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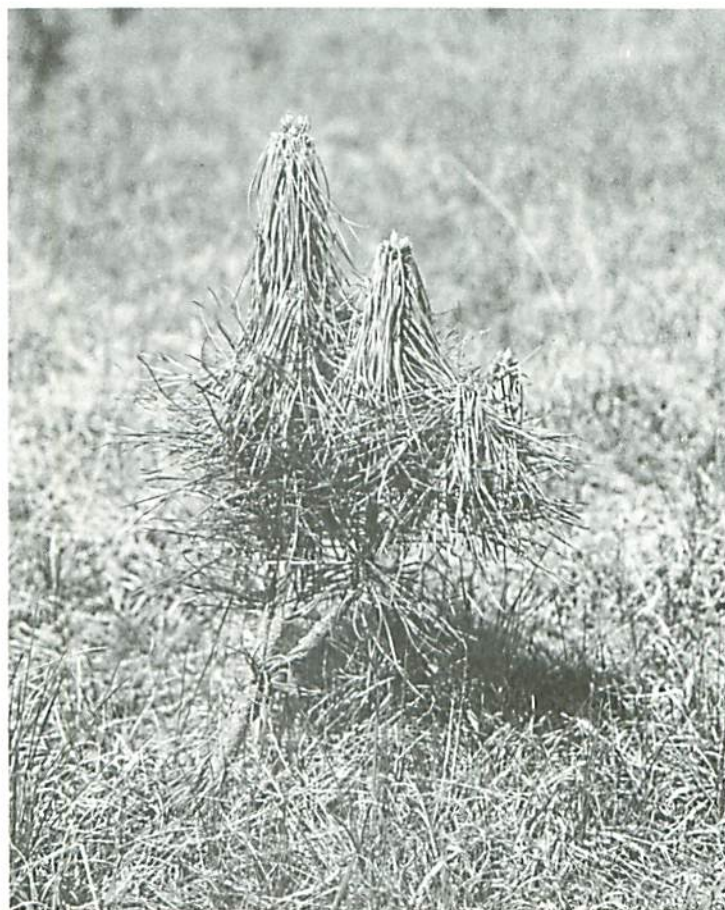
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SURVEY BULLETIN

33236

Forest Insect and Disease Conditions in Ontario

Fall 1982



Needle droop condition of pine

FOREST INSECT AND DISEASE CONDITIONS IN ONTARIO

Fall 1982

This is the last of three bulletins issued in 1982 by the Forest Insect and Disease Survey Unit. The bulletins describe the most important pest conditions encountered during the 1982 field season. More detailed regional reports are in preparation and will be issued in the spring of 1983.

RETIREMENTS



Mrs. M. Davidson



Mr. K. Hall

Mrs. M. (Margaret) Davidson and Mr. K.C. (Ken) Hall, two long-time members of the Forest Insect and Disease Survey Unit, retired at the end of October.

Mrs. Davidson began her work as Survey Stenographer in 1966 following service with the Department of Transport and the Aluminum Company of Canada. Her meticulously typed reports and manuscripts and her specialized knowledge of scientific terminology will be missed.

Ken Hall served as a Flying Officer with the R.C.A.F. and spent a brief time at Algoma Steel before joining the department in May of 1947. Since that time Ken has served as an Insect Ranger in such northern Ontario districts as Gogama, Geraldton, Thunder Bay and, since 1968, Sault Ste. Marie. His dedication and specialized knowledge of northern Ontario pest conditions will be difficult to replace.

SPRUCE BUDWORM SYMPOSIUM

A spruce budworm symposium sponsored by the Canada-Ontario Joint Forestry Research Committee was held in Timmins from 14 to 16 September, 1982. The objective of the symposium was to improve understanding of the spruce budworm situation in Ontario. During two days of meetings, participants attempted to develop answers to five theme questions:

1. How important will the spruce-fir component be?
2. What are the attitudes of forest industry toward future utilization of balsam fir?
3. In what forest use patterns will the spruce budworm be important?
4. What management actions should be taken now to reduce future impact?
5. What information is needed to facilitate management of the spruce budworm problem?

A third day was taken up by a field trip to Harker and Lamplugh townships where delegates viewed protected and unprotected spruce-fir stands. Topics discussed in relation to the stands viewed included soils, stand history, budworm history, utilization of the stand and justification of spray treatments and spray programs. The field trip also took in sites used for herbicide and stock-type regeneration trials, and problems related to regeneration of salvaged areas were discussed. The Proceedings of the symposium will be published by the Great Lakes Forest Research Centre.

ANNUAL FOREST PEST REVIEWS

The 1982 forest pest reviews for Ontario were held this fall, the southern review on 10 November in the MacDonald Block, Queen's Park, Toronto and the northern review on 18 November in the Sheraton-Caswell Inn in Sudbury. Major topics presented at the southern review included the gypsy moth, Scleroderris canker, maple decline, and an update of several pests including the spruce budworm, oak leaf shredder and jack pine budworm. The northern review featured the spruce budworm, *Trichogramma minutum* experiment, Swaine jack pine sawfly and an update on other significant pests. Papers on the topics of environmental impact of pesticides and estimation of forest pest losses were presented at both reviews and a film was shown. Staff from the Great Lakes Forest Research Centre and the Forest Pest Management Institute (Canadian Forestry Service), the Pest Control Section and district offices of the Ontario Ministry of Natural Resources (OMNR), Agriculture Canada, and the Universities of Guelph, Lakehead and Toronto were involved in the programs.

FOREST INSECTS

Spruce Budworm, *Choristoneura fumiferana* (Clem.)

The significant changes in this year's spruce budworm situation were described in the summer (1982) Survey Bulletin. This year the area of moderate-to-severe defoliation totalled some 8,023,000 ha, a considerable decrease from the 18,217,000 ha mapped in 1981 (Table 1). Regionally the largest decline (60%) was observed in northeastern Ontario. In southern Ontario the area of moderate-to-severe defoliation decreased by about 30%, while in northwestern Ontario this area increased by 41%.

Table 1. Comparison of the area of forest in Ontario defoliated by spruce budworm in 1981 and 1982.

