

FOREST INSECT AND DISEASE SURVEYS  
IN THE WESTERN SURVEY REGION, 1972

(FOREST DISTRICTS: SIOUX LOOKOUT, KENORA, FORT FRANCES  
AND THUNDER BAY)

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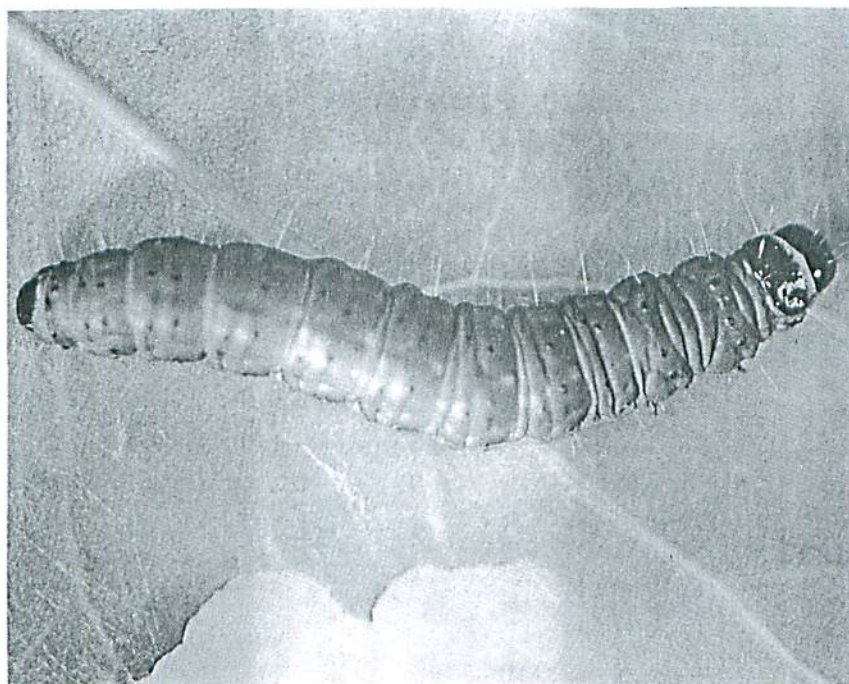
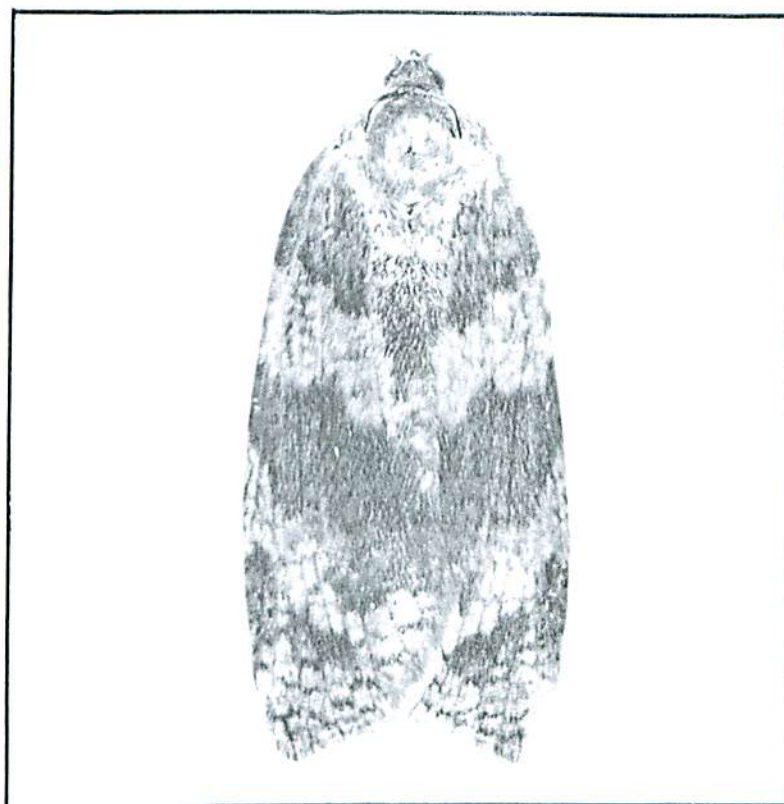
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Frontispiece. Adult and larva of the large aspen tortrix.

## SURVEY HIGHLIGHTS

The following report describes the more important forest insect and disease conditions in the Western Survey Region in 1972.

Emphasis was placed on providing backup biological information on the spruce budworm in support of aerial spraying operations carried out by the Ontario Ministry of Natural Resources. Population levels of the forest tent caterpillar increased markedly in the Kenora District but the prolonged outbreak in the Fort Frances District virtually collapsed. Similarly, infestations of jack pine budworm in the Sioux Lookout, Kenora and Fort Frances districts disappeared. A marked increase in the areas infested by the large aspen tortrix and the birch skeletonizer was recorded.

Tree disease surveys revealed the presence of armillaria root rot at many points in the Region. No new infection centers of Scleroderris canker of pines were located; however, extensive damage accumulated in jack pine regeneration stands in the northern part of the Sioux Lookout District. A survey of root and butt diseases of fir and spruces initiated in 1971 was expanded in 1972 to include jack pine. Examination of elms in the southern part of the Region failed to reveal the presence of Dutch elm disease.

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## INSECTS

Birch Skeletonizer, *Bucculatrix canadensisella* Cham.

Infestations persisted for the third consecutive year in stands of white birch (*Betula papyrifera* Marsh.) and in 1972 damage was noticeable throughout the Region except in the northeastern corner (see Appendix, Fig. A1). Damage was particularly severe in stands bordering lakes and rivers, where foliage browning and premature leaf drop occurred. In many instances trees were devoid of foliage by early September.

Large Aspen Tortrix, *Choristoneura conflictana* Wlk.

Infestations of this insect continued and expanded in Sioux Lookout, Fort Frances and Thunder Bay districts for the fifth consecutive year and declined in the Kenora District. Moderate-to-severe defoliation of trembling aspen (*Populus tremuloides* Michx.) occurred over approximately 15,500 square miles of forest land, an increase of more than 14,000 square miles over 1971 (see Appendix, Fig. A2).

Large areas of infestation occurred in the southeastern part of Sioux Lookout District, in the northeastern part of Fort Frances District and in stands throughout approximately 75% of the Thunder Bay District. New pockets of moderate-to-heavy infestation were recorded in the Red Lake area as shown and at two points north of 11 base line in the northwestern part of the Sioux Lookout District, and in Quetico Provincial Park and near Lake of the Woods in Fort Frances District.

Defoliation was light in the English River watershed in Kenora District where moderate and heavy infestations were reported in 1971.

Cocoons were examined at seven points, and the percentages that gave rise to moths ranged from 49% to 81%, indicating the likelihood of continued outbreaks in 1973 (Table 1).

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 information report by G. M. Howse *et al.* (O-X-173). This report provides the reader with a complete description and analysis of developments concerning the spruce budworm situation in Ontario in 1972 and gives infestation forecasts for the Province for 1973.



Table 1. Summary of large aspen tortrix cocoon dissections in the Western Survey Region in 1972 (Counts were based on the examination of 100 cocoons at each location.)

