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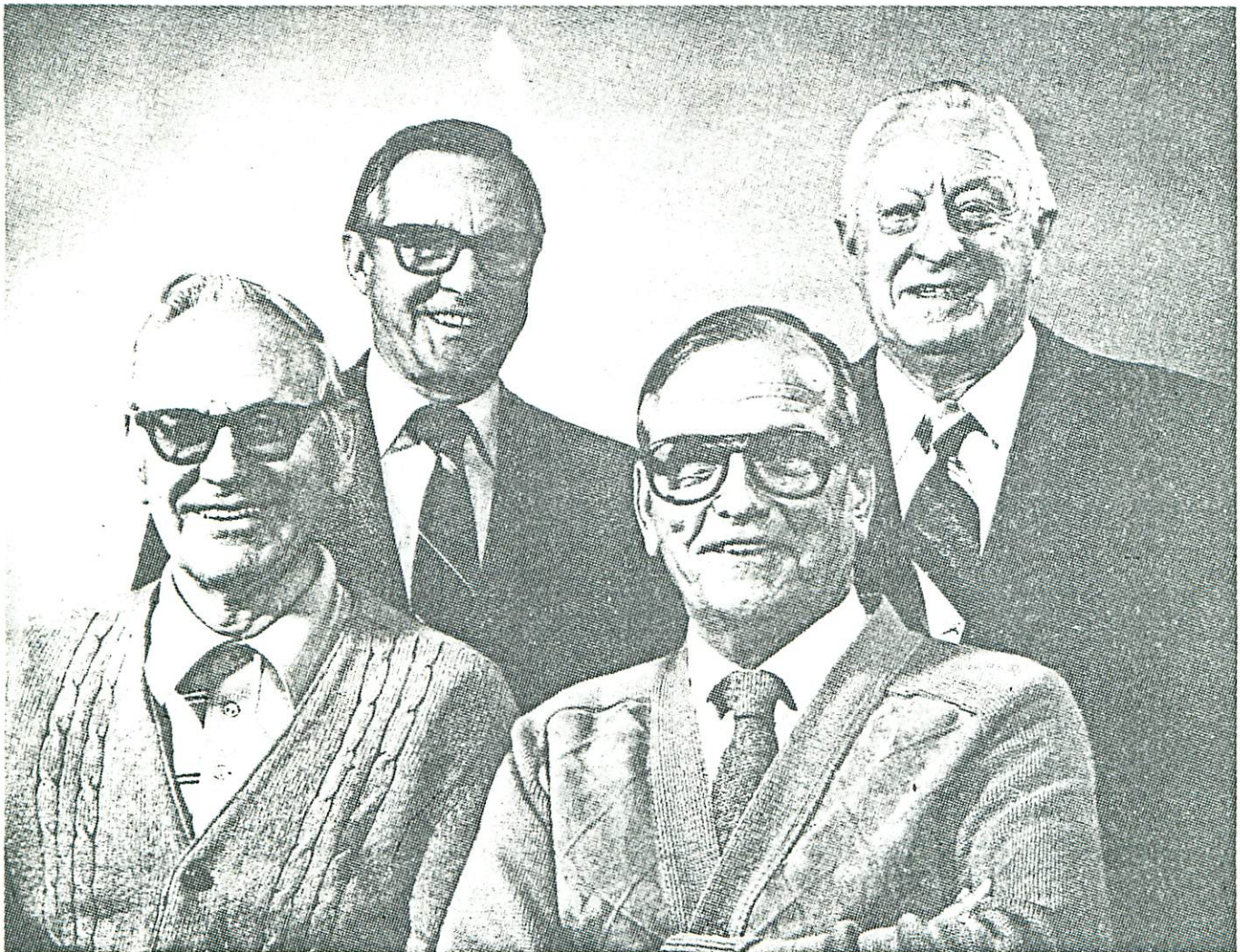
SURVEY

BULLETIN

33266

Forest Insect and Disease Conditions in Ontario

Fall 1980



Retiring from the FIDS Unit at the end of December 1980 are, from left to right, Angus Harnden, Ed Buchan, Art Rose and Mac McDowall.

GREAT LAKES FOREST RESEARCH CENTRE
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Forest Insect and Disease Conditions in Ontario

Fall 1980

This is the third and final bulletin on forest insect and disease conditions in Ontario during the 1980 field season. Collectively these bulletins describe the more important forest pest problems detected and evaluated in the province from early May to late September. Detailed descriptions and results of forest pest surveys on a regional basis will be forthcoming in the spring of 1981.

RETIREMENTS

Four long-time members of the Forest Insect and Disease Survey (FIDS) Unit retired at the end of December, 1980 (cover photo). Their combined service totals more than 135 years, and represents a tremendous wealth of knowledge and experience. Obviously it is trite to say that they will be missed, but indeed that is the case.

A.H. (Art) Rose joined the department in 1947 and has been insect survey officer (laboratory) for most of his career with FIDS. Art graduated