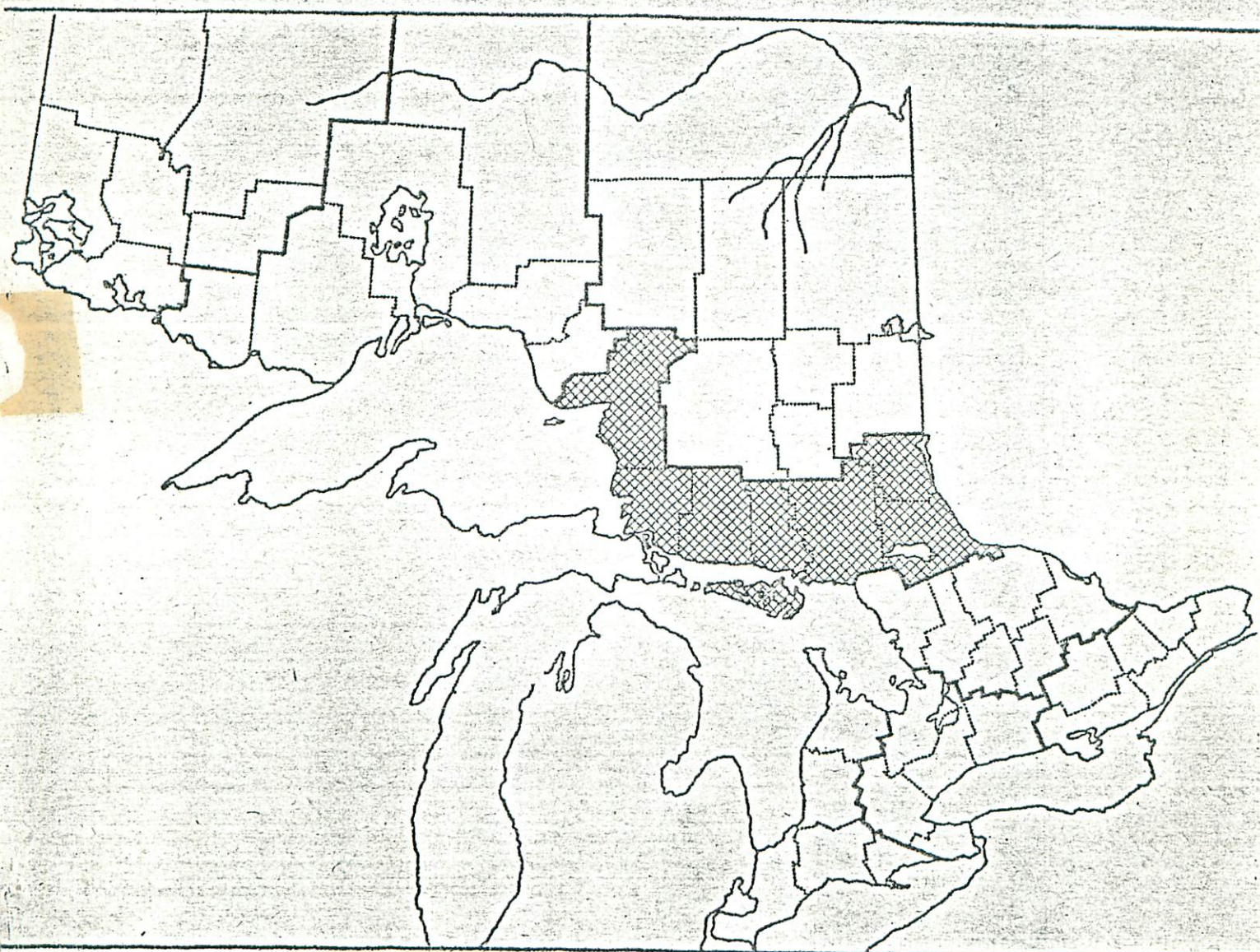


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FOREST INSECT AND DISEASE SURVEYS IN THE NORTHEASTERN REGION OF ONTARIO, 1976

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



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GREAT LAKES FOREST RESEARCH CENTRE
SAULT STE. MARIE, ONTARIO
CANADIAN FORESTRY SERVICE
DEPARTMENT OF FISHERIES AND THE ENVIRONMENT

MARCH 1977

*Copies of this report may be obtained
from*

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Great Lakes Forest Research Centre,
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Box 490, Sault Ste. Marie, Ontario.
P6A 5M7*

Frontispiece



*Unit 1, Sustaining
Detection 04
2/12/77*

Defoliation of hardwood stand by the saddled prominent.
Note migrating larvae on trunk of beech tree, right foreground.



Trembling aspen leaf showing typical damage caused by the ink
spot of poplar.

SURVEY HIGHLIGHTS

Weather patterns during the early spring and summer influenced a variety of forest insects and tree diseases in the Northeastern Region in 1976.

