

Last
copy

Archives



Government
of Canada

Gouvernement
du Canada

Canadian
Forestry
Service

Service
canadien des
forêts

SURVEY BULLETIN

33242

Forest Insect and Disease Conditions in Ontario

Fall 1985



Chinese experts learn Forest Insect and Disease Survey methods

GREAT LAKES FOREST RESEARCH CENTRE
Box 490 • Sault Ste. Marie Ontario

FOREST INSECT AND DISEASE CONDITIONS IN ONTARIO

Fall 1985

This is the last of three bulletins issued by the Forest Insect and Disease Survey (FIDS) Unit of the Great Lakes Forestry Centre (GLFC) describing forest insect, disease and abiotic conditions in the province of Ontario in 1985. More detailed regional reports describing pest conditions in the eight Ontario Ministry of Natural Resources (OMNR) administrative regions are being prepared and will be issued early in 1986.

ANNUAL FOREST PEST REVIEWS

The ninth annual Ontario pest reviews were held in southern and northern Ontario, respectively, on 5 and 6 November, 1985. The southern review took place in the MacDonald Block, Queen's Park, Toronto, and the northern review was held at GLFC in Sault Ste. Marie. The southern review featured presentations on major pests including gypsy moth, spruce and jack pine budworms, Scleroderris canker (European strain), and the pinewood nematode. Presentations were also made on such topics as red pine pests (of seeds, cones and plantations), hardwood decline and OMNR spray policy and procedures. Dr. J.R. Carrow, Dean of Forestry, University of Toronto, made a presentation entitled "Spruce Budworm, Some Lessons From the East". Updates were provided on the status of other pests such as the oak leaf shredder, forest tent caterpillar, brown spot needle blight and wind damage. A film entitled "Acid Rain: Requiem or Recovery" was presented.

The northern review featured presentations on the jack pine budworm including spray operations and their results, the status of the pest in Manitoba and the perspective of industry. Also featured were a number of topics related to spruce budworm, including the 1985 situation, spray operations and results, and the results of *Trichogramma minutum* experiments. Presentations were made on OMNR spray policies and procedures, and the acid rain national early warning system (ARNEWS), and updates were given on various other pests such as the black army cutworm, forest tent caterpillar, pinewood nematode and Scleroderris canker. A film entitled "In Touch With the Forest" was shown. The southern review was attended by 112 people; 120 turned out for the northern review.

Presentations were made by GLFC staff as well as by staff of the Pest Control Section and of the Thunder Bay and Tweed Districts of OMNR, E.B. Eddy Forest Products Ltd., Manitoba Department of Natural Resources, University of Toronto, Northern Forestry Centre, and Forest Pest Management Institute.

VISIT OF CHINESE FORESTRY SPECIALISTS

Early in October, two insect and disease specialists from China, Mr. Z. Jin and Mr. H. Zhou, visited GLFC as part of a Canada-China integrated intensive forest management project. The two were accompanied by a Chinese interpreter, Mrs. Heli Li and a Canadian interpreter, Mr. Doug Chow. Since the two visitors are specialists in insect and disease surveys and control, much of their time was spent with FIDS staff. Among the FIDS activities they observed were aerial and ground inspection of stands damaged by spruce and jack pine budworm, various techniques for surveying insect and disease organisms, and laboratory demonstrations. Their itinerary included a two-day trip in which they were shown a number of insect and disease problems in the field, along with survey field procedures, a large sawmill operation at Nairn, and a Christmas tree operation near Thessalon. During the three weeks the group also spent time with a number of other specialists at GLFC and the Forest Pest Management Institute, visited OMNR's Aviation and Fire Management Centre and the Sault Ste. Marie District Office for demonstrations on supplementary aerial photography and toured the Turkey Lake watershed to view ARNEWS activities and studies on the long-range transport of air pollutants.

SURVEY HEAD ADDRESSES ONTARIO SHADE TREE COUNCIL

On 21 October 1985, Dr. G.M. Howse addressed the 21st Annual Meeting and Seminar of the Ontario Shade Tree Council in Scarborough, Ontario. Dr. Howse spoke on the condition of native trees in Ontario with special emphasis on insect, disease and abiotic problems. His talk included a discussion of the biology, damage and current status of such pests as the spruce and jack pine budworms, gypsy moth, forest tent caterpillar, Scleroderris canker and pinewood nematode. The condition of hardwoods, particularly sugar maple and oak, was described, as well as ARNEWS. Dr. Howse accompanied his talk with a number of slides illustrating major points in his presentation. The meeting was attended by about 80 people concerned with urban forestry and the ornamental and shade tree industry in Ontario.

ARNEWS PLOT SYSTEM COMPLETED FOR ONTARIO

In 1984, FIDS was given a new role as part of an acid rain national early warning system (ARNEWS). The system consists of a number of study plots established across the country to detect as early as possible any damage that may occur to Canadian forests because of acid precipitation. Accordingly, in 1984 the Ontario FIDS Unit established 13 study plots in strategic areas in the various acid deposition zones of the province. They were located in stands of the major commercial tree species in Ontario including black spruce, white spruce, jack pine, trembling aspen, white birch, yellow birch and sugar maple.

In 1985, an additional 12 plots were installed to complete the total number assigned to the Ontario Region (Fig. 1). Tree species monitored in the new plots will include white pine and Norway spruce in addition to those listed above. On each plot, such parameters as vertical and radial growth, crown structure and density, mortality, incidence of insect and disease attack and specific acid rain symptoms are measured. In addition, at each location subplots are established for the study of ground cover plants. Chemical analysis of foliage and soil samples will also be carried out at regular intervals.

FOREST INSECTS

Spruce Budworm, *Choristoneura fumiferana* (Clem.)

The 1985 spruce budworm situation in Ontario was described in the Summer Survey Bulletin. Briefly, the total area of moderate-to-severe defoliation increased by some 3,584,513 ha to 12,332,365 ha, with most of the increase occurring in the Northwestern and North Central administrative regions. The major budworm infestation in the province now occurs from the Wawa-Hearst area westward to the Manitoba border, a huge infestation totaling some 12,175,220 ha in area. In the remainder of the province, including northeastern and southern Ontario, budworm populations have declined drastically.

Late-season surveys show that the area of budworm-associated tree mortality increased from 13,516,000 to 13,936,000 ha (Table 1 and Fig. 2). Most of the increase occurred in the North Central and Northwestern regions, particularly in the Thunder Bay District, which had an increase of 192,000 ha, and in the Fort Frances District, which had an

Table 1. Comparison of the area (ha) of budworm-associated tree mortality in Ontario in 1984 and 1985.

Region	1984	1985	Increase
NW	126,000	263,000	137,000
NC	247,000	517,000	270,000
N	7,948,000	7,958,000	10,000
NE	3,622,000	3,625,000	3,000
S ^a	1,573,000	1,573,000	0
Total	13,516,000	13,936,000	420,000

^a includes Algonquin, Eastern and Central regions.

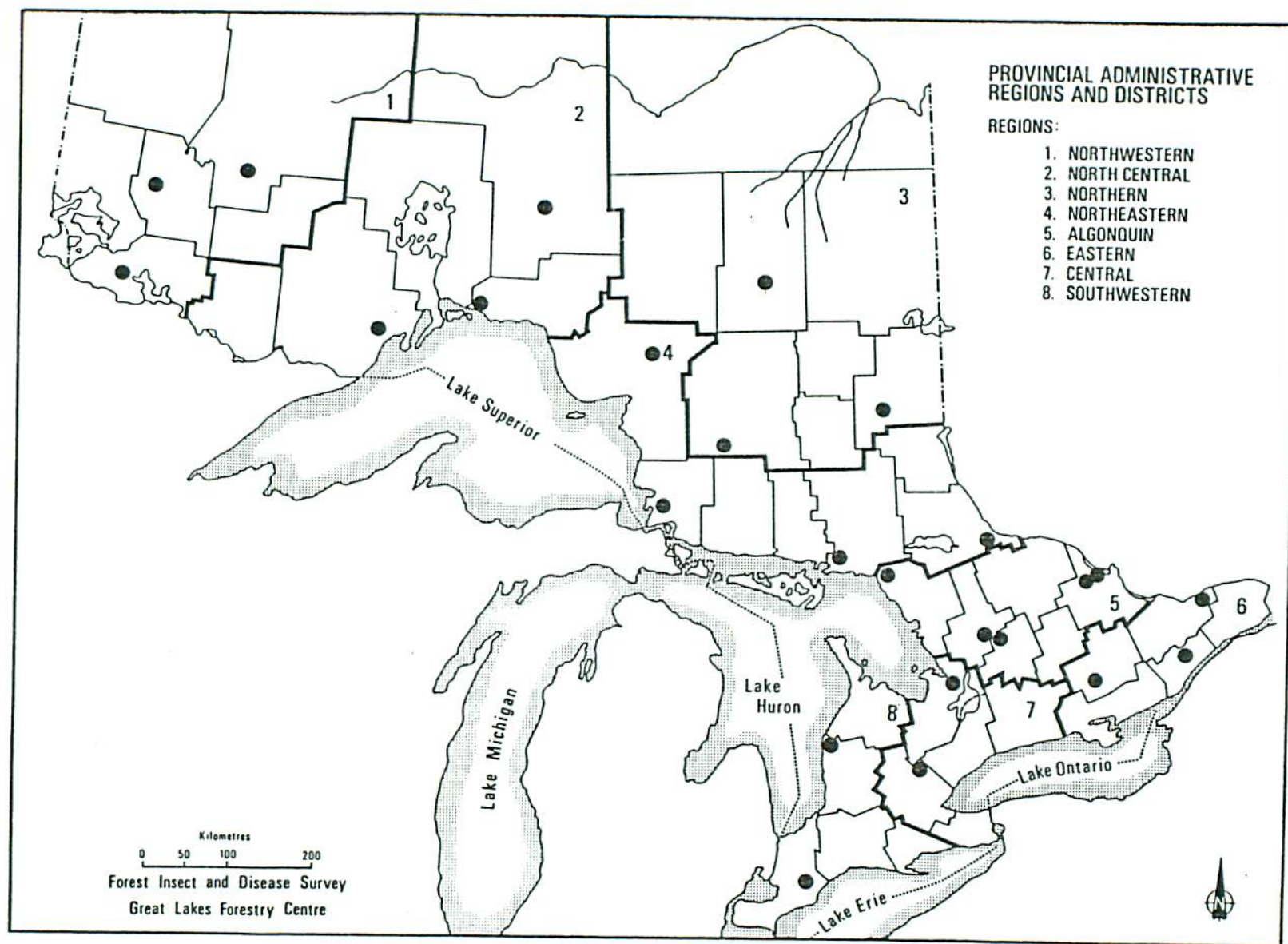


Figure 1. 1985 Acid Rain National Early Warning System (ARNEWS)