Location	Parasitized (%)	Diseased or dead of unknown cause (%)	Showing moth emergence (%)
Sioux Lookout District			
Pickle Lake Rd at English River	31	9	60
Hwy 17 at Raven Lake Junction of Hwy 105 and 125	13	6	81
	19	3	78
Thunder Bay District			
McGregor Twp	32	2	66
Conmee Twp	38	13	49
Armstrong Rd	19	5	76
Northern Light Lake	40	8	52

Jack-pine Budworm, *Choristoneura pinus pinus* Free.

In northwestern Ontario, past records indicate that jack-pine budworm infestations have broken out abruptly and often disappeared in a like manner. All infestations reported in 1971 on jack pine (*Pinus banksiana* Lamb. [= *P. divaricata* (Ait.) Dumont]) in the southern parts of the Kenora and Sioux Lookout districts and in the Fort Frances District disappeared, and defoliation was negligible.

Jack-pine Tip Beetle, *Conophthorus banksianae* McPherson

This insect was common through extensive areas of jack pine regeneration in the Sioux Lookout, Kenora and Thunder Bay districts. The first record of the insect in Fort Frances District was obtained when infested shoots were collected near the village of Emo. Most shoot mining occurs on lateral branches; however, the terminal branch is frequently attacked. Mining causes the wilting and death of the apical whorl of branch tips shortly after elongation occurs in the spring (Fig.1). Quantitative sampling was carried out at two points to determine the incidence of attack on tree leaders and lateral branches (Table 2). Damage to leaders destroys the current year's growth and thus is of much greater consequence than damage to lateral branches.

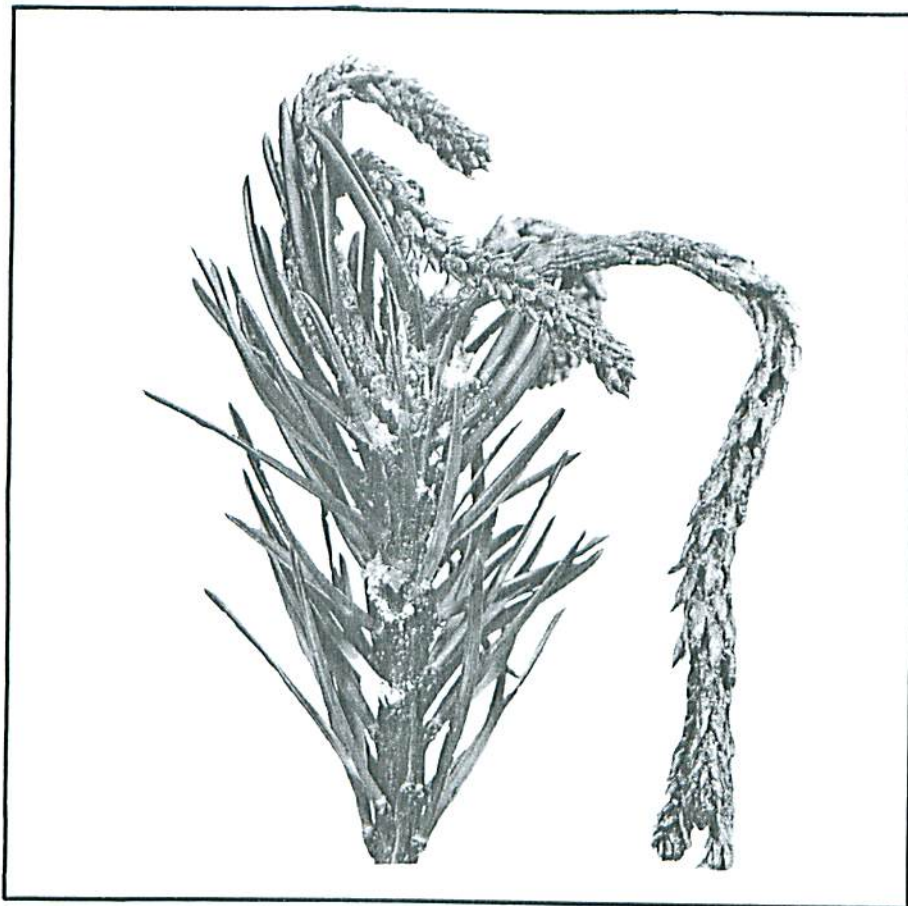
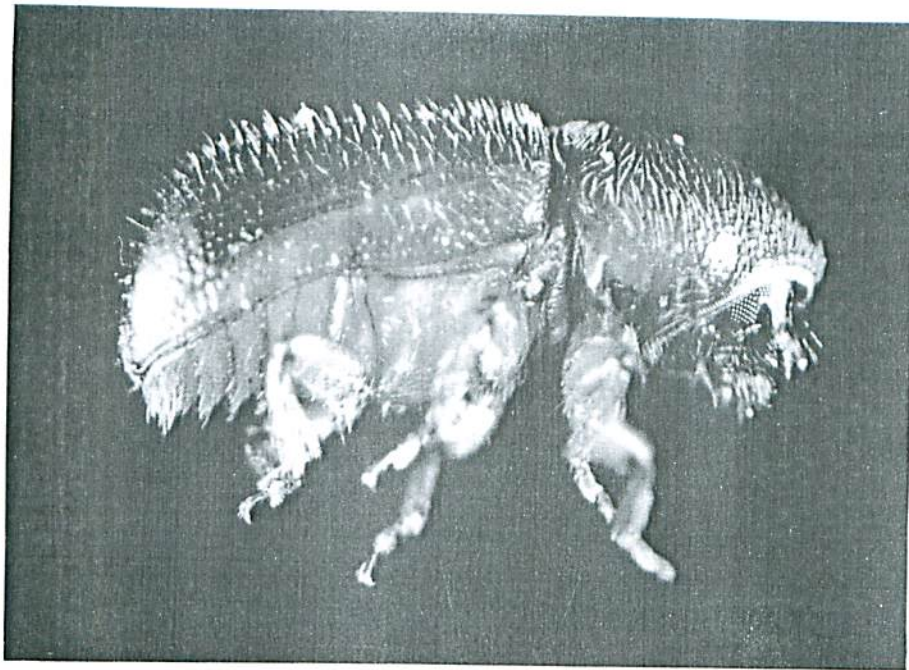


Fig. 1. Top: jack-pine tip beetle  
Bottom: a damaged tip



Table 2. Summary of damage by the jack-pine tip beetle in the Western Survey Region in 1972 (Counts were based on examination of 100 trees at each location.)

Location	Avg DBH of sample trees (in.)	Trees damaged (%)	
		Terminal branch	One or more lateral branches
Sioux Lookout District			
Lomond Twp	1	12	27
Tot Lake	1	3	4

Introduced Pine Sawfly, *Diprion similis* (Htg.)

Infestations of this sawfly, found for the first time in 1970 east of the town of Fort Frances, declined from moderate intensity in 1971 to very low numbers in 1972. Surveys of eastern white pine (*Pinus strobus* L.) stands over approximately 100,000 acres that were previously infested showed no defoliation.

Birch Leaf Miner, *Fenusa pusilla* (Lep.)

No appreciable change was noted in the distribution of this introduced insect. In the Fort Frances District, heavy infestations recurred on white birch regeneration along the McKenzie Lake road in Quetico Provincial Park and in the Nym and French lakes areas. Moderate infestations were observed nearby at Atikokan and in the Emo area west of Fort Frances. Heavy infestations persisted near Gull Bay on Lake Nipigon and at Mile 36 on Highway 800 in the Thunder Bay District (Table 3). Foliage of ornamental birches within the city of Thunder Bay was severely damaged in some instances. Light infestations were observed at scattered points elsewhere in each of the above districts.

