2). Severe defoliation was present on large diameter trees in Garden River Indian Reserve and at one location in St. Joseph Township, Sault Ste. Marie District; in May Township, Espanola District; and in the townships of Pedley, Widdifield, Chisholm, and Indian Reserve

No. 10, North Bay District. Moderate-to-heavy damage occurred just north of Little Rapids in Thessalon Township, Blind River District. Light-to-moderate pockets of damage were common in Campbell and Victoria townships, Espanola District and in Lauder, South Himsworth, McLaren, and Bonfield townships, North Bay District. Scattered colonies were observed in the Temagami District but no significant defoliation occurred.

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

Decreased populations were observed in 1977, mainly in the western part of the Region. High numbers observed west of the town of Wawa, Wawa District, and in scattered areas of the Blind River and Sault Ste. Marie districts in 1976 declined to endemic levels. Low numbers were found on individual trees in Blyth, Thistle, and Widdifield townships, North Bay District and Nairn Township, Espanola District. However, populations were much higher in the Temagami District and severe defoliation was common.

Aspen Leafroller, *Pseudexentera oregonana* Wlshm.

Marked increases in populations of this insect were observed on trembling aspen in 1977. Very high populations were found along highways 555 and 557 north of the town of Blind River and along Highway 639 north of the town of Elliot Lake, Blind River District. Moderate-to-severe defoliation was present near the Gordon Lake turnoff in Sault Ste. Marie District; in Dill and Dowling townships, Sudbury District; in West Ferris Township, North Bay District; and in Strathcona Township, Temagami District. Light-to-moderate damage was scattered throughout the districts of Espanola, Sudbury, North Bay and the northern part of the Temagami District.

Red Pine Needle Midge, *Thecodiplosis piniresinosae* Kearby

A marked increase in population levels of this midge occurred in a large area in the southern part of Blind River District. The highest populations were found in plantations of large diameter red pine trees in Kirkwood Township in the Kirkwood Management Unit. Damage assessment in the heavy infestation showed defoliation of 87% of the current growth in 1977 compared to 53% in 1976. Defoliation averaging 26% was recorded in the surrounding red pine plantations in Kirkwood, Rose and Bridgland townships. Light damage was present elsewhere in the Unit and as far east as Parkinson Township, north of Iron Bridge. Small diameter trees within the infested area appear free of attack. The status of the insect was not reported in 1976 owing to the early curtailment of field activities; however, examination of foliage indicated that lower populations had been present in the same general area in 1976.

Larvae overwinter in the soil and pupate in the spring and adults emerge during the latter part of May and early June. Eggs are laid at the base of the developing needle fascicles. Larvae mine into the fascicle base and feed between the paired needles or on the needle surface inside the sheath. In late September infested needles turn yellow, and then brown and fall from the trees as a result of rain, wind or snow. Most larvae have moved to the surface of the mineral soil by late October. A review of past outbreaks indicates that infestations are of short duration, usually one to two years.

Pine Needle Sheathminer, *Zelleria haimbachi* Busck

Fluctuating population levels of this insect have been reported in the eastern part of the Region in the past and the last record of high numbers was in the North Bay District in 1972. The insect is found feeding in the new shoots of jack pine, and mining at the base of the immature needles causes them to turn brown and eventually break off. Increased populations of this pest were found in the central and eastern parts of the Region in 1977. High numbers were observed on large trees at one location in Kirkwood Township in Blind River District. Light-to-moderate damage was found in Nairn and Foster townships, Espanola District; in Papineau Township, North Bay District; and in Harty Township, Sudbury District. Light damage occurred elsewhere in Kirkwood Township, as well as in the twonships of Haughton and Lewis in Blind River District, and throughout the Temagami District.

