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GREAT LAKES FOREST RESEARCH CENTRE
CENTRE DE RECHERCHE FORESTIÈRE DES GRANDS LACS

Results of forest insect and disease surveys in the NORTHERN REGION of Ontario, 1982

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

Canada

SURVEY HIGHLIGHTS

The effects of weather extremes experienced in June, 1980 were again reflected in the reduced population of spruce budworm in 1982. Severe defoliation was restricted to relatively small areas in the Hearst, Kapuskasing and Cochrane districts and in the Lake Abitibi area of the Cochrane and Kirkland Lake districts. Egg-mass counts indicate that light-to-moderate infestations will be general over a large part of the Region in 1983 and that severe defoliation will recur in those areas heavily infested in 1982. Ground and/or aerial spray operations of seed production areas, plantations, tree nurseries and other high-value stands were carried out by the Ontario Ministry of Natural Resources (OMNR) in several districts.

Little change occurred in the forest tent caterpillar infestations in the Cochrane District but a new infestation in the Matheson-Iroquois Falls area caused extensive defoliation there. Heavy infestations of the birch skeletonizer and the spearmarked black moth again caused severe foliar damage to white birch over large sections of the Region. Minor changes were recorded in the Swaine sawfly situation in the Elk Lake Management Unit, Kirkland Lake District.

Special surveys carried out in the Region in 1982 included a project to collect information on the two major insect vectors of the Dutch elm disease fungus, pheromone trapping for several insect species, and a detailed survey of insect and disease problems affecting high-value jack pine stands and plantations.

The generous assistance and cooperation extended by OMNR personnel in all districts of the Region are gratefully acknowledged.

The same format was followed in categorizing pests as in the 1982 Northern Region report.

Major Insects or Diseases

Capable of causing serious injury to or death of living trees or shrubs.

*Minor Insects or Diseases**

Capable of sporadic or localized injury but not usually a serious threat to living trees or shrubs.

Other Forest Insects/Diseases (Tables)

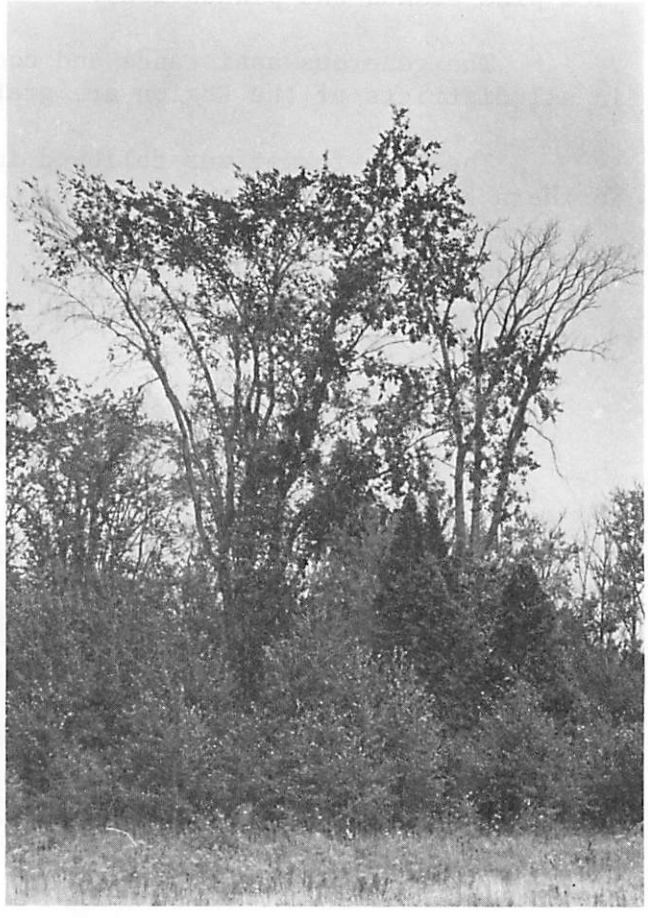
These tables provide information on two types of pest: 1) those which are of minor importance and have not been shown to cause serious damage to forest trees, and 2) those which are capable of causing serious damage but, because of low populations or for other reasons, did not cause serious damage in 1982.

* No minor insects or diseases were reported in the Northern Region in 1982.

L. S. MacLeod
D. C. Constable
W. A. Ingram

Frontispiece

Damage by forest tent caterpillar, *Malacosoma disstria* Hbn.



Typical elm (*Ulmus* spp.) deterioration by Dutch elm disease, *Ceratocystis ulmi* (Buism.) C. Moreau

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INSECTS

Major Insects

Birch Skeletonizer, *Bucculatrix canadensisella* Cham.

Heavy infestations of the birch skeletonizer recurred in white birch (*Betula papyrifera* Marsh.) stands in all districts of the Region in 1982 (Fig. 1). The total area of severe defoliation was approximately 56,000 km^2, representing a 100% increase over 1981. Light-to-moderate defoliation was general over the remainder of birch stands in the Region.

Spruce Budworm, *Choristoneura fumiferana* (Clem.)

The results of damage surveys, population sampling, and egg-mass counts will be included with those of other regions in a special report to be published later this year. That report will provide a complete description and analysis of developments in the spruce budworm situation in Ontario in 1982 and will give infestation forecasts for the province for 1983.

Larch Casebearer, *Coleophora laricella* (Hbn.)

Populations of the larch casebearer declined sharply in the Hearst, Kapuskasing and Cochrane districts. No defoliation was observed in previously infested stands in these districts or in other districts of this Region.

Eastern Pine Shoot Borer, *Eucosma gloriola* Heinr.

Little change in population levels of this shoot borer was noted in 1982. Leader damage in jack pine (*Pinus banksiana* Lamb.) plantations in the four southernmost districts of the Region is summarized in Table 1.

Birch Leafminer, *Fenusa pusilla* (Lep.)

As in 1981 extremely high populations of the birch leafminer were common on white birch through Chapleau, Gogama, Kirkland Lake and Timmins districts. Aerial surveys disclosed heavily damaged foliage at numerous locations and the numbers of mature trees attacked increased substantially over 1981. Trees at many locations in the urban areas of Chapleau, Timmins, South Porcupine, Matheson, Kirkland Lake, Gowganda, Englehart and New Liskeard sustained 100% foliar damage.

In the Hearst, Kapuskasing, and Cochrane districts damage was generally light and confined to regeneration trees except in the town of Kapuskasing where severe discoloration of foliage was common.