Blotch Miners on Poplar, *Lithocolletis ontario* Free., *L. nipigon* Free.

An increase in population levels of the blotch miner *L. ontario* on trembling aspen occurred at many points in the Region. Heavy infestations were recorded at five locations in the Sioux Lookout District and at many scattered points in the eastern part of Fort Frances District. Numerous small pockets of heavy infestation were observed at widely separated points elsewhere in the Region.

*L. nipigon*, a blotch miner causing similar damage on balsam poplar (*Populus balsamifera* L.) caused severe mining of foliage in small localized areas in Nipigon, Blake, and Paipoonge townships. Small numbers were observed at many points elsewhere in Thunder Bay District.

Table 3. Summary of birch leaf miner counts in the Western Survey Region from 1970 to 1972 (Counts were based on examination of 100 leaves taken at random from three trees at each location.)

Location	Avg DBH of sample trees (in.)	Leaves mined (%)		
		1970	1971	1972
Fort Frances District				
McKenzie Lake Rd	1	--	--	45
Nym Lake	1	--	--	38
French Lake	1	--	--	61
Thunder Bay District				
Gull Bay, Lake Nipigon	3	65	60	33
Northern Light Lake	3	--	9	0
Marks Lake Rd	3	--	21	20
Scoble Twp	2	29	31	14
Mile 36, Hwy 800	2	--	64	57

Forest Tent Caterpillar, *Malacosoma disstria* Hbn.

The area defoliated by this insect decreased from approximately 900 square miles in 1971 to approximately 30 square miles, most of which occurred in the Kenora District.

The largest infestations were located northeast of Eagle Lake, where moderate-to-severe defoliation occurred in five pockets. In the Fort Frances District, the infestation that had persisted for several years in the area west of Rainy Lake decreased to small pockets in Devlin and Mather townships.

Dissections of cocoons after moth emergence showed that an increased number of pupae were killed by the parasite *Sarcophaga aldrichi* Park. in the Fort Frances District, and this resulted in a lower emergence of moths for the third consecutive year. Cocoon dissections in the Kenora District infestation showed an unusually high



number of parasitized pupae (70+%) considering that 1972 was the first year of moderate-to-heavy infestation (Table 4).

Egg surveys carried out in late summer indicated that medium-to-heavy infestations can be expected in the Eagle Lake area in 1973, whereas only trace populations are forecast for Fort Frances District (Table 5).

Table 4. Summary of forest tent caterpillar cocoon dissections in the Western Survey Region from 1970 to 1972 (Counts were based on examination of 100 cocoons at each location.)

Location	Parasitized (%)			Diseased (%)			Showing adult emergence (%)		
	1970	1971	1972	1970	1971	1972	1970	1971	1972
Kenora District									
Hwy 17 at Minitaki	--	--	78	--	--	0	--	--	22
Hwy 17 at Dryden	--	--	72	--	--	1	--	--	27
Fort Frances District									
Crozier Twp	51	78	91	5	11	0	44	11	9
Miscampbell Twp	53	81	94	9	9	0	38	10	6
Mather Twp	--	--	87	--	--	0	--	--	13

Table 5. Summary of forest tent caterpillar egg-band counts and infestation forecasts for 1973 in the Western Survey Region (Counts were based on the examination of one-three trees at each location.)

Location	Avg DBH of sample trees (in.)	No. of trees examined	Avg no. of egg bands per tree	Infestation forecast for 1973
Kenora District				
Hwy 17 at Beaver Creek	7	1	27.0	heavy
Hwy 17 at Oxdrift	5	3	7.0	heavy
Fort Frances District				
Kingsford Twp	5	3	0.3	light
Crozier Twp	5	3	1.0	light
Mather Twp	5	3	0.3	light



White Pine Weevil, *Pissodes strobi* (Peck)

Populations of this weevil continued to fluctuate throughout the Region with moderate-to-heavy weeviling at eight of 14 permanent sample points (Table 6). The most severe damage was recorded along the Basket Lake road northeast of Tache Crossing, at Great Lakes Paper Co. Camp 319 and Webb Township in the Sioux Lookout District, and in Marks and Conmee townships in the Thunder Bay District. Elsewhere light-to-moderate weeviling was common. Although jack pine was the principal host, white spruce (*Picea glauca* [Moench] Voss) and Norway spruce (*P. abies* [L.] Karst.) were heavily damaged in some instances.

Table 6. Summary of damage by the white pine weevil in the Western Survey Region from 1970 to 1972 (Counts were based on examination of 100 trees at each location.)

Location	Host	Avg DBH of sample trees (in.)	Trees weeviled (%)		
			1970	1971	1972
Sioux Lookout District					
Heyson Twp	jP	1	18	8	3
Basket Lake Rd	jP	1	17	7	17
Camp 319, G.L.P. Co.	jP	1	6	7	11
Centrefire Lake	jP	1	8	7	6
Webb Twp	jP	1	--	2	19
Kenora District					
Dryden Tree Nursery	wS	1	--	--	7
Fort Frances District					
Williamson Lake	jP	3	--	16	11
Manion Lake Rd	jP	1	--	--	7
Thunder Bay District					
Marks Twp	nS	3	17	18	18
Marks Lake Rd	rP	1	9	1	7
Marks Lake Rd	jP	2	--	15	21
Conmee Twp	wS	3	--	56	35
English River	jP	2	4	9	12
Kopka Lake	jP	2	2	2	6

Larch Sawfly, *Pristiphora erichsonii* (Htg.)

A general decline in populations of this insect was evident throughout the Region. Heavy infestations which occurred at numerous locations in 1971 subsided, the only exception being in McIntyre Township in the Thunder Bay District, where medium infestations persisted for the third consecutive year. Surveys revealed that a major portion of the population decline was attributable to early larval mortality. In numerous instances, successful egg hatching occurred; however, larvae failed to survive after initial feeding.

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

Heavy infestations persisted on ornamental mountain-ashes in the city of Thunder Bay and on scattered clumps of American mountain-ash (*Sorbus americana* Marsh.) as far south as the Pigeon River. A spread in the distribution was recorded in Thunder Bay District when colonies of larvae were observed in the Kakabeka Falls area and near Mile 50 on Highway 800. The sawfly was not found elsewhere in the Region despite extensive surveys.