Plot locations . . . ●

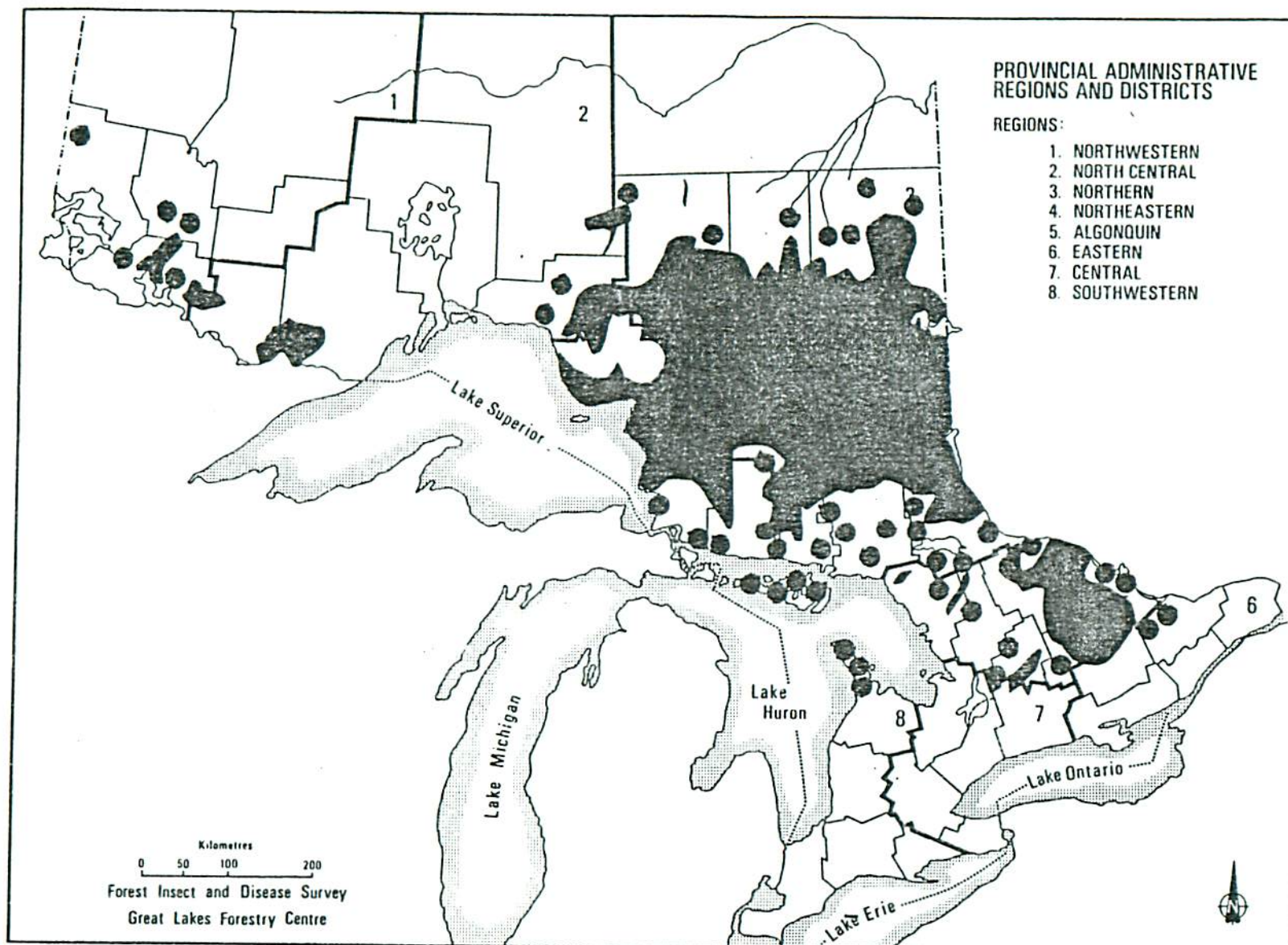


Figure 2. 1985 Spruce budworm mortality
Mortality . . . ■ or ●
Total area 13,936,000 ha

increase of 110,227 ha in budworm-associated tree mortality. Small increases ranging from 1,500 ha to 25,326 ha occurred in the Dryden, Kenora, Atikokan, Geraldton and Terrace Bay districts. Increases of 9,618 ha and 2,838 ha, respectively, were recorded in the Hearst District of the Northern Region and the Wawa District of the Northeastern Region. The area of budworm-associated tree mortality remained constant in the remainder of the province.

The FIDS Unit has completed its 1985 spruce budworm egg-mass survey with some 506 locations sampled across the province. An analysis of the results indicates a decline in egg-mass densities of approximately 57% over 1984 levels. Declining egg-mass counts were recorded in all districts sampled except Kenora District, where an increase of 25% was recorded. Nevertheless, counts within the major infestation described above remain sufficiently high to maintain moderate-to-severe defoliation levels throughout most of the area infested in 1985. Indeed, there may be some expansion along the northern edge of the infestation in the form of scattered, isolated pockets of defoliation between the Werner Lake area on the Manitoba border eastward to the town of Hearst. At the same time, there will probably be some lessening in the severity of defoliation, particularly in older parts of the infestation. The decline in this part of the province was likely the result of cool, wet, windy weather during the oviposition period and probably represents a temporary respite in budworm populations rather than a long-term decline.

In the remainder of northern Ontario where egg-mass counts have been declining for several years, egg-mass densities were reduced considerably and consequently only a few isolated pockets of moderate-to-severe defoliation are expected in the Chapleau, Cochrane and North Bay districts in 1986. Egg-mass counts in southern Ontario have declined to very low levels and no defoliation of any consequence is expected next year.

Jack Pine Budworm, *Choristoneura pinus pinus* Free.

Major increases in jack pine budworm infestations were outlined in the Summer Survey Bulletin. All together, some 3,660,069 ha of moderate-to-severe defoliation were mapped in the four northern regions and the Algonquin Region. The Summer Survey Bulletin also included a jack pine budworm defoliation map which was incomplete and contained several errors. This bulletin contains an updated and corrected version of the same map (Fig. 3). The main areas of difference in the two maps are in northwestern Ontario where the infestation straddling the four corners of the Ignace, Dryden, Atikokan and Fort Frances districts is actually further south than shown on the summer map. In addition, a number of small pockets of defoliation in the Thunder Bay District of the North Central Region and the Kenora, Sioux Lookout and Ignace districts of the Northwestern Region were omitted from the summer map. In

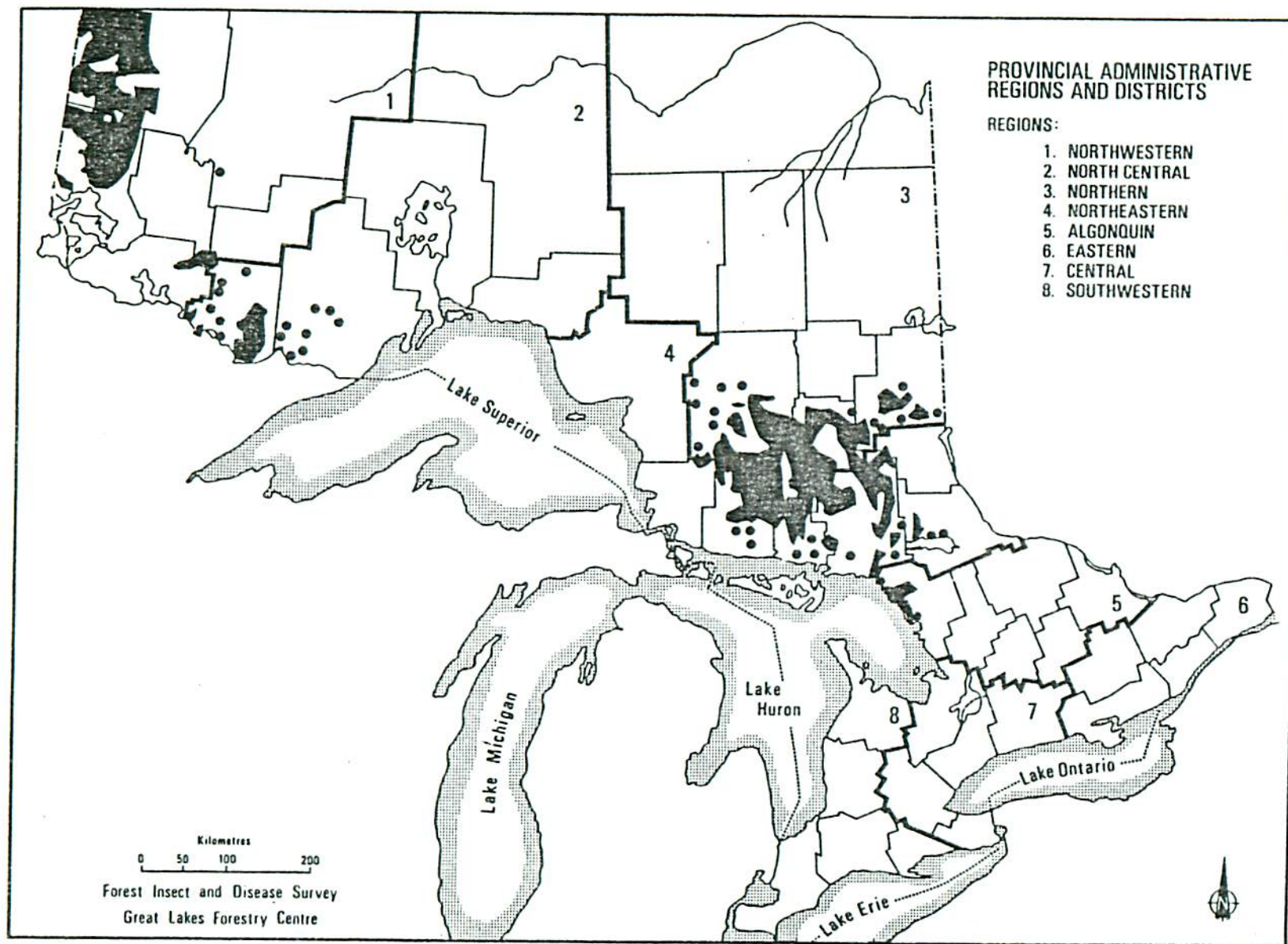


Figure 3. 1985 Jack pine budworm defoliation

Moderate-to-severe . . . ■ or ●

Total area 3,660,069 ha

northeastern Ontario the summer map showed the main body of infestation extending somewhat further north in the Chapleau District than is the case.