Outbreak region in Ontario	Gross area of moderate-to-severe defoliation (000,000 ha)		
	1981	1982	Change
Northwestern	.658	.931	+ .273
Northeastern	16.958	6.669	- 10.289
Southern	.601	.423	- .178
Total	18.217	8.023	- 10.194

During the months of July and August, 623 locations throughout the province were sampled for egg-mass counts and defoliation estimates. In 1980 and again in 1981, egg-mass densities decreased on an overall basis. In each of those years, however, there were major regional differences. This year, although egg-mass densities showed an overall increase of some 12%, there were declines in two of the three regions sampled.

For the third consecutive year egg-mass densities decreased by some 17% in southern Ontario. This is likely to result in a further decrease in the total area of moderate-to-severe defoliation in 1983. Generally, defoliation next year is expected to be light with pockets of moderate-to-severe defoliation scattered throughout the northern part of the Algonquin Region.

In northeastern Ontario, egg-mass densities decreased by 51% in 1980 and by 46% in 1981. This year the downward trend slowed somewhat with

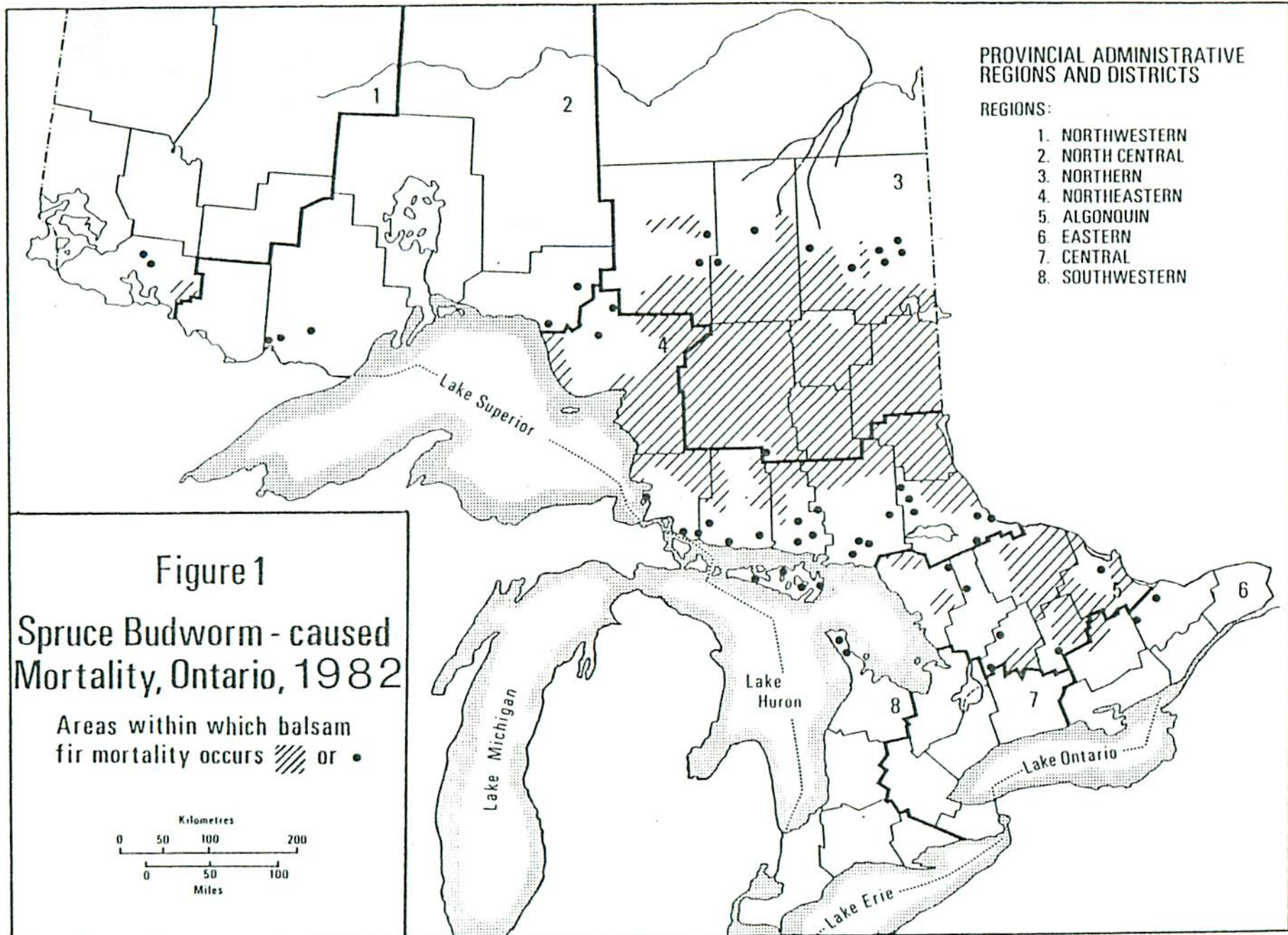
an overall decrease of only 4%. In the eastern part of the North Central Region, egg-mass densities declined about 10%. The greatest declines occurred in Timmins (89%) and Kapuskasing (52%) districts, but considerable changes were also recorded in Chapleau, Temagami, Terrace Bay and Blind River. The decreases that occurred in 11 districts in this area were offset somewhat by increases in the other six districts. The largest increases occurred in Sudbury (34%) and Hearst (24%) districts, with smaller gains in Sault Ste. Marie, Geraldton, Nipigon and Cochrane. Forecasts for 1983 call for generally scattered areas of moderate-to-severe defoliation of balsam fir and white spruce throughout the southern portions of Sault Ste. Marie, Blind River and Espanola districts and throughout most of Sudbury and North Bay districts. Other pockets are likely to occur in the southern portion of Temagami District, around Lake Abitibi and north of Lake Abitibi in Cochrane District. Generally moderate-to-severe defoliation will probably recur north of Lake Superior Provincial Park in Wawa District and within the currently infested areas in Geraldton and Terrace Bay districts. Some expansion of this infestation is likely to occur in a northwesterly direction. In Hearst District the area of moderate-to-severe defoliation may decline slightly in 1983; however, egg-mass populations remain high enough in the infested areas to cause moderate-to-heavy defoliation. Budworm populations are expected to be generally very light in the remaining districts (Chapleau, Gogama, Timmins, and Kirkland Lake) in 1983.