Table 4. Other forest insects

Insect	Host(s)	Remarks
Archips argyrospilus (Wlk.) Fruit tree leafroller	wB, rM, rO	light-to-moderate defoliation common; occasional trees severely defoliated in Temagami District
Archips cerasivoranus (Fitch) Uglynest caterpillar	pCh, ecCh	high populations in several locations in Lefroy Twp, Blind River District; light populations in Blind River, Sault Ste. Marie, Espanola, and North Bay districts
Archips negundanus Dyar Boxelder leafroller	mM	Population levels declined throughout the city of Sault Ste. Marie.

(continued)

Table 4. Other forest insects (continued)

Insect	Host(s)	Remarks
Argyresthia aureoargentella Brower *A. Thuiella* Pack. *Pulicalvaria thujaella* (Kft.) Cedar leafminer complex	eC	heavy browning in Carnarvon Twp, with low populations on the remainder of Manitoulin Island, Espanola District
Calosoma frigidum Kby. Ground beetle	rO, wS bF	large numbers found feeding on spruce budworm larvae north of Searchmont in Sault Ste. Marie District and along the Aubinadong road in Blind River District; light numbers observed feeding on oak leaf shredder and basswood looper larvae in several areas in Blind River District
Cenopis acerivorana Mack. Maple leafroller	sM, rM	light populations for the second year at Hiawatha Park, Sault Ste. Marie District and in Lorrain Twp, Temagami District; small numbers elsewhere in Sault Ste. Marie District
Choristoneura pinus pinus Free. Jack pine budworm	jP	small numbers in Rhodes Twp, Sudbury District
Choristoneura rosaceana Harr. Obliquebanded leafroller	rO, wB, pCh, ecCh	moderate-to-high populations on red oak in Jocelyn Twp, Sault Ste. Marie District; found commonly in Blind River, Sault Ste. Marie, and North Bay districts
Coleophora betulivora McD. Birch casebearer	wB	increased populations along Ranger Lake in Sault Ste. Marie District

(continued)

Table 4. Other forest insects

Insect	Host(s)	Remarks
Conophthorus banksianae McPherson Jack pine tip beetle	jP	light damage common on smaller diameter trees along Hwy 101 and in cutover areas in Wawa District
Danaus plexippus Linn. Monarch butterfly	milkweed	high populations in Jocelyn Twp; small numbers found commonly at numerous locations in Sault Ste. Marie and Blind River districts
Dioryctria reniculelloides Mut. & Mun. Spruce coneworm	wS	high populations in Banting and Gillies Limit twp; common elsewhere in Temagami District
Diprion frutetorum (F.) Nursery pine sawfly	scP	new distribution record in Sault Ste. Marie District
Eucosma gloriola Heinr. Eastern pineshoot borer	jP, wP	small numbers in Lefebvre Twp, Espanola District and Burwash Twp, Sudbury District
Malacosoma californicum pluviale Dyar Western tent caterpillar	wB	low numbers along the Kukagami Lake road and at Ramsey Lake, Sudbury District
Meroptera pravella Grt. Lesser aspen webworm	tA	common in aspen stands throughout Temagami District
Monoctenus sp. Juniper sawfly	eC	high populations in Strathcona and Strathy twp; general increase elsewhere in Temagami District
Neodiprion pratti banksianae Roh. Jack pine sawfly	jP	light populations on open-grown trees at one location in Kirkwood Twp, Blind River District; small numbers at sample points elsewhere in the Region
Operophtera bruceata (Hlst.) Bruce spanworm	M	populations declined to endemic levels in all areas which were infested in 1976

(continued)

Table 4. Other forest insects (concluded)