Surveys were carried out in early fall to determine the impact of the insect on jack pine stands within the major infestation. In Parry Sound District, high levels of top killing and tree mortality were evident in Wallbridge, Harrison and Carling townships. The most severe damage was recorded at Charles Inlet in Harrison Township where 66% of the trees were dead and 33% had dead tops. Counts at some 14 locations revealed an average of 24.6% whole-tree mortality with an additional 37.3% top killing. Trees in these areas were generally growing on poor, rocky sites and had been under heavy attack by the insect for two or more years.

In northeastern Ontario low levels of top killing and tree mortality were recorded in stands that have been infested since 1984 or earlier. The most severe damage recorded was in Monestime Township, Espanola District, where top killing of 41% and 33% was recorded at two locations along with whole-tree mortality of 7% and 4%. A similar situation prevailed in the Red Lake District of the Northwestern Region where two years of heavy defoliation have resulted in low levels of mortality and top killing. The most severe damage occurred at Royd Lake where 3% of the trees were dead and 33% top killing was recorded. Surveys carried out in the southern Atikokan District in areas where stands had been infested since 1984 or earlier showed tree mortality ranging from 5% to 28% and top killing ranging from 1% to 27%. Counts at six locations revealed an average of 14.2% tree mortality coupled with an average 10% top killing.

The 1984 jack pine budworm egg-mass survey has been completed, with some 377 locations sampled in the province. Analysis of the counts for 172 locations sampled in 1984 and 1985 shows an overall decline of 59% in egg-mass densities.

In northwestern Ontario, despite a decline in egg-mass densities of some 61%, moderate-to-severe defoliation is expected to persist within the 1985 infestation in the Red Lake, Kenora, Fort Frances, Dryden and Ignace districts of the Northwestern Region and in the northwest Atikokan District of the North Central Region (Table 2). The potential exists for the expansion and consolidation of these infestations into a single, huge area of moderate-to-severe defoliation stretching from the northwest Atikokan District west through the Ignace, Fort Frances and Kenora districts to the Manitoba border and north to the Trout Lake area of Red Lake District. Elsewhere in northwestern Ontario, infestations are expected to decline in the central Atikokan District and the southwestern Thunder Bay District, although small, scattered pockets of light and occasionally moderate-to-severe damage may persist in some areas.

Table 2. Comparison of jack pine budworm egg-mass densities in Ontario in 1984 and 1985 (based on six 61-cm jack pine branch tips at each location).

Region	No. of locations	Avg no. of egg masses		
		1984	1985	% change
Northwestern	16	16.7	6.5	-61
North Central	18	8.3	2.1	-75
Northern ^a	66	4.7	3.1	-33
Northeastern ^a	60	7.8	2.7	-65
Southern Ontario ^b	12	3.8	0.4	-89
Over all	172	7.2	3.0	-59

^a includes 25 locations sprayed in 1985

^b Southern Ontario includes Algonquin and Central regions.

In northeastern Ontario, populations are expected to decline considerably in the Northern and Northeastern regions and in the Parry Sound District of the Algonquin Region. Indeed, it is possible that populations could collapse over extensive areas in 1986. Populations should remain moderately high in parts of the Espanola, Sudbury and Blind River districts, although the area affected and the severity of defoliation will be reduced from 1985 levels. Some pockets of moderate-to-severe defoliation will persist in the Chapleau and Gogama districts, while populations will decline sharply and probably collapse in the Kirkland Lake and Parry Sound districts.

Gypsy Moth, *Lymantria dispar* (L.)

In 1985 infestations of the gypsy moth increased dramatically for the third consecutive year (see Summer Survey Bulletin). All together some 246,342 ha of moderate-to-severe defoliation were mapped, most of it in the Tweed and Napanee districts of the Eastern Region. Substantial areas of moderate-to-severe defoliation were also mapped in the Carleton Place and Brockville districts of the Eastern Region and for the first time pockets of moderate-to-severe damage spread to adjacent areas of the Pembroke District of the Algonquin Region, and the Lindsay District of the Central Region. Small areas of light infestation were discovered near Port Colborne in the Niagara District where egg-laying female moths were found late in 1984.

For the third consecutive year the FIDS Unit and the OMNR Parks Branch carried out a larval trapping program in 67 locations, mainly provincial parks and campgrounds in southern Ontario (Fig. 4). The trapping program is based on the gypsy moth larval habit of descending the trees to hide during the day. A strip of burlap is tied around the tree trunk with the top half folded over the bottom half. Descending larvae hide under the overhanging burlap where they are easily captured. FIDS rangers installed traps in each park where they were monitored constantly by the rangers and parks personnel. Suspect larvae were sent to the Sault Ste. Marie laboratory for positive identification. Larvae were caught in 16 provincial parks in the Eastern Region as well as at the G. Howard Ferguson Forest Station. These results were not unexpected as all these locations were within the area considered to be generally infested by the pest. However, larval captures at Bonnechere Provincial Park in the Pembroke District and Turkey Point Provincial Park in the Simcoe District were significant as this is the first time the program has yielded results in the respective Algonquin and Southwestern regions.

The adult pheromone trapping program was carried out in the same southern Ontario parks in which larval trapping took place, and in a number of other locations (Fig. 5). Two pheromone traps were installed in each park and, wherever possible, one trap was located at the entrance and the other in a camping area. Additional traps were installed in highly suspect locations. Positive identification of captured moths was made at the Sault Ste. Marie laboratory. Moths were captured at 51 of 67 parks in comparison with 49 of 64 parks in 1984. Traps were destroyed by vandals in two parks. In addition, high numbers of moths were captured at the G. Howard Ferguson Forest Station in the Brockville District and at the Canadian Forces Base, Petawawa, in the Pembroke District. As expected, the highest numbers of moths were captured in the Eastern Region where the insect has been established for a number of years. However, significant moth catches were also made at the following parks outside the generally infested area (numbers in parentheses): Algonquin Park, Driftwood Campground (21), Bonnechere (39), Carson Lake (20), Canadian Forces Base, Petawawa, nine traps (160), Lake St. Peter (9), Petroglyphs (41), Silent Lake (12), Darlington (37), Emily (11), Marks Burnham (40), Serpent Mounds (30), Bronte Creek (26), Long Point (11), Selkirk (33), Turkey Point (33) and Pinery (7). In addition, small numbers of adults (1-5) were captured at the following parks: Tea Lake, Rock Lake and Whitefish Lake campgrounds in Algonquin Park, Killbear, Oastler, Balsam Lake, Awenda, Bass Lake, Mara, McRae Point, Six Mile Lake, Springwater, Wasaga Beach, Sibbalds Point, Cyprus Lake, Sauble Falls, Inverhuron, McGregors Point, Craighleith, Ipperwash, Rondeau and Iroquois Beach. The most significant catches may be those at Canadian Forces Base, Petawawa, where there is great potential for spread because of the constant movement of personnel and equipment to other parts of the country.