In northwestern Ontario egg-mass densities increased dramatically for the second consecutive year with an overall increase of 60% in 1982. Egg-mass populations increased in all districts in the area, but the largest gains occurred in Atikokan, Kenora and Fort Frances. As a result, it is possible that the area of moderate-to-severe defoliation may almost double in 1983 with extensions likely occurring on the periphery of all currently infested stands.

The area of budworm-associated tree mortality continued to increase in 1982, but at a much slower rate than in 1981 (Fig. 1). A summary comparing the extent of tree mortality in 1981 and 1982 is provided in Table 2.

Table 2. Comparison of the area of budworm-associated tree mortality in Ontario in 1981 and 1982.

Region in Ontario	Gross area of budworm-associated tree mortality (000,000 ha)		
	1981	1982	Change
Northwestern	0.088	.150	+ .062
Northeastern	9.572	9.934	+ .362
Southern	1.550	1.550	0
Total	11.210	11.634	+ .424



Tree mortality was observed in some 11,634,000 ha this year, up about 424,000 ha from the previous year. As expected, the major increases occurred in northeastern Ontario where tree mortality now occurs over almost 10,000,000 ha. Most of this increase was in the north in the districts of Hearst, Kapuskasing and Cochrane but increases were also noted in Wawa, Blind River and Sault Ste. Marie. In southern Ontario the situation remained unchanged from 1981. In northwestern Ontario the area of budworm-associated tree mortality increased by almost 40% in 1982 and mortality now occurs within an area of about 150,000 ha. Several new pockets of tree mortality totalling some 39,000 ha were detected in Thunder Bay District, with other increases in Fort Frances and Atikokan districts.

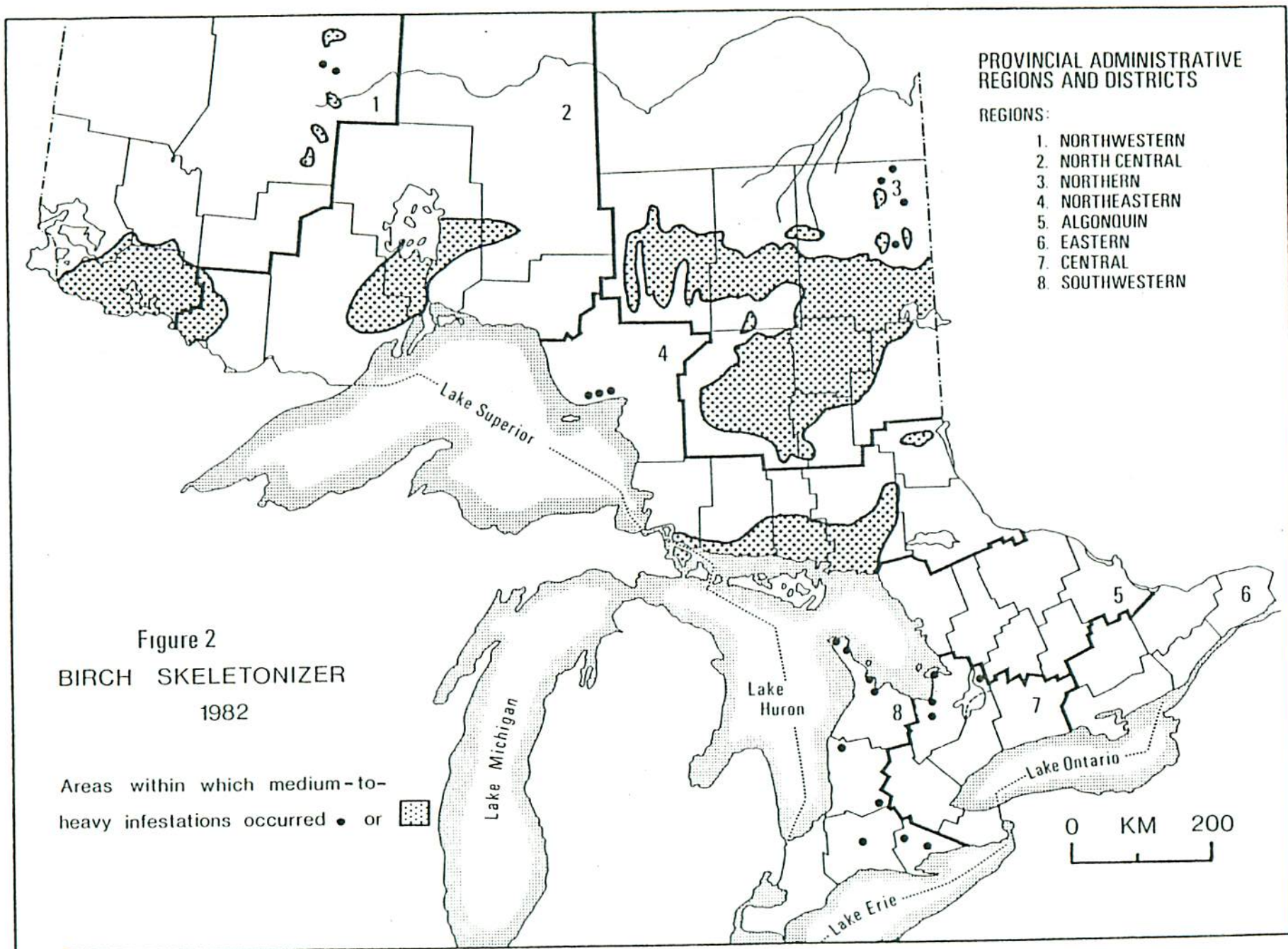
Birch Skeletonizer, *Bucculatrix canadensisella* Chamb.

