

FOREST INSECT AND DISEASE SURVEYS  
IN THE CENTRAL SURVEY REGION, 1973

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Fig. 1. Trunk of a tree under a  
canopy of a forest in  
the mountains.

## SURVEY HIGHLIGHTS

Severe defoliation of spruce and balsam fir by the spruce budworm persisted throughout a large part of the Survey Region. Major extensions of heavy infestation occurred in the Blind River, Espanola and Sudbury districts whereas in the Chapleau District a very marked decline of populations was evident in the area damaged by severe spring frost in 1972. Numerous pockets of dead or dying balsam fir and spruce are present in the Onaping Lake area north of Sudbury. Two important defoliators of hardwoods reappeared after an absence of several years: scattered pockets of trembling aspen trees were heavily defoliated by the forest tent caterpillar in the Espanola and Sudbury districts and some yellow birch was defoliated by the *Dimorphopteryx* sawfly in the Sault Ste. Marie District. Although most heavy infestations of large aspen tortrix declined to light intensity, some small isolated heavy infestations persisted. High populations of the birch leaf skeletonizer continued in the southern part of the Sudbury and Espanola districts but declined sharply in the Blind River District.

Dutch elm disease infection was especially heavy along the North Shore and on Manitoulin Island and host mortality occurred in many areas. New centres of infection of *Scleroderris* canker of pine were evaluated in Sudbury, Gogama and Blind River districts. Deerskin droop, a disease of red pine, was found in the Chapleau, Wawa and Sault Ste. Marie districts. A severe wind storm in August caused extensive damage in an area of approximately 35 square miles northwest of the city of Sudbury.

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## INSECTS

Greenstriped Mapleworm, *Anisota rubicunda* Fabr.

A sharp increase in population levels resulted in heavy defoliation to maple stands (*Acer saccharum* Marsh. and *A. rubrum* L.) throughout an area of approximately 40 square miles in the Tyson Lake area, Sudbury District. The infested area along Highway 637 extended from Mahzenazing River south to Indian Reserve No. 3 where defoliation ranged from 60% to 80%. The moderate infestation reported on Cockburn Island in 1972 increased to heavy intensity. Diseased late-instar larvae collected at Tyson Lake revealed the presence of an Entomophthora fungus disease. Occasional colonies of mapleworm were present in Bridgland and Houghton townships in the Blind River District.

Birch Skeletonizer, *Bucculatrix canadensisella* Cham.

Population levels of this late-season defoliator of white birch (*Betula papyrifera* Marsh.) fluctuated considerably in the Region. A large area of moderate-to-severe defoliation persisted in the southern part of the Sudbury and Espanola districts and in townships 143, 144 and 149 of the Blind River District. However, birch stands on Manitoulin Island and in the area from Massey to Spragge, which were heavily infested in 1972, were only lightly damaged. A decline in infestation intensity was also apparent in the Lake Wanapitei area but light infestations enlarged to include the eastern part of Sudbury and Gogama districts. Several small pockets of heavy infestation occurred within this area (see Appendix, Fig. A1). The heavy infestation present in the White River and Terrace Bay districts virtually disappeared in 1973.

Large Aspen Tortrix, *Choristoneura conflictana* Wlk.

Except in parts of the Sudbury, Espanola, and Gogama districts where high populations persisted at numerous locations, infestations generally declined. The two largest defoliated areas, totalling approximately 200 square miles, occurred in parts of 13 townships northwest of the city of Sudbury (see Appendix, Fig. A2). Moderate-to-severe defoliation was also observed on trembling aspen (*Populus tremuloides* Michx.) throughout most of Manitoulin Island.

The heavy infestations previously recorded in the Sault Ste. Marie, Chapleau, White River and Wawa districts generally subsided to light or trace levels. Exceptions occurred in small stands at Bremmer in the White River District, at Dubreuilville in the Wawa District and near Foleyet in the Chapleau District.

The population collapse may be attributed in part to the large amounts of pox virus and granulosis virus found in larvae submitted to the Insect Pathology Research Institute from White River and Wawa districts.

Spruce Budworm, *Choristoneura fumiferana* (Clem.)

The results of damage surveys, population sampling, and egg-mass counts have been included with those of other survey regions in a special information report by G. M. Howse *et al.* (O-X-193). This report provides complete description and analysis of developments in the spruce budworm situation in Ontario in 1973 and gives infestation forecasts for the Province for 1974.

Oak Leaf-tier, *Croesia semipurpurana* (Kft.)

Red oak (*Quercus rubra* L.) trees on Manitoulin Island in the Espanola District were again severely defoliated, although population levels in several stands declined. Defoliation ranged upwards to 90% in Sandfield Township. A decline of heavy infestations to moderate intensity occurred at Hiawatha Park and Garden River in the Sault Ste. Marie District and in Cobden Township in the Blind River District. The insect is widely distributed at low levels throughout the range of oak.

A Birch Sawfly, *Dimorphopteryx melanognathus* Roh.

Outbreaks of this sawfly have occurred periodically north of Sault Ste. Marie for the last 15 years, usually for a duration of 1 year. The time interval between outbreaks apparently is governed by the length of the larval diapause which varies from 1 to 5 years. After an absence of 3 years, infestations reappeared in 1973 north of Sault Ste. Marie and defoliation occurred along the Batchawana River in the vicinity of the Tribag Mine. Damage was confined to a smaller area than in previous outbreaks. In all other areas where infestations have occurred in the past, infestations were less than severe.

Basswood Looper, *Erannis tiliaria* Harr.

The highest populations of this defoliator were found in Township 30 Range 18, Wawa District, where defoliation in excess of 50% occurred in one small clump of hazel (*Corylus* sp.). Low larval populations were present on pin cherry (*Prunus pensylvanica*) in the Montreal River area in Wawa District, on red oak and basswood (*Tilia americana* L.) in Victoria Township and on Manitoulin Island in Espanola District.

Birch Leafminer, *Fenusa pusilla* (Lep.)