The spruce budworm continued to predominate as the most serious pest in balsam fir and spruce stands, and the infestation spread west and north into uninfested stands in the Wawa District. Moderate-to-severe defoliation was common except in older areas of infestation where lighter defoliation occurred. Mortality of balsam fir increased. New pockets of forest tent caterpillar infestation were found in Sault Ste. Marie and Blind River districts whereas in Sudbury, North Bay and Temagami districts population reductions were evident. Basswood looper populations declined to endemic levels in the north, but the insect was common in the south where it caused severe defoliation in many areas. Red oak in the southwestern part of the Region as far east as Manitoulin Island suffered severe damage from the oak leaf shredder. A marked increase in population levels of saddled prominent resulted in heavy defoliation to a variety of deciduous hosts on St. Joseph and Cockburn islands. There were small, isolated, heavy infestations of the Bruce spanworm, greenstriped mapleworm, birch leafminers, fall webworm, balsam fir sawfly, redheaded pine sawfly, European pine sawfly and yellowheaded spruce sawfly.

The incidence and damage level of Dutch elm disease were again high in the southern part of the Region. White pine blister rust and shoestring root rot, though found commonly, remained at a low damage level. During the field season emphasis was placed on a complex of needle rust organisms.

K. C. Hall
Supervisor

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INSECTS

Luna Moth, *Actias luna* Linn.

Considerably higher than average populations of this spectacular insect persisted on white birch (*Betula papyrifera* Marsh.) and yellow birch (*B. alleghaniensis* Britton) trees in Rose Township, Blind River District. Defoliation ranged from barely noticeable to complete stripping of trees. Small numbers of larvae were found on scattered trees in neighboring Kirkwood Township.

Pine Spittlebug, *Aphrophora parallela* (Say)

High numbers of spittle masses were present in one small plantation of Scots pine (*Pinus sylvestris* L.) in Kirkwood Township, Blind River District. No appreciable change was observed on Manitoulin Island, Espanola District, where moderate populations persisted in Gordon and Carnarvon townships, and light populations were recorded in Dawson, Billings and Sandfield townships. Light numbers were found commonly on white pine (*P. strobus* L.) at Hiawatha Park in the Sault Ste. Marie District.

Uglynest Caterpillar, *Archips cerasivoranus* (Fitch)

Infestations of this insect were confined to Blind River and Espanola districts. For the second consecutive year numerous unsightly tents were present in Rose, Kirkwood, Bridgland, Haughton, Galbraith and Lefroy townships. A new small pocket of heavy infestation occurred north of Iron Bridge in Blind River District and an area of moderate damage was present in Allan Township, Espanola District. Small numbers were observed elsewhere in Blind River and Sault Ste. Marie districts.

Boxelder Leafroller, *Archips negundanus* Dyar

Infestations of this rare insect increased to a high level throughout the city of Sault Ste. Marie. Defoliation of Manitoba maple (*Acer negundo* L.) ranged from 50% to 70% and in some locations complete stripping of foliage occurred.

Large Aspen Tortrix, *Choristoneura conflictana* Wlk.

Infestation intensities of this insect changed from those of 1975 in three districts. Increased amounts of moderate-to-severe defoliation were observed in the townships of Gillies Limit, Strathy,

Askin and Hartle, and smaller pockets occurred at numerous other points in the Temagami District. Damage levels were comparable to those of 1975 on Manitoulin Island and in Merritt and Nairn townships, in Espanola District. Decreases in infestations were observed in the northwestern part of the Sudbury District, with pockets of moderate-to-severe defoliation remaining in Muldrew, Ulster and Morgan townships. In the North Bay District population declines were evident, except in Papineau and Phelps townships where moderate-to-severe damage was found at various locations.

Elsewhere in the Region populations were low, with some noticeable amounts of feeding in May Township, Espanola District, Fraleck and Parkin townships, Sudbury District, and West Ferris Township, North Bay District.

In most infestations the leafrollers *Pseudexentera oregonana* Wlshm., *Epinotia nisella criddleana* Kft., *Compsolechia niveopulvella* Hlst. and *Sciaphila duplex* Wlshm. were present and contributed to the defoliation.

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 G.M. Howse et al. (Report O-X-260). This report provides a complete description and analysis of developments in the spruce budworm situation in Ontario in 1976 and gives infestation forecasts for the province for 1977.

Larch Casebearer, *Coleophora laricella* Hbn.

Populations declined at the sample location in the Garden River Indian Reserve. An average of 7.7 larvae per 45.7-cm (18-in.) branch tip was recorded, compared with 14.8 in the previous year. On St. Joseph Island, also in the Sault Ste. Marie District, larval densities resembled those of 1975. In Blind River District larvae occurred more frequently on small-diameter trees, especially in Proctor and Thessalon townships.

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

For the second consecutive year, high populations of this defoliator caused severe damage to red oak (*Quercus rubra* L.) in the area extending from Batchawana Bay in the Sault Ste. Marie District east along the north shore to Shedden Township in Espanola District and throughout a large portion of Manitoulin Island (see Appendix, Fig A1). Defoliation

was most noticeable in forests with a high red oak content, especially in the Iron Bridge-Blind River area. The basswood looper, *Erannis tiliaria* Harr., contributed to the defoliation on Manitoulin Island, west of Spanish and in the Basswood Lake area.