Populations of this insect, which reached outbreak proportions last year, continued to expand in 1982 (Fig. 2). The total area within which moderate-to-severe defoliation occurred increased from 57,200 km² in 1981 to approximately 82,200 km² this year.

In northwestern Ontario, two large infestations totalling about 25,000 km² occurred. The first of these encompasses almost the entire Fort Frances District along with the western part of the Atikokan District. The second infestation extends from Dog Lake in the Thunder Bay District through the southern Nipigon District and eastward to Croll Township in the Geraldton District. Smaller pockets totalling about 375 ha were mapped in the eastern Sioux Lookout and Ignace districts.

This year the most extensive infestations occurred in northeastern Ontario, where moderate-to-severe browning of birch foliage was evident within an area of about 57,200 km². This area comprised two large infestations and a number of smaller ones. The larger of the two occurred across the southern parts of the Hearst, Kapuskasing and Cochrane districts and extended southwest to encompass the northwestern part of the Kirkland Lake District, a large part of the Timmins District and parts of the Gogama and Chapleau districts. The second large infestation extends from St. Joseph Island in the Sault Ste. Marie District, across the southern Blind River, Espanola and Sudbury districts, to Henry and James townships in the North Bay District. A number of smaller pockets of heavy infestation were also mapped in Trail and Parliament townships and in the Kesagami Lake area of Cochrane District, in Howells and Lisgar townships, Kapuskasing District and in the area between Klock and Bucke townships, Temagami District. Low populations and small numbers of larvae were found on birch trees throughout much of the remainder of the Northern and Northeastern regions.

In southern Ontario the population increase was more modest with a total area of 50 km² suffering moderate-to-severe defoliation. The bulk of this damage occurred in the Bruce Peninsula of Owen Sound District where 25 km² were affected and in the Parry Sound-Byng Inlet area of the Parry Sound District where 10 km² were affected. Smaller areas of moderate-to-severe



damage were also reported from a number of widely scattered locations in the Huronia, Wingham, Aylmer and Simcoe districts. Low populations were found commonly in a number of areas in the northern Bracebridge District and northwestern Parry Sound district.

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

As reported in the summer Survey Bulletin, heavy adult moth flights were observed in the Wawa and Chapleau districts and the northern parts of the Sault Ste. Marie, Blind River, Sudbury and Gogama districts. However, the expected high larval populations failed to materialize and indeed the area within which moderate-to-severe defoliation was mapped declined from 9,000 km² in 1981 to approximately 4,100 km² this year. The figure previously reported for 1981, 7,800 km², has been revised upwards to 9,900 km² following re-examination of survey maps. This defoliation was confined mainly to alder and white birch in the southern Chapleau District with populations in adjacent areas of Wawa District declining to very low levels (Fig. 3). Low populations were also widely distributed in Sault Ste. Marie and Blind River districts, and small pockets of light infestation were reported from Weeks and Avis townships, Sudbury District and Wadsworth Township, Kapuskasing District.

Redhumped Oakworm, *Symmerista canicosta* Fracl.

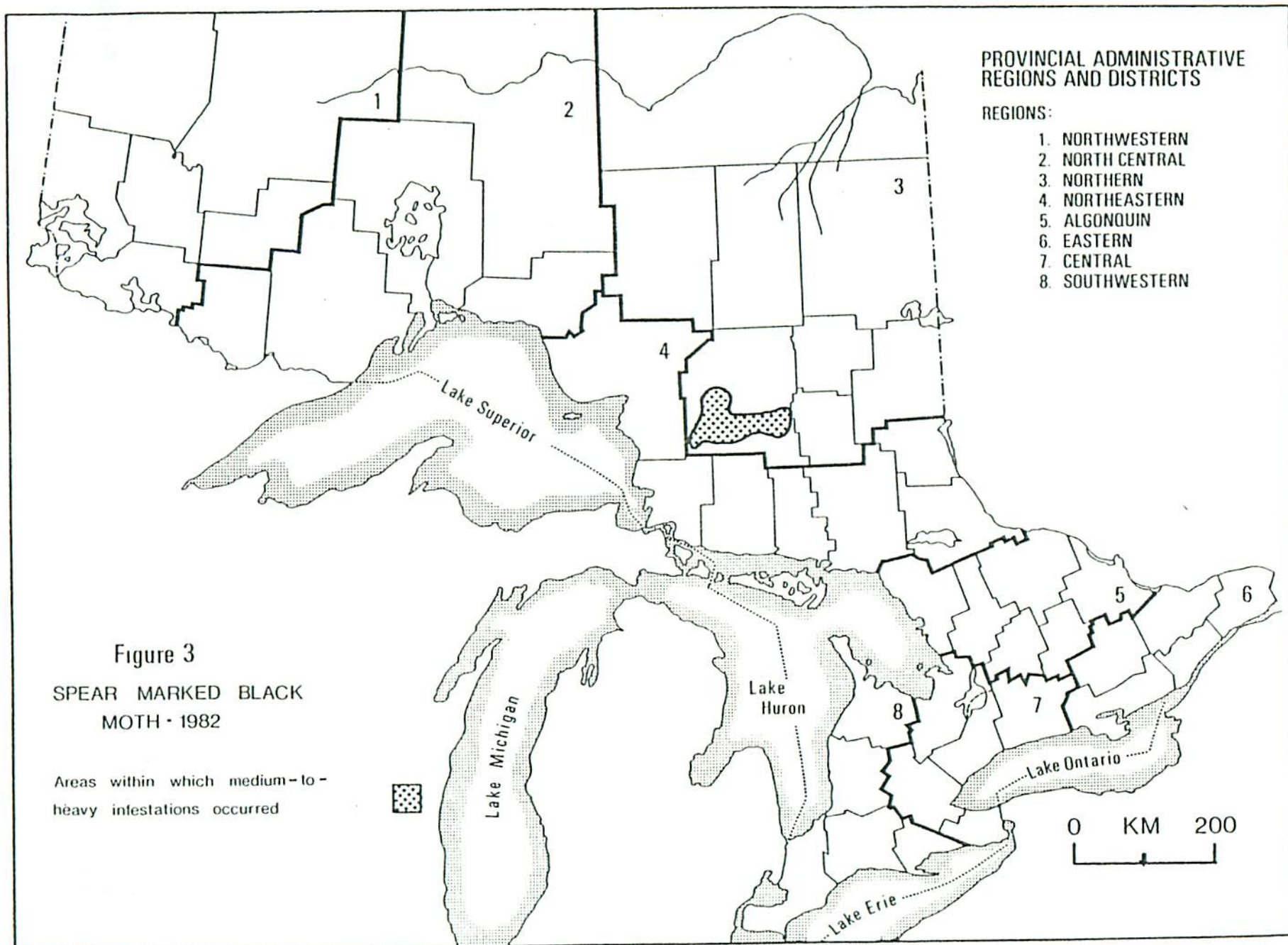
For the second consecutive year this usually rare insect was reported in infestation proportions in the Southwestern and Algonquin regions. In the Southwestern Region, red and white oak on about 3,500 ha in the Pinery Park-Grand Bend area of Chatham District were heavily attacked with defoliation ranging up to 70%. Small isolated infestations on single trees also occurred near Bayfield in the Wingham District. In the Algonquin Region, burr and red oak were similarly damaged in an area of about 2,100 ha in the Thirty Thousand Islands in Georgian Bay, Parry Sound District. Small numbers of larvae were also reported on basswood in the Lake of the Woods area of Fort Frances District, on red and white oak on Beausoleil Island, Huronia District and on red oak in Hungerford Township, Tweed District.