Table 7. Other noteworthy insects

Insect	Host(s)	Remarks
<i>Acleris logiana</i> Linn.	wB	This skeletonizer was common on roadside trees near Sioux Narrows, Kenora District.
<i>Acleris variana</i> Fern.	wS	Small numbers were common on beating samples.
<i>Adelges lariciatus</i> (Patch)	wS	common on scattered trees near Bear Pass, Fort Frances District
<i>Adelges strobilobius</i> Kalt.	bS	high populations near Greenmantle and Perrigo lakes, Sioux Lookout District
<i>Alsophila pometaria</i> (Harr.)	mM	heavy infestations on shade trees, Fort Frances
<i>Altica corni</i> Woods	Do	heavy at Menako Lake, Sioux Lookout District
<i>Altica populi</i> Brown	cPo	common in the town of Fort Frances

(continued)



Table 7. Other noteworthy insects (continued)

Insect	Host(s)	Remarks
<i>Aphrophora parallela</i> (Say)	jP	common on small trees at one location, Fort Frances District
<i>Archips cerasivoranus</i> (Fitch)	cCh	common on roadside cherry near Finland, Fort Frances District and near Nestor Falls, Kenora District
<i>Argyrotaenia pinatubana</i> Kft.	wP	light infestation near Bear Pass, Fort Frances District
<i>Cecidomyia reeksi</i> Vock.	jP	light-to-medium infestations at several locations, Sioux Lookout District
<i>Chrysomela mainensis mainensis</i> Bech.	Al	light near Dog Lake and west of Kakabeka Falls, Thunder Bay District
<i>Coleophora laricella</i> Hbn.	tL	low populations, no changes in distribution
<i>Croesus latitarsus</i> Nort.	wB	small numbers along Deavon Lake road, Thunder Bay District
<i>Dioryctria abietivorella</i> Grt.	wS	heavy in cones along north Deavon Lake road, Thunder Bay District, and near Lake of the Woods Provincial Park, Fort Frances District
<i>Dioryctria reniculella</i> Grt.	bF	heavy in cones at Cloven Lake, Sioux Lookout District
<i>Diprion hercyniae</i> (Htg.)	wS	small numbers on beating samples at many locations
<i>Disholcaspis bassetti</i> Gill.	wO	twig galls common on occasional trees in Pratt Township, Fort Frances District
<i>Gonioctena americana</i> (Schaeef.)	tA	heavy infestations over 1 sq. mile near Weikwabinonaw River and medium along Early Lakes road, Thunder Bay District

(continued)



Table 7. Other noteworthy insects (continued)

Insect	Host(s)	Remarks
<i>Hyphantria cunea</i> Dru.	tA	scattered infestations along Highway 11, Fort Frances District
<i>Lithocolletis hamadryadella</i> Clem.	wO	leaf miners common near Rainy River, Fort Frances District
<i>Lyonetia</i> sp.	wB	high populations of this rare leaf miner along Highway 11 east of Quetico Park, Thunder Bay District
<i>Malacosoma californicum pluviale</i> Dyar	cCh	scattered nests common in Kenora, Fort Frances and Thunder Bay districts
<i>Mindarus abietinus</i> Koch.	bF	common at many points in Fort Frances and Thunder Bay districts
<i>Neodiprion abietis</i> complex	bF	small numbers in Sioux Lookout and Fort Frances districts
<i>Neodiprion nanulus nanulus</i> Schedl	rP, jP	medium infestations on ornamentals in the city of Thunder Bay; scattered colonies at Nym Lake, Fort Frances District and at several locations, Sioux Lookout District
<i>Neodiprion pratti banksianae</i> Roh.	jP	medium infestations on ornamentals in the city of Thunder Bay; small numbers of colonies elsewhere in the Region
<i>Neodiprion virginianus</i> complex	jP	heavy infestations on scattered trees north of Pigeon River, Thunder Bay District; scattered colonies at many points in the remainder of the Region
<i>Paleacrita vernata</i> Peck	mM	heavy infestations on shade trees in the town of Dryden, Kenora District

(continued)

Table 7. Other noteworthy insects (concluded)

Insect	Host(s)	Remarks
<i>Pikonema alaskensis</i> (Roh.)	wS, bS	heavy on roadside plantings near Stratton and Pinewood, Fort Frances District; common on open-growing and fringe trees in the remainder of the Region
<i>Pikonema dimmockii</i> (Cress.)	wS	small numbers common on beating samples from Sioux Lookout and Thunder Bay districts
<i>Pineus similis</i> Gill.	wS	galls common on ornamentals in the town of Fort Frances
<i>Rhyacionia busckana</i> Heinr.	jP	light infestation near Van Nostrand Lake, Sioux Lookout District
<i>Toumeyella numismaticum</i> (P. & M.)	jP	medium on Basket Lake road, Sioux Lookout District and heavy on a few trees near Stanley, Thunder Bay District
<i>Zeiraphera destitutana</i> (Walker)	wS	light near Centrefire Lake, Sioux Lookout District; caused severe defoliation along with <i>Zeiraphera fortunana</i> Kft. at Burchell Lake, along Highway 11 east of Nipigon and along Dog River road, Thunder Bay District
<i>Zelleria haimbachi</i> Busck	jP	small numbers at one location, Fort Frances District

## TREE DISEASES

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

A survey of numerous stands of jack pine regeneration provided data which indicate that no appreciable change in the status of this root rot occurred in pine stands in 1972. Six evaluations were performed as part of the survey (Table 8) and results showed that current mortality was distributed throughout each stand and ranged upward to 12%.

Table 8. Summary of current mortality and level of infection of *Armillaria* root rot of jack pine in the Western Survey Region in 1972 (Counts were based on examination of 40 trees, 4 from each of 10 plots at each location.)

Location	Tree height (ft)	Current mortality (%)	Level of infection
Sioux Lookout District			
Wintering Lake	4	2.5	low
Tot Lake	5	2.5	low
Basket Lake Rd	6	2.5	low
Fort Frances District			
Bowes Rd	3	5.0	moderate
Burris Twp	8	7.5	moderate
Thunder Bay District			
Graham Rd	6	12.5	moderate

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

Infection of these needle rusts on spruces declined to a low level in 1972, but included a moderate infection center near Sioux Narrows in the Kenora District and a heavy infection center reported at Off Lake, in the Fort Frances District in 1971. Affected trees were observed at many points elsewhere in the Region; however, only very small numbers of rust-infected needles were present.



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

Although little change in the incidence of this needle rust occurred, levels of infection declined throughout the Region. Standard evaluations carried out at three points in Kenora District and at two points in Thunder Bay District revealed a light infection 15 miles north of Vermilion Bay on Highway 105 (Table 9).

Table 9. Summary of incidence and level of infection of a needle rust on jack pine in the Western Survey Region in 1972 (Counts were based on the examination of 40 trees, 4 from each of 10 plots at each location.)

Location	Tree height (ft)	Acres affected	Incidence (%)	Level of infection
Kenora District				
15 miles north of Vermilion Bay on Hwy 105	1	3000	50	light
Hwy 105 at Camp Robinson	1	100	100	trace
Devonshire Twp	1	500	65	trace
Thunder Bay District				
Sackville Twp	1	10	60	trace
Innis Lake	7	10	88	trace

Sweetfern Blister Rust, *Cronartium comptoniae* Arth.

Surveys were continued to locate new infection centers of this stem canker on jack pine, but little change was noted over 1971. Ocular observations and two evaluations indicated that infection levels were either low or absent in most stands inspected, with the exception of a light infection level in an area approximately 45 miles east of Fort Frances near Mine Centre and Turtle Tank Siding, where 8% of the trees examined were infected.

Surveys were also carried out to determine the range of Sweet Fern (*Comptonia peregrina* [L.] Coult.), the principal alternate host, mostly because it often is the major portion of ground cover in the jack pine stands and is now known to occur in many areas of the Fort Frances District and near Rae Lake in the Kenora District, thus setting a new distribution record. The other known alternate host Sweet Gale (*Myrica gale* L.) occurs along streams and lakeshores; thus its impact on jack pine is limited, although it is observed commonly throughout the Region.

Western Gall Rust of Hard Pines, *Endocronartium harknessii* (J.P. Moore)  
Y. Hiratsuka

This gall-forming rust continued to cause variable degrees of damage in jack pine stands at numerous points (Table 10). Although infection occurred on trees of all sizes and many branches were killed, the most serious damage was found on small-diameter trees with infected stems.