Greenstriped Mapleworm, *Dryocampa rubicunda rubicunda* (Fabr.)

Numbers generally decreased in all areas except Jocelyn Township, Sault Ste. Marie District, where high populations were found in one clump of small-diameter, open-grown maple (*Acer* spp.) trees. Moderate defoliation was present in Carnarvon Township, Espanola District and low numbers were found in the Sand Dam Road area, North Bay District, Humboldt Township, Sudbury District, and Bridgland and Rose townships, Blind River District. Elsewhere populations declined to endemic levels.

Basswood Looper, *Erannis tiliaria* Harr.

Pronounced fluctuations in the population levels of this insect were evident in several large areas of forest.

The infestation present in an area of 2,064 km² (800 sq mi) in the Wawa District in 1975 collapsed to endemic levels. The presence of a nuclear polyhedrosis virus was recorded in many parts of the infestation in 1975 and was considered to be a contributing factor. In contrast, light infestation persisted in the southern part of Sault Ste. Marie and Blind River districts and increased to heavy intensity in many areas. The largest infestation, approximately 1,680 km² (650 sq mi), extended from Hodgins Township, Sault Ste. Marie District to Maech Township (5E), Blind River District. Two small infestations of approximately 130 km² (50 sq mi) each occurred in the Basswood Lake area and east of Elliot Lake, Blind River District. Small isolated pockets of heavy damage were present in Scarfe, Cobden, Gould, Joques (162), Bouck (150) and Beange (156) townships, Blind River District and in Herrick Township, Sault Ste. Marie District (see Appendix, Fig A2). Overstory yellow and white birch, sugar maple (*Acer saccharum* Marsh.) and oak (*Quercus* spp.) and a wide variety of understory deciduous hosts suffered severe defoliation within the heavy infestation. The nuclear polyhedrosis virus which occurred in the Wawa infestation in 1974 and 1975 was present in three areas of especially high population (Herrick, Gladstone and Bouck townships) and caused considerable larval mortality. The increase in populations was also apparent in the Espanola District with moderate-to-severe defoliation occurring in Carnarvon, Sandfield and Shedden townships. Light-to-moderate damage was common elsewhere on Manitoulin Island and in Cameron, Merrick and Patterson townships, North Bay District.

Birch Leafminer, *Fenusa pusilla* (Lep.)

This insect which mines the leaves of birch (*Betula* spp.) trees and causes varying degrees of brown discoloration was more widespread and numerous in 1976. Severe defoliation was again present in Hagar Township and on regeneration trees in Antrim Township, Sudbury District. New pockets of severe damage were found at Granite Lake, Temagami District and in association with *Profenusa thomsoni* (Konow) in a 1.2-ha (3-acre) stand in Nadjiwon Township (Twp 24, Rge 23), Wawa District. Light-to-moderate damage occurred at numerous locations in Temagami, North Bay and Espanola districts. Elsewhere in the Region populations were common at low levels.

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

Medium-to-high populations were found on roadside or open-grown regeneration trembling aspen (*Populus tremuloides* Michx.) at numerous locations in Temagami District and in Hilton Township, Sault Ste. Marie District. Light damage was common elsewhere in Sault Ste. Marie, Wawa, and Blind River districts.

Saddled Prominent, *Heterocampa guttivitta* Wlk.

Pockets of heavy infestation by this defoliator occurred on St. Joseph Island, Sault Ste. Marie District and on Cockburn Island, Espanola District (see Frontispiece). Low numbers were found as far east as Robinson Township on Manitoulin Island, Espanola District. In samples submitted from Jocelyn Township, Sault Ste. Marie District the presence of an Entomophthora fungus was confirmed.

Fall Webworm, *Hyphantria cunea* Dru.

A heavy infestation of this defoliator has persisted at Beaucage Point on Lake Nipissing, North Bay District since 1973. Numerous webs were present on black ash (*Fraxinus nigra* Marsh.) and white elm (*Ulmus americana* L.), with some feeding on other deciduous trees. Individual colonies were common elsewhere in the Region, especially in the southern part of the Espanola District.

Aspen Blotchminer, *Lithocolletis ontario* Free.

Infestation levels of this miner declined in 1976, but were sufficiently high to cause severe mining to regeneration trembling aspen throughout Temagami District and in the townships of Rose, Kirkwood, Thessalon and Bridgland, Blind River District. Elsewhere

populations were found at the endemic levels. Light populations of *Lithocolletis nipigon* Free., a similar species of miner, were present on balsam poplar (*Populus balsamifera* L.) in Hodgins Township, Sault Ste. Marie District.

Eastern Tent Caterpillar, *Malacosoma americanum* F.

Two new small areas of heavy infestation were found. Colonies were very numerous and defoliation was severe on apple trees (*Malus* sp.) in St. Joseph Township, Sault Ste. Marie District and on serviceberry (*Amelanchier* Med.) in Long Township, Blind River District. Small numbers were observed at numerous other locations.