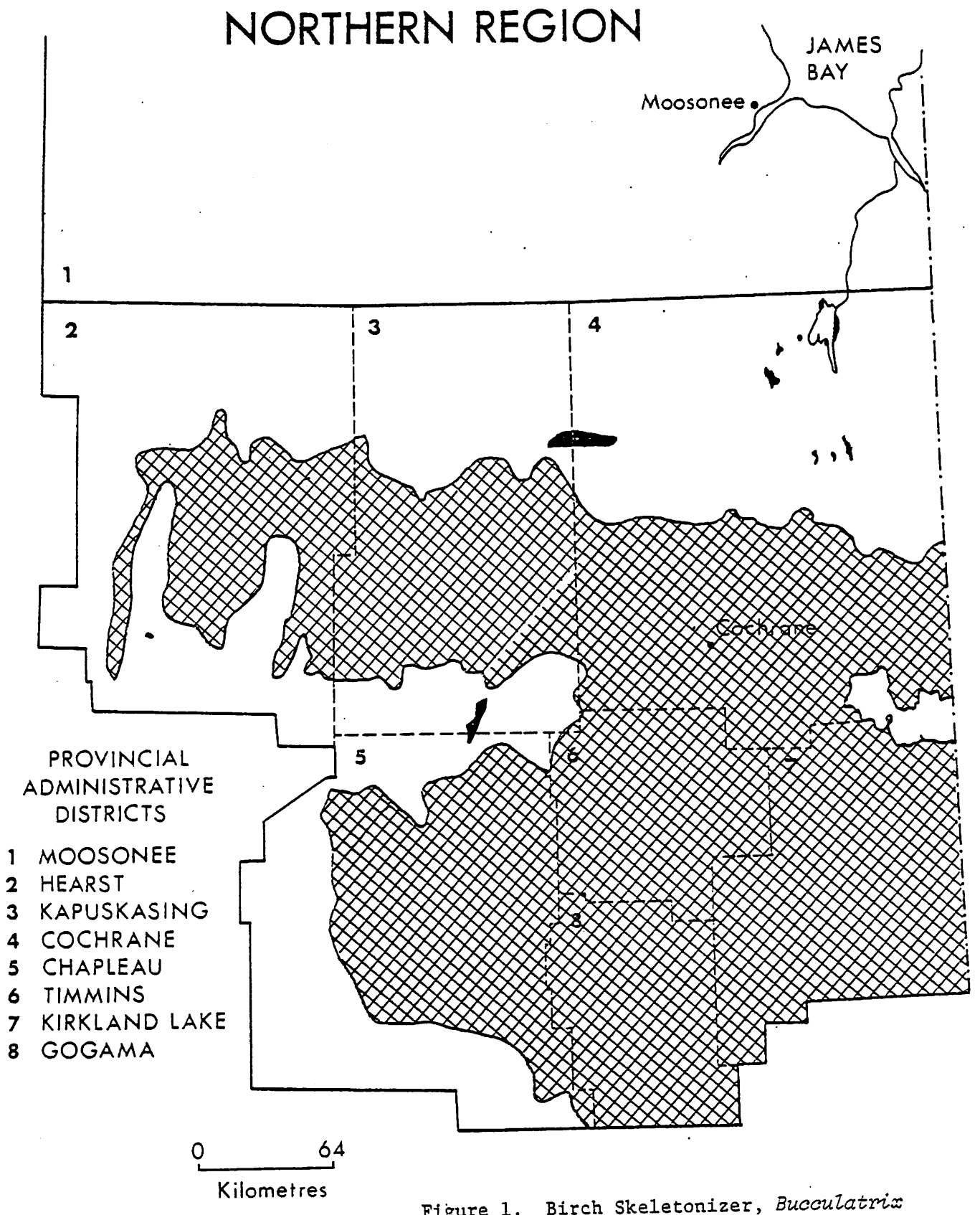


Figure 1. Birch Skeletonizer, *Bucculatrix canadensisella* Cham.

Areas within which moderate-to-heavy defoliation occurred in 1982

● or ▨

Table 1. Summary of leader damage caused by the eastern pine shoot borer in four districts in 1982 (counts based on the examination of 150 jack pine trees at each location).

Location (Twp)	Avg ht of trees (m)	Estimated trees per ha	Leaders killed (%)	Area affected (ha)
Chapleau District				
Dalmas	2.7	2,500	2.0	80
Topham	2.6	13,700	0.3	400
Abney	2.8	2,500	0.7	118
Pinogami	2.8	4,300	4.8	40
Gogama District				
Vrooman	1.4	2,900	0.0	4
Ogilvie	1.2	2,900	5.3	68
Jack	2.1	2,242	3.2	20
Timmins District				
Sewell	1.8	2,900	3.1	30
Macklem	1.5	2,900	4.0	40
Kirkland Lake District				
Cane	2.5	2,500	8.0	50
Gross	0.6	2,990	7.0	10
Catherine	1.8	2,990	9.3	20
Morrisette	3.0	2,990	4.0	5

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

Although this insect was widely distributed through the Region, the only severe defoliation occurred on aspen (*Populus* spp.) regeneration in Arnott and Studholme townships, Hearst District, where approximately 100 ha were affected. Defoliation in the 25-50% range was observed in Ivanhoe Provincial Park, and on roadside regeneration between Ramsay and Biscotasing in Chapleau District. Generally light defoliation was noted through the remainder of the Region.

Forest Tent Caterpillar, *Malacosoma disstria* Hbn.

In 1982 a total of approximately 62,000 ha of trembling aspen (*Populus tremuloides* Michx.) forest suffered moderate-to-severe defoliation in the Cochrane and Kirkland Lake districts (see Frontispiece and Fig. 2). The infestation located north of the town of Cochrane, Cochrane District, remained virtually unchanged, with 32,456 ha being moderately and severely defoliated. A new infestation, north of Matheson on the Kirkland Lake-Cochrane District boundary, caused a total of 29,600 ha of moderate and severe defoliation. Infestations which occurred in 1981 west of Smooth Rock Falls in the Kapuskasing District and near Kap Kig Iwan Provincial Park in the Kirkland Lake District declined to trace levels in 1982.

Egg-band sampling indicated that pockets of severe defoliation will recur in the older infestation in Cochrane District and severe defoliation is forecast for the new infestation in the Cochrane and Kirkland Lake districts (Table 2).

Table 2. Summary of forest tent caterpillar egg-band counts on trembling aspen in two districts in 1982 and infestation forecasts for 1983.

Location (Twp)	Avg DBH of trees (cm)	No. of trees sampled	Total no. of egg bands	Infestation forecasts for 1982
Cochrane District				
Glackmeyer	14.0	1	36	heavy
" (Brower Cr.)	14.8	3	10	light
Clute (south)	30.5	1	20	heavy
" (centre)	11.9	3	17	moderate
" (north)	15.2	3	4	light
Leitch	12.7	1	9	heavy
" (Silver Queen L.)	13.1	3	1	trace
Walker	12.3	3	1	trace
Kennedy	11.0	3	1	trace
Fournier	12.7	1	68	heavy
Blount	16.5	3	5	light
Kirkland Lake District				
Beatty	10.2	1	49	heavy
Coulson	12.5	1	73	heavy
Carr	10.2	1	72	heavy
Hislop	7.5	1	22	heavy
Dack	12.5	3	4	trace
Taylor	13.1	3	2	trace