Eastern Pine Shoot Borer, *Eucosma gloriola* Heinr.

This insect was reported from a number of areas throughout the province. The most severe damage occurred in a number of jack pine plantations in the Timmins, Kirkland Lake and Temagami districts, where leader damage ranged from 9 to 17%. Leader damage elsewhere did not generally exceed 5%.

Redheaded Pine Sawfly, *Neodiprion lecontei* (Fitch)

Populations were generally low in southern Ontario with the exception of small planted areas in Osler Township, Algonquin District and Tay Township,



Huronian District where medium infestations occurred. A general increase in numbers was evident in the Eastern Region following several years of low populations. In the Northeastern Region, heavy infestations caused severe damage to red pine plantations in South Himsforth Township, North Bay District and Laura Township, Sudbury District. Damage by similarly high populations in Proctor Township, Blind River District was controlled by clipping.

Forest Tent Caterpillar, *Malacosoma disstria* Hbn.

Infestations of this insect persisted in four widely separated areas in the province (See summer Survey Bulletin). These were located as follows: in the city of Thunder Bay and the adjacent townships of Paipoonge, Neebing, Scoble and Blake, in the Thunder Bay District; in the townships of Shakespeare, Merritt, Hallam and May in the Espanola District; north of the town of Cochrane, Cochrane District; and northeast of the town of Matheson on the Cochrane-Kirkland Lake District boundary. Egg band counts completed recently indicate that the infestations in the Cochrane and Kirkland Lake districts will persist at high levels in 1983. Similarly, populations in the Thunder Bay area are expected to remain high, with some spread to the north into Conmee, Oliver and McIntyre townships. The infestation in Espanola District is expected to disappear in 1983.

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

Generally low and declining populations were reported in southern Ontario in marked contrast to the situation in 1981 when increased populations were recorded in the southern half of the province. The only significant damage occurred in Brampton, Maple District where windrow trees suffered 50% defoliation and on Wolfe Island in the Napanee District and in Bastard Township in the Brockville District, where open-grown and fencerow black walnut and butternut were heavily defoliated.

Fall Webworm, *Hyphantria cunea* (Dru.)

Increased populations were evident in the Central, Southwestern and Eastern regions of southern Ontario. Defoliation of black ash, black walnut, cherry and butternut was widespread in the Southwestern Region and in the Huronia, Maple and Cambridge districts of the Central Region. Black ash was the preferred host in the Eastern Region, with the heaviest defoliation occurring in Fitzroy and Huntley townships of the Carleton Place District and in Charlottenburg Township of the Cornwall District. In northern Ontario, increased populations were reported on trembling aspen, alder, pin cherry and birch in the Kirkland Lake District of the Northern Region and in the Temagami District of the Northeastern Region. Reports of low numbers of unsightly feeding nests were also received from the Dryden, Fort Frances, Kenora, Pembroke and Bancroft districts.

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

High populations and increased foliar damage to trembling aspen were reported from much of northern Ontario this year. Numerous areas of heavy infestation occurred in the Northwestern and North Central regions, particularly in the Geraldton District where populations had declined to low levels in 1981. In the Northern Region very high populations were reported from the Chapleau and Gogama districts and from areas south of Highway 11 in the Cochrane and Kapuskasing districts. Scattered, heavy infestations occurred in the Timmins and Kirkland Lake districts. In the Northeastern Region, populations increased sharply in the Sault Ste. Marie, Wawa and Blind River districts. Heavy infestations were also evident in Cameron Township, North Bay District and in Weeks, Mandamin and Boon townships, Espanola District.

In southern Ontario medium-to-heavy defoliation was widespread in the Pembroke and Algonquin Park districts, with the most severe foliar damage occurring in Maria, White and Clara townships of the Algonquin Park District.

Yellow Headed Spruce Sawfly, *Pikonema alaskensis* (Roh.)

In addition to information presented in the summer Survey Bulletin, this insect was reported causing severe defoliation of planted black and white spruce in highway windbreaks at many points in the Matheson and Ramore areas of Kirkland Lake District and in the Nighthawk, South Porcupine and Timmins areas of Timmins District. Moderate damage, with defoliation in the 15% to 30% range, was reported from a number of areas in the Thunder Bay and Nipigon districts. Populations declined to low levels at Rainbow Falls Provincial Park, Terrace Bay District and at Klotz Lake, Geraldton District where they had been high for a number of years. A new infestation was discovered on open-grown white spruce at Obatanga Provincial Park, Wawa District, with defoliation ranging as high as 80% on some trees. New, heavy infestations were also reported from Laval Township, Dryden District, where white spruce regeneration suffered an average of 66% defoliation and from Skey Township, Ignace District, where defoliation of planted white spruce ranged from 10% to 90%. Small, localized pockets of medium and heavy infestation were also reported from the Fort Frances, Kenora, Red Lake, Kapuskasing, Cochrane and Chapleau districts.