Insect	Host(s)	Remarks
Orgyia leucostigma J.E. Smith White marked tussock moth	deciduous	small populations in the cities of Sault Ste. Marie and Sudbury
Phyllobius oblongus Linn. European snout beetle	deciduous	defoliation 10% to 20% on understory trees in Hodgins Twp, Sault Ste. Marie District; control measures taken at golf course in Carnarvon Twp, Espanola District
Pissodes approximatus Hopk. Northern pine weevil	rP	heavy in one plantation of grafted stock in Gurd Twp, North Bay District
Pityokteines sparsus Lec. Balsam fir bark beetle	bF	dead and near dead trees infested in Munster and Sweeny twp, Sudbury District
Profenusa thomsoni (Konow) Ambermarked birch leafminer	wB	varying numbers in most stands in Temagami District
Schizura concinna J.E. Smith Redhumped caterpillar	W, tA	trace levels on aspen at several points in Blind River District and on Manitoulin Island, Espanola District
Tetralopha aplastella Hlst. Aspen webworm	tA	common in aspen stands throughout Temagami District
Zeiraphera improbana (Walker) Larch needleworm	tL	small pocket of medium-to-heavy infestation north of Little Rapids, Blind River District; light damage in Garden River Indian Reserve, Sault Ste. Marie District

TREE DISEASES

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

This disease was widespread in the Region, and was especially prominent in young pine plantations and natural regeneration. In 1977 a high annual rate of mortality was recorded at two locations in Espanola District whereas at all other locations the rate ranged from low to moderate (Table 5).

Table 5. Summary of annual mortality caused by Armillaria root rot at eight locations in the Northeastern Region

Plot location (Twp)	Tree species	No. of trees examined	Tree height (m)[a]	Avg DBH (cm)[b]	Mortality rate 1977 (%)
Blind River District					
Villeneuve	rP	100	1	3	1
Kirkwood	scP	100	1	3	1
Espanola District					
Dawson	scP	100	3	3	0
Plourde	jP	300	2	2	5
Lefebvre	jP	300	2	2	5
North Bay District					
Cameron	rP	100	2	3	0
Wawa District					
Challener	jP	100	1	3	1
Recollet	jP	100	2	3	2

[a] 1 m = 3.28 ft

[b] 1 cm = .39 in.

Needle Rust of Spruce, *Chrysomyxa ledicola* Lagh.

For the second consecutive year this disease occurred most frequently in the northern part of the Region. A substantial increase in defoliation was recorded adjacent to the Dubreuilville road in Dambrozzio Township where 15% defoliation occurred in one large black spruce

(*Picea mariana* [Mill.] B.S.P.) stand. Defoliation was 9% at this location in 1976. Incidence levels were high at numerous other locations in the Wawa District but in all cases defoliation was low. In Haughton Township, Blind River District, Comox Township, Espanola District and Botha Township, Sudbury District trace levels of defoliation occurred on numerous small black spruce trees.

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

Reductions in the amount of damage caused by this foliage disease to trembling aspen were observed in 1977. Generally only trace levels of defoliation were found; one location in Field Township, North Bay District had a low level of defoliation (Table 6). Although the percentage of defoliation was minimal the number of trees actually affected by the disease was high in most cases.

Table 6. Defoliation damage caused by ink spot of poplar at 12 locations in the Northeastern Region in 1977.

Location (Twp)	Tree height (m)[a]	Area affected (ha)[b]	Trees affected (%)	Defoliation (%)
Blind River District				
Rollins	2.2	3.2	77	5
Villeneuve	35.0	1.0	70	1
Wardle	29.0	1.6	100	2
Espanola District				
Nairn	4.0	28.3	54	5
North Bay District				
Fell	3.4	40.5	51	1
Field	12.2	40.5	75	10
Lauder	1.5	8.1	6	2
Thistle	13.7	40.5	60	5
Sudbury District				
Antrim	3.0	20.2	0	0
Loughrin	15.2	8.1	65	5
Waldie	2.1	4.0	0	0
Wawa District				
Naveau	18.0	< 1.0	1	1

[a] 1 m = 3.28 ft

[b] 1 ha = 2.47 acres

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

No appreciable change in the status of this disease was recorded in 1977. Moderate damage levels were recorded in Parkinson Township, Blind River District and in the townships of Foster and Merritt in Espanola District (Table 7). Damage was low in the remainder of the stands sampled.