Forest Tent Caterpillar, *Malacosoma disstria* Hbn.

Damage levels of this forest pest fluctuated across the Northeastern Region. New pockets of moderate-to-severe defoliation were observed as far west as Laird, Jocelyn and Patton townships in Sault Ste. Marie and Blind River districts, respectively. Major extensions in the 1975 infestation boundaries were observed in the southeast corner of the Espanola District, especially in part of Manitoulin Island (see Appendix, Fig A3), in the Killarney area south of Sudbury, Sudbury District, and south of Lake Nipissing, North Bay District. In contrast, the infestations along the north shore of Lake Nipissing in the Temagami District collapsed. Small pockets of moderate-to-severe feeding remained in Lorrain Township. Low numbers of larvae were found or infestation intensities resembled those of 1975 at many other locations in the Region.

Unseasonably warm weather over the Easter weekend induced the premature hatching of eggs and the subsequent cold wet weather of late April and early May resulted in mortality of first-instar larvae. In some areas egg numbers were so high that egg hatch as low as 2% was sufficient to cause moderate-to-severe damage.

Forest tent caterpillar egg-band counts in 1976 indicated little spread of moderate-to-severe defoliation for 1977, with the exception of the southeast corner of the Sault Ste. Marie District. Moderate-to-severe defoliation is expected again within the area infested in 1976, and light-to-moderate damage is expected to spread in all directions around the remainder of the existing infestation (Table 1).

Table 1. Summary of forest tent caterpillar egg-band counts and infestation forecasts for 1977 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	1977 infestation forecast ^b
Blind River District					
Bright Twp	tA	15	3	0.0	N
Gladstone Twp	tA	8	3	3.6	M
Kirkwood Twp	tA	10	3	0.0	N
Parkinson Twp	tA	10	3	0.3	L
Patton Twp	tA	15	3	30.0	S
Espanola District					
Assiginack Twp	tA	13	3	0.0	N
Nairn Twp	tA	10	3	1.0	L
Salter Twp (Chutes Prov. Park)	tA	13	3	0.0	N
Shakespeare Twp	tA	10	3	4.0	M
Sheguiandah Twp	tA	15	1	45.0	S
North Bay District					
Butler Twp	tA	10	3	4.3	M
Caldwell Twp	tA	13	3	1.3	L
Calvin Twp (Samuel de Champlain Prov. Park)	tA	10	3	3.3	M
Commanda Twp	tA	13	3	13.7	S
Patterson Twp (Restoule Prov. Park)	tA	10	1	41.0	S
Sisk Twp (Marten River Prov. Park)	tA	10	3	1.7	L
Stewart Twp	tA	18	1	26.0	S
Sault Ste. Marie District					
Jocelyn Twp	sM	15	2	106.0	S
Johnson Twp	tA	8	3	2.3	M
Laird Twp	tA	10	3	17.0	S
Meredith Twp	tA	10	3	2.0	M
Tarbutt Add'l Twp	tA	10	3	7.0	S

(continued)

Table 1. Summary of forest tent caterpillar egg-band counts and infestation forecasts for 1977 in Northeastern Region (counts based on the examination of one to three trees per location).
(concluded)

Location	Host	Avg DBH (cm) ^a	No. of trees sampled	Avg no. of egg bands per tree	1977 infestation forecast ^b
Sudbury District					
Appleby Twp	tA	15	1	13.0	S
Bigwood Twp	tA	15	1	40.0	S
Cascaden Twp (Windy Lake Prov. Park)	tA	13	3	0.3	L
Drury Twp (Fairbank Prov. Park)	tA	15	1	35.0	S
Graham Twp	tA	13	3	6.3	S
Killarney Twp (Killarney Prov. Park)	tA	15	1	62.0	S
Moncrieff Twp	tA	15	3	0.0	N
Norman Twp	tA	10	3	1.0	L
Street Twp	tA	10	3	1.0	L
Waldie Twp	tA	10	3	1.3	L
Temagami District					
Coleman Twp	tA	13	3	0.0	N
Gillies Limit Twp	tA	15	3	0.0	N
Lorrain Twp	tA	10	1	16.0	S

^a 1 cm = .39 in.

^b N = nil, L = light, M = moderate, S = severe

Balsam Fir Sawfly, *Neodiprion abietis* complex

Defoliation levels remained much the same as in 1975, with a minor increase in the area of infestation east of North Bay. Moderate-to-severe damage to the upper crowns of balsam fir (*Abies balsamea* [L.] Mill.) was observed in Papineau, Calvin, West Ferris, Commanada, Beaucage, and Pedley townships and in Indian Reserve No. 10. Scattered pockets of light-to-moderate defoliation were found as far north as Lyman Township and south of Lake Nipissing in North Himsworth, Nipissing and Gurd townships, North Bay District.