White Pine Weevil, *Pissodes strobi* (Peck)

Populations remained low in the northern part of the province except in the Northeastern Region. Here, a number of white, red, Scots and jack pine plantations in the Espanola, North Bay, Sudbury and Blind River districts sustained leader damage in the 30% to 60% range. Leader damage in jack pine plantations in Barr Township, Temagami District declined from 20% in 1981 to 7% this year. Elsewhere in northern Ontario, leader damage was generally less than 10%. In southern Ontario populations remained generally high,

with heavy infestations reported from a number of areas in the Central and Algonquin regions. The most serious damage occurred in the Glencairn Seed Orchard in Tosorontio Township, Huronia District where young Norway spruce were severely damaged. Leader damage ranging from 29% to 39% was also reported from several other areas in the Huronia District. Increased populations were noted in the Simcoe District of the Southwestern Region, with white pine plantations suffering moderate damage at several locations. Populations in the Eastern Region remained generally low, with no damage reported.

Larch Sawfly, *Pristiphora erichsonii* (Htg.)

Damage by this insect declined to generally low levels in most of the province in 1982. Exceptions to this trend occurred in the Geraldton District where medium and heavy infestations in a number of areas caused defoliation ranging from 25 to 75%. At one location in Colter Township, repeated defoliation has caused top killing in a 1 ha tamarack stand. Medium-to-heavy infestations were reported near the city of Thunder Bay and in Paipooonge and McTavish townships, Thunder Bay District where a total area of about 116 ha was affected. A single, heavy infestation in Morley Township, Fort Frances District caused severe defoliation in a 10 ha tamarack stand. In southern Ontario, the only high populations reported were in the Huronia District, where a number of small European larch plantations totalling about 15 ha sustained moderate-to-severe damage.

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

Heavy infestations were again reported at many locations in the Northeastern and North Central regions. The most severe damage occurred in areas around the north shore of Lake Superior in the northern Sault Ste. Marie District and in the Wawa and Terrace Bay districts, where clumps of mountain ash were often 100% defoliated. Scattered heavy infestations were also recorded at several locations in the southern Thunder Bay District of the North Central Region and south of Highway 11 in the Cochrane and Kapuskasing districts of the Northern Region. New distribution records were obtained when the insect was collected for the first time between the towns of Dryden and Kenora and in the town of Ignace in the Dryden, Kenora and Ignace districts, respectively, of the Northwestern Region.

Cherry Scallopshell Moth, *Hydria prunivorata* Ferg.

High populations and heavy damage by this usually innocuous insect were reported from the Central and Southwestern regions. In the Owen Sound District, aerial surveys and subsequent ground checks revealed that the insect caused 100% defoliation of scattered black cherry trees in about 20 ha of mixed hardwoods in Albemarle Township. Similar damage occurred on an area of about 80 ha in the Durham Regional Forest and surrounding private land in Uxbridge Township, Maple District. Moderate defoliation of black cherry was also reported from Clarke and Macauley townships, Bracebridge District.

Maple Leaf Cutter, *Paraclemensia acerifoliella* (Fitch)

Heavy infestations persisted for the third consecutive year in the Halton Regional Forest, Cambridge District where approximately 16 ha of sugar maple were 60% defoliated. New infestations were reported on Beausoleil Island in the Huronia District where moderate damage occurred on understory trees in an overmature hardwood stand. In the Napanee District, where heavy infestations occurred in a 20 km² area of Bedford Township in 1981, populations were considerably reduced this year although low numbers could still be found over a wide area. The insect was also reported in low numbers from the Tweed, Carleton Place and Brockville districts.

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

Increased populations of this insect were reported from the Southwestern Region for the second consecutive year. Heavy infestations recurred at Pearce Provincial Park, Aylmer District, where approximately 68 ha of sugar maple were 60% defoliated. Heavy infestations also occurred in sugar maple stands in the Sauble Beach-Sauble Falls area of Owen Sound District where defoliation averaged about 50% over a total area of about 60 ha. Moderate damage to small groups of trees was also reported from several locations in the Huronia and Cambridge districts of the Central Region and from Dawson Township in the Espanola District of the Northeastern Region.

Swaine Jack Pine Sawfly, *Neodiprion swainei* Midd.

Several changes were evident this year in the Swaine jack pine sawfly infestations which have been present in the Kirkland Lake and Temagami districts for several years.

The northernmost infestation, which occurs in the Banks-Makobe lakes area in Banks, Wallis, Willet and Roadhouse townships, was reduced to mainly moderate intensity and the area infested decreased from 4,660 to 3,950 ha. The infestation in the Big Boot-Lady Evelyn Lake area in Van Nostrand and Klock townships decreased from 1,035 ha in 1981 to 701 ha in 1982. Populations were reduced, but the area remains infested, with generally light defoliation being reported around Big Boot Lake and through the eastern part of the area, where severe defoliation occurred in 1982. Pockets of light and moderate defoliation were also reported in jack pine plantations in the Chalice Lake area of Gamble and McGiffin townships, Temagami District. Light infestations were again reported from several islands in Lake Temagami.

Redheaded Jack Pine Sawfly, *Neodiprion virginianus* complex

The heavy infestations which occurred in 1981 on jack pine in the Chapleau, Timmins and Kirkland Lake districts of the Northern Region and in the Temagami District of the Northeastern Region declined to very low levels

in 1982. Reports of low populations were also received from the Thunder Bay, Atikokan, Sudbury, Geraldton, Ignace, Cochrane and Hearst districts.

Jack Pine Budworm, *Choristoneura pinus pinus* Free.