High populations of this insect occurred commonly on small roadside white birch throughout Lake Superior Park, near Missanabie in the Wawa District and in the Goulais River area of the Sault Ste. Marie District. Light-to-medium infestation was present on small host trees at numerous other locations in the Chapleau District, near Massey and McKerrow in the Espanola District, at Chelmsford in the Sudbury District, and along the Elliot Lake road in the Blind River District.

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

Populations of this beetle were widespread in the Sault Ste. Marie, Wawa, White River and Sudbury districts. Defoliation was confined to small regeneration or understory trembling aspen trees and in most cases was light in intensity. The only exceptions occurred in Hess Township in the Sudbury District and in Township 175 in the Blind River District where moderate defoliation was recorded.

Aspen Blotchminer, *Lithocolletis ontario* Free.

The most noteworthy infestations of this leafminer occurred on roadside hosts in Borden, Gallagher, Sandy, Chewett, Pinogami and Ivanhoe townships in the Chapleau District and for the second year on small-diameter trees in Kirkwood and Rose townships in the Blind River District. High populations were present in the lower crowns of large-diameter hosts in Gaudette Township in the Sault Ste. Marie District. Elsewhere population levels were low.

Forest Tent Caterpillar, *Malacosoma disstria* (Hbn.)

This insect reached heavy infestation proportions for the first time since 1968 (Fig. 1 and 2). Areas of moderate-to-severe defoliation ranged in size from 500 to 30,000 acres at scattered locations within a 45-mile radius of the city of Sudbury. The three largest infestations occurred in the Naughton-Whitefish area, the Hagar area and in the Chelmsford Valley. Small pockets were found commonly in the French River area (see Appendix, Fig. A3) with defoliation ranging from 25% to 80%. Small numbers of larvae were common at scattered locations elsewhere. On the basis of egg-band surveys carried out in the Sudbury District, heavy infestations are forecast for those areas defoliated in 1973. In addition, medium-to-heavy infestations are expected in the Fairbank Lake area and a light infestation is forecast along Highway 17 from McKerrow to Nairn in the Espanola District and in the Trout and Penache lakes area in Sudbury District (Table 1).

Table 1. Summary of forest tent caterpillar egg-band counts and infestation forecasts for 1974 in the Sudbury and Espanola districts (Counts were based on the examination of one to three trees per location.)

Location	Avg dbh	No. of trees sampled	Avg no. of egg bands per tree	1974 infestation forecast <sup>a</sup>
Trill Twp (near Fairbank Prov. Park)	4	3	6.3	M-S
Dieppe Twp (near Penache Lake)	6	3	2.0	L-M
Grayham Twp (near McCharles Lake)	5	3	12.3	S
Bigwood Twp ( $\frac{1}{2}$ mile west of Rutter)	8	1	131.0	S
Allen Twp (near Hartley Bay)	5	3	0.0	N-L
Bigwood Twp (1 mile north of French River)	4	3	0.0	N-L
Killarney Prov. Park (near George Lake)	6	3	0.0	N-L
Attlee Twp (3 miles east of Tyson Lake)	5	3	0.0	N-L
Laura Twp (Hwy 637, 3 miles south of Hwy 69)	5	3	0.0	N-L
Hoskin Twp (Trout Lake)	5	3	1.0	L
Hagar Twp (2 miles south of Markstay)	5	1	22.0	S
Hawley Twp (northeast end of Nepewassi Lake)	5	3	0.0	N-L
Casimir Twp	5	3	14.0	S
Rayside Twp (2 miles east of Chelmsford)	4	3	7.3	M-S
Dowling Twp ( $2\frac{1}{2}$ miles northwest of Dowling)	6	2	17.5	S
Cascaden Twp ( $\frac{1}{2}$ mile west of Windy Lake Prov. Park)	5	3	0.0	N-L
Nairn Twp (Hwy 17 at Nairn Centre)	6	3	1.6	L
Baldwin Twp ( $\frac{1}{2}$ mile west of McKerrow)	6	3	1.0	L
Salter Twp (Hwy 17 near Massey)	5	3	0.0	N-L

<sup>a</sup> N = nil, L = light, M = moderate, S = severe



Figure 1. Forest tent caterpillars massed on the stem of a trembling aspen tree.



Figure 2. Scattered masses of caterpillars typical of initial outbreak.

Redheaded Pine Sawfly, *Neodiprion lecontei* (Fitch )

Population declines were evident at all sample points in the Sudbury and Espanola districts. The light populations present in 1972 in Mills Township on Cockburn Island and in the Burwash area declined to very low levels. The only area of appreciable defoliation occurred on shelterbelt trees in Salter and Victoria townships in the Espanola District.

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

Numbers increased slightly in Scots pine (*Pinus sylvestris* L.) plantations on Manitoulin Island in the Espanola District. Colony counts were higher at four of six locations, the most significant increase being in Gordon Township (Table 2). Larvae were found near Providence Bay and on the West Bay Indian Reserve; both of these points are new distribution records. In the Sault Ste. Marie District the insect has been confined to the city of Sault Ste. Marie since its discovery in 1968, but in 1973 a few colonies were found at Garden River, several miles east of the city.

Table 2. Summary of colony counts of European pine sawfly in Scots pine plantations on Manitoulin Island in 1972 and 1973

Location (Twp)	No. of trees examined		Total no. of colonies		Avg no. of colonies/tree	
	1972	1973	1972	1973	1972	1973
Dawson	500	500	116	177	.23	.35
Carnarvon	225	325	339	175	1.51	.54
Sandfield	100	100	10	8	.10	.08
Gordon	250	250	345	519	1.38	2.06
Allan	100	100	3	36	.03	.36
West Bay	-	35	-	15	-	.43
Billings	400	400	390	460	.98	1.15

White Pine Weevil, *Pissodes strobi* Peck

Population levels of this destructive pest fluctuated considerably. In the Blind River District, the most severe incidence of leader damage was again present in white pine (*Pinus strobus* L.) plantations

in Wells and Parkinson townships. In the Kirkwood Management Unit, leader damage increased in three of the four areas evaluated. The percentage of leader damage in white pine plantations in Sudbury, Espanola and Gogama districts averaged 12.4% compared with 17% recorded in 1972. Population levels in the Chapleau District were low at all sample points, the most noteworthy changes occurring in Townships 12E, 11C and 11B where sharp declines in the number of weeviled leaders were found (Table 3). Small increases occurred in all stands of jack pine (*Pinus banksiana* Lamb.) sampled.