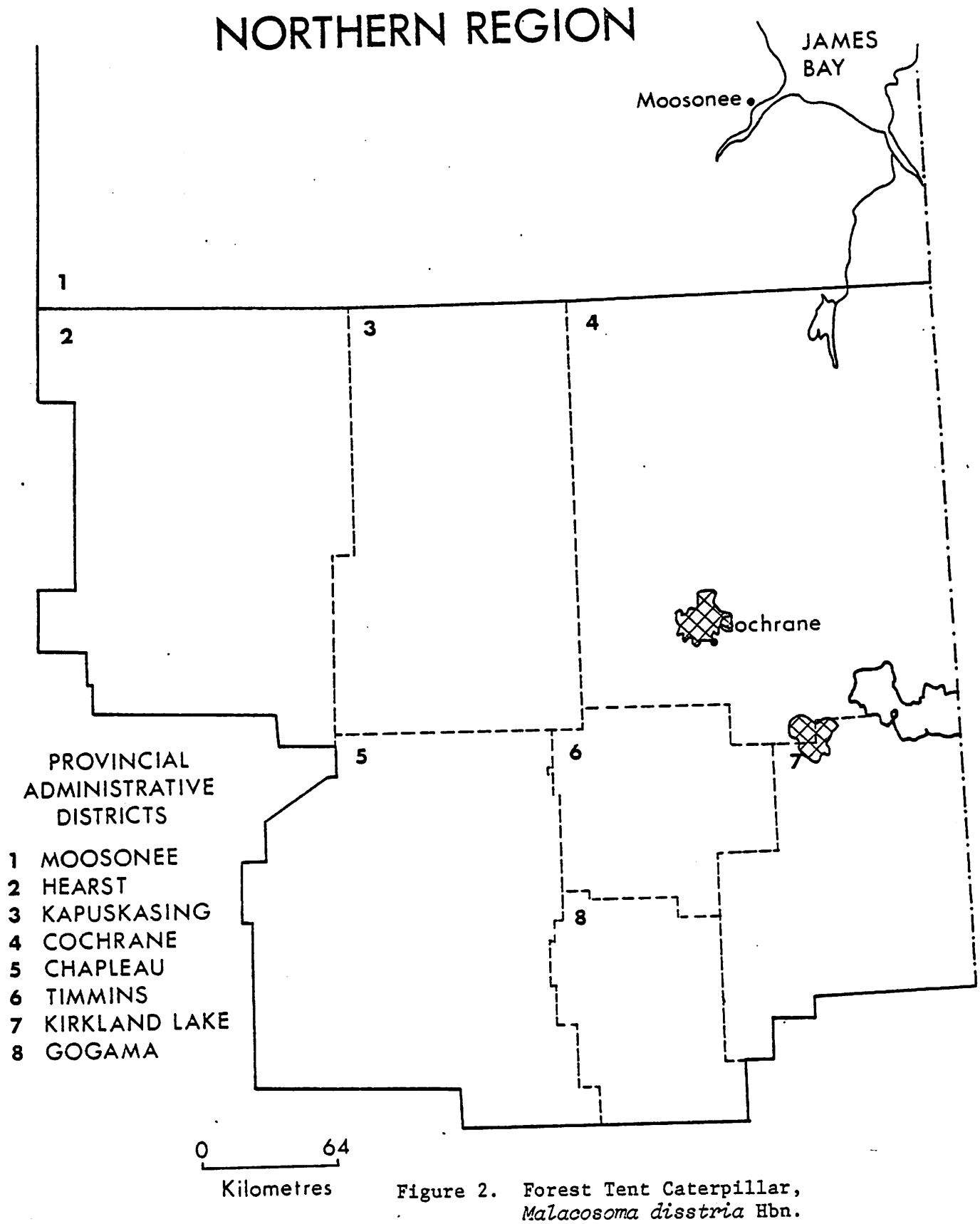


Figure 2. Forest Tent Caterpillar, *Malacosoma disstria* Hbn.

Areas within which moderate-to-heavy defoliation occurred in 1982 . . . . . ▨

Whitespotted Sawyer, *Monochamus scutellatus* (Say)

Reduced forest operations caused by depressed economic conditions may have been a factor in limiting damage caused by the sawyer beetle in the Region in 1982. Damage was confined mostly to fringe jack pine trees in 'checkerboard' cuts in Neelands Township, Chapleau District but no significant damage occurred in other districts of the Region.

Jack Pine Sawflies, *Neodiprion* spp.

These sawflies were observed in unusually high numbers in 1982. Jack pine was the preferred host and appreciable defoliation of both plantations and natural stands resulted. The red pine sawfly, *Neodiprion nanulus nanulus* Schedl., was the most common and the principal defoliator. Shoreline trees suffered 30% defoliation for several kilometres along the Minisinakwa River in Noble Township and throughout Jack Township, Gogama District. Severely defoliated trees were common along the Chapleau River and the Biscotasing Road in Chapleau District; in the Matachewan, Sesekinika, Gowganda and Larder Lake areas in Kirkland Lake District; and in the Kamiskotia and Highway 144 areas in Timmins District. In most of these areas the jack pine sawfly, *N. pratti banksianae* Roh., was usually present in small numbers. Although they are found rarely in the northern districts of the Region, the pine sawflies, *N. maurus* Roh., *N. nanulus nanulus* Schedl., and *N. pratti banksianae* Roh., were observed in small numbers in Hearst, Kapuskasing and Cochrane districts.

Swaine Jack Pine Sawfly, *Neodiprion swainei* Midd.

Several changes in the Swaine sawfly situation in the Elk Lake Management Unit were noted in 1982. A general reduction in the intensity of the infestation was evident and defoliation was generally moderate, with pockets of severely stripped trees.

The Banks-Wallis infestation expanded northward along the Makobe River to a point immediately north of Alexander Lake and westward several kilometres along Crane Creek. Cutting operations in the southwest sector have reduced the area of infestation from 4,660 ha in 1981 to approximately 3,950 ha.

Populations were much lower in the Lady Evelyn infestation. Lightly infested trees were observed at several points around Big Boot Lake and through the eastern part of the area, which was severely defoliated in 1981. The total area of the Lady Evelyn infestation in 1982 was 701 ha, down from 1,035 ha in 1981.

Pockets of light-to-moderate defoliation occurred through the Gamble-McGiffin plantations in the Chalice Lake area. Scattered colonies

were found in jack pine stands along the Beauty Lake Road from Little Southbear Lake to the south branch of the Lady Evelyn River. Lightly defoliated trees were also found on islands in Lake Temagami.

Redheaded Jack Pine Sawfly, *Neodiprion virginianus* complex

A marked decline in numbers of this sawfly was general in all districts. In 1981 pockets of severe defoliation were found over 265 ha in Chapleau District and in the Elk Lake-Matachewan area in Kirkland Lake District but colonies were rare in these areas in 1982.

Aspen Leafblotch Miner, *Phyllonorycter ontario* (Free.)

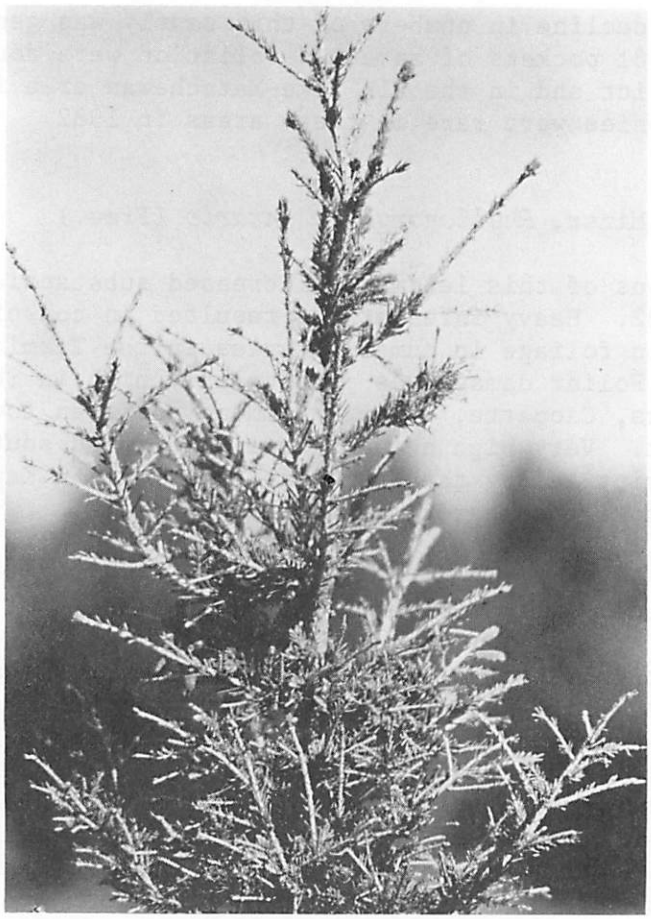
Populations of this leafminer increased substantially throughout the Region in 1982. Heavy infestations resulted in conspicuous browning of trembling aspen foliage in numerous areas in the Timmins and Kirkland Lake districts. Foliar damage was particularly high in Shoals Provincial Park and in Peters, Caouette, Wakami, Hammond and Moen townships in Chapleau District. Very high numbers were also found south of Highway 11 in Cochrane District, along the Chain of Lakes Road in Kapuskasing District and throughout the Hearst and Gogama districts.