Table 7. Summary of percentage of trees affected by the white pine blister rust at six locations in the Northeastern Region in 1977.

Location (Twp)	Avg ht of sample trees (m)[a]	Avg DBH (cm)[b]	Area affected (ha)[c]	Trees affected (%)
Blind River District				
Parkinson	3.7	13	< 1.0	12.0
Thessalon	3.7	15	4.0	0.5
Wells	3.0	10	< 1.0	3.0
Espanola District				
Foster	2.1	3	8.1	19.0
Merritt	3.0	5	1.6	17.0
Sault Ste. Marie District				
Garden R.-Indian Res.	4.6	15	2.0	4.0

[a] 1 m = 3.28 ft

[b] 1 cm = 0.39 in.

[c] 1 ha = 2.47 acres

Leaf Spots of Birch, *Gloeosporium* sp.

This leaf disease was found commonly in the Wawa District. Six infection centres, ranging in size from < 1 ha (2.47 acres) to 40 ha (100 acres), were evaluated. In all instances moderate defoliation was recorded on a high percentage of trees. The only exception to this was observed in Peever Township where trace defoliation occurred.

Table 8. Defoliation damage caused by leaf spots of birch at six locations in the Wawa District in 1977

Location (Twp)	Tree species	Avg ht of sample trees (m)[a]	Avg DBH (cm)[b]	Area affected (ha)[c]	Defoliation (%)
Tiernan	yB	3.1	2	40	29
Miskokomom	yB	6.6	5	< 1	50
Laforme	yB	1.0	1	< 1	25
Calibert	wB	2.1	2	< 1	40
Asselin	yB	1.0	1	< 1	40
Peever	yB	2.0	2	6	1

[a] 1 m = 3.28 ft

[b] 1 cm = 0.39 in.

[c] 1 ha = 2.47 acres

Hypoxylon Canker of Poplar, *Hypoxylon mammatum* (Wahl.) Miller

This disease is widespread in the Region, generally at a low to moderate level. Evaluation made in Wawa and Blind River districts in areas of trembling aspen reproduction showed the incidence of stem infection to range from 0.3% to 4%. The organism infects the branches and main stem of aspen trees causing cankers which, after 3-4 years, kill the infected branch or tree.

Stem Canker of Birch, *Melanconium bicolor* Nees

This disease was found at numerous locations in the Wawa and Sault Ste. Marie districts. In most instances infection centres were small and damage was confined to a small number of trees. Exceptions to this occurred along the Mijin Lake road, Tiernan Township, where approximately 40 ha (100 acres) of yellow birch reproduction had 41% of the trees affected. Of these, 21% bore stem cankers that caused death of the upper crowns. Similarly, on the Montreal Falls road, 50% incidence was recorded. Of this, 41% was in the "severe damage" category (indicating stem cankers). Fourteen percent of these trees were dead. Cultures taken from cankered stems also revealed the presence of *Cryptosporium betulinum* Sacc. in Tiernan Township and *Cytosporium betulinum* Sacc. in the Montreal Falls road area.

Leaf and Twig Blight, *Venturia macularis* (Fr.) Müller & Arx
(= *Pollaccia radiosa* [Lib.] Bald. & Cif.)

The percentage of affected aspen increased across the Region. Moderate-to-high numbers of trees were found affected at various locations in the Blind River, Sault Ste. Marie, and North Bay districts. Comparable levels were found in Nairn Township, Espanola District; Antrim and Waldie townships, Sudbury District; and Dambrossio Township, Wawa District. Numerous terminal infections were present (see Frontispiece) whenever an appreciable percentage of the trees had the disease (Table 9). Damage levels were low elsewhere.