Redheaded Pine Sawfly, *Neodiprion lecontei* (Fitch)

Increased populations were observed in the western part of the Region. Severe defoliation was present throughout a large red pine (*Pinus resinosa* Ait.) plantation in Patton Township, where control measures were carried out by the Ontario Ministry of Natural Resources, and on roadside trees along Highway 17 in Thompson Township, Blind River District. A small private plantation in Jocelyn Township on St. Joseph Island, Sault Ste. Marie District was severely damaged, but a virus disease which caused extensive mortality to late-instar larvae provided excellent control. The infestation in May Township, Espanola District decreased in intensity from an average of 1.9 colonies per tree in 1975 to 0.5 colonies per tree in 1976, in a quantitative sample of 100 trees. However, after repeated attacks over a number of years some trees have succumbed, and approximately 10% mortality has resulted in the plantation. Low numbers were observed in Cameron Township, North Bay District and Victoria Township, Espanola District.

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

Substantial decreases in numbers of colonies were recorded at all count locations on Manitoulin Island, with the exception of two plantations in Carnarvon Township, Espanola District (Table 2) where increases were minimal. The infestation in a small plantation at Thessalon in Blind River District, found in 1974, was again sprayed in 1976 to control the residual population which had persisted since at least 1975. Populations persisted throughout the city of Sault Ste. Marie.

Swaine Jack Pine Sawfly, *Neodiprion swainei* Midd.

Population levels remained high throughout the northern part of Temagami District. Defoliation of jack pine (*Pinus banksiana* Lamb.) trees was most severe in open areas, particularly along shorelines and on islands. Spraying by private cottage owners on Lake Temagami has proven effective.

Redheaded Jack Pine Sawfly, *Neodiprion virginianus* complex

Heavy infestations that were present in the southern part of Robinson Township, Espanola District declined to low numbers in 1976. Numerous parasitized eggs were found at this location. In all other areas where insects were recorded last year, populations declined.

Table 2. Summary of colony counts of European pine sawfly in Scots pine plantations on Manitoulin Island in 1975 and 1976.

Location (Twp)	Tree height (m) ^a	No. of trees examined		Total no. of colonies		Avg no. of colonies per tree	
		1975	1976	1975	1976	1975	1976
Billings	5.2	200	200	95	22	.48	.11
Carnarvon	4.0	100	100	97	1	.97	.01
Carnarvon	5.2	100	100	11	16	.11	.16
Carnarvon	2.1	50	50	8	14	.16	.28
Carnarvon	4.9	50	50	198	42	4.00	.84
Dawson	4.0	100	100	85	13	.85	.13
Dawson	4.0	300	300	152	17	.51	.06
Dawson	4.0	100	100	39	6	.39	.06
Gordon	4.3	100	100	50	25	.50	.25
Gordon	4.0	50	50	20	0	.40	.00
Sandfield	2.7	100	100	61	19	.61	.19

^a 1 m = 3.28 ft

Bruce Spanworm, *Operophtera bruceata* (Hlst.)

The only infestation recorded was in the Sault Ste. Marie District. For the second consecutive year severe defoliation was present at Robertson Lake in VanKoughnet Township and light damage occurred along the Ranger Lake road in Hodgins Township. A new pocket of medium-to-heavy infestation was found along the Tribag Mine road in Palmer Township. In heavy infestations overstory trees suffered light-to-moderate damage, but understory hosts were severely defoliated. Small numbers were found at several other locations.

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

Increased population levels caused severe defoliation to a small white spruce (*Picea glauca* [Moench] Voss) plantation managed by the Nickel District Conservation Authority in Neelon Township and on scattered individual trees in Lorne Township, Sudbury District. Moderate-to-severe damage was found in and around the town of Espanola in Merritt and Foster townships, Sudbury District, on open-grown trees in East Ferris and Bonfield townships, North Bay District, and in Killarney Township, Sudbury District. Elsewhere across the Region populations were low.

White Pine Weevil, *Pissodes strobi* Peck

The incidence of leader damage to white pine trees caused by the white pine weevil remained high in four districts of the Region. In plots sampled in the Espanola District, an average of 42% of the trees were weeviled, about the same percentage as in 1975. Two sample plots in North Bay District showed an average of 32% with damaged leaders, a substantial reduction from the 52% recorded the previous year. In Sudbury and Blind River districts, 27% and 22%, respectively, of the trees sampled showed weevil damage (Table 3). Weevil populations in jack pine plantations were at a very low level except in Firstbrook Township, Temagami District, where 9% of the trees suffered leader damage.

Table 3. Summary of damage caused by the white pine weevil in five districts in 1975 and 1976

Location (Twp)	Host	No. of trees sampled	Trees weeviled (%)	
			1975	1976
Blind River District				
Patton	wP	200	-	26
Kamichisitit (168)	wP	300	21	24
Kirkwood	wP	100	-	21
Lefroy	wP	100	-	18
Espanola District				
Foster	wP	100	38	34
Merritt	wP	100	48	46
Victoria	wP	100	37	46
Hallam	ScP	100	7	0
Nairn	jP	100	2	0
North Bay District				
Badgerow	wP	100	64	37
Boulter	wP	100	40	27
Lauder	wP	100	-	10
Sudbury District				
Delamere	wP	100	22	27
Temagami District				
Firstbrook	jP	100	3	9

Larch Sawfly, *Pristiphora erichsonii* (Htg.)