Table 10. Summary of incidence and level of infection of western gall rust of hard pines on jack pine in the Western Survey Region in 1972 (Counts were based on examination of 40 trees, 4 from each of 10 plots at each location.)

Location	Tree height (ft)	Incidence (%)	Mortality (%)	Level of infection
Sioux Lookout District				
Basket Lake Rd	5	7.5	0	moderate
Heyson Twp	10	2.5	0	light
Wintering Lake	4	5.0	0	light
Kenora District				
North of Vermilion				
Bay on Hwy 105	3	10.0	0	heavy
South of Camp Robinson on Hwy 105	15	7.5	0	light
Thunder Bay District				
Innes Lake	40	75.0	0	heavy
Graham Airport	8	37.5	5	moderate

Leaf and Twig Blight, *Pollaccia radiosa* (Lib.) Bald. & Cif.

This leaf and twig blight of poplars was again prevalent. Surveys showed that the disease was common on young trees growing in the open, especially along roadsides. Only trace or light infection levels were found; however, incidence of infection ranged up to 72% (Table 11).



Table 11. Summary of incidence and infection levels of leaf and twig blight on poplars in the Western Survey Region in 1972  
(Counts were based on examination of 40 trees, 4 from each of 10 plots at each location.)

Location	Tree height (ft)	Incidence (%)	Level of infection
Sioux Lookout District			
Deen Lake	5	27	light
Red Lake	5	10	trace
North Rd at 11 base line	5	0	trace
Kenora District			
Dryden Tree Nursery	3	10	trace
Fort Frances District			
Flanders Rd	10	72	light

Rhizina Root Rot, *Rhizina undulata* Fr.

This potentially important disease of conifer seedlings was collected for the first time in Thunder Bay District in 1972. Heavy fruiting was found on the ground in recently burned areas, approximately 10 miles east of English River in Trewartha Township, and on the east side of Allard Lake north of Ogoki Reservoir (Fig. 2). *R. undulata* is an important disease of planted seedlings in Finland and other parts of Europe and its impact is realized when reestablishing burned-over areas either by natural regeneration or by planting.

Scleroderris Canker of Pine, *Gremmeniella abietina* (Lagerb.) Morelet  
(= *Scleroderris lagerbergii* Gremmen)

No new infection centers of this disease were found. In the Sioux Lookout District, infection centers previously reported in jack pine regeneration continued to expand and aerial mapping of burned-over areas northwest of Pickle Lake detected scattered pockets of damage and mortality over approximately 20,000 acres in the Pipestone River area, 2,500 acres in the Pineimuta River area and 2,000 acres near Lysander Lake. The most severe damage was noted near Pineimuta River where infection centers in 12-18-inch jack pine increased as much as threefold in size.



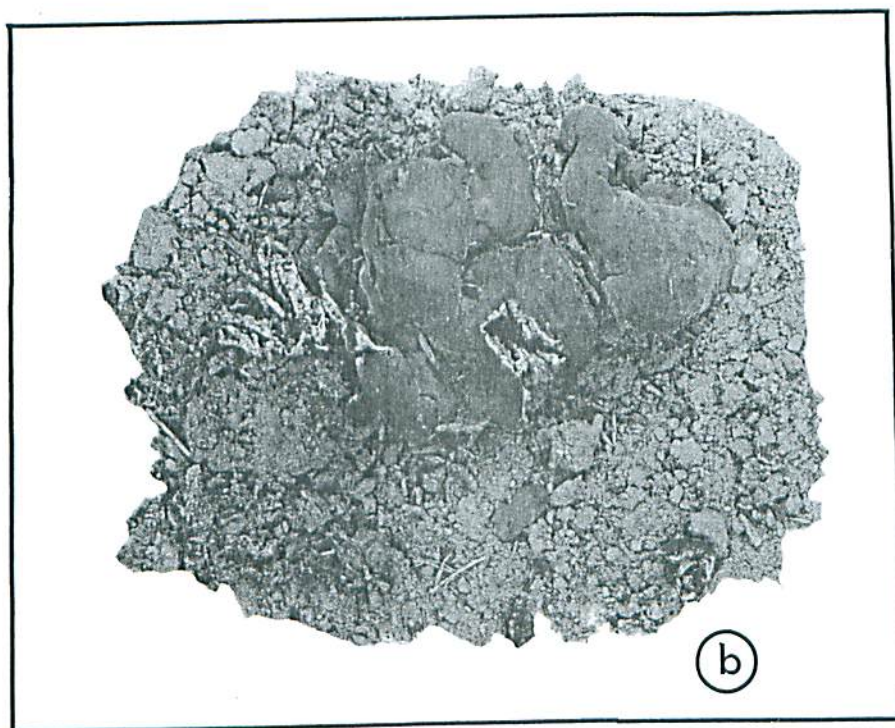
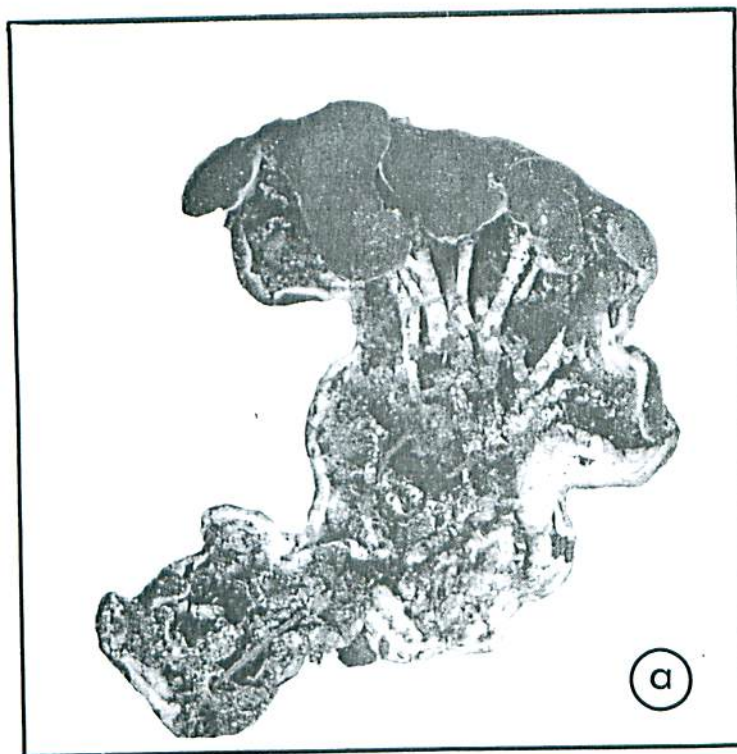


Fig. 2. Sporophores of *Rhizina undulata* Fr. showing (a) undersurface and (b) upper surface.

In the Kenora District the disease was recorded previously in a small red pine (*Pinus resinosa* Ait.) plantation and in a windbreak at the Ontario Ministry of Natural Resources tree nursery near Dryden. In 1972, the disease was isolated from symptomatic cultures of white spruce seedlings that were damaged by another agent. Extensive surveys of other seedbeds, windbreaks and a small red pine plantation in the area failed to turn up the disease. It appears that sanitation measures carried out in previously infected areas were relatively successful, as the nursery now appears to be in good shape.