A preliminary report in the summer Survey Bulletin indicated that moderate-to-severe defoliation of jack pine occurred over approximately 300 ha in the Owen Sound District and over 80 ha in the Huronia District. An unspecified area of moderate-to-severe defoliation was reported in the Parry Sound District. Surveys have now been completed and the results show that a total of 308 ha were moderately to severely defoliated in the Johnstons Harbour and Sauble Beach areas of Owen Sound District. Approximately 80 ha of jack pine plantations suffered moderate-to-severe defoliation in Vespra and Oro townships, Huronia District, including parts of the Hendrie Forest. Follow-up surveys in Carling Township, Parry Sound District show that jack pine in a total area of 593 ha was moderately to severely defoliated. An additional 39 ha were lightly defoliated. It was reported in the summer Survey Bulletin that aerial surveys had detected moderate-to-severe defoliation in Shawanaga Township and on Franklin Island in Georgian Bay. Subsequent ground checks have revealed that most of this defoliation was caused by drought rather than by jack pine budworm.

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

Although increased defoliation was evident in parts of the Central and Southwestern regions (summer Survey Bulletin), recent egg surveys indicate that populations should remain generally low in 1983. The only exception to this trend is in the Dufferin County Forest and adjacent areas of the Simcoe County Forest in Mulmur and Tosorontio townships, Huronia District. Here, egg counts indicate that the populations which have built up steadily since 1981 will continue to cause moderate-to-severe defoliation in 1983.

Gypsy Moth, *Lymantria dispar* L.

As reported in the summer Survey Bulletin, gypsy moth defoliation was detected in a number of areas in the Eastern Region in 1982. The most serious damage was in the Kaladar area of Tweed District where six small pockets of severe defoliation totalling 269 ha and 12 pockets of moderate defoliation totalling 3,341 ha were detected. These were located in two main areas, one north and one south of the village, along with a number of small scattered pockets to the west. Egg surveys were carried out recently in the area north and south of the village as well as in areas to the west which were infested in 1981 and were sprayed this year. The results indicate that in 1983 light-to-moderate defoliation will likely occur north of Kaladar. Light defoliation is expected in the treated areas west of the village and severe defoliation will likely occur in the infestation to the south.

In addition to the above, the insect was detected in a number of other locations in the Eastern Region. The largest of these were in Lochiel and Caledonia townships where 10 ha and 7 ha of trembling aspen suffered moderate and severe defoliation, respectively. The remainder of the areas were located as follows: in Cornwall, Caledonia, South Plantagenet, Charlottenburgh, Osnabruck and Winchester townships and the city of Cornwall in the Cornwall District and in Tyendinaga and Fredericksburgh townships, the city of Belleville and the Pitts Ferry and Wolfe Island areas of Napanee District.

In addition to defoliation and larval trapping surveys, the Forest Insect and Disease Survey Unit cooperated with Agriculture Canada by placing gypsy moth pheromone traps (Pluslure) in some 35 provincial parks and private campgrounds in the Northeastern and Northern regions and the eastern half of the North Central Region. In 1982, a single male moth was trapped at White Lake Provincial Park, located on highway 17 between the towns of White River and Marathon in the Wawa District. Pheromone traps were also placed in 13 oak stands in southern Ontario which have been monitored for a number of years for a condition known as oak decline. Two moths were trapped in Alice Township and one at the Petawawa National Forestry Institute in Pembroke District, eight moths were trapped at Durham Regional Forest, Uxbridge Township, Maple District and a total of 30 moths were caught in two traps in Lanark Township, Carleton Place District.

OTHER INSECTS OF NOTE

Heavy infestations of the birch sawfly, *Arge pectoralis* (Leach), caused moderate-to-severe defoliation of shoreline white birch along Georgian Bay in Carling and Shawanaga townships, Parry Sound District.

High populations of the red pine cone beetle, *Conophthorus resinosae* Hopk., caused varying degrees of damage to red pine plantations and seed orchards at a number of locations in the Temagami District and in a seed production area at Baltimore, Lindsay District.

Heavy infestations of the alder flea beetle, *Altica ambiens alni* Harr., were reported on alder in the Northern Region as well as in the Atikokan and Thunder Bay districts of the North Central Region.

The saddled prominent, *Heterocampa guttivitta* (Wlk.), caused 15 to 30% defoliation of sugar maple at Awenda Provincial Park, Huronia District.

Numerous heavy infestations of the solitary oak leaf miner, *Cameraria hamadryadella* (Clem.), were reported in the Eastern Region. Burr oak was the preferred host, although red and white oak were also attacked.

Heavy defoliation of white and burr oak by the shorthorned oakworm, *Anisota finlaysoni* Riotte, was reported from Front of Leeds and Front of Escott townships, Brockville District and from Camden Township, Napanee District.

Populations of the Zimmerman pine moth, *Dioryctria zimmermani* (Grt.), declined to low levels in the Maple and Huronia districts following several years of heavy infestations which had caused severe damage to the shoots of red and Austrian pine at a number of locations in both districts.

Heavy infestations of the small birch leafminer, *Ectoedemia lindquisti* (Free.), caused severe defoliation of about 20 ha of shoreline birch at Awenda Provincial Park and in adjacent areas of Tiny Township, Huronia District.

The variable oakleaf caterpillar, *Heterocampa manteo* (Dblly.), caused up to 90% defoliation of basswood in Lake of the Woods Provincial Park, Fort Frances District. The larvae were also reported to be numerous in Sydenham and Keppel townships, Owen Sound District.

The satin moth, *Leucoma salicis* (Linn.), was found causing heavy defoliation of silver poplar in Thurlow Township, Napanee District. This represents a westward extension in the known range of this introduced insect.

Populations of the ambermarked birch leafminer, *Profenusa thomsoni* (Konow), declined to very low levels on white birch in the Pickle, Greenbush Minchen, Doran and Lake St. Joseph areas of Sioux Lookout District following heavy infestations in 1981. Light infestations were observed in Boyce, Clavet and Oakes townships, Geraldton District .

Heavy infestations of the oak leafmining sawfly, *Profenusa lucifex* (Ross), caused defoliation of white oak in the 100% range at a number of locations near the city of London in the Aylmer District.

Heavy infestations of the introduced pine sawfly, *Diprion similis* (Htg.), were reported on mature white pine in the Miles Bay area of Kenora District by OMNR personnel. High populations were also reported on white pine in Morris Township, Wingham District.