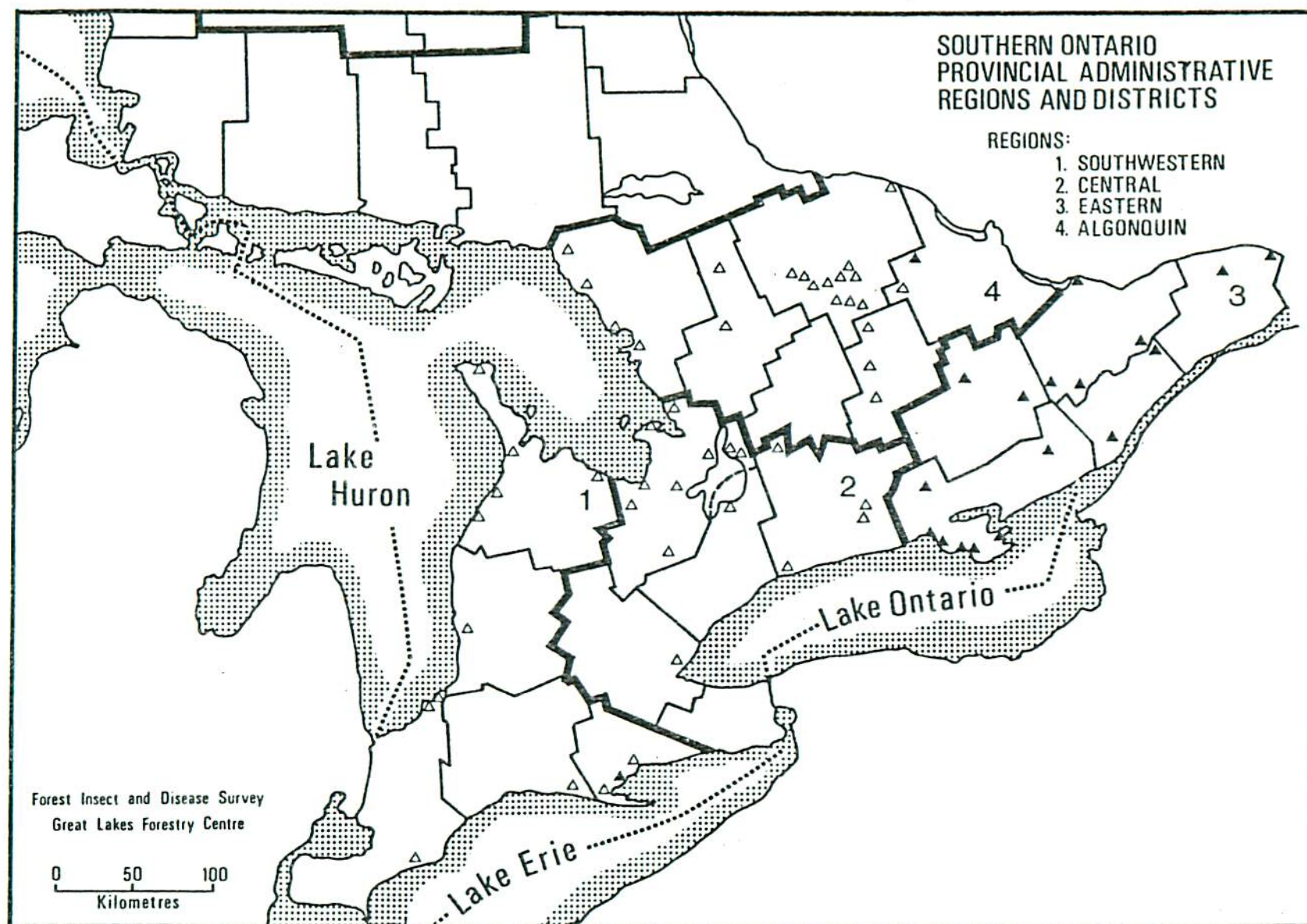


Figure 4. 1985 Gypsy moth larval trapping

Locations in which burlap larval traps were deployed:

Negative results . . . Δ

Positive results . . . ▲

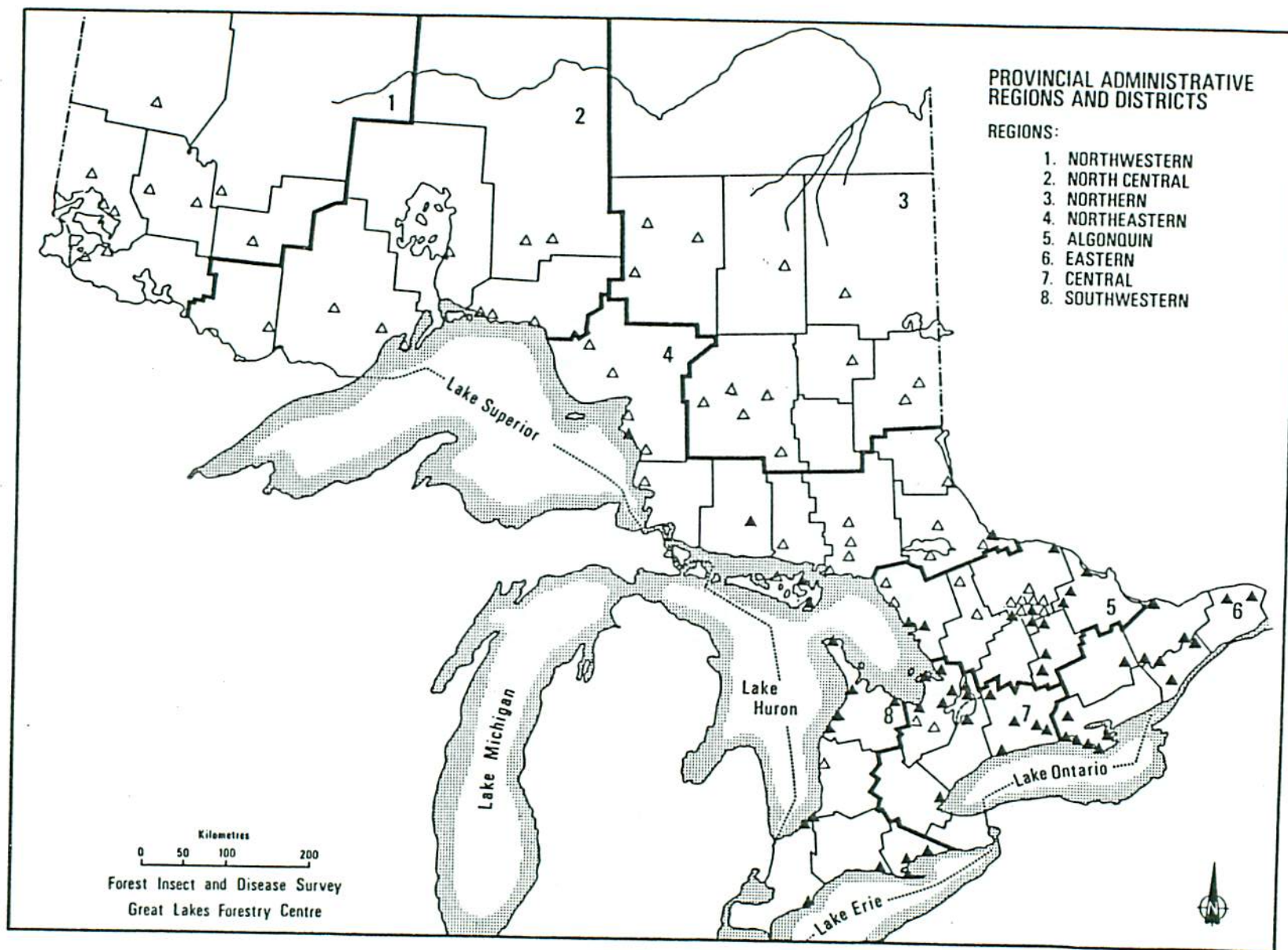


Figure 5. 1985 Gypsy moth pheromone trapping

Locations in which pheromone traps were deployed:

Negative results . . . Δ

Positive results . . . ▲

As in other years, a separate pheromone trapping program was carried out in northern Ontario as a cooperative effort between the Plant Protection Division of Agriculture Canada and the FIDS Unit. The methodology was similar to that used in southern Ontario, with two traps deployed in each park or private campground and 10 traps deployed in areas where positive results were obtained in 1984. Positive catches were confirmed in the Sault Ste. Marie laboratory. Traps were deployed at 53 locations with negative results at all but five: Agawa Bay Campground, Lake Superior Park, 1 adult; Mississagi Park, 2 adults; Antoine, 1 adult; South Bay Resort, 1 adult; and Red Lodge on Manitoulin Island, 3 adults.

This is the second consecutive year that adults have been captured at Red Lodge. No adults were captured at Nagogamisis, Rainbow Falls and Fairbanks provincial parks, where positive catches were made in 1984, despite the installation of additional traps.

The largest egg-mass survey ever conducted for the gypsy moth in Ontario was completed in late October. The survey focused on the Eastern Region and adjacent areas of the Algonquin and Central regions. The survey was conducted by OMNR staff with technical assistance from the FIDS Unit. Analysis of data is continuing but preliminary forecasts based on the results of this survey indicate that some 750,000 ha of defoliation may occur in 1986.

Forest Tent Caterpillar, *Malacosoma disstria* Hbn.

The area of moderate-to-severe defoliation caused by the forest tent caterpillar increased markedly from 124,750 ha in 1984 to 208,942 ha in 1985 (Summer Survey Bulletin). Infestations were located in the North Central, Northern and Northeastern regions.

The 8-year-old infestation in the North Central Region is located south of the city of Thunder Bay in Blake and Crooks townships, part of Indian Reserve No. 52 and on Pie Island at the entrance to Thunder Bay on Lake Superior. Here, the area of moderate-to-severe defoliation declined from 38,500 ha to 5,000 ha this year. Egg-mass counts made in the fall of 1985 indicate that a spread of this infestation is unlikely in 1986 and indeed populations will probably continue to decline next year.

In the Northern Region, three separate infestations occurred in the Kirkland Lake District, as well as a number of smaller pockets in the Chapleau and Gogama districts. The largest of these is located in the southeast corner of the Kirkland Lake District, extending south along Lake Timiskaming into the northeast Temagami District of the Northeastern Region, and encompassing some 157,178 ha. Egg-mass counts indicate that this infestation will remain heavy in 1986 and may expand somewhat in area. The second largest infestation occurs in the south-

western Kirkland Lake District, west of the town of Gowganda, and includes about 16,368 ha of moderate-to-severe defoliation. Egg-mass counts indicate that this infestation will remain heavy, and will probably expand considerably in 1986, perhaps merging with pockets of infestation in nearby Churchill and Macmurchy townships in the Gogama District. An older infestation near Painkiller Lake in the northwest Kirkland Lake District was about 11,600 ha in area this year and will probably persist at about the same size and intensity in 1986.

In the Northeastern Region, a small infestation south of Elliot Lake in Proctor Township, Blind River District, which declined to 300 ha in 1985, is expected to expand again in 1986 with increased defoliation levels. A new infestation of some 13,000 ha which was detected by aerial surveys in Nebotik and Conking townships in the Wawa District could not be sampled because of its inaccessibility.

New infestations that occurred in Burton and McKenzie townships, Parry Sound District, and affected an area of about 1,000 ha, will probably persist and possibly expand in 1986, although extensive egg-mass sampling of these areas was not possible. There is also potential for infestation in several other areas of the province, where increased numbers of colonies and wandering larvae were observed in 1985.

Pine False Webworm, *Acantholyda erythrocephala* (L.)

Further to information presented in the Summer Survey Bulletin, a new distribution record for this insect was established when larvae were found in a jack pine plantation in Arnott Township, Hearst District. Low and declining populations were reported in red pine plantations in Bancroft and Algonquin Park districts and in one location in Dummer Township, Lindsay District.