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

Damage to white spruce (*Picea glauca* [Moench] Voss) and black spruce (*P. mariana* [Mill.] B.S.P.) was prevalent in the Region, with all districts except Moosonee and Gogama reporting varying degrees of defoliation. Moderate-to-severe damage to single trees and small groups of trees was observed in the town of Chapleau, in Ivanhoe Provincial Park and in Biscotasing; in windbreaks and Ontario Landscaping Agreement (OLA) planting stock at the Swastika Tree Nursery and in Ontario Ministry of Transportation and Communications (OMTC) windbreaks and on open-grown trees at many points in the Matheson, Ramore, Nighthawk, South Porcupine and Timmins areas. Heavy defoliation of approximately 30 ha of young white spruce plantations persisted in Calder and Glackmeyer townships, Cochrane District and severely defoliated trees were observed commonly through Hearst and Kapuskasing districts (see photo).

White Pine Weevil, *Pissodes strobi* (Peck)

Quantitative sampling in pine and spruce plantations for the period 1977-1981 showed that leader mortality caused by the white pine weevil averaged 6% annually. Although numbers varied considerably in 1982, evaluations indicated that population levels had been reduced by almost 50% across the Region (Table 3).



Damage by yellowheaded spruce sawfly,
Pikonema alaskensis (Roh.)

Table 3. Summary of damage caused by the white pine weevil in seven districts in 1982 (counts based on the examination of 150 trees at each location).

Location (Twp)	Host	Avg ht of trees (m)	Esti-mated trees/ha	Trees weeviled (%)	Area affected (ha)
Chapleau District					
Abney	jP	2.8	2,500	8.0	118
Manning	wS	1.7	1,682	2.4	16
Marshall	bS	1.6	2,500	3.3	4
Pinogami	jP	2.6	4,300	0.0	40
Dalmas	jP	2.7	2,500	2.0	80
Topham	jP	2.6	13,720	1.2	400
Gilliland	jP	1.1	2,980	5.3	40
Cochrane District					
Calder	wS	2.8	2,691	4.0	2
"	wS	6.9	3,445	0.0	4
Clute	wS	1.8	4,306	2.0	40
"	bS	1.5	4,306	6.0	100
Sargeant	jP	1.9	6,000	1.0	20
Dundonald	jP	2.5	4,306	0.0	25
Colquhoun	rP	3.9	1,200	1.0	2
Gogama District					
Invergarry	jP	2.0	2,200	3.6	80
Vrooman	jP	1.4	2,900	3.3	4
Ogilvie	jP	1.2	2,900	0.6	68
Jack	jP	2.1	2,242	2.5	20
Hearst District					
Stoddart	bS	1.9	4,306	1.3	100
"	wS	1.9	4,306	4.0	100
Studholme	wS	6.2	1,400	0.0	45
Way	wS	0.9	2,903	0.0	4
Studholme	jP	6.2	2,850	2.0	100
Kapuskasing District					
Fauquier	wS	3.6	3,014	1.0	4
"	wS	1.8	2,534	7.0	3
Idington	bS	3.4	2,870	1.0	40
Opasatika	wS	2.6	1,794	2.0	6
Shearer	bS	2.2	3,962	5.0	40
Guilfoyle	wP	1.4	1,690	2.0	10

(continued)

Table 3. Summary of damage caused by the white pine weevil in seven districts in 1982 (counts based on the examination of 150 trees at each location).

Location (Twp)	Host	Avg ht of trees (m)	Esti-mated trees/ha	Trees weeviled (%)	Area affected (ha)
Kirkland Lake District					
Morrisette	jP	3.0	2,500	6.0	10
Cane	jP	2.5	2,350	12.0	10
Catherine	jP	1.8	2,500	9.0	6
Timmins District					
Sewell	jP	2.0	2,100	5.0	10
Macklem	jP	2.5	2,500	7.0	15

Larch Sawfly, *Pristiphora erichsonii* (Htg.)

The infestation along the Fraser River in McCoig Township, Hearst District, collapsed completely in 1982. Single colonies were observed in tamarack (*Larix laricina* [Du Roi] K. Koch) stands in Langlois Township, Chapleau District and in Lisgar Township, Kapuskasing District.

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

Severe defoliation of mountain-ash (*Sorbus* spp.) trees was common through Chapleau, Gogama, Kirkland Lake and Timmins districts and in the southern part of Kapuskasing and Cochrane districts. Although this tree is of little importance in forest stands, the heavy damage to ornamentals resulted in numerous requests for information on control of the sawfly.

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

In 1981 severe discoloration of white birch foliage occurred over an area of 4,568 km^2 in the Chapleau District. In 1982 population levels declined and the total area of damage was approximately 4,081 km^2 (Fig. 3). At least part of this reduction in population levels was attributed to microsporidia infection which ranged from 10 to 40% in larval samples in 1981. In the Gogama District little damage to birch was observed but alder (*Alnus* sp.) was heavily infested at many locations. The insect was recovered in small numbers from other districts of the Region but no significant defoliation was observed.

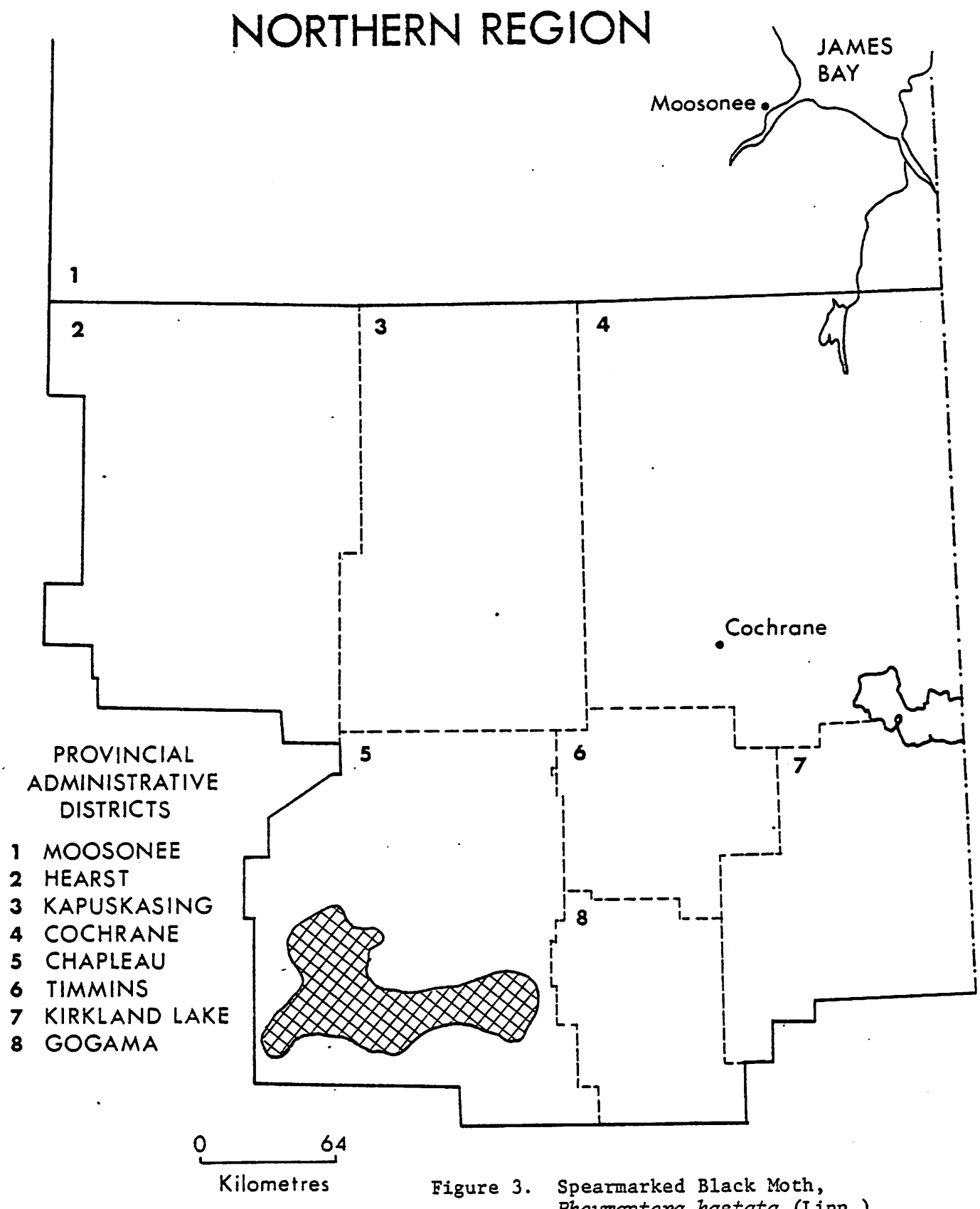


Figure 3. Spearmarked Black Moth, *Rheumaptera hastata* (Linn.)