Larch Sawfly, *Pristiphora erichsonii* (Htg.)

Populations of the larch sawfly generally declined to a very low level. The only areas of noticeable defoliation were in Garibaldi Township in Gogama District and in a European larch (*Larix decidua* Mill.) plantation on Cockburn Island. Elsewhere colonies occurred infrequently and resulting defoliation was very light.

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

Severe defoliation was present in the Trombone, Pineal and Gale lakes area southwest of the town of Chapleau. Scattered pockets of moderate defoliation occurred in the northern part of Lake Superior Park, Wawa District, in Victoria Township, Espanola District, and in the Shining Tree area of the Gogama District. Elsewhere populations of this sawfly were low.

Ambermarked Birch Leafminer, *Profenusa thomsoni* (Konow)

The most noteworthy populations of this miner occurred on the lower crowns of white birch trees at Rocky Island Lake in the Blind River District. In the Chapleau District a light infestation was present on reproduction along the Jackpine River Trail in Township 24 Range 23. The high populations reported for the past 3 years southwest of the town of Chapleau declined to endemic levels in 1973.

Table 3. Summary of damage caused by the white pine weevil in five districts in 1972 and 1973 (100 trees examined at each location except where otherwise indicated )

Location (Twp)	Host (Sample size 1973)	Trees weeviled (%)	
		1972	1973
Blind River District			
Wells	wP	49	25
Parkinson	wP	44	34
168	wP (300 trees)	0.6	6.6
LeFroy (Kirkwood Mgt Unit)	wP (281 " )	8.6	13.8
Bridgland ( " " " )	wP (166 " )	12.9	8.3
Rose, Block 1( " " " )	wP (177 " )	8.8	10.7
Rose, Block 6( " " " )	wP (209 " )	6.6	8.6
Sudbury District			
Delamere	wP	12	9
Cherriman	wP	33	14
Servos	wP	4	3
Hart	jP	0	2
Morgan	jP	8	11
Munster	jP	0	5
Espanola District			
Salter	wP	-	15
Merritt	wP	26	10
Foster	wP	15	22
Nairn	jP	0	8
139	jP	5	8
115	jP	4	5
Hallam	ScP	-	12
Gogama District			
Burrows	wP	12	14
Benneweis	jP	0	10
Vrooman	jP	3	7
Chapleau District			
Calais	wP	1	1
Calais	jP	1	1
8D	jP	6	2
Edith	jP	4	0
Lloyd	jP	1	2
Panet	jP	1	2
Strathearn	jP	2	2
12E	jP	14	3
11C	jP	11	4
Nimitz	jP	4	3
11B	jP	14	5
Coppell	jP	-	2
23 Rge 17	jP	-	2

Table 4. Other forest insects

Insect	Host(s)	Remarks
<i>Aphrophora parallela</i> (Say)	ScP	light-to-moderate populations common on Manitoulin Island; small numbers at Ivanhoe Prov. Park
<i>Choristoneura pinus pinus</i> Free.	jP, ScP	small numbers in Merritt, Gordon and Dawson twp, Espanola District
<i>Coleophora laricella</i> Hbn.	tL	Counts at Garden River averaged .87 larvae per 18-in. branch tip.
<i>Malacosoma californicum</i> <i>pluviale</i> Dyar	ecCh	light-to-moderate populations in Burrows Twp, Gogama District
<i>Neodiprion nanulus nanulus</i> Schedl	rP	occasional colonies in Balfour Twp, Sudbury District and at Biscotasing, Chapleau District
<i>Neodiprion pratti banksianae</i> Roh.	jP	occasional colonies in Merritt Twp, Espanola District
<i>Neodiprion swaini</i> Midd.	jP	light defoliation on scattered trees at one location in Bigwood Twp, Sudbury District
<i>Operophtera bruceata</i> (Hlst.)	sM	light infestation on understory trees in Jocelyn Twp, Sault Ste. Marie District
<i>Phyllobius oblongus</i> Linn.	W, E, M	Populations declined from heavy to light in Carnarvon Twp, Espanola District

## TREE DISEASES

Note: In this section of the report, incidence refers to the proportion of trees infected and level of infection refers to the disease severity.

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

Surveys and evaluations made in previous years show that this organism is present throughout the Survey Region on a wide variety of coniferous and deciduous hosts. Although the organism is most destructive in young pine plantations, serious damage can occur in mature trees. An evaluation done in a mature black spruce (*Picea mariana* [Mill.] B.S.P.) stand in Nimitz Township, Chapleau District, revealed that 32% of the stand was infected and many of the infected trees had been windthrown. Other evaluations showed trace or light levels of infection. A summary of evaluations made over the past several years reveals that the highest rate of incidence was in Township 124, Espanola District, where in 1970 37% of the trees in a red pine plantation were diseased.

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

The Dutch elm disease continued to be the most important problem in the southern portion of the Region.

A survey was initiated in 1973 to measure the rate at which elm trees are dying as a result of infection by the causal organism. Fourteen plots, twelve in rural areas and two in urban locations, have been established throughout the range of elm. Forty living trees have been described at each location and the infection levels have been determined. The plots will be reexamined in 1974 to ascertain the rate of mortality (see Appendix, Fig. A4).

Surveys in 1973 showed a high level of infection and incidence in both rural and urban locations in Blind River, Espanola, Sault Ste. Marie and Sudbury districts (Table 5). No infection was found in Wawa District. Mortality is generally light, ranging from nil to 15% in areas of quantitative sampling. However, moderate-to-heavy mortality is present in parts of Township 168 and Thessalon Township in Blind River District and Aberdeen and Laird townships in Sault Ste. Marie District.