Black Army Cutworm, *Actebia fennica* (Tausch.)

The Summer Survey Bulletin reported heavy infestations at several locations in the Chapleau, Gogama and Blind River districts. The infestations were located in areas that had been burned as site preparation for planting; this confirms the idea that adults are attracted to burned areas during the egg-laying period. With this in mind, the FIDS Unit attempted a small pheromone trial in which pheromone traps were placed on prescribed burn sites in an effort to predict where infestations might occur in 1986. Adult male moths were caught over an extended flight period (29 July-26 September). While it is not at present possible to predict accurately the severity of future infestations from the number of moths captured, high moth captures in Teetzel Township, Kapuskasing District (132 and 97), Minnipuka Township, Hearst District (87), and Piche Township, Blind River District (47) indicate that these sites should be inspected early in the spring if planting

operations are planned. Moths were also captured at 16 other locations in the Northern Region, but numbers were low and high populations are not expected to occur at these sites in 1986.

Birch Sawfly, *Arge pectoralis* (Leach)

Unusually high populations of this insect occurred in a number of locations this year. Heavy infestations caused up to 100% defoliation of ornamental and shoreline white birch in the city of Sudbury and on Ramsay Lake in McKim Township, Sudbury District. The insect was also reported in high numbers in several areas in the Kirkland Lake, Timmins and Temagami districts, as well as in Georgian Bay Township, Huronia District, where defoliation sometimes reached 100%. Smaller numbers occurred at a number of locations in the Chapleau and Gogama districts and in single spots in each of the Parry Sound and Algonquin Park districts.

Oak Skeletonizer, *Bucculatrix ainsliella* Murt.

The Summer Survey Bulletin reported low populations in most of the Central and Southwestern regions with the exception of a few areas in the Niagara District. Surveys of the second generation, which feeds in August and September, revealed moderate-to-severe foliar damage in a number of areas in the Central Region. Foliar damage ranged from 50% to 90% in red oak stands within the city of Cambridge, and in the Ancaster-Dundas area of Cambridge District. Occasional moderate foliar damage (in the 70% range) was recorded in the Brantford and Hamilton areas of Cambridge District, and in the Richmond Hill area of Maple District. Foliar damage ranged from 25% to 75% on the oak component of a mixed hardwood stand in North Cayuga Township, Niagara District. Low populations were encountered in numerous other areas, particularly in the Chatham and Simcoe districts.

Birch Skeletonizer, *Bucculatrix canadensisella* Cham.

Populations of this insect peaked in 1982 when an area of some 82,000 km² had moderate-to-severe defoliation. By 1984 this figure had declined to 4,581 km² and in 1985 the residual populations collapsed, with only three small pockets, totalling 63 ha, recorded. These were located near Lake La Muir in Bishop Township, and on the north arm of Opeongo Lake in Bower Township, Algonquin Park District. Reports from the remainder of the province showed only small numbers of larvae and no discernible defoliation.

Beech Scale, *Cryptococcus fagisuga* Lindinger

This important vector of the beech bark disease is rarely found in Ontario. In 1985 the insect was collected from beech in three stands in the Cambridge District. Low populations were identified in hardwood stands in Blenheim and Erin townships, and at Bronte Creek Provincial Park. The last previous collection was made in 1981, near Holland Landing in the Maple District.

Walnut Caterpillar, *Datana integerrima* G. & R.

After remaining at generally low levels for several years, populations of the walnut caterpillar increased markedly in the Southwestern Region and in a few areas in the Central Region. Sporadic defoliation ranging as high as 75% was observed on ornamental, open-grown roadside, and plantation black walnut trees in the Simcoe, Wingham, Chatham and Niagara districts. Moderate defoliation was also reported on ornamentals in the city of Brampton, Maple District, and in Brantford Township, Cambridge District.

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

The Summer Survey Bulletin reported the results of larval feeding by the first generation of this introduced defoliator. Subsequent surveys indicate that high populations of second-generation larvae were present in several white pine plantations in Saugeen and Amabel townships, Owen Sound District. Patches of trees, up to 2 ha in area within these plantations, had defoliation as high as 100%. Approximately 2% mortality was recorded in a 1.6-m white pine plantation near Paisley in Saugeen Township. Low but increased populations were observed in six other townships in the Owen Sound District as well as in a few locations in the Maple and Huronia districts. In the Carleton Place District defoliation ranging from 40% to 70% was recorded on roadside red, white and Scots pine in the Kemptville-Burritts Rapids area. In the Kenora District, where populations have been high for several years, second-generation larvae were much reduced in numbers and only low populations were encountered. Reports of small numbers of larvae were also received from the Wingham, Fort Frances, Bracebridge and Thunder Bay districts.

Maple Trumpet Skeletonizer, *Epinotia aceriella* (Clem.)

For the second consecutive year, widespread declines were evident in infestations of this insect. The total area of moderate-to-severe defoliation was reduced from 24,750 ha in 1984 to approximately 530 ha in 1985, and most of it was located in the Eastern Region. The most severe damage was observed in Presqu'ile Provincial Park, where

defoliation ranged from 80% to 100% in a 20-ha stand. Moderate-to-severe damage was recorded in a 480-ha area near Marmora in Tweed District. Similar heavy defoliation occurred in Pearce Provincial Park, Aylmer District, where about 5 ha were affected. In spite of the declines noted above, low populations were encountered in many other areas in southern Ontario as well as in the Northeastern Region of northern Ontario.

Eastern Pine Shoot Borer, *Eucosma gloriola* Heinr.

Generally low and declining populations were reported from most areas with the exception of a few locations in the Northern and North-western regions. The most serious damage was reported in a 100-ha jack pine stand in Skead Township, Kirkland Lake District, where 14% of the 2.2-m trees suffered leader damage. Elsewhere in the two regions, leader damage in stands evaluated ranged from 3% to 7%. The insect was reported from a number of other areas in northern Ontario, but in most cases leader damage did not exceed 1%.

Birch Leafminer, *Fenusa pusilla* (Lep.)

Further to information presented in the Summer Survey Bulletin, pockets of heavy infestation caused severe leafmining damage to small white birch stands in Eilber Township, Kapuskasing District, Shannon Township, Hearst District, and Calvert and Fournier townships, Cochrane District. Medium infestations were observed in Webster and Adanac townships, Cochrane District, on roadside trees near the village of MacDiarmid, Nipigon District, and on ornamental trees in the towns of Red Lake and Sioux Lookout in the Red Lake and Sioux Lookout districts. Severe leafmining on ornamentals was reported from the towns of Kapuskasing, Hearst, Cochrane and Iroquois Falls.

Fall Webworm, *Hyphantria cunea* (Dru.)

In northern Ontario populations were generally low, although there were a few exceptions. Numerous feeding tents and accompanying defoliation were observed on white birch along Highway 596 south of Minaki in the Kenora District, where 50%-75% defoliation occurred. Similar defoliation was observed in a 1-ha white birch stand in Menary Township, Fort Frances District. Heavy defoliation was recorded on a variety of deciduous hosts, but most commonly on white birch and black ash in Widdifield, Beaucage, Commanda, Papineau and Cameron townships, North Bay District. Reports of the insect were received from a number of other districts in northern Ontario but in most cases damage was insignificant.

In southern Ontario, populations were on the increase in a number of areas. In the Eastern Region a number of pockets of heavy infestation ranging from 5 to 26 ha in area were detected in the Tweed, Brockville, Carleton Place and Cornwall districts. A total area of about 84 ha was affected, with black ash, red maple and white elm the main species attacked. Population levels varied in the Algonquin Region, with heavy infestations on roadside trees and black ash swamps in a number of areas in the Parry Sound, Bracebridge and Minden districts. Particularly severe damage occurred in black ash swamps along Highway 35 in the southern Minden and northern Lindsay districts where defoliation sometimes reached 100%. Infestations were on the decline in the Algonquin Park, Pembroke and Bancroft districts, although medium populations were observed in a few locations in the Pembroke and Algonquin Park districts. Populations were again high in the northern Huronia District of the Central Region and in the Wingham District of the Southwestern Region. In the northern Huronia District moderate-to-severe defoliation was observed in small stands of deciduous species in several townships with some small stands of black ash 100% defoliated. In the Niagara District large numbers of feeding nests were observed on ornamentals along the Niagara Parkway from Fort Erie to Niagara-on-the-Lake. Counts in this area disclosed as many as 20 infested ornamentals/km of roadside.

Redheaded Pine Sawfly, *Neodiprion lecontei* (Fitch)

Although infestations remained generally light, there was a marked resurgence in populations of this pest in southern Ontario. The most severe damage occurred in the Huronia District where red pine plantations in Vespra, Rama, Mara and Flos townships suffered defoliation ranging from 10 to 40%. Occasional trees, usually on the fringes of infested plantations, had defoliation as high as 100%. In the Owen Sound District, where the insect is rarely found, a 7-m red pine plantation about 5 ha in area supported high populations on the fringe trees and somewhat lower numbers in the interior of the stand. Increased numbers of colonies were also reported from numerous areas in the Algonquin Region. The heaviest defoliation was recorded on roadside and ornamental trees near the towns of Dorset and Parry Sound in the Bracebridge and Parry Sound districts where defoliation of ornamental red pine averaged 90% and 60%, respectively. High and medium populations were also reported on plantations in Mayo and Wollaston townships, Bancroft District, as well as in Raglan and Sebastapol townships, Pembroke District. In the Eastern Region, where infestations have been building for several years, a number of heavy infestations occurred in the Carleton Place, Tweed and Brockville districts, in red pine and jack pine plantations. OMNR treated the worst of these with a virus spray, with varied results. Small numbers of colonies were observed commonly in the remainder of the Eastern Region. Populations in the Northeastern Region remained generally low, with only small numbers of larvae reported in the North Bay and Espanola districts.

Swaine Jack Pine Sawfly, *Neodiprion swainei* Midd.