Populations increased at many locations in 1976. Defoliation in excess of 40% on large host trees occurred at the Garden River Indian Reserve, Sault Ste. Marie District; heavy defoliation was also found in pockets of small-diameter fringe trees in Calibert Township, Wawa District, in Bridgland and Haughton townships, Blind River District, and in May Township, Espanola District. Light-to-moderate damage was present at one location in St. Joseph Township, Sault Ste. Marie District, in Salter and Robinson townships, Espanola District, and in Bonfield, Widdifield and South Himsforth townships, North Bay District. Only scattered colonies were observed in the Temagami District. Elsewhere populations were low.

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

Feeding damage by this defoliator differed from that of 1975 in various parts of the Region. Higher populations occurred in North Bay District where they caused moderate-to-severe defoliation of mountain ash (*Sorbus americana* Marsh.) trees in Blyth, Merrick, Widdifield and Phelps townships. In contrast, the intensity of attack in Temagami District declined sharply, with only light defoliation resulting. No appreciable change was observed west of Wawa where high populations have persisted for the past several years. Occasional host trees were heavily damaged in Blind River and Sault Ste. Marie districts and in urban areas in Temagami District, but more generally defoliation was light.

Table 4. Other forest insects

Insect	Host(s)	Remarks
<i>Acrobasis rubrifasciella</i> Pack.	A1	small pocket of heavy infestation in Laird Twp, Sault District; occurred commonly at many locations in Wawa, Blind River and Sault districts
<i>Argyresthia aureoargentella</i> Brower, <i>A. thuiella</i> Pack., <i>Pulicalvaria thujaella</i> (Kft.)	eC	noticeable browning at one location in Carnarvon and Billings twp on Manitoulin Island

(continued)

Table 4. Other forest insects (continued)

Insect	Host(s)	Remarks
<i>Cecidomyia reeksii</i> Vock.	jP	light twig mortality in Parkinson Twp, Blind River District and Phelps Twp, North Bay District
<i>Conophthorus banksianae</i> McPherson	jP	light twig damage on re-generation in Maness Twp, Wawa District more frequent in 1976
<i>Conophthorus coniperda</i> (Sz.), <i>C. resinosa</i> Hopk.	rP, wP	high populations were again present on islands and shoreline reserves of mature pine in Temagami District, particularly on Temagami and Rabbit lakes
<i>Datana ministra</i> Dru.	ecCh	heavy defoliation to small trees in Nairn Twp, Espanola District
<i>Dichelonyx</i> sp.	Be	found commonly on understory trees in Hilton Twp, Sault District
<i>Dioryctria reniculelloides</i> M. & M.	wS	found commonly in association with spruce budworm in Kirkwood Twp, Blind River District
<i>Eriocampa ovata</i> Linn.	mM	high numbers of adults observed at Bellevue Park, Sault District
<i>Hoplia trifasciata</i> Say	tA	occurred commonly at one location in Hilton Twp, Sault District
<i>Malacosoma californicum pluviale</i> Dyar	wB	found commonly near the headquarters at Ramsey Lake, Sudbury District
<i>Marathyssa inflicta</i> Wlk.	Su	heavy defoliation at Hiawatha Park and Rock Lake, Sault District, and in Merritt Twp, Espanola District

(continued)

Table 4. Other forest insects (concluded)

Insect	Host(s)	Remarks
<i>Neurotoma inconspicua</i> (Nort.)	pCh	many colonies found at one location in Kirkwood Twp, Blind River District
<i>Orgyia leucostigma</i> J.E. Smith	deciduous	annoying in the cities of Sault Ste. Marie and Sudbury
<i>Phyllobius oblongus</i> Linn.	deciduous	high populations at golf course near Mindemoya, Espanola District and in one location in East Mills Twp, North Bay District
<i>Pityokteines sparsus</i> Lec.	bF	many galleries found in some dead trees at Halfway Lake Park, Sudbury District; populations low on dead fir elsewhere
<i>Pseudexentera cressoniana</i> Clem.	rO	heavy damage on understory hosts in small area at Hiawatha Park, Sault District
<i>Pseudexentera oregonana</i> Wlshm.	tA	small pockets of light populations in Meredith Twp, Sault District and along Dubreuilville road, Wawa District
<i>Vasates quadripedes</i> Shim.	siM	very heavy on some ornamentals in the town of Espanola
<i>Zelleria haimbachi</i> Busck.	jP	light-to-moderate numbers at one location in Parkinson Twp, Blind River District

TREE DISEASES

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

This disease, which causes rotting in the roots and root collar and the eventual death of the tree, was widespread on young pines but generally at a trace damage level. In 1976 a total of eight plantations, the preferred site of the fungus, were evaluated and had an average of 1% annual mortality or less (Table 5).