Table 5. Summary of incidence and level of infection of the Dutch elm disease and tree mortality caused by the disease in the Central Survey Region in 1973

Location	Incidence and level of infection (%)	Estimated mortality <sup>a</sup>
Blind River District		
Bright Twp	85.0	L
Twp 1B	80.0	L
Blind River (town)	12.5	N
Twp 188	35.0	N
Thessalon Twp	84.6	M
Espanola District		
Salter Twp	32.5	L
Assiginack Twp	42.5	L
Espanola (town)	32.5	L
Dawson Twp	7.5	L
Allen and Billings twp	40.0	L
Sault Ste. Marie District		
Macdonald Twp	35.0	N
Johnson Twp	57.0	L
Twp 26 Rge 12	65.0	L
Johnson Twp	30.0	L
Sudbury District		
Scollard Twp	40.0	L
Rayside Twp	20.0	L
Wawa District		
Twp 28 Rge 16	0.0	N

<sup>a</sup> N = nil, L = light, M = moderate

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

An increase in the occurrence of spruce needle rust was recorded in all districts. Although the incidence of infected trees was high at most sample points, the level of infection varied considerably. Moderate-to-high infection levels were evaluated at five sample points in Chapleau District (three in Sudbury District and two in Gogama District). Trace and light degrees of infection occurred at all other sample points (Table 6).

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

This foliage disease was found commonly on small trembling aspen trees throughout the Region, usually at trace or light levels of infection. Exceptions occurred in Oates and Reeves townships, Chapleau District, and Kemp Township in Gogama District where moderate infection was recorded (Table 7).

Table 7. Summary of incidence and level of infection of ink spot in the Central Survey Region in 1973 (Evaluations were based on examination of four trembling aspen trees in each of 10 plots at each location.)

Location (Twp)	Acres affected	Incidence <sup>a</sup>	Level of infection <sup>a</sup>
Blind River District			
175	50	M	T
3E	10	M	T
Chapleau District			
Oates	15	L	M
Reeves	20	H	M
Espanola District			
Salter	20	M	T
Gogama District			
Kemp	20	H	M
Sault Ste. Marie District			
Herrick	200	H	L
Sudbury District			
Cherriman	100	L	L
Jennings	5	M	L
Morgan	50	M	L
Wawa District			
51	20	L	L
White River District			
Cecile	50	N	N
Knowles	35	L	T

<sup>a</sup> N = nil, T = trace, L = light, M = moderate, H = high

Sweet Fern Blister Rust, *Cronartium comptoniae* Arth.

This rust occurs commonly in the Central Survey Region wherever jack pine and its alternate hosts, sweet fern (*Comptonia peregrina*) and sweet gale (*Myrica gale*), are found. The incidence and level of infection in affected stands change only slightly from year to year although persistent infection has caused considerable damage in the form of basal cankers (see Frontispiece). Tree mortality has been very low except in young jack pine stands evaluated in Hart (1969) and Baldwin (1973) townships where moderate and light mortality were recorded. In 1973 new centres of infection were established in semi-mature stands in Chapleau, Espanola, Sudbury and Gogama districts (Table 8). Negative results were obtained in all young stands of jack pine examined in the Chapleau District except in Township 12E where the disease is well established.

Table 8. Summary of incidence of sweet fern blister rust in the Central Survey Region, 1969 to 1973 (Evaluations were based on the examination of four trees in each of 10 plots at each location.)

Location (Twp)	Year evaluated	Tree height	Acres affected	Incidence (%)
Blind River District				
6D	1970	40	50	2.5
1A	1970	60	1000	7.5
Haughton	1970	30	100	2.5
2E	1970	30	50	10.0
2F	1972	20	-	22.5
Chapleau District				
10E	1970	-	500	7.5
de Gaulle	1970	-	100	5.0
11B	1970	-	1000	2.5
29	1970	-	400	25.0
Cosens	1970	-	50	2.5
25 Rge 23	1973	60	30	57.0
10D	1973	50	25	40.0
Nimitz	1973	30	50	30.0
Wakami	1973	50	50	7.5
43	1973	25	0	0.0
Reeves	1973	40	5	5.0
Foleyet	1973	30	10	7.5
Pinogami	1973	60	10	17.5
Borden	1973	50	10	2.5
Fawn No. 1	1973	3-8	-	0.0
Fawn No. 2	1973	"	-	0.0

(continued)

Table 8. Summary of incidence of sweet fern blister rust in the Central Survey Region, 1969 to 1973 (Evaluations were based on the examination of four trees in each of 10 plots at each location.) (concluded)

Location (Twp)	Year evaluated	Tree height	Acres affected	Incidence (%)
Chapleau District (cont'd.)				
Esther	1973	3-8	-	0.0
Edith	1973	"	-	0.0
Fingal	1973	"	-	0.0
11E	1973	"	-	0.0
12E	1973	"	10	70.0
Espanola District				
Nairn	1969	60	-	1.0
Nairn	1970	50	10	20.0
124	1970	45	20	37.5
I	1972	50	50	10.0
Merritt	1973	70	100	10.0
Baldwin	1973	70	100	30.0
Gogama District				
Noble	1969	60	50	1.0
Carter	1969	60	200	5.0
Unwin	1970	40	50	7.5
Carter	1970	70	35	10.0
Benneweis	1971	7	400	7.5
Benneweis	1972	7	100	7.5
Dublin	1973	70	20	10.0
Sault Ste. Marie District				
Gaudette	1970	60	200	20.0
Gaudette	1972	60	200	27.5
Sudbury District				
Hart	1969	10	10	32.5
Cartier	1970	50	50	20.0
Ermatinger	1970	60	20	40.0
Hawley	1970	30	20	15.0
Munster	1972	50	20	5.0
Bowell	1973	50	100	22.5
Haentschell	1973	70	-	0.0
Aylmer	1973	50	30	1.0
Wawa District				
64	1970	40	100	7.5
27 Rge 23	1970	-	-	5.0

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

This important disease of white pine was again widely distributed in the Region. Infection levels varied from light to moderate and incidence ranged from 5% to 22.5% (Table 9). The disease causes branch and top mortality with most damage occurring in both young planted stands and natural regeneration.