Populations of this late season defoliator remained low in the Banks-Makobe Lakes area of Kirkland Lake and Temagami districts, where high numbers have been recorded for the past few years. Scattered, low numbers of colonies were found in jack pine plantations in Gamble and McGiffin townships, and at several points on Rabbit, Lady Evelyn, and Temagami lakes in the Temagami District. The only defoliation of any significance was on Island 127 in Lake Temagami where approximately 1 ha of jack pine trees had defoliation of about 80%. This is the third consecutive year of heavy defoliation on the island and a few trees have died as a result of the damage.

Redheaded Jack Pine Sawfly, *Neodiprion virginianus* complex

Reports of this pest of jack pine were received from a number of areas in northern Ontario. The most severe damage occurred in the Chapleau District, where small patches of jack pine up to 0.5 ha in size were affected in Caouette and Gilliland townships. Defoliation ranged from 25% to 80% in these areas. Similar defoliation levels were recorded on roadside trees in Caliper Lake Provincial Park, Fort Frances District and at several locations along Highway 614 in the Terrace Bay District. The insect was also reported in low numbers from the Kenora, Red Lake, Thunder Bay, Sioux Lookout, Cochrane and Hearst districts.

Maple Leafcutter, *Paraclemensia acerifoliella* (Fitch)

Populations of this sugar maple pest, which have been on the rise for several years, began to decline in 1985. In the Central Region, infestations that have been heavy for about seven years in the Robertson Tract of the Halton Regional Forest, Cambridge District declined considerably, although defoliation of about 40% persisted on understory trees in an area of about 16 ha. Similarly, approximately 50% defoliation was recorded on understory trees on Beausoleil Island in the Georgian Bay Islands National Park, Huronia District. Aerial surveys detected a larger infestation of about 126 ha in Belmont Township, Lindsay District, where defoliation was in excess of 75%.

An overall decline was also evident in the Algonquin Region where there was a decline in both numbers and distribution of the insect. In this Region only two pockets of heavy infestation persist, one in Laxton Township, Minden District, where approximately 35 ha suffered defoliation of about 75%, and another in Wilberforce Township, Pembroke District, where some 125 ha had similar defoliation levels.

The decline was not as evident in the Eastern Region where populations continued to rise in some areas. A 20-ha pocket of moderate-to-severe defoliation that occurred in Murphy's Point Provincial Park in

1984 increased in size to 30 ha. Heavy infestations persisted in a 6-ha stand in Limerick Forest, Brockville District. The maple leafcutter, in conjunction with the maple trumpet skeletonizer, also caused severe defoliation in a 500-ha area near Marmora in the Tweed District. Low populations of the insect were readily found at numerous other locations in the Eastern Region.

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

Populations of this insect, which declined in 1984, rebounded in 1985, with heavy infestations reported in a number of areas in northern Ontario. Severe leafmining damage occurred on trembling aspen in five townships in the Hearst District and in two townships in the Kapuskasing District. Numerous pockets of moderate and severe damage occurred in the Nipigon, Thunder Bay, Atikokan and Geraldton districts, and in the eastern Terrace Bay District and the western Wawa District. High populations were also reported in the eastern Fort Frances District and the southern Dryden and Kenora districts. Localized pockets of heavy leafmining were reported from the Furniss Lake area of Ignace District and Westmeath Township, Pembroke District. Numerous areas of light infestation occurred throughout the northern part of the province. The insect usually causes its most severe damage on young trembling aspen trees along roadsides, in the fringes of large stands and in regenerating cutovers and burned areas.

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

In addition to information presented in the Summer Survey Bulletin, numerous infestations were reported mainly in the Northern, North Central and Northwestern regions. The most notable of these occurred in a 325-ha black spruce plantation in Stock Township, Timmins District, where a number of pockets of heavy defoliation were observed. Defoliation in the 75% range was recorded on white spruce snow hedges in James Township, Kirkland Lake District, and the same species suffered defoliation of 25% on 81% of the trees in a 15-ha plantation in Calder Township, Cochrane District, for the second consecutive year. Somewhat lower damage levels occurred in a 37-ha white spruce plantation in Shannon Township, Hearst District, where defoliation was 10%, and 47% of the trees were attacked. Light defoliation was reported on white and black spruce seed production trees in the Kimberley-Clark tree nursery in Geraldton District and a few trees in a black spruce seed orchard in O'Connor Township, Thunder Bay District, suffered 40%-60% defoliation. Ornamental trees in urban areas and roadside and lakeshore areas, and open-growing trees in a number of other areas in the North Central and Northwestern regions, suffered defoliation ranging as high as 100%.

White Pine Weevil, *Pissodes strobi* (Peck)

In northern Ontario the most widespread and severe damage again occurred in the Timmins, Temagami and Kirkland Lake districts. Quantitative sampling in eight jack pine plantations in these three districts showed leader damage ranging from 11% to 19%. The most severely affected plantations were in Skead and Michie townships, Kirkland Lake District, both of which had 19% leader damage. Leader damage of approximately 11% was recorded in a single 2-m jack pine stand in Browning Township, Chapleau District. In the Northwestern Region weevil damage as high as 8% was recorded in a number of 4-year-old black spruce seed orchards where OMNR has begun a clip and burn program to control the insect. The weevil was recorded in numerous other areas in the northern part of the province but, in most cases, damage was less than 5%.

In southern Ontario, populations increased marginally in the Southwestern Region and either remained unchanged or decreased in the remainder of this part of the province. High populations in Glenelg, Holland and Sullivan townships, Owen Sound District, prompted OMNR to continue a clip and burn program in high-value white pine plantations and increased populations with leader damage in the 13% range were noted in white pine plantations in North Walsingham and Windham townships, Simcoe District. Other areas in southern Ontario where significant damage was encountered were Orillia Township, Huronia District, where planted white pine had 33% leader damage and Balsam Lake Provincial Park, Lindsay District, where two white pine plantations had leader damage of 16% and 17%.

Larch Sawfly, *Pristiphora erichsonii* (Htg.)

With a few exceptions, low and declining populations of this insect were reported across the province. The exceptions occurred in the Thunder Bay District, where small stands of tamarack, ranging in size from 0.5 to 2 ha, had defoliation levels of 60%-100%. The stands were located in Neebing and Upsala townships and near Kabaigon Lake. A single, small pocket of damage with defoliation of approximately 75% was recorded near Lerome Lake, Atikokan District and defoliation ranging from 15% to 50% was recorded in scattered stands along Highway 622 northeast of the town of Atikokan.

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

Populations of this insect were much lower in 1985 than they had been for the previous several years. Once again, the most widespread damage was recorded along Highway 17 in the Terrace Bay, Wawa, and Nipigon districts where defoliation was as high as 65%. In the previous few years it had been close to 100%. High populations, and defoliation

ranging from 50% to 100%, were observed on roadside mountain-ash trees in the Upsala area of Thunder Bay District. Similar high populations occurred in a few locations in the northwestern part of the Sault Ste. Marie District. Generally low numbers and light defoliation were reported from the remainder of northern Ontario and from the Lindsay District of southern Ontario.

Grey Willow Leaf Beetle, *Pyrrhalta decora decora* (Say)

Widespread, heavy infestations of this insect were reported in the Atikokan, Thunder Bay and Nipigon districts in the Summer Survey Bulletin. Later reports show that the insect was also present in very high numbers wherever willow occurred in the Northwestern Region. Particularly severe damage occurred in the large willow swamps of the western Fort Frances District, where the grey willow leaf beetle was feeding in conjunction with the willow leaf beetle, *Pyrrhalta tuberculata* (Say). Scattered defoliation sometimes reaching 100% was also reported from the Chapleau, Gogama, Kapuskasing and Hearst districts.

Other Noteworthy Insects

The jack pine tip beetle, *Conophthorus banksianae* McPherson was reported in low numbers at a number of locations in the Blind River, Cochrane, Hearst, Kapuskasing, Chapleau and Gogama districts.

The white pine cone beetle, *C. coniperda* (Sz.), heavily infested white pine cones in a number of stands near the town of Angus in the Huronia District. Similar heavy infestations occurred in a white pine seed production area in Caledon Township, Maple District.

The twoleaf tier, *Psilocorsis reflexella* Clem., caused conspicuous browning of oak and aspen foliage on small clumps and stands of trees in the Parry Sound, Bracebridge, Minden and Lindsay districts as well as in Georgian Bay Township, Huronia District.

New infestations of the pine gall weevil, *Podapion gallicola* Riley, were located in red pine plantations in Westmeath Township, Pembroke District, Burleigh Township, Bancroft District and Edgar Township, Algonquin Park District.

The mounded ant, *Formica* sp., caused pockets of mortality in planted white pine and white spruce in a young plantation in Amaranth Township, Huronia District.

Moderate-to-high populations of the small birch leafminer, *Ectoedemia lindquisti* (Free.), were reported on white birch along the Georgian Bay shoreline in Tiny Township and on Beausoleil Island in Georgian Bay Islands National Park, Huronia District.

High populations of the alder flea beetle, *Altica ambiens alni* Harr., were reported on fringe and shoreline trees in a number of areas in the Kapuskasing, Hearst, Cochrane, Timmins, Kirkland Lake, Chapleau and Kenora districts.

The shorthorned oakworm, *Anisota finlaysoni* Riotte, caused 10%-20% defoliation of open-grown white and bur oak in the town of Milton and in Flamborough and Blenheim townships, Cambridge District.

The willow leafminer, *Micrapteryx salicifoliella* Cham., caused severe browning of willow foliage throughout the Geraldton, Terrace Bay, Nipigon and Hearst districts.

High populations of a pine sawfly, *Neodiprion maurus* Roh., feeding in conjunction with the red pine sawfly, *N. nanulus nanulus* Schedl., caused 100% loss of the old foliage on scattered semimature jack pine trees along Highway 584 north of Geraldton.

The European pine shoot moth, *Rhyacionia buoliana* (Schiff.), damaged 70% of the trees in a red pine plantation in Wilmot Township, Cambridge District. Less severe damage occurred in East Wawanosh Township, Wingham District, on the same host.

The horned oak gall wasp, *Callirhytis cornigera* (O. & S.), caused scattered branch and whole-tree mortality in small stands of pin oak in Willoughby and Bertie townships, Niagara District.