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

Plot location (Twp)	Tree species	No. of trees examined	Tree height (m) ^a	Avg DBH (cm) ^b	Mortality rate 1976 (%)
Blind River District					
Sagard	rP	100	2.1	3	1.0
Tweedle	rP	300	1.5	3	0.3
Tweedle	wP	200	1.5	3	0.5
Sturgeon	rP	500	0.9	3	0.2
North Bay District					
Papineau	rP	100	1.2	3	0.0
Sudbury District					
Lorne	rP	100	2.1	5	0.0
Wawa District					
Challener	jP	400	1.0	3	0.2
Nadjiwon	jP	500+	1.0	3	0.1

^a 1 m = 3.28 ft

^b 1 cm = .39 in.

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

This destructive pathogen continues to be of major importance. Diseased elms were observed at many locations throughout the southern part of the Region, especially on St. Joseph Island and north of Bruce Mines and Desbarats. In stands with a high density of elm severe cumulative mortality is now the rule rather than the exception, particularly along waterways.

Spruce Broom Rust, *Chrysomyxa arctostaphyli* Diet.

This disease was found at six locations in the northern part of the Region. The highest incidence of witches' broom was recorded in a stand of small-diameter black spruce (*P. mariana* [Mill.] B.S.P.) in Recollet Township (Twp 24, Rge 22) along Highway 101 east of Wawa, where 9.9% of the trees were infected. Just west of Wawa the disease occurred primarily on larger-diameter black spruce; 5.8% of the trees were affected in one stand in Rabazo Township (Twp 30, Rge 22) and 9.0% in neighboring Lendrum Township (Twp 30, Rge 23). Between these two locations disease levels are low. Further south in Giles Township (Twp 30, Rge 17), Wawa District and in Herrick Township, Sault Ste. Marie District, white spruce appeared to be more susceptible than black spruce with 4% and 5%, respectively, of the trees infected per stand.

Table 6. Summary of percentage of trees affected by the spruce broom rust at six locations in the Northeastern Region in 1976

Plot location (Twp)	Tree species	Avg DBH (cm) ^a	Avg ht of sample trees (m) ^b	Area affected (ha) ^c	Trees affected (%)
Wawa District					
Recollet	bS	7	3.4	10+	9.9
Quill	bS	7	3.0	10+	.5
Rabazo	bS	15	8.2	10+	5.8
Lendrum	bS	15	10.7	20+	9.0
Giles	wS	12	9.1	8+	4.0
Sault Ste. Marie District					
Herrick	wS	15	12.2	10+	5.0

^a 1 cm = 0.39 in.

^b 1 m = 3.28 ft

^c 1 ha = 2.47 acres

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

This disease occurred most frequently in the northern part of the Region. Seven infection centers were evaluated: five in Wawa District

ranging in size from > 1 ha (> 2.47 acres) to 20 ha (49.4 acres) and one each in Sault Ste. Marie and Blind River districts, < 1 ha (< 2.47 acres) and 2 ha (4.94 acres), respectively (Table 7). Defoliation at most locations was confined to small-diameter hosts and did not exceed trace level, except in Menzies Township, where moderate defoliation was present in one small pocket of regeneration black spruce, and in Dambrossio Township, where light defoliation occurred on much larger hosts and throughout a much larger area.

Table 7. Defoliation damage caused by the spruce needle rust at six locations in the Northeastern Region in 1976.

Plot location	Tree species	Avg ht of sample trees (m) ^a	Avg DBH (cm) ^b	Area affected (ha) ^c	Defoliation (%)
Wawa District					
Lendrum	wS	1.2	3	4	< 5
Lendrum	bS	0.3	3	4	< 5
Rabazo	bS	2.1	3	20	< 5
Dambrossio	bS	10.6	10	20	9
Menzies	bS	1.2	3	< 1	25
Blind River District					
Haughton	bS	1.5	3	< 1	< 5
Sault Ste. Marie District					
Plummer Add'l	bS	1.5	3	2	< 5

^a 1 m = 3.28 ft

^b 1 cm = 0.39 in.

^c 1 ha = 2.47 acres

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

Browning of trembling aspen leaves was heavier in the central and eastern portions of the Region in 1976 (see Frontispiece). Moderate levels of defoliation with a high percentage of the trees affected was observed at many locations in North Bay, Espanola and Blind River districts (Table 8). In the remainder of the Region defoliation levels were low to trace, although in most areas the percentage of the trees affected was high.