Table 9. Summary of incidence of white pine blister rust in the Central Survey Region in 1973 (Evaluations were based on the examination of four trees in each of 10 plots at each location.)

Location (Twp)	Tree height	Acres affected	Incidence (%)
Blind River District			
1F	10	200	10.0
Parkinson	7-15	100	5.0
Espanola District			
Mills	15	20	12.5
B	4-10	20	15.0
Gogama District			
Cabot	5	100	7.5
Sault Ste. Marie District			
Hiawatha Park	20	10	22.5
Wawa District			
29 Rge 16	20-60	200	8.0

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

A review of previous evaluations of this organism indicates the disease to be widely distributed in the Region but usually at trace levels of infection. Exceptions were evaluated in 1971 in Benneweis Township, Gogama District and in Carnarvon Township, Espanola District in 1970 where moderate and heavy levels of infection, respectively, were recorded. In 1973, trace levels of infection were found in a Scots pine plantation in Gordon Township, Espanola District and in a semimature stand of jack pine in Township 64, White River District. The disease was not detected in five other Scots pine plantations on Manitoulin Island or at eight locations in Chapleau District.

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

This disease continued to be of major importance and varying levels of infection and incidence exist at numerous sample points (Table 10). Three new infection centres were found in red pine plantations in Cabot Township, Gogama District, Morgan Township, Sudbury District and Township V in Blind River District. Evaluations carried out at these locations showed an incidence of 97.5%, 15%, and 87.5%, respectively. In the Chapleau District fewer external signs of infection were observed in jack pine plantations where symptoms had previously been severe, indicating that the disease is firmly established.

Table 10. Summary of incidence and level of infection of Scleroderris canker in the Central Survey Region in 1973

Location (Twp)	Host	Acres affected	Incidence <sup>a</sup>	Level of infection <sup>a</sup>
Blind River District				
Kirkwood No. 1	jP	3.5	L	T
Kirkwood No. 2	jP	4.5	L	L
Kirkwood No. 3	jP	136	H	H
Kirkwood No. 4	jP	11	M	T
Rose No. 1	jP	70	L	T
Rose No. 2	jP	5	M	T
Rose No. 3	jP	32	L	T
4D	rP	500	M	T
V	rP	500	H	T
Chapleau District				
11B	jP	140	H	H
12E	jP	10	H	H
11E	jP	0	N	N
Fingal	jP	0	N	N
Edith	jP	0	N	N
Esther	jP	0	N	N
Fawn No. 1	jP	0	N	N
Fawn No. 2	jP	0	N	N
Espanola District				
Carnarvon	AsP	0	N	N
Billings	ScP	0	N	N
Nairn	rP	0	N	N
Gogama District				
Cabot	rP	30	H	H
Halliday	jP	0	N	N

(continued)

Table 10. Summary of incidence and level of infection of Scleroderris canker in the Central Survey Region in 1973 (concluded)

Location (Twp)	Host	Acres affected	Incidence <sup>a</sup>	Level of infection <sup>a</sup>
Sudbury District				
Hanmer	rP	0	N	N
Killarney	rP	0	N	N
Morgan	rP	20	M	M

<sup>a</sup> N = nil, T = trace, L = light, M = moderate, H = high

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

This canker, which causes branch and/or tree mortality, is present throughout the Central Survey Region, and is most prevalent in young, understory stands. As would be expected, stem cankers are more serious than branch cankers, and usually cause the death of the tree either through girdling or by windsnap at the point of infection. Table 11 shows the wide variance of incidence in numerous stands.

Table 11. Summary of incidence and level of infection of Hypoxylon canker in the Central Survey Region from 1968 to 1973 (Evaluations were based on examination of four trembling aspen trees in each of 10 plots at each location.)

Location (Twp)	Year of evaluation	Acres affected	Incidence <sup>a</sup>	Level of infection <sup>a</sup>
Blind River District				
W	1973	500	L	T
Spragge	1973	3	M	M
Long	1973	200	M	L
Gladstone	1969	-	H	-
188	1969	50	H	H
149	1968	250	H	H
Gould	1968	300	H	H
Kirkwood	1968	1000	H	H
Chapleau District				
Muskego	1973	200	H	M
de Gaulle	1973	50	H	M
Blamey	1973	100	H	M
8D	1973	20	M	T
11G	1973	10	M	T
Fingal	1973	10	M	T

(continued)

Table 11. Summary of incidence and level of infection of Hypoxylon canker in the Central Survey Region from 1968 to 1973  
(Evaluations were based on examination of four trembling aspen trees in each of 10 plots at each location.)  
(continued)

Location (Twp)	Year of evaluation	Acres affected	Incidence <sup>a</sup>	Level of infection <sup>a</sup>
Chapleau District (cont'd.)				
Osway	1973	5	M	T
11E	1973	15	M	T
Borden	1968	20	M	M
Cochrane	1968	10	H	H
Coppell	1968	40	-	L
McGee	1968	5	M	L
Ramsden	1968	50	-	M
29	1968	6	H	H
Espanola District				
Gough	1973	60	H	H
131	1973	40	M	M
Burpee	1973	10	M	M
Shedden	1969	50	H	H
J	1968	60	H	H
Gogama District				
Dublin	1973	15	M	M
Carter	1973	20	M	L
Arden	1973	30	M	M
Sault Ste. Marie District				
Fenwick	1968	500	H	M
Curtis	1968	1000	H	M
Herrick	1968	750	H	M
Sudbury District				
Delamere	1973	40	M	M
Ulster	1973	10	M	M
Aylmer	1973	100	M	M
Hutton	1973	20	M	M
Bigwood	1973	10	M	M
Cascaden	1973	15	M	M
Jennings	1973	10	M	M
Davis	1973	20	M	M
Loughrin	1969	50	H	H
Morgan	1969	50	H	M
Carlyle	1968	50	H	H
Waters	1969	100	H	H

(continued)

Table 11. Summary of incidence and level of infection of Hypoxylon canker in the Central Survey Region from 1968 to 1973  
(Evaluations were based on examination of four trembling aspen trees in each of 10 plots at each location.)  
(concluded)

Location (Twp)	Year of evaluation	Acres affected	Incidence <sup>a</sup>	Level of infection <sup>a</sup>
White River District				
Hunt No. 1	1973	500	M	M
Hunt No. 2	1973	50	M	M
Cecile	1973	500	M	M
71	1973	1000	L	T

<sup>a</sup> N = nil, T = trace, L = light, M = moderate, H = high

Willow Rust, *Melampsora abietis-capraearum* Tub.