The disease, previously reported in the Thunder Bay District along the Graham Road and at the Graham Airport, continued to cause tree mortality in jack pine regeneration. Forty percent of the trees growing in a stand near the Graham Airport had symptoms of the disease.

#### Nursery Problems, A. Dryden Nursery, B. Thunder Bay Nursery

A. For the third consecutive year black spruce (*Picea mariana* [Mill.] B.S.P.) nursery stock was damaged by some unknown factor in the Ontario Ministry of Natural Resources tree nursery in Kenora District. In 1972, several thousand white spruce were similarly damaged.

Symptoms were the same as those reported previously, i.e., severe browning of foliage and needle drop by late May or early June. Examination of affected stock at the Great Lakes Forest Research Centre determined the presence of the following fungi: *Trichoderma* sp., *Fusarium* sp. and *Alternaria* sp. in black spruce, *Fusarium* sp., *Pestalotia* sp., *Alternaria* sp. and *Aureobasidium* sp. in white spruce. These organisms are considered to be secondary.

The fungus *Gremmeniella abietina* (Gremmen) Morelet (= *Scleroderris lagerbergii* Gremmen), the cause of *Scleroderris* canker of pine, is also known to infect spruce. It was isolated from one white spruce seedling from the nursery; however, the character of the damage and the single isolation indicate that this was probably not the causal agent.

B. A high incidence of deformed seedlings was found in white spruce seedbeds in the Ontario Ministry of Natural Resources tree nursery in Thunder Bay District. Quantitative sampling of 3-0 seedlings in Compartment 21 showed 61.07% of the seedlings deformed (standard error of 1.36%). Similar sampling of 2-0 white spruce from one seedbed indicated losses of 21%.

The initial stage of this condition occurs in late June or early July of the first year. At this time the growing point fails to set a normal bud, resulting in the formation of a cluster of small shoots rather than a single dominant leader. The damage may also occur in the second and third years. Although some trees may recover they are



generally of such poor form or small size that they are culled during the lifting process (Fig. 3). Deformed seedlings were also present in jack pine and red pine seedbeds in the Thunder Bay Nursery, though at such low incidence that losses are negligible. A similar condition was found to exist in the Ontario Ministry of Natural Resources tree nursery in the Kenora District; however, incidence was considerably lower and losses were not considered to be serious.

#### Drought

In 1971 a prolonged hot spell caused numerous pine species to redden. The most noticeable damage occurred on dry and shallow soil sites. The area within which damage was most evident extended from Rainy Lake in a northwesterly direction to Nestor Falls. Surveys carried out in the fall of 1971 determined that mortality ranged from 5 to 10% in mixed pine stands. The follow-up surveys carried out in the summer of 1972 showed no additional mortality and a good recovery of trees in the affected stands.

#### Elm Deterioration

Extensive surveys have been carried out in the Region for several years in search of the Dutch elm disease (*Ceratocystis ulmi* [Buism.] C. Moreau). Samples from elms with symptoms similar to those displayed by Dutch elm disease have been submitted to the Great Lakes Forest Research Centre each year; however, the disease has not been isolated. The closest infection center is located in the central part of the State of Minnesota (State of Minnesota, Division of Plant Industry, Pest Report Number 940-12).

Should the disease eventually reach northwestern Ontario, it is expected to spread quite rapidly since the native elm bark beetle (*Hylurgopinus rufipes* Eich.), a vector of the disease, is common in the Fort Frances and Rainy River areas in the southern part of the Region.

#### Frost Damage

In the Thunder Bay District severe frosts in late May and early June caused extensive damage to new shoots and foliage of several tree species. The most serious damage was observed in the Dog River area where newly planted white spruce suffered heavy mortality. Extensive shoot mortality occurred to black spruce, balsam fir (*Abies balsamea* [L.] Mill.) and various deciduous species as well. Heavy shoot and foliage mortality were also noted on the above hosts along the Spruce River road, west of Muskrat Lake, along Highway 800 between Gull Bay and Armstrong and along the Marks Lake road in Marks Township. Much



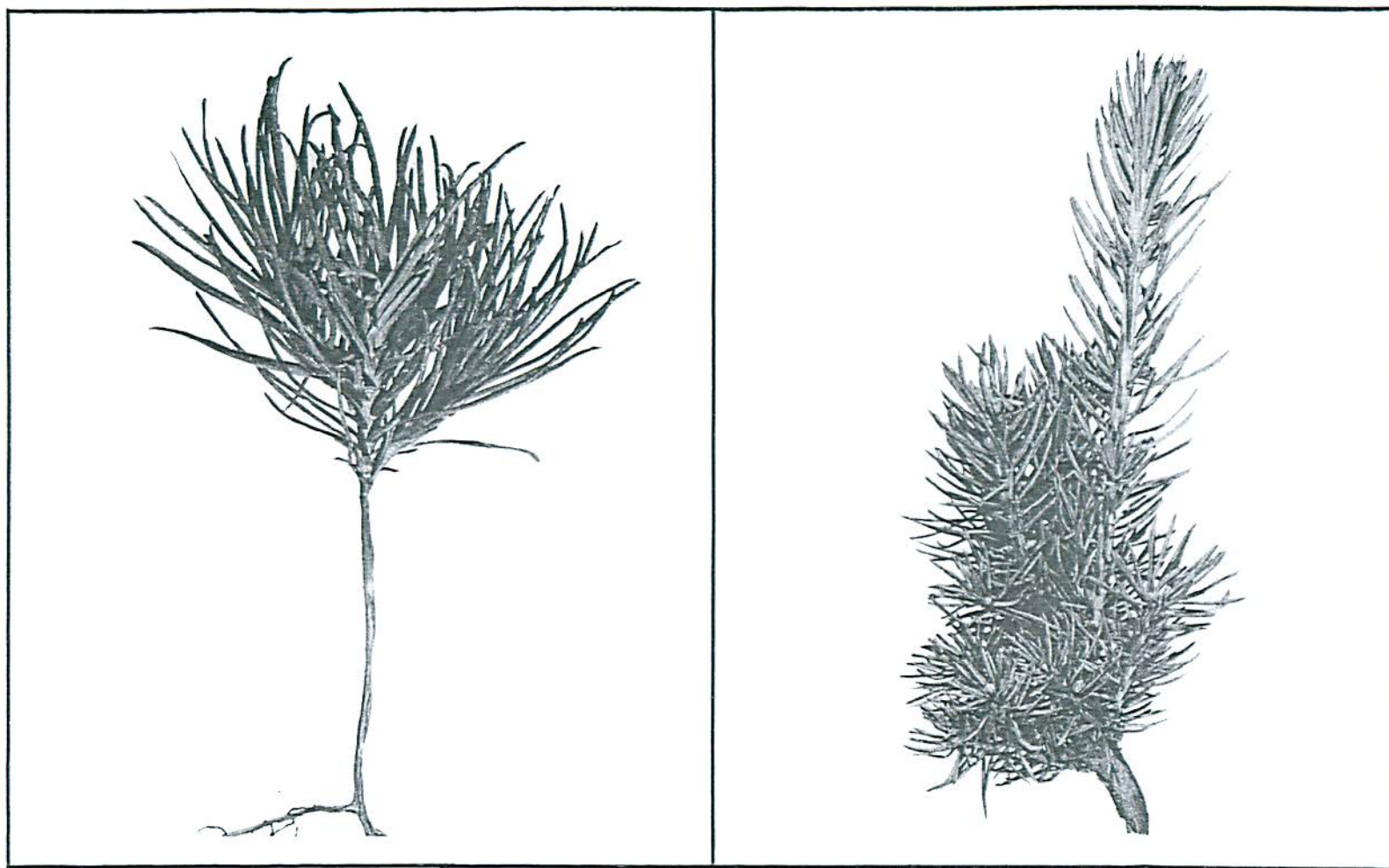


Fig. 3. Deformed seedlings: Left: 1-0 jack pine seedling  
Right: 3-0 white spruce seedling

of the foliage of black ash (*Fraxinus nigra* Marsh.) was destroyed in the Pigeon River area. Scattered light mortality of new growth on white spruce and jack pine was recorded near Mine Centre in the Fort Frances District. Damage in the Sioux Lookout and Kenora districts was negligible.