Table 8. Defoliation damage caused by ink spot of poplar at a number of locations in the Northeastern Region

Location (Twp)	Tree height (m) ^a	Area affected (ha) ^b	Trees affected (%)	Defoliation (%)
Blind River District				
Bouck	6.1	< 1	20	40
Bright	3.0	< 1	100	1
Cobden	16.8	< 1	100	54
Kamichisitit	4.6	roadside	100	1
Nouvel	8.1	< 1	100	10
Parkinson	3.7	roadside	1	2
Raimbau	4.6	roadside	40	1
Rioux	7.6	< 1	100	40
Rollins	4.6	1	100	50
Scarfe	10.7	4	5	1
Espanola District				
Carnarvon	8.2	1	100	1
Dunlop	6.7	41	100	49
North Bay District				
Boulter	3.0	12	0	0
East Ferris	10.7	41	65	30
Fell	1.2	20	95	30
Gibbons	9.1	24	100	40
Lauder	1.8	8	10	1
Mattawan	2.4	4	0	0
McNish	2.4	16	100	10
Phelps	2.1	4	50	10
Sault Ste. Marie District				
Herrick	9.4	2	88	16
Shields	4.6	< 1	30	2
Sudbury District				
Antrim	12.2	41	0	0
Leinster	12.2	< 1	100	50
Temagami District				
Askin	10.7	12	100	17
Best	12.2	4	75	10
Coleman	12.2	4	50	10

^a 1 m = 3.28 ft

^b 1 ha = 2.47 acres

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

Surveys carried out to determine the presence and disease level of this rust were intensified in 1976. Many red pine and jack pine plantations and natural stands were examined, but negative results were recorded in all areas except in Maech Township (Twp 5E), Blind River District, where trace defoliation occurred on natural regeneration in the Seabrook Lake area.

Sweetfern Blister Rust, *Cronartium comptoniae* Arth.

No important change in the status of the organism was observed. Past surveys have shown the disease to be widespread in the Region, but in most instances affecting only small numbers of trees. Three new centers of infection were evaluated in 1976 and similarly showed only a small percentage of hosts affected.

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

This rust occurs commonly throughout the Region. Moderate damage was recorded in small white pine plantations in Thessalon Township, Blind River District and in Merritt Township, Espanola District. Damage was light at most other sample points (Table 9).

A Needle Cast of Jack Pine, *Davisomycella ampla* (Davis) Darker

This organism which attacks jack pine and often causes severe needle cast was collected at three locations. A high number of trees in Lendrum Township (Twp 30, Rge 23), Wawa District and small numbers in Maech Township, Blind River District and Gaudette township, Sault Ste. Marie District had evidence of the disease. In all instances defoliation was at the trace level and confined to smaller-diameter roadside trees.

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

Defoliation levels of this disease varied considerably in the Region. The high incidence of blackened, culled tips prevalent throughout the Sault Ste. Marie, Blind River and Wawa districts in 1975 declined to trace levels. Conversely, the percentage of infected hosts increased to high levels in Shakespeare Township, Espanola District and in Lauder Township, North Bay District and to moderate levels at three other locations in the latter district. Damage in all areas was light and confined to regeneration trembling aspen.

Table 9. Summary of percentage of trees affected by the white pine blister rust in the Northeastern Region in 1976

Plot location (Twp)	Avg ht of sample trees (m) ^a	Avg DBH (cm) ^b	Area affected (ha) ^c	Trees affected (%)
Blind River District				
Thessalon	3.6	10	1	13.0
Patton	2.1	3	20	1.0
Long	9.1	20	1	1.0
Cobden	4.6	10	2	3.0
Tweedle (2A)	2.1	3	10	1.0
Tweedle (2A)	1.5	3	10	0.7
Kamichisitit (168)	2.1	3	40	2.7
Parkinson	3.6	10	10	0.5
Wells	3.6	8	1	10.0
Kirkwood	4.6	13	20	2.0
Espanola District				
Merritt	1.8	3	1	14.0
Sault Ste. Marie District				
Gaudette	3.0	8	4	2.1
Garden R. Indian Res.	4.3	13	10	7.3

^a 1 m = 3.28 ft

^b 1 cm = 0.39 in.

^c 1 ha = 2.47 acres

Single-tree Mortality of Balsam Fir

This condition, characterized by the presence of scattered, red, dead balsam fir trees, was more prevalent in 1976. The most noticeable area of damage was along the Mississagi River extending from Lafoe Creek in Wagg Township to Aubrey Falls in Rollins Township. Smaller numbers of red balsam were present throughout Lake Superior Park and the Esnagi Lake area, Wawa District and in the Ranger Lake area, Sault Ste. Marie District.

Salt Damage

This condition was most prevalent along Highway 17 east of Sault Ste. Marie, where it extended as far as May Township, Espanola District. Heavy damage was most common on red pine but in Thessalon Township and in the Garden River Indian Reserve white pine was also damaged.

Drought Injury

Extensive damage in the form of premature leaf browning was caused by the prolonged warm, dry weather during the latter part of August and September. White birch and yellow birch were the most susceptible hosts. This condition was common throughout the Region and was most severe on high rocky sites.

Table 10. Other Noteworthy Diseases

Organism	Host(s)	Remarks
<i>Gremmeniella abietina</i> (Lagerb.) Morelet (= <i>Scleroderris lagerbergii</i> Gremmen)	jP	high percentage of trees infected in Gaudette Twp, Sault Ste. Marie District
<i>Sirococcus strobilinus</i> Preuss	rP	low damage level on numerous trees in Fisher Twp, Sault Ste. Marie District