TREE DISEASES

Diplodia Tip Blight, *Sphaeropsis sapinea* (Fr.) Dyko & Sutt.

The incidence of this disease was lower than usual except in the Cambridge District where mortality in excess of 35% was recorded in several Scots pine plantations. The disease was also recovered from a European larch planting in Oxford on Rideau Township, Brockville District. At this location, disease-caused stem cankers resulted in 9% mortality, mostly of fringe trees.

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

An overall decline in the intensity of this foliage disease was apparent this year. Reports of the disease, usually at very low levels, were received from the Thunder Bay, Atikokan, Nipigon, Chapleau and Sudbury districts. The only occurrence of any significance was along the Bisco Road in Chapleau District, where small clumps of trembling aspen suffered up to 75% foliar damage.

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

These rusts of black and white spruce were widespread in northern Ontario and although incidence was often in the 90 to 100% range, actual foliar damage was usually less than 5%. The only exception was in Lendrom Township, Wawa District where 2m white spruce were heavily defoliated.

Leaf Anthracnose of Maple, *Kabatella apocrypta* (Ell. & Ev.) Arx

The incidence of this leaf disease declined markedly for the second consecutive year. The only reports of damage in 1983 were received from the Wingham District where the disease was observed commonly on roadside trees at varying infection levels.

Leaf and Twig Blight of Aspen, *Venturia macularis* (Fr.) E. Muell, & Arx

As reported in the spring Survey Bulletin, this disease occurred on trembling aspen in a number of areas in the northern part of the province, usually at low or declining infection levels. Exceptions to this trend occurred in Potts and Woodyatt townships, Fort Frances District, where 55 and 67%, respectively, of the trees examined were severely damaged and near Lake of the Woods, Kenora District where 79% of the trees examined were severely damaged. The only other noteworthy infection was reported in Lomond Township, Sioux Lookout District, where 16% of the trees were severely damaged.

Maple Scorch

This condition is caused in the early stages of leaf development before the water-regulating mechanism of the leaf is fully developed. At this time, bright, dry, windy weather causes severe loss of water within the developing leaf which cannot be replaced quickly. As a result, some of the cells collapse and die. Localized patches of dead tissue appear in the leaf, which later turns brown and dries out. In severe cases the entire tree may turn brown.

In 1982 the condition was reported to be causing varying degrees of damage in the Southwestern, Central, Algonquin and Northeastern regions. Particularly severe damage was noted in Amabel and Keppel townships of the Owen Sound District and in McNab Township of the Pembroke District. In the latter location bud damage was evident. Follow-up surveys will be conducted in 1983 to determine whether the effects of the condition are carried over to the next year.

Needle Droop

Needle droop is the result of physiological drought caused by short exposure to high temperature, low humidity and bright, breezy conditions.

This results in rapid transpiration or water loss from the needle, which, in turn, causes the collapse and death of cells within the needle where cell wall development is not complete. The needles then bend over or droop. The condition normally affects current foliage on trees under 2m high.

This year needle droop was reported widely in the Blind River and Espanola districts of the Northeastern Region, where a large number of red and white pine plantations were affected. The most severe damage was in Houghton Township, Blind River District, where 100% of the trees in a 50 ha red pine plantation suffered an average of 84% (current) foliar damage.

The condition was also reported from Aubrey Township, Dryden District where one red pine plantation was severely damaged.

Storm Damage -- Blowdown

A severe windstorm swept through northwestern Ontario during the night of 5 July 1982, causing patches of heavy damage to timber at several locations in the Fort Frances, Ignace, Thunder Bay and Nipigon districts. The largest area of damage occurred along the Thunder Bay-Ignace District boundary in the vicinity of Allanwater and Sesiginaga lakes, where approximately 3,200 ha of jack pine, aspen and black spruce were uprooted or broken off. In the Fort Frances District approximately 1,700 ha were affected in the Bernadine-Jones lakes area. According to figures supplied by OMNR, the bulk of the downed timber in this area consisted of jack pine (86%) and black spruce (12%), with white birch and trembling aspen making up the remainder. About 63,200 units net of merchantable wood were damaged and salvage operations are planned by Boise-Cascade Canada Limited.

On 19 August a tornado caused extensive damage to timber in Mattawan and French townships, North Bay District. A total area of about 5 km² was affected in the two townships. The affected area has been licensed for salvage purposes and harvesting has begun.

OTHER DISEASES OF NOTE

A needle cast disease, *Lophodermium* sp., caused 65% foliar damage to 75% of the trees in a 27 ha red pine plantation in Boulter Township, North Bay District. The same disease was also noted on red pine plantations at a number of other locations in North Bay District and at single locations in Sudbury and Espanola districts.

A poplar leaf disease, *Septoria populicola* Pk., caused heavy defoliation of balsam poplar throughout the Eastern Region.

The needle cast, *Lophodermium pinastri* (Schrad. ex Hook.) Chev., was reported from a number of red pine plantations in the Sault Ste. Marie and

Blind River districts. Although incidence ranged as high as 100% foliar damage was usually less than 20%.

Severe defoliation of walnut and butternut was caused by a leaf spot disease, *Marssonina juglandis* (Lib.) Magn., at a number of locations throughout the Eastern Region.

A leaf anthracnose of oak, *Gloeosporium quercinum* West., caused moderate damage to oak foliage on the eastern portion of Wolfe Island, Napanee District.

Shoestring root rot, *Armillaria mellea* (Vahl. ex Fr.) Kumm., was reported on jack pine regeneration from numerous locations in northern Ontario. Mortality in all cases was less than 2% .

A poplar leaf rust, *Melampsora medusae* Thuem., caused 80% to 90% defoliation of some hybrid poplar clones in the G. Howard Ferguson Forest Station, Brockville District.

Marssonina brunnea (Ell. & Ev.) Magn., a leaf rust disease, caused 75% defoliation of two hybrid poplar clones at the G. Howard Ferguson Forest Station, Brockville District.

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15 December 1982

ISSN 0705-503X