#### Rodent Damage

In the Thunder Bay District, pockets of heavy damage to jack pine reproduction were found along the Graham Road from Highway 17 to the Graham Airport. Mortality in some pockets ranged up to 30%. Light damage was observed in regeneration along Highway 17 between Ignace and the English River in the Sioux Lookout District and at widely scattered points elsewhere in the Region.

#### Root and Butt Rot of Conifers

Surveys were carried out for the second consecutive year to determine incidence of specific fungi causing root and butt rot in balsam fir, white spruce and black spruce (*Picea mariana* [Mill.] B.S.P.) and in 1972 jack pine was sampled as well. Root systems of from one to five host trees were exhumed and examined at 17 widely separated points in the Region. Samples of roots containing rot were submitted to the Great Lakes Forest Research Centre for analysis. Three principal root-rotting fungi were isolated from diseased tissue (Table 12).

#### Winter Drying

Unusually severe winter drying was evident across the southeastern portion of the Thunder Bay District. The most severe damage was observed in a Scots pine (*Pinus sylvestris* L.) plantation in Conmee Township where 95% of the trees were heavily damaged. Severe damage was also recorded in red pine plantations in Dorion and Paipoonge townships, on Scots pine along Highway 590 south of Kakabeka Falls, and on spruce and Scots pine along Highway 61 south of Thunder Bay. Light damage was observed at widely scattered points elsewhere in the Region.

Table 12. Summary of root and butt rots collected in the Western Survey Region in 1972

Location	Tree species	Disease organism
Sioux Lookout District		
Jordan Twp	wS	<i>Polyporus tomentosus</i>
McNevin Twp	jP	<i>Armillaria mellea</i>
Marchington Lake	bS	<i>Polyporus tomentosus</i>
Kimmewin Lake	bF	<i>Polyporus tomentosus</i>
Kenora District		
Boys Twp	bF	<i>Armillaria mellea</i>
Devonshire Twp	jP	<i>Polyporus tomentosus</i>
Fort Frances District		
Dance Twp	bF	<i>Coniophora</i> sp.
Watten Twp	wS	<i>Polyporus tomentosus</i>
Thunder Bay District		
Mile 14, Dog River Rd	bF	<i>Armillaria mellea</i>
Mile 33, Dog River Rd	bF	<i>Coniophora puteana</i>
Purdon Twp	bS	<i>Polyporus tomentosus</i>
Booth Twp	wS	<i>Polyporus tomentosus</i>
Hwy 17, at English River	jP	<i>Armillaria mellea</i>

Table 13. Other noteworthy diseases

Organism	Host(s)	Remarks
<i>Apiosporina collinsii</i> (Schw.) Hoehn.	Se	heavy infection on under-story near Kakabeka Falls, Thunder Bay District
<i>Arceuthobium americanum</i> Nutt. ex Engelm.	jP	light mortality of previously infected trees; no change recorded in distribution of this dwarf mistletoe in the Kenora District in 1972
<i>Cenangium abietis</i> (Pers.) Rehm.	rP, scP	occasional trees infected near Mine Centre, Fort Frances District and in the Thunder Bay nursery

(continued)



Table 13. Other noteworthy diseases (continued)

Organism	Host(s)	Remarks
<i>Chrysomyxa arctostaphyli</i> Diet.	bS	small numbers of witches' brooms on occasional trees near Candler Lake, Sioux Lookout District
<i>Ciborinia whetzelii</i> (Seaver) Seaver	tA	trace infection in 200-tree plot near Sioux Lookout
<i>Cronartium comandrae</i> Pk.	jP	trace infection levels at two scattered points in the Fort Frances and Thunder Bay districts
<i>Cytospora pini</i> Desm.	jP	leader mortality on occasional trees at one location in the Thunder Bay District
<i>Davisomycella ampla</i> (Davis) Darker	jP	needle rust common throughout the Region
<i>Fomes pini</i> (Brot. ex Fr.) Karst.	wS	light infection of this stem rust near Shebandowan, Thunder Bay District
<i>Hypodermella laricis</i> Tub.	tL	light infection on mature trees near Black Sturgeon Lake, Thunder Bay District
<i>Isthmiella faullii</i> (Darker) Darker	bF	light needle infection near Pigeon River, Thunder Bay District
<i>Lophodermium pinastri</i> (Schrad. ex Hook.) Chev.	jP	light infection levels near Central Patricia, Sioux Lookout District
<i>Marssonina populi</i> (Lib.) Magn.	tA	ornamentals lightly infected in the town of Sioux Lookout
<i>Melampsorella caryophyllacearum</i> Schroet.	bF	occasional trees with witches' broom near Keewatin, Kenora District
<i>Melampsora epitea</i> Thuem.	W	heavy rust infection on riverside willow near Upsala, Thunder Bay District

(continued)

Table 13. Other noteworthy diseases (concluded)

Organism	Host(s)	Remarks
<i>Phragmidium americanum</i> (Pk.) Diet.	wild rose	light infection on wild rose (third Ontario record)
<i>Pollaccia radiosa</i> (Lib.) Bald. & Cif.	tA	common in varying degrees of intensity throughout the Region
<i>Pollaccia saliciperda</i> (All. & Tub.) Arx	W	roadside willow heavily infec- ted near Longbow corners, Kenora District
<i>Puccinia asteris</i> Duby	Aster	This leaf rust of broadleaf aster and alternate host of <i>Coleosporium asterum</i> , was found commonly at many points throughout the Region.
<i>Pucciniastrum epilobii</i> Otth	bF	light needle rust infection at widely separated locations in the Fort Frances and Thunder Bay district
<i>Rhytisma salacinum</i> (Pers.) Fr.	W	low infection levels on shoreline willow
<i>Scolecconectria cucurbitula</i> (Tode ex Fr.) Booth	jP	light infection levels along the Graham Road, Thunder Bay District