Area within which light-to-moderate defoliation occurred in 1982 . . . . . ▨

Table 4. Other forest insects.

Insect	Host(s)	Remarks
Aceria sp. nr. *dispar* Nalepa Aspen leaf mite	tA	low levels throughout the northeastern portion of the Region along Hwy 11; darkened shrunken foliage quite conspicuous throughout these areas
Acrobasis betulella Hlst. Birch tubemaker	wB	varying degrees of damage in most stands in Kirkland Lake and Timmins districts
Adelges strobilobius (Kalt.) Pale spruce gall adelgid	bF	moderate gall damage to young trees along Kukatush Road in Chapleau District
Altica ambiens alni Harr. Alder flea beetle	Al	Severe defoliation continued throughout the Region; the heaviest defoliation occurred in pockets adjacent to low, wet areas.
Altica corni Woods Dogwood flea beetle	Do	pockets of severe defoliation along the Shiningtree Management Rd, Sheard Twp, Gogama District
Altica carinata Germ. Elm flea beetle	wE	heavy defoliation over 8 ha in Sheard Twp, Gogama District
Archips argyrospilus (Wlk.) Fruittree leafroller	tA, wB, Co	a decline in population levels throughout Kirkland Lake and Cochrane districts
Archips cerasivoranus (Fitch) Uglynest caterpillar	ecCh, pCh, W	varying degrees of defoliation observed at numerous points in the Region
Argyrotaenia tabulana Free. Jackpine tube moth	jP	high numbers throughout plantations in Timmins District

(continued)

Table 4. Other forest insects (continued).

Insect	Host(s)	Remarks
Choristoneura rosaceana (Harr.) Obliquebanded leafroller	tA,wB	common at low levels in stands throughout Kirkland Lake and Timmins districts
Chrysomela walshi Brown Balsam poplar leaf beetle	bPo	moderate damage throughout Kirkland Lake and Timmins districts and along Chain of Lakes Rd in Kapuskasing District
Cinari hottesi (G. & P.) Spruce aphid	wS	heavy populations on large trees on Moose Factory Island
Epinotia solandriana Linn. Birch-aspen leafroller	tA,wB	heavy damage, Shoals Prov. Pk, Chapleau District; low levels common throughout Kirkland Lake and Timmins districts
Eriophyes sp.	tA,wB, cCh, wAs	common at low levels throughout the Region on a wide variety of hosts
Eriosoma lanigerum (Hausm.) Woolly apple aphid	wE	heavy damage at Department of Agriculture Experimental Farm in Kapuskasing District
Eucordylea n. sp.	jP	low levels throughout plantations in Timmins District
Eupareophora parca (Cress.) Spiny ash sawfly	bAs	crown lightly defoliated in most stands throughout Kirkland Lake and Timmins districts
Fenusa dohrnii (Tischb.) European alder leafminer	Al	heavy damage over a 1-ha area in Studholme Twp, Hearst District
Gracillaria sp.	wB	small pocket of moderate defoliation in Stetham Twp, Gogama District

(continued)

Table 4. Other forest insects (continued).

Insect	Host(s)	Remarks
Hemichroa crocea (Geoff.) Striped alder sawfly	Al	moderate-to-heavy defoliation throughout Cochrane District and in eastern portion of Kapuskasing District
Holcocera immaculella McD. Conifer micro moth	jP	In Noble Twp, Gogama District, .5 ha of jack pine flowers suffered moderate damage.
Hyphantria cunea (Dru.) Fall webworm	tA,wB, Al, pCh	increased population levels observed throughout southern portion of Kirkland Lake District; occasional colonies west of Lake Abitibi in Moody Township
Ips pini (Say) Pine engraver	jP	moderate population on fringe trees in large cutover area in Bliss Twp, Chapleau District
Malacosoma californicum pluviale Dyar Northern tent caterpillar	eCh,W	light-to-moderate population levels on open-grown cherry (*Prunus* spp.) in old fields throughout Kirkland Lake, Cochrane and Timmins districts
Messa populifoliella (Town.) Poplar leafmining sawfly	tA	low levels throughout Kapuskasing and Cochrane districts and on Moose Factory Island in Moosonee District
Micurapteryx salicifoliella Cham. Willow leafminer	W	High populations in the area from Hornepayne to Hearst continued to expand to the northwest into Eilber Twp, Kapuskasing District.
Nematus limbatus Cress. Willow sawfly	W	low levels commonly found on willow (*Salix* spp.) foliage throughout Timmins and Kirkland Lake districts

(continued)

Table 4. Other forest insects (continued).

Insect	Host(s)	Remarks
Neurotoma inconspicua (Nort.) Plum webspinning sawfly	pCh	heavy defoliation on small clumps of trees in Ivanhoe Prov. Pk, Chapleau District
Nymphalis antiopa (L.) Mourningcloak butterfly	Decid.	High numbers persisted in Kirkland Lake and Timmins districts.
Paraprociphilus tesselatus (Fitch) Woolly alder aphid	Al	moderate infestation in Owens Twp, Kapuskasing District
Pemphigus populi-globuli Fitch Poplar bullet gall aphid	bPo	low levels recorded in Wadsworth Twp, Chapleau District and on Moose Factory Island
Petrova albicapitana (Busck.) Northern pitch twig moth	jP	low levels recorded throughout Dundonald Twp, Cochrane District
Phlyctaenia sambucalis Schiff. Elderberry leaftier	Elder-berry	light defoliation common in Timmins and Kirkland Lake districts
Phratora americana canadensis Brown American willow leaf beetle	w,tA	severe defoliation throughout Five Mile Provincial Park, Chapleau District
Phratora purpurea purpurea Brown Aspen skeletonizer	tA	light-to-moderate defoliation in most stands in Kirkland Lake and Timmins districts
Phyllonorycter kenora (Free.) Willow leafblotch miner	W	moderate damage recorded throughout Stimson Twp, Cochrane District
Phyllonorycter nipigon (Free.) Balsam poplar leafblotch miner	bPo	high populations recorded in Colquhoun and Calvert twps, Cochrane District; low levels throughout the remainder of the Region

(continued)

Table 4. Other forest insects (continued).