The Cooley spruce gall adelgid, *Adelges cooleyi* (Gill.), caused light foliar damage in a 2-ha Douglas-fir Christmas tree plantation in West Williams Township, Aylmer District.

The red pine coneworm, *Eucosma monitorana* Heinr., was found in high numbers in red pine cones in mature plantation trees in Charlotteville Township, Simcoe District.

Heavy infestations of the locust borer, *Megacyllene robiniae* (Forst.), weakened the tree trunks, with the result that there were numerous wind-snapped trees in a black locust windbreak in Houghton Township, Simcoe District.

The poplar flea beetle, *Altica populi* Brown, caused moderate-to-severe defoliation of small balsam poplar stands ranging in size from 0.25 to 1.0 ha in five townships in the Espanola District.

The red pine shoot moth, *Dioryctria resinosella* Mut., caused moderate damage to new shoots in a 10-ha red pine plantation in Burwash Township, Sudbury District.

Heavy infestations of the red pine cone beetle, *Conophthorus resinosae* Hopk., occurred in shoreline stands of red pine on Lake

Temagami in the Temagami District. Particularly severe damage was noted in Finlayson Point Provincial Park, where the ground was littered with fallen branch tips containing overwintering adults.

The oak slug sawfly, *Caliroa fasciata* (Norton) and *C. obsoleta* (Norton), caused severe defoliation of red oak, white oak and bur oak in a number of areas in the Carleton Place, Brockville, Tweed, Napanee and Cornwall districts.

TREE DISEASES

Scleroderris Canker, *Ascolaryx abietina* (Lagerb.) Schläpfer-Bernhard

The discovery of the European race of this disease in Ontario was reported in the Summer Survey Bulletin. Two red pine plantations were affected, one each in Macaulay Township, Bracebridge District, and McMurrich Township, Parry Sound District (Fig. 6). Since that time both plantations have been cut and burned in an effort to eradicate the pathogen in these areas. Controlled ground fires will be carried out on both sites in the spring of 1986 in order to destroy any infected material that may remain on the ground. In mid-October the European race of the disease was identified from a third area in Mayo Township, Bancroft District, where two red pine plantations about 1 km apart were infected (Fig. 6). The plantations are about 8 ha and 3.5 ha in size and are located approximately 2 km north of McArthurs Mills. These sites have been sanitized and all infected material has been cut or pruned and burned.

New infections of the North American race were reported from young red pine and jack pine stands in Haughton and Patton townships, Blind River District, and Recollet and Peever townships, Wawa District. The most severe damage was located in a 100-ha jack pine stand in Recollet Township where 85% of the trees were infected. The disease was also reported at somewhat lower infection levels in red pine and jack pine plantations in Gogama, Chapleau, Terrace Bay and Geraldton districts.

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

The pinewood nematode has been identified from nine locations in Ontario (Fig. 7). The latest find was in a pocket of recently dead and dying red pine at the St. Williams Forest Tree Nursery in the Simcoe District. Most of this year's finds were made as part of a widespread intensive survey that FIDS has carried out to determine the range of this pest in the province. This year some 280 locations have been sampled. To date, the organism has been confirmed from five locations and an additional 181 samples are being processed at the Biosystematics Research Institute in Ottawa for positive determination of the organism.