Single-tree Mortality of Balsam Fir

This condition is characterized by the presence of scattered, red, dead balsam fir trees. Aerial mapping revealed the condition to be more widespread and much more severe in 1977 than in previous years. In the area east of Highway 129, balsam fir stands show evidence of the condition, but generally the number of affected trees is small. However, west of Highway 129, north to the Chapleau District border, and throughout the southern part of the Wawa District the incidence of red trees becomes much more apparent, with virtually all balsam fir stands affected to some degree. Aerial counts ranged from 10 to 50 affected trees in numerous individual stands. The cause of this condition is not known at present.

Frost

A heavy frost during the week of June 6, 1977 caused heavy damage to new growth, especially balsam fir, in many areas of the Region. The most severe damage appears to have occurred on small trees in low lying areas north of the Elliot Lake, Iron Bridge and Thessalon areas of Blind River District; north of Searchmont, Sault Ste. Marie District; in the Mijin road, Baldhead River, Red Rock Lake areas, and scattered other locations west of Wawa in Wawa District; and throughout the northern part of the Espanola District. The most southerly record of damage was in a low lying white spruce (*Picea glauca* [Moench] Voss) plantation in Foster Township, Espanola District, where defoliation was recorded at 37%. In many cases some larger trees were damaged, but the damage did not appear as heavy as that on smaller trees.

Table 9. Summary of percentage of trembling aspen trees affected by the leaf and twig blight in the Northeastern Region in 1977.

Location (Twp)	Avg ht of sample trees (m)[a]	Avg DBH (cm)[b]	Area affected (ha)[c]	Trees affected (%)	Trees severely damaged (terminal affected) (%)
Blind River District					
Bridgland	2.8	2	< 1.0	8.0	2.0
Bright	1.9	1	< 1.0	5.0	1.0
Galbraith	2.3	1	< 1.0	2.0	0.0
Gladstone	4.0	4	1.0	34.0	12.0
Kirkwood	2.5	2	4.0	0.4	0.0
Parkinson	1.4	1	4.0+	6.0	2.4
Patton	2.1	1	< 1.0	17.0	12.0
Rioux	2.1	1	< 1.0	2.0	0.0
Rollins	2.2	1	3.2	2.1	1.0
Rose	3.0	3	< 1.0	10.0	0.0
Espanola District					
Nairn	4.0	3	28.3	32.0	14.0
North Bay District					
Boulter	1.8	1	4.0	5.0	0.0
Fell	3.4	3	40.5	21.0	15.0
Lauder	1.5	1	8.1	35.0	27.0
Sault Ste. Marie District					
Curtis	1.5	1	< 1.0	10.0	2.0
Jocelyn	2.3	1	2.8	73.0	42.0
Kincaid	1.7	1	< 1.0	72.0	14.0
Smilsky	1.8	1	< 1.0	10.0	0.0
Sudbury District					
Antrim	3.0	1	20.2	20.0	7.0
Waldie	2.1	1	4.0	38.0	26.0
Wawa District					
Dambrossio	2.2	1	10.1	14.0	6.7

[a] 1 m = 3.28 ft

[b] 1 cm = 0.39 in.

[c] 1 ha = 2.47 acres

Table 10. Other forest diseases

Organism	Host(s)	Remarks
Cronartium comandrae Pk. Comandra blister rust	jP	numerous branch galls at one location in the Garden River Indian Reserve
Cytospora leucostoma Sacc. Twig blight	pCh	high damage level at one location in Raimbault Twp, Blind River District and in Recollet Twp, Wawa District
Cytospora pini Desm. Cytospora canker	wP	occasional dead trees in Foster and Merritt twp, Espanola District
Endocronartium harknessii (J.P. Moore) Y. Hiratsuka Globose gall rust	scP	common in plantations on Manitoulin Island, Espanola District
Melampsora medusae Thuem. Aspen leaf rust	tL	trace defoliation levels in Thessalon and Kirkwood Twp, Blind River District