Insect	Host(s)	Remarks
Phytocoptella abnormis (Gar.) Linden gall mite	Ba	trees heavily affected on Department of Agriculture Experimental Farm in Kapuskasing District
Pikonema dimmockii (Cress.) Greenheaded spruce sawfly	wS	low levels in Seed Production Area #3220 in Clute Twp, Cochrane District
Pineus floccus (Patch) Red spruce adelgid	bS	heavy damage to individual trees in Leitch Twp, Cochrane District
Pineus similis (Gill.) Ragged spruce gall adelgid	wS	low levels on mature trees in Clute Twp, Cochrane District and at Moose Factory
Pissodes approximatus Hopk. Northern pine weevil	jP	common in recent mortality in Calvert Twp, Cochrane District and Frost Twp, Hearst District
Pityokteines sparsus (LeCl.) Balsam fir bark beetle	bF	high bark beetle activity in recently dead trees in Shoals Prov. Park, Chapleau District
Profenusa thomsoni (Konow) Ambermarked birch leafminer	wB	low levels throughout Kirkland Lake and Timmins districts
Psilocorsis reflexella Clem. Twoleaf tier	tA	low levels common throughout Kirkland Lake, Timmins and Cochrane districts
Psylla floccosa (Patch) False woolly alder aphid	Al	moderate levels throughout Kapuskasing and Cochrane districts and on Moose Factory Island

(continued)

Table 4. Other forest insects (concluded).

Insect	Host(s)	Remarks
Tethida cordigera (Beauv.) Blackheaded ash sawfly	As	small pockets of severe defoliation in Ivanhoe Prov. Pk and Carew Twp, Chapleau District
Tetralopha aplastella (Hlst.) Aspen webworm	tA	low numbers common in Kirkland Lake, Timmins and Cochrane districts
Toumeyella parvicornis (Ckll.) Pine tortoise scale	jP	low numbers in Dundonald Twp, Cochrane District and at Kipling Dam in Kapuskasing District
Vasates quadripes (Shim.) Maple bladdergall mite	siM	heavy damage in open-grown trees in Leitch Twp, Cochrane District

TREE DISEASES

Major Diseases

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

This root disease is caused by the fungus *Armillaria mellea*, which attacks and kills conifers and hardwoods. Infection on conifers is indicated by yellowing or reddening of needles and in hardwoods by a thinning of the crown and the presence of dying branches. Infection in healthy trees is spread through contact with infected roots of diseased trees by means of rhizomorphs which grow through the soil and penetrate the root bark.

Armillaria root rot evaluations were conducted at 11 locations in four districts of the Region (Table 5). The disease was detected in eight of the 11 stands evaluated and tree mortality averaged 2.7%.

Table 5. Summary of Armillaria root rot evaluations in four districts (counts based on examination of 150 trees at each location).

Location (Twp)	Host	Avg ht of trees (m)	Estimated trees/ha	Area affected (ha)	Trees dead (%)
Chapleau District					
Dalmas	jP	2.7	2,500	80	0.0
Topham	jP	2.6	13,720	400	0.3
Abney	jP	2.7	2,500	118	1.3
Gogama District					
Jack	jP	2.1	2,242	20	1.2
Ogilvie	jP	1.2	2,900	68	0.0
Timmins District					
Macklem	jP	2.1	3,000	40	5.0
German	jP	3.0	3,000	80	4.0
Kirkland Lake District					
Black	jP	7.6	3,000	40	0.0
McEvay	jP	3.0	3,000	30	5.0
Dunmore	jP	1.8	2,990	20	7.0
Burt	jP	1.2	2,990	10	6.0

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

This foliar disease was widespread throughout the Region. Varying degrees of ink spot damage were observed mainly on single trees and in small clumps of trees. Foliar damage ranged from 5% to 20% and affected trees varied from 4.5 m to 9.1 m in height. Quantitative data are given in Table 6.

Table 6. Summary of ink spot evaluation in two districts in 1982.

Location (Twp)	Tree ht (m)	Area affected (ha)	Trees affected (%)	Foliar damage (%)
Timmins District				
Sheraton	6.0	1	10	5
Timmins	6.0	1	10	5
Kirkland Lake District				
Katrine	4.5	2	10	20
McVittie	7.6	2	10	10
Teck	4.5	2	10	10
McEvay	2.1	5	10	10
Dack	9.1	2	10	5

Table 7. Other forest diseases.

Organism	Host(s)	Remarks
Chrysomyxa ledi (Alb. & Schw.) d By. *Chrysomyxa ledicola* Lagh. Needle rusts	wS,bS	trace to low levels of defoliation on regeneration throughout the Region
Coleosporium asterum (Diet.) Syd. Needle rust of pine	jP	Young pine plantations throughout Gill, Arnott and McEwing twps (Hearst District) again experienced high levels of infection.
Gloeosporium aridum Ell. & Holw. Anthracnose	blAs	trace to light levels of defoliation along Hwy 129, Chapleau District

(continued)

Table 7. Other forest diseases (concluded).

Organism	Host(s)	Remarks
Hypoxylon mammatum (Wahl.) Miller Hypoxylon canker	tA	no appreciable change in damage levels throughout the Region
Leptostroma sp. Needle cast	jP	light foliar damage to jack pine plantations south of Hwy 11 in Cochrane and Hearst districts
Lophodermium spp. Needle cast	jP,rP	observed at trace levels in jack pine stands in the eastern portions of the Region
Melampsora medusae Thuem. Needle rust	tL	low levels of foliar rust common on open-grown larch (*Larix* spp.) in Fauquier Twp, Kapuskasing District
Nectria cinnabarina (Tode ex Fr.) Fr. Nectria dieback	eW	light branch mortality on hedgerow trees at Department of Agriculture Experimental Farm, Kapuskasing District
Pucciniastrum epilobii Otth Needle rust	bF	low levels south of Hwy 11 in Hearst and Kapuskasing districts
Rhytisma punctatum (Pers.) Fr. Speckled tar spot	nM	widespread throughout the Region
Rhytisma salicinum (Pers.) Fr. Tar spot	W	trace-to-low levels recorded at several locations throughout the Region
Venturia macularis (Fr.) Müller & Arx Shoot blight	tA	low levels throughout the northern and eastern portions of the Region, with avg foliar damage of 20%

Abiotic Damage

Frost Damage

A small pocket of approximately 2 ha of mature trembling aspen foliage was 100% damaged in Foleyet Township, Chapleau District. Elsewhere in the Region, trace levels were observed at widely scattered points.

Squirrel Damage

Flagging and dead branch tips on jack pine trees were prevalent throughout the Region. Drops of pitch could often be seen around the scar where the cones were torn off by squirrels. Up to a 3-year portion of the branch can be killed depending on where the cone was located.

Wind Damage

Several areas of wind damage were detected from aerial surveys in the Region. In the Chapleau District, approximately 8 ha of jack pine and aspen were blown over in Margaret Township. In Calder and Bragg townships, Cochrane District, a total of 15 ha of mixed black spruce, trembling aspen and white birch was uprooted by severe winds. In the Hearst District, approximately 2 ha in Hiawatha Township comprising white birch-aspen and black spruce were toppled. No areas of wind damage were observed in the Timmins and Kirkland Lake areas.

Special Surveys

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

As part of a national program, the Forest Insect and Disease Survey (FIDS) Unit conducted a survey to collect information about the distribution and incidence of Dutch elm disease (see Frontispiece) and the distribution and level of the major vectors of the fungus in Canada: the native elm bark beetle, *Hylurgopinus rufipes* (Eich.) (hereafter N.E.B.B.), and the smaller European elm bark beetle, *Scolytus multistriatus* (Marsh.) (hereafter S.E.E.B.B.).

To attract the S.E.E.B.B., 13 pheromone traps were deployed in six districts of the Region where elm (*Ulmus* spp.) was known to occur. Traps were placed within 300 m of live or dying elms and attached to utility poles or trees of species other than elm. These traps were exposed during the second week of June and remained in place until the end of the field season in September.

Since an effective pheromone has not been developed to attract the N.E.E.B. it was necessary to set up 11 log traps in five districts to determine the presence or absence of *C. ulmi* vectors. At each site, two logs were cut (15 to 25 cm in diameter and 2 m long) and set out in the open, off the ground and in the vicinity of the pheromone traps (Fig. 4).