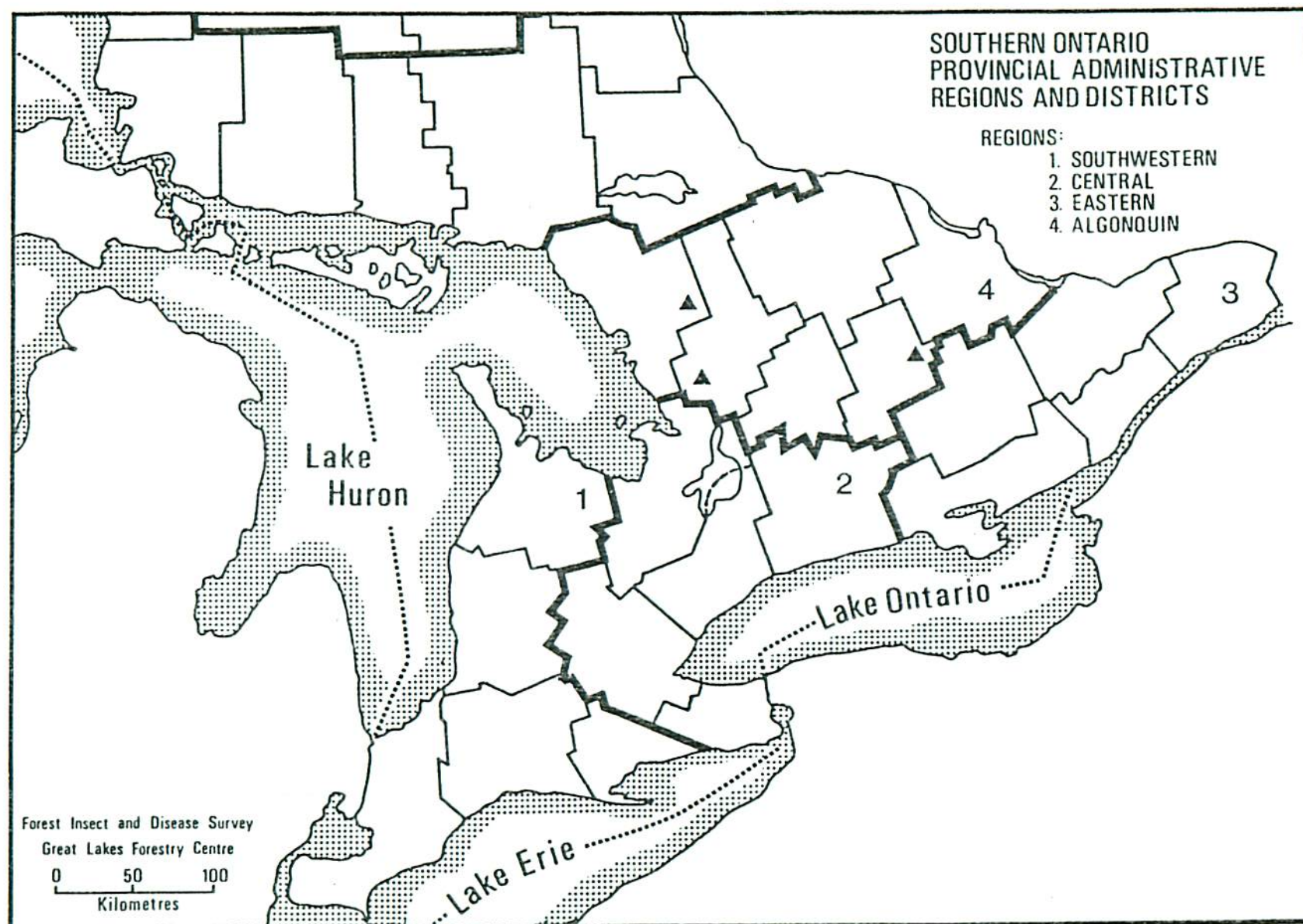


Figure 6. 1985 Scleroderris canker

Locations in which the European race was found . . . ▲

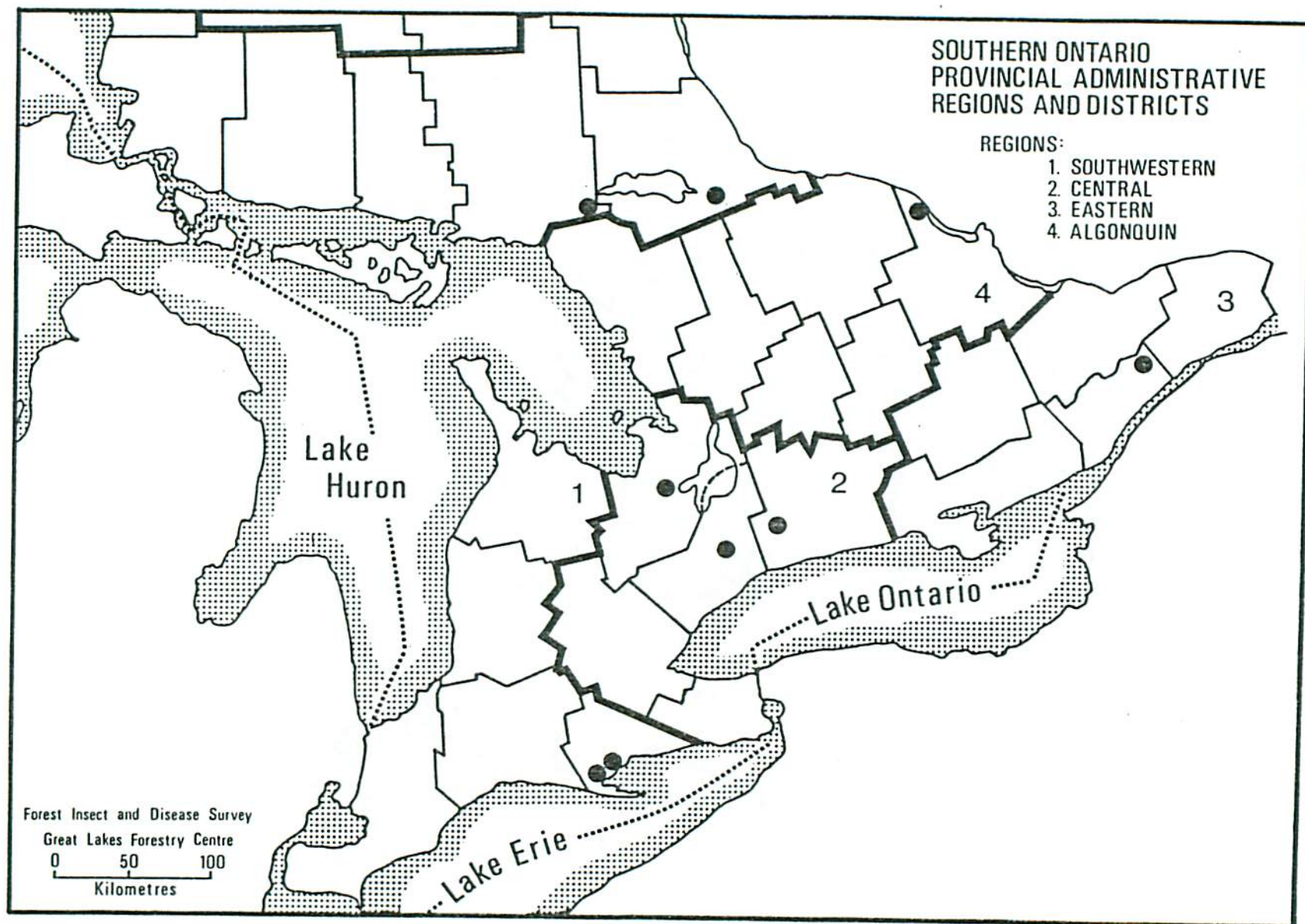


Figure 7. 1985 Pinewood nematode

Locations in which the nematode was found . . . ●

Tip Blight, *Sphaeropsis sapinea* (Fr.) Dyko and B. Sutton

Although this disease attacks most species of pine, it is particularly damaging on the introduced species, Scots pine and Austrian pine. Heavy infections continued to plague semimature Scots pine plantations in the Maple and Cambridge districts of the Central Region. The most severe damage this year was observed in Scots pine plantations in Puslinch and Beverly townships, Cambridge District, where 66% and 50% mortality, respectively, were recorded. A high incidence of the disease in Whitchurch Township, Maple District, has prompted OMNR to begin a stand conversion process replacing Scots pine with species less vulnerable to the disease. To date, some 48 ha of Scots pine have been clear cut in preparation for replacement planting. Elsewhere in the province, heavy infections occurred on roadside plantings of Austrian pine along Highway 401 in Dereham, West Oxford and North Dorchester townships, Aylmer District. The disease caused moderate foliar damage in part of a 5-ha red pine plantation in Radcliffe Township, Pembroke District, and trace infections were reported on red and white pine trees in Samuel de Champlain Provincial Park, North Bay District.

Spruce Needle Rusts, *Chrysomyxa ledi* (Alb. & Schwein.) de Bary and *C. ledicola* (Peck) Lagerh.

Generally increased infection levels of these rust diseases were reported from the Northwestern Region. The most striking damage occurred in the Red Lake District of the Northwestern Region where aerial surveys disclosed heavy infection levels in black and white spruce stands within an area of some 255,000 ha between Coli Lake and Ear Falls. Ground checks within this area showed infection levels ranging from 75% to 100% and foliar damage ranging from 25% to 100%. In the Sioux Lookout District, small pockets of black spruce along the Marchington Road had foliar damage of 25%-50% with 75% of the trees infected. A 100-ha mixed stand of black and white spruce in Carpenter Township, Fort Frances District, had foliar damage ranging from 20% to 100%, and in a 2-ha block of Colorado blue spruce in the Dryden Nursery seed orchard, Dryden District, 100% of the trees were infected, with foliar damage of 30%. Generally low and decreasing infection levels were reported from other areas of the province.

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

Preliminary surveys as described in the Summer Survey Bulletin disclosed that heavy infections, with foliar damage in the 25%-75% range, persisted in a number of areas in the Timmins and Kirkland Lake districts. Subsequent surveys revealed a few small pockets of moderate-to-severe defoliation, 1-ha in size, in Cartier and Cabot townships, Gogama District. Moderate-to-severe foliar damage was also reported on small clumps of trees in Lahontan Township, Terrace Bay District. Only low and declining infections were reported elsewhere in the province.

Ash Dieback

This condition, which is characterized by general crown dieback, and accompanied by branch and occasionally stem cankering, was prevalent in a number of areas in the Owen Sound and Lindsay districts. The most severe damage was observed in Collingwood Township, Owen Sound District, where dead and dying white ash in small clumps and stands were encountered on the north aspect of ski slopes and on level ground below the escarpment. Similar damage was encountered along County Road 26 for about 4 km south of Wiarton. Four pockets of recent damage were located in a small, well tended white ash plantation in Sullivan Township. Hedgerow, roadside and occasionally woodlot trees had the same type of damage at a number of other locations in both districts. Fungi isolated from samples of cankered tissue included *Cytospora pruinosa* (Fr.) Sacc. and *Nectria cinnabarina* (Tode:Fr.) Fr., neither of which is thought to be the primary cause of the decline.

Maple Anthracnose, *Kabatella apocrypta* (Ell. & Ev.) Arx and
Discula campestris (Pass.) v. Arx

Severe infections causing 100% foliar damage were reported on single trees and small clumps of sugar maple and white elm at a number of locations in Billings and Mills townships and a few other places in Espanola District. Similar high infection levels occurred on red maple and sugar maple in Raglan Township, Pembroke District. Somewhat lower levels of infection and leaf damage occurred in numerous other areas in the Pembroke District as well as in the Niagara, Simcoe, Wingham and Aylmer districts.

Shoot Blight, *Venturia macularis* (Fr.) E. Müller & v. Arx

Widespread, heavy infections of this disease occurred in the Cochrane, Hearst and Kapuskasing districts. Infection levels of 100% were recorded in Bragg and Sheldon townships, Cochrane District, and Fauquier Township, Kapuskasing District, where leader mortality averaged 96%. Infection levels in the 90% range were also recorded in Alderson and Hawkins townships, Hearst District. Medium and heavy infections were also reported from the Chapleau and Gogama districts where infection levels ranged from 59% to 85%. A single high incidence of the disease was reported in Sproule Township, Algonquin Park District. Light infections were common in many areas in the Thunder Bay, Nipigon and Atikokan districts as well as at Halfway Lake Provincial Park in the Sudbury District.

Leaf Spots and Blights of Poplar, *Linospora tetraspora* G.E. Thompson, *Marssonina brunnea* (Ell. & Ev.) Magnus, *M. populi* (Lib.) Magnus and *Mycosphaerella populicola* G.E. Thompson

Heavy infections by these late-season leaf diseases were reported from a number of areas. The leaf blight *L. tetraspora* caused extensive browning and premature leaf fall on balsam poplar in the Kapuskasing and Hearst districts and the western part of the Cochrane District. The leaf spot disease *Marssonina brunnea* heavily infected numerous pockets of trembling aspen, causing leaf browning and early leaf drop at numerous points in the southern Atikokan, Thunder Bay, Terrace Bay and Nipigon districts. A third leaf disease, *M. populi*, caused 50%-90% foliage loss on balsam poplar throughout the Lindsay, Minden, Bracebridge and Parry Sound districts. Another leaf spot disease, *Mycosphaerella populicola*, caused heavy foliar damage on balsam poplar at numerous locations in the Geraldton, Wawa, Chapleau and Gogama districts.

ABIOTIC DAMAGE

Scorch

This condition was described in the Summer Survey Bulletin, which reported extensive damage to hardwood foliage in the Owen Sound, Sault Ste. Marie and Blind River districts. Subsequent surveys detected the condition causing varying degrees of foliar damage to single trees and small groups of red maple and sugar maple in a broad band across the Bracebridge and Minden districts, and in scattered areas in the Pembroke, Bancroft and Algonquin Park districts. A single pocket of damage occurred on red pine in Somerville Township, Minden District, where 4% of the trees in a 2-m plantation were damaged.

Wind Damage

Severe wind storms on 7 September 1985 heavily damaged hardwood stands within a total area of about 40 ha on islands in Bass Bay (Big Rideau Lake) and on the adjacent mainland in South Burgess Township, Brockville District, and North Burgess Township, Carleton Place District.

Other Noteworthy Diseases

Four new infection centers of Fomes root rot, *Heterobasidium annosum* (Fr.) Bref. were located in the Limerick Forest, Brockville District.

The leaf anthracnose, *Gnomonia leptostyla* (Fr.) Ces. & de Not., heavily damaged butternut foliage, causing premature leaf drop throughout the Lindsay and southern Minden districts. The same disease caused up to 100% defoliation of roadside and fringe black walnut in the southern Cambridge District and moderate-to-severe defoliation (25%-75%) in North Walsingham Township, Simcoe District.

Horse-chestnut leaf blotch, *Guignardia aescula* (Peck) Stewart, caused varying degrees of foliar damage on this largely ornamental species throughout the Central and Southwestern regions.

The leaf spot, *Mycosphaerella effigurata* (Schwein.) House, heavily damaged the foliage of a small stand of black ash in West Williams Township, Aylmer District. It also caused light damage to various species of ash at numerous other locations in the Central and Southwestern regions.

A root and butt rot, *Inonotus tomentosus* (Fr.) Gilbertson, was associated with a pocket of dead and dying white spruce trees within a stand at Canadian Forces Base Borden, Huronia District. It was found causing similar damage to shelterbelt white spruce at the Midhurst Forest Tree Nursery, Huronia District.

The fungus *Diplodia juglandis* Fr. was associated with heavy twig dieback in a 1-ha black walnut plantation near Newmarket in the Maple District.

The needle cast, *Lophodermium seditiosum* Minter et al., caused approximately 10% defoliation of 3-m jack pine in a 50-ha plantation in Orlig Township, North Bay District.

Quantitative sampling in the Southwestern Region for Dutch elm disease, *Ceratocystis ulmi* (Buism.) C. Moreau, showed infection rates ranging from 2% to 8% on young white elm reproduction. Moderate infection levels were reported on semimature white elm in Wilberforce Township, Pembroke District.

An unknown wilt condition caused severe foliar damage on white pine in the northwestern portion of Macaulay Township, Bracebridge District. Foliar damage ranged from 75% to 100% on affected trees.

An unknown agent caused severe damage to the current year's foliage of red pine at many locations in the southern Sault Ste. Marie, Blind River and Espanola districts.

M.J. Applejohn
Chief of Survey Technicians
31 December 1985

G.M. Howse
Head, Forest Insect and
Disease Survey Unit

ISSN 0705-503X