APPENDIX

NORTHEASTERN REGION

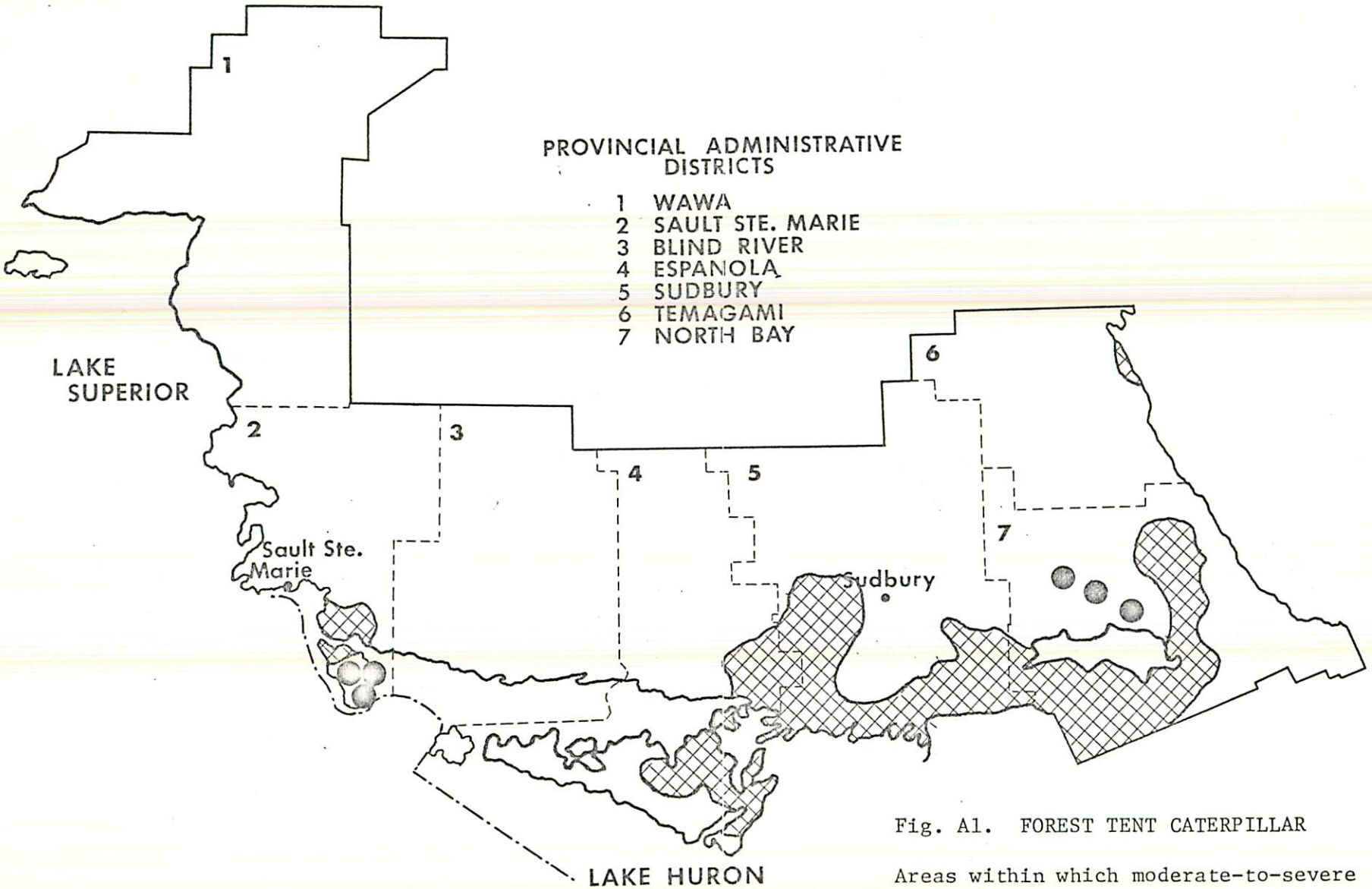

Fig. A1. FOREST TENT CATERPILLAR

Areas within which moderate-to-severe defoliation occurred in 1977

or