The first pair of logs was set out at the beginning of the field season and examined during the middle of July, at which time a second pair of logs was set out. The latter pair was examined at the end of the field season. Logs were peeled to determine the presence of galleries constructed by either the S.E.E.B.B. or the N.E.B.B., since both species could be attracted to the logs.

Log and pheromone trap results were negative except in Ogilvie Township where one adult of the N.E.B.B. was found in the pheromone trap.

To determine the distribution of Dutch elm disease in the Region, a search for elm trees in 11 urban and seven rural areas was conducted at widely scattered points. In most of the areas examined, very little elm existed, and all samples submitted to the laboratory for identification were negative.

Jack Pine Plantations

In 1982, a special survey was performed to review insect and disease problems of high-value jack pine stands. In the Northern Region, six permanent sample plots in the 0.5 to 2.0 m height classes were established and will be rated on an annual basis. In other areas of the Region, 12 randomly selected stands (six of each in the 2.1 to 6.0 m and >6.0 m height class) were also examined. A variety of insect pests and diseases were detected and evaluated; however, there appear to be no serious problems revealed by these surveys. Positive results are summarized in Tables 8 and 9.

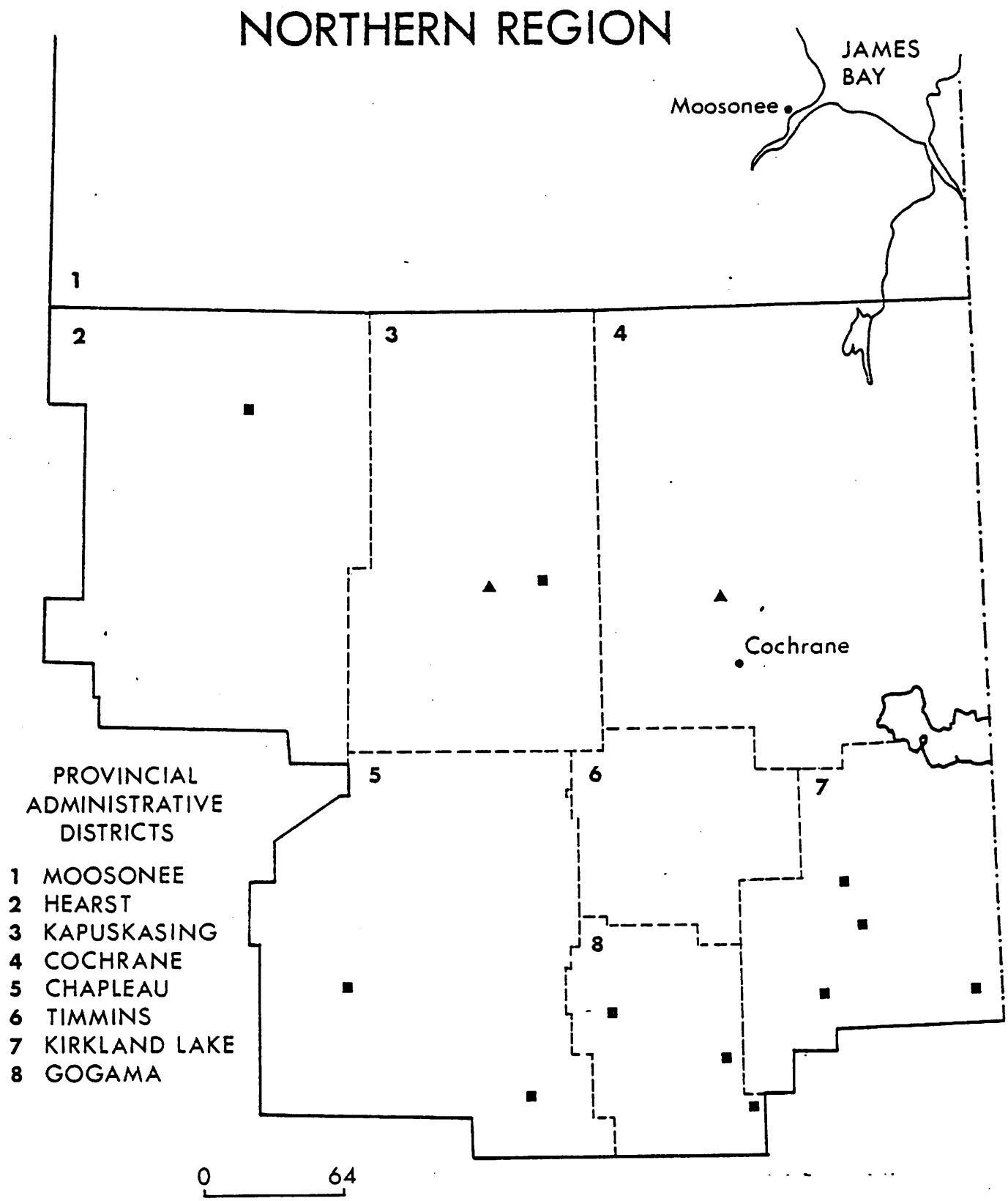


Figure 4. Dutch Elm Disease, *Ceratocystis ulmi* (Buism) C. Moreau, vector survey in 1982

Location of pheromone trap . . . . . ▲

Location of pheromone trap plus log trap . . . . . ■

Table 8. Insect evaluations in the special jack pine survey conducted in 18 plantations throughout the Northern Region (300 trees examined in the 2.0 m class and 150 trees examined in the 2.1-6.0 and >6.0 m classes).

Location (Twp)	Area (ha)	Estimated trees/ha	Ht class (m)	Jack pine sawfly: Trees affected (%)	Jack pine sawfly: Defoliation (%)	White pine weevil: Trees affected (%)	Eastern pine shoot borer: Leaders attacked (%)	Eastern pine shoot borer: Laterals attacked (%)	Jack pine tip beetle: Leaders attacked (%)
Chapleau District									
Gilliland	60	2,424	0-2.0	0	0	.7	.3	0	0
Bliss	75	2,775	"	0	0	.3	0	.3	.3
Pattinson	40	2,990	2.1-6.0	0	0	6.0	2.6	6.6	0
Strom	80	2,000	>6.0	0	0	0	0	0	0
Gogama District									
Invergarry	300	2,500	2.1-6.0	.7	.2	10.6	6.0	8.0	0
Garvey	400	2,500	>6.0	0	0	0	0	0	0
Timmins District									
Robb	50	2,900	0-2.0	.3	10	0	1.3	0	0
Macklem	50	3,000	2.1-6.0	0	0	7.3	9.3	0	0
German	80	3,000	>6.0	1.3	1	0	0	0	0
Kirkland Lake District									
Corkill	322	2,900	0-2.0	0	0	1.0	1.6	0	0
McEvay	30	3,000	2.1-6.0	0	0	0	0	0	0
Black	40	3,000	>6.0	0	0	0	0	0	0
Cochrane District									
Sheldon	93	9,900	0-2.0	0	0	0	0	0	0
Dundonald	84	2,584	2.1-6.0	0	0	0	0	0	2
Hearst District									
Cross	220	2,541	0-2.0	0	0	0	0	0	0
Studholme	40	1,400	>6.0	0	0	0	0	0	.6
Kapuskasing District									
Kipling	90	10,000	2.1-6.0	0	0	0	0	0	0
Fauquier	40	796	>6.0	1.3	1	0	0	0	0

Table 9. Disease evaluations in the special jack pine survey conducted in 18 plantations throughout the Northern Region (300 trees examined in the 0-2.0 m class and 150 trees examined in the 2.1-6.0 and >6.0 m classes).