Small areas of high incidence of this rust were present in Townships 71 and 64 in the White River District and light incidence occurred in Township 3E in Blind River District. Although the infection was evaluated at trace or light levels, scattered hosts, especially in the White River District, were severely infected.

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

This disease occurs commonly on small-diameter open-grown trembling aspen trees. Evaluations showed a high incidence and level of infection in a small area in Township 1B, Blind River District and Township 28 Range 16 in Wawa District. Moderate levels of infection occurred at three locations and at all other sample points infection ranged from trace to light (Table 12).

Leaf Blight of Balsam Poplar, *Septoria populi* Desm.

Premature browning of balsam poplar foliage caused by this disease occurred primarily in the southern part of the Region. The condition was most prevalent in stands on Manitoulin Island in Sudbury District, at Foleyet in Chapleau District and along the north shore in Espanola, Blind River and Sault Ste. Marie districts. Infection level and incidence were high at most locations.

Table 12. Summary of incidence and level of infection of leaf and twig blight in the Central Survey Region in 1973 (Evaluations were based on examination of four trembling aspen trees in each of 10 plots at each location.)

Location (Twp)	Acres affected	Incidence <sup>a</sup>	Level of infection <sup>a</sup>
Blind River District			
1B	$\frac{1}{2}$	H	H
2A	$\frac{1}{4}$	H	M
150	2	H	L
175	3	M	L
Espanola District			
Salter	20	H	M
Sault Ste. Marie District			
Gaudette	$\frac{1}{4}$	H	M
Sudbury District			
Cartier	5	M	T
Morgan	20	M	T
Wawa District			
46	10	M	L
28, Rge 16	1/10	H	H
White River District			
70	3	H	L
32, Rge 28	50	H	L

<sup>a</sup> T = trace, L = light, M = moderate, H = high

#### Red Pine Shoot Blight, *Sirococcus strobilinus* Preuss

A survey was initiated in 1973 to determine the presence and level of infection of this blight in the Province. In the Central Survey Region small areas of infection were found in the Wawa, Sault Ste. Marie and Chapleau districts. The highest incidence occurred at Agawa Provincial Park where 55% of the red pine in a 200-acre stand were diseased. At Pancake Bay Provincial Park, widely separated hosts were infected. In Chapleau District, a small stand of understory trees was moderately damaged at Weshaygo Lake in Township 10E.

*S. strobilinus* kills only the current season's growth, but the damage is usually cumulative and eventually the entire tree may die. Seedlings die quickly; larger trees may take several years to succumb. There is evidence that infected overstory trees are the main source of

infection for younger trees; consequently, the establishment of new red pine plantations beneath older red pines should be avoided.

#### Single-tree Mortality of Balsam Fir

Surveys of this condition, characterized by the presence of scattered dead balsam fir trees, were continued in 1973. The condition is most prevalent in the Blind River District, where substantial increases in the number of affected trees were recorded in all areas except at Matinenda Lake, Township 161, where identical counts were made in 1972 and 1973 (Table 13). Small numbers of affected hosts were present in Espanola, Gogama and Sudbury districts.

Table 13. Summary of incidence of dead balsam fir trees in the Central Survey Region in 1972 and 1973 as determined by aerial surveys

Location (Twp)	No. of acres examined	No. of dead (red) balsam fir trees	
		1972	1973
Blind River District			
163, Wilkie Lake	160	5	22
U, Rotter Lake	160	15	50
156, Dunlop Lake	160	10	21
156, South Lake	40	6	7
161, Little Moon Lake	40	10	22
161, Matinenda Lake	160	12	12
149, Elliot Lake	160	25	50
157, Christman Lake	80	4	12
1A, Mount Lake	160	11	14
Espanola District			
I and 132	1212	-	3
Gogama District			
Marquette and Paudash	1454	-	3
Sudbury District			
Howey	727	11	10

### Wind Storm Damage

Two violent wind storms occurred in the Region in 1973.

The most destructive storm occurred on August 23 and caused damage in an area approximately 36 miles long and  $\frac{1}{4}$  mile to 1 mile wide, extending from the Spanish River in Chalet Township, Gogama District to Friday Lake in Rhodes Township, Sudbury District. Tree damage, in the form of stem breakage or uprooting, was severe and affected trees in all diameter classes and on all site conditions (Fig. 3 and 4).

The second storm occurred in September and damage was confined to a narrow strip in Foleyet Township, Chapleau District.

### Winter Injury

Injury caused by winter drying was observed less frequently than usual in the Region. The only area in which appreciable damage persisted was the Marne Lake area in Gogama District.

### Foliage Discolouration of White Pine

Our June aerial surveys revealed areas of severe foliage discolouration in stands of mature and semimature white pine in the Sudbury, Gogama and Espanola districts. The damage resembled semimature tissue needle blight or sulphur dioxide damage. Areas affected ranged in size from 5 to 20 square miles. The majority of the larger areas affected occurred north and northeast within a 30- to 50-mile radius of the city of Sudbury. The largest of these areas were mapped near Alphretta, Welcome, Wanapitei, Barlow and Avery lakes in Espanola District.