## APPENDIX



# WESTERN SURVEY REGION

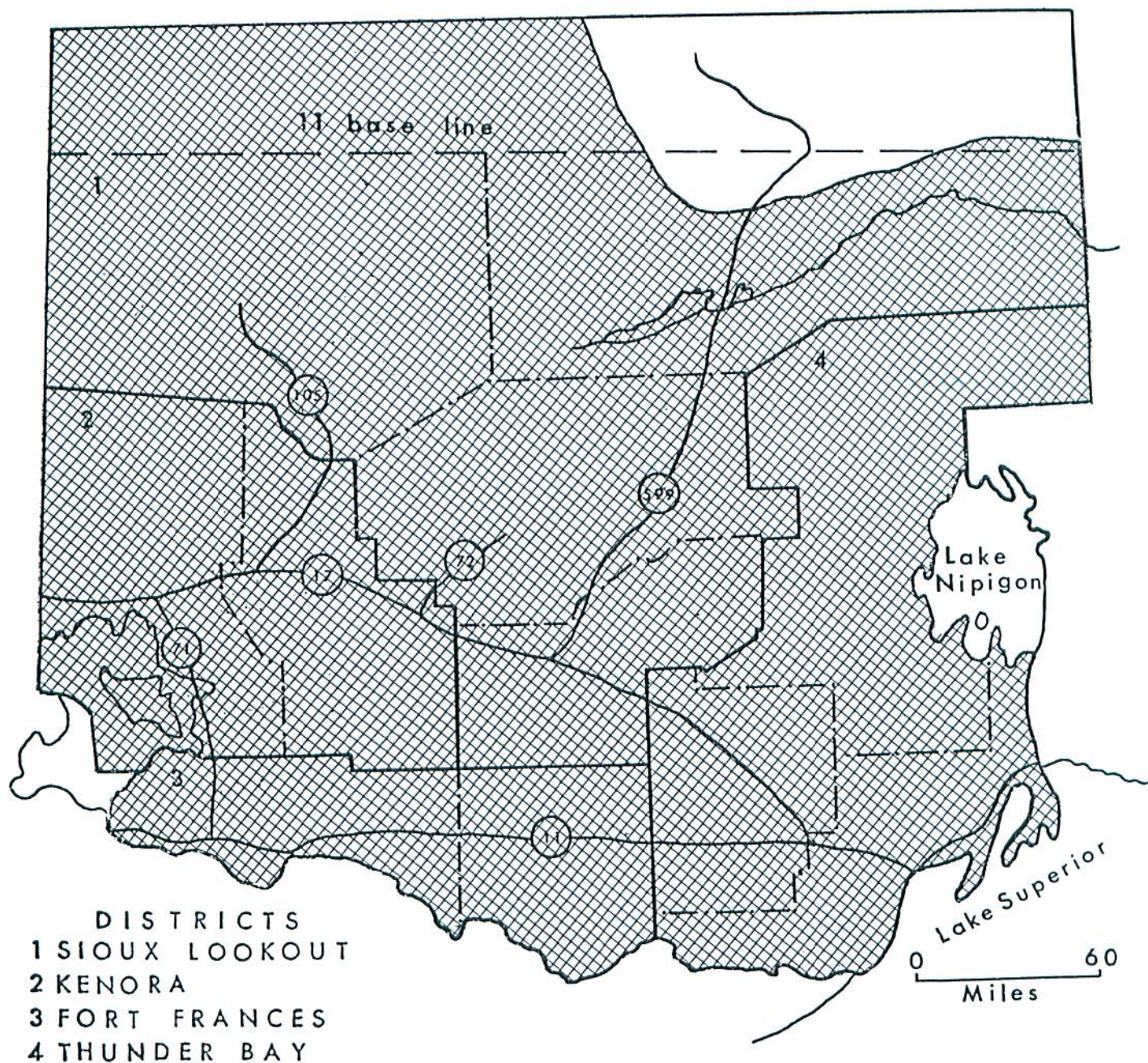


Fig. A1. BIRCH SKELETONIZER

Areas within which defoliation occurred  
in 1972

Moderate-to-severe  
defoliation . . . . .





# WESTERN SURVEY REGION

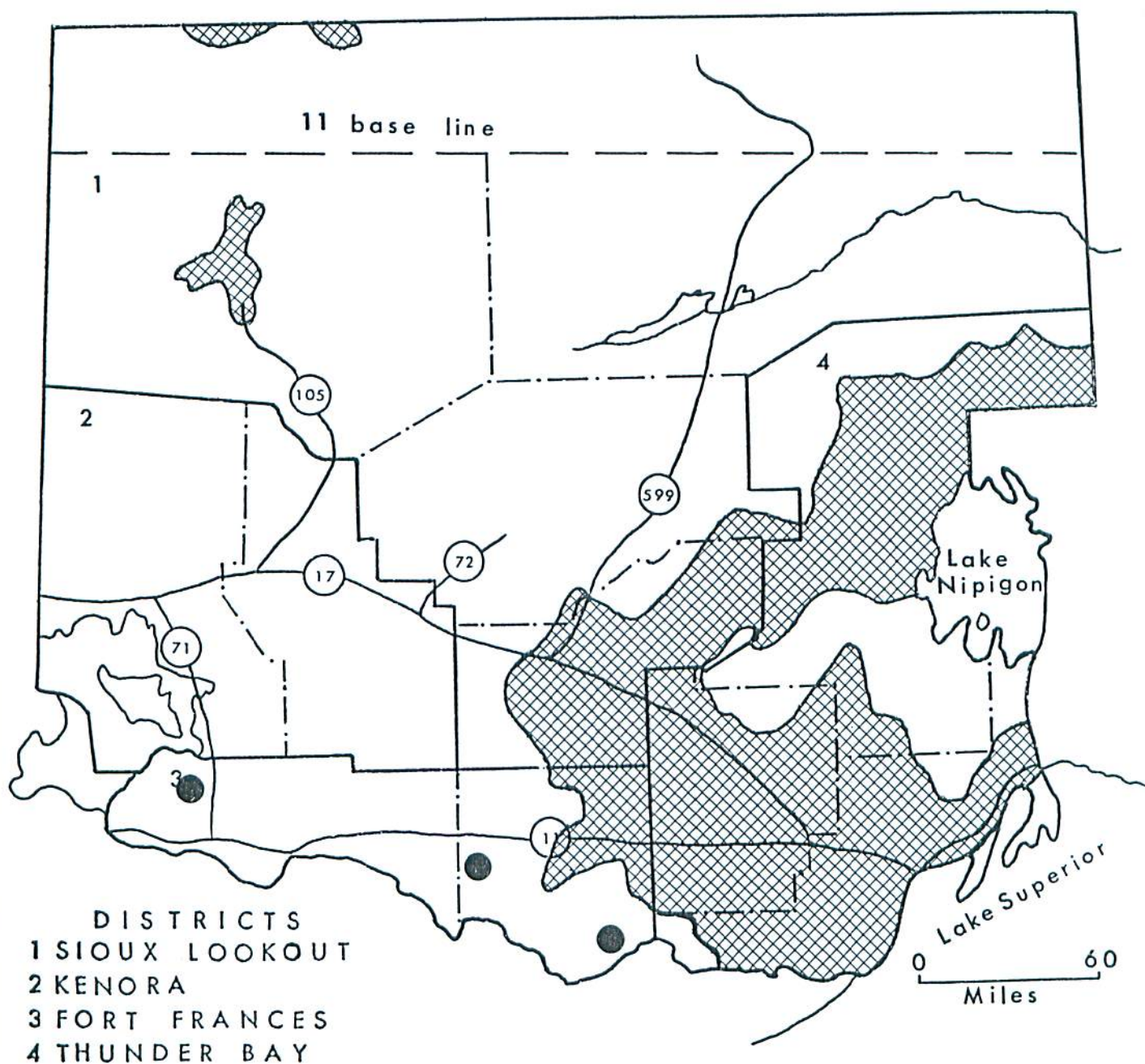



Fig. A2. LARGE ASPEN TORTRIX

Areas within which defoliation occurred  
in 1972

Moderate-to-severe  
defoliation . . . . .  or 