Location (Twp)	Area (ha)	Estimated trees/ha	Ht class (m)	*Armillaria mellea* Trees affected (%)	Scleroderris canker Trees affected (%)	Gall rust Trees affected (%)	Stem rust Trees affected (%)	*D. ampla* Avg defoliation (%)	*Coleosporium asterum* Foliar damage (%)	Combined mortality (%)
Chapleau District										
Gilliland	60	2,424	0-2.0	0.3	0	1	0	0	0	0
Bliss	75	2,775	0-2.0	0	0	0	0	0	0.6	0
Pattinson	40	2,990	2.1-6.0	0.6	0	2	0	4	1.6	0
Strom	80	2,000	>6.0	0	0	1.6	0	0	0	0
Cogama District										
Invergarry	300	2,500	2.1-6.0	0	0	2.6	0.6	0	0.8	1.8
Garvey	400	2,500	>6.0	0	0	0	0	0	0	0
Timmins District										
Robb	50	2,900	0-2.0	0	0	0	0	0	0	0
Macklem	50	3,000	2.1-6.0	0	0	0	0	0	0	0
German	80	3,000	>6.0	0	0	0	15.3	0	0	0
Kirkland Lake District										
Corkill	322	2,900	0-2.0	0.3	0	0	0	0	0	0
McEvay	30	3,000	2.1-6.0	0	0	0	0	0	0	0
Black	40	3,000	>6.0	0	0	0	7.3	0	0	0
Cochrane District										
Sheldon	93	9,000	0-2.0	0	0	0	0	0	0	0
Dundonald	84	2,584	2.1-6.0	0	0	0.6	0	0.7	0	0
Hearst District										
Cross	220	2,541	0-2.0	0	0	0	0	0	0.1	0
Studholm	40	1,400	>6.0	0	0	0	0	0.8	1.1	0
Kapuskasing District										
Kipling	90	10,000	2.6-6.0	0	0	0	0.6	1.8	0	0
Fauquier	40	796	>6.0	0	0	0	0	0	0	0

Jack Pine Seed and Cone Pests

In response to concern expressed by OMNR personnel about seed and cone problems, the FIDS Unit conducted a survey of jack pine cones to determine damage caused by insects and diseases.

Two samples of cones were taken from natural stands in two districts of the Region. The first sample of 100 cones (second year, but in the green stage) was made during the first week of July and the second collection of 100 cones (in the early woody stage) was made during the second week of September.

Although no damage was caused by diseases, an average of 31.5% of developed cones was damaged and of this total an average of 50.1% of cones were damaged by lepidopterous larvae. Results are summarized in Table 10.

Table 10. A summary of damaged jack pine cones in two districts of the Region in 1982.

Location (Twp)	Developed cones examined	Developed cones damaged (%)	Cones damaged by Lepidoptera (%)	Seed loss within damaged cones (%)	Principal causes of seed loss
Chapleau District					
Bordeleau Visit 1	100	29	6.9	58	Undetermined
Cochrane District					
Dundonald Visit 1	100	34	94.0	92	*Dioryctria disclusa* Heinr.

Pinewood Nematode, *Bursaphelenchus xylophilus* (Steiner & Buhrer) Nickle

As part of the general surveys in the Region, efforts were made to sample recently dead or dying pine trees for the presence of nematodes, since these pests have not been found in Ontario. Increment core samples were obtained at 21 widely scattered points in the Region (Fig. 5) and were examined in the laboratory.

The nematodes are transferred from infested to healthy pines by sawyer beetles. Nematodes kill the host tree by rapidly multiplying in the sapwood of branches and main stems, thereby disrupting the water-flow within the tree. Needle discoloration, a change from green to yellow and finally to brown, is the first visible symptom expressed by infested pines. The symptom is preceded by a marked decrease in resin flow. Trees invaded by the nematode in the spring wilt and die by late summer, but some may wilt within 3 months of becoming infested.

All samples submitted and examined in 1982 were negative.

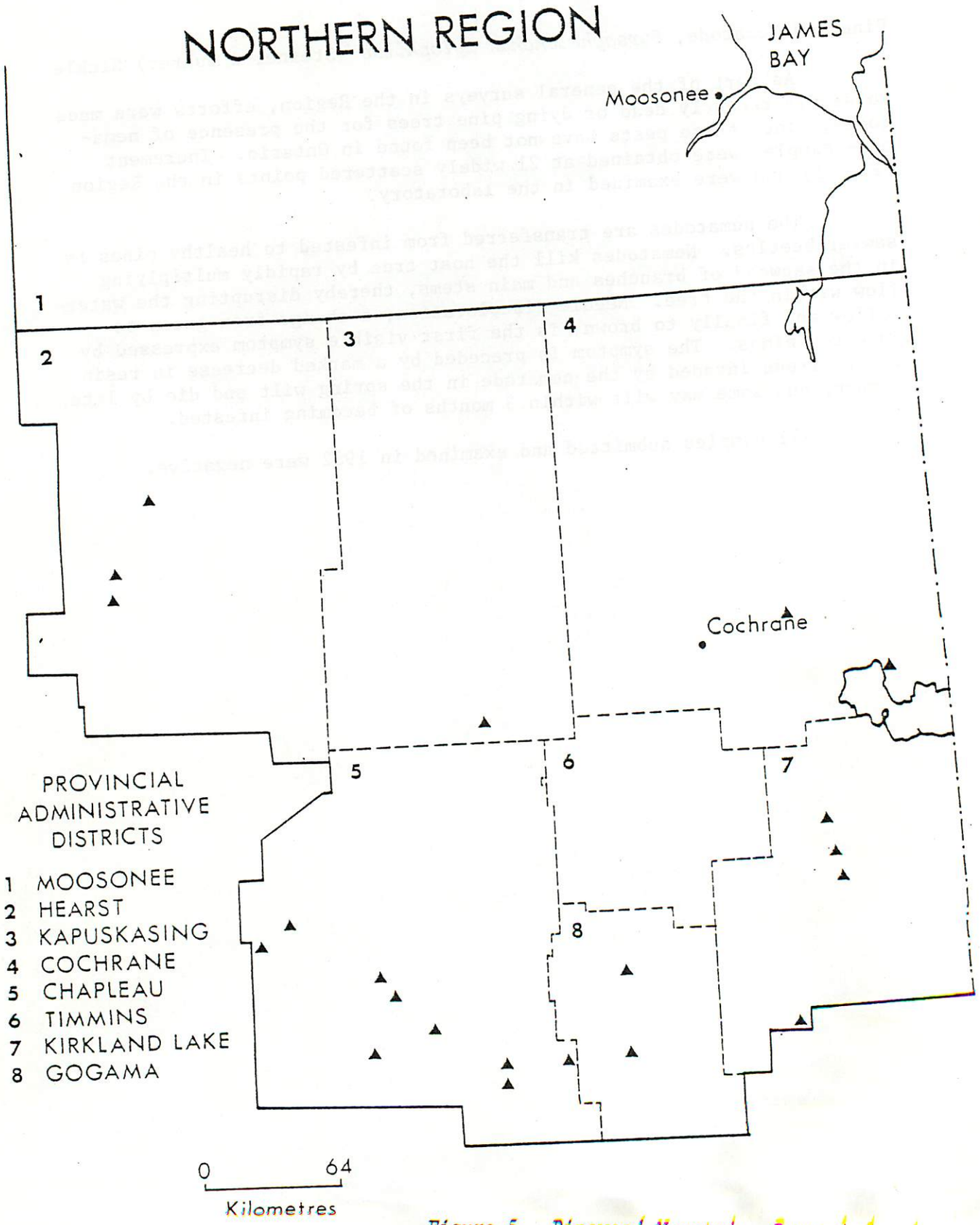


Figure 5. Pinewood Nematode, Bursaphelenchus mylophilus (Steiner & Buhrer) Nickle

Sample locations in 1982