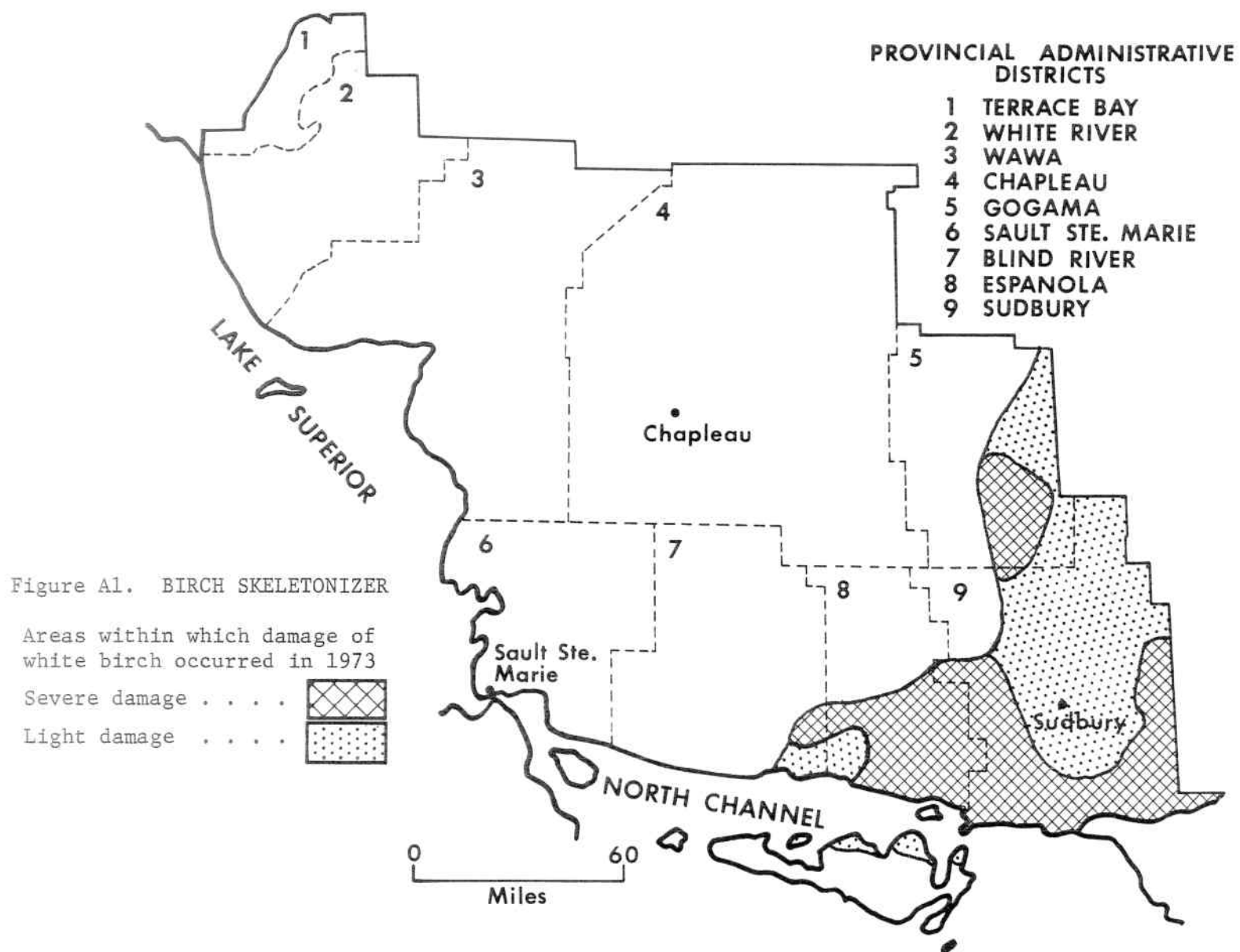
Figures 3 and 4 showing windstorm damage which crossed the Sudbury and Gogama districts.

Table 14. Other forest diseases

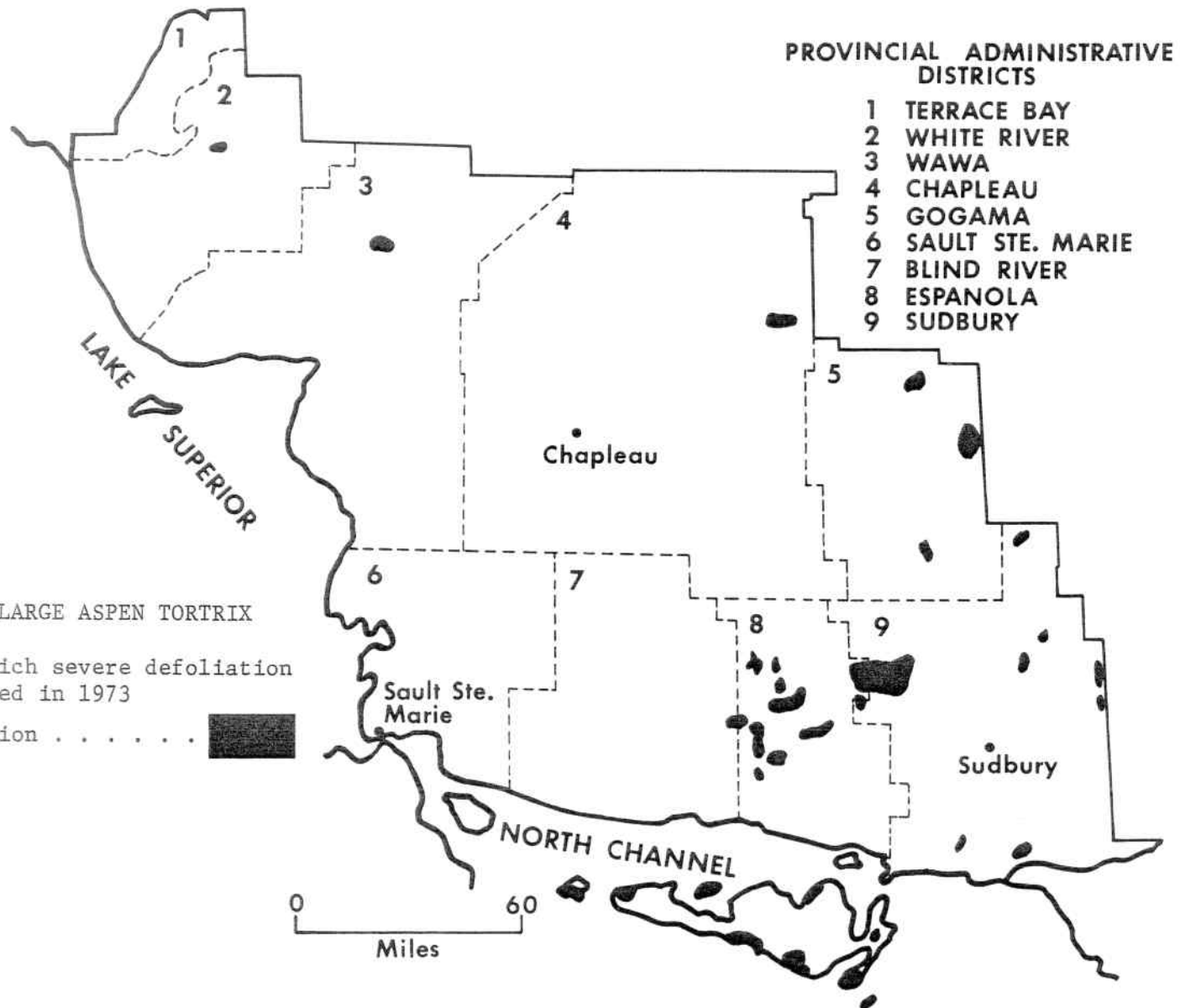
Organism	Host (s)	Remarks
<i>Arceuthobium pusillum</i> Pk.	bS	trace infection evaluated in small area in Twp 29 Rge 14, in Sault Ste. Marie District
<i>Chrysomyxa pirolata</i> Wint.	bS	low incidence and level of infection in Twp 71, White River District
<i>Peridermium stalactiforme</i> Arth. and Kern (= <i>Cronartium coleosporioides</i> )	jP	high incidence in Twp 30 Rge 23, Wawa District
<i>Phyllosticta minima</i> (Berk. & Curt.) Ell. & Ev.	rM	high incidence in Montreal Mining Co., Sault Ste. Marie District and Bridgland Township, Blind River District

## APPENDIX

# CENTRAL SURVEY REGION



# CENTRAL SURVEY REGION



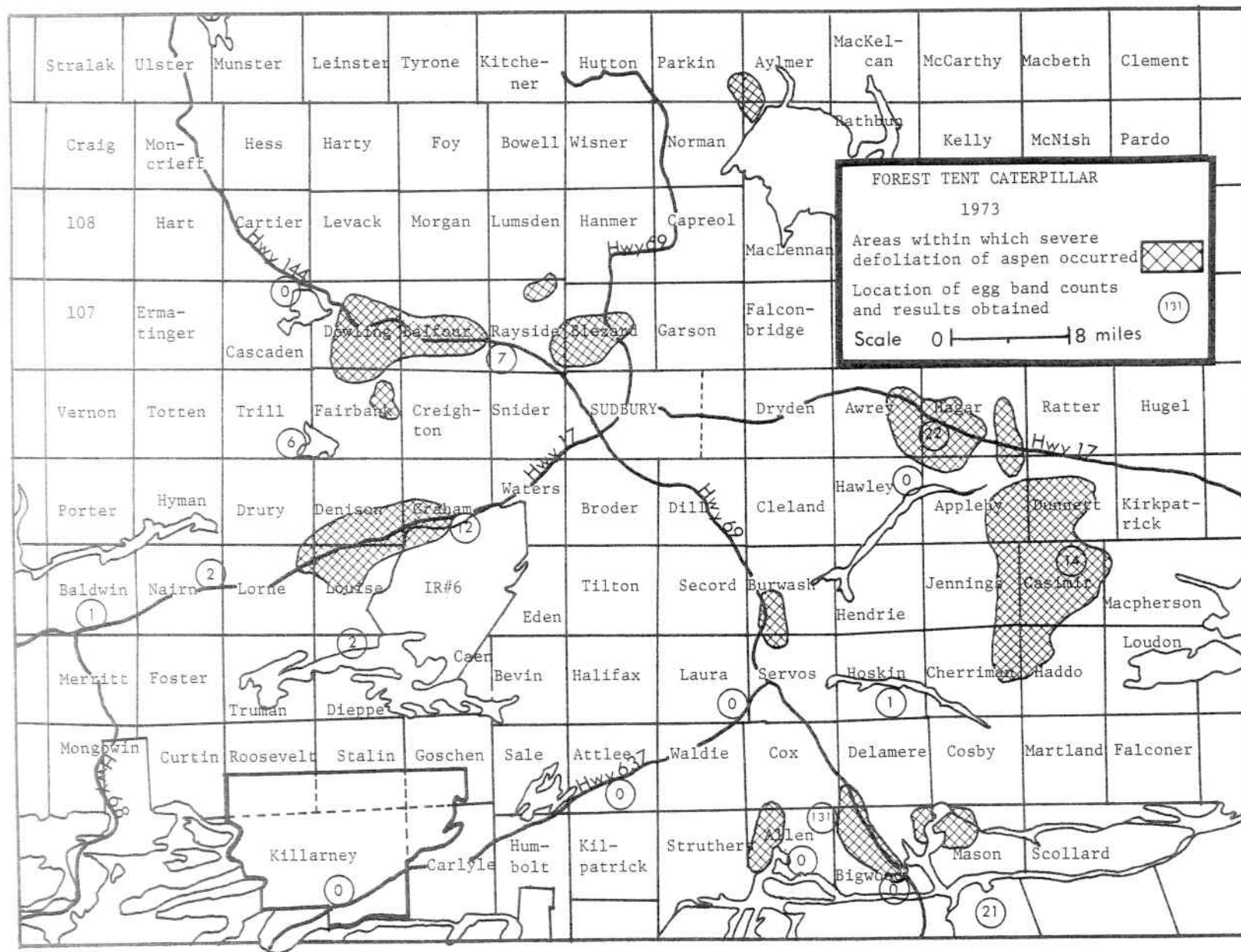


Figure A3

Figure A4. DUTCH ELM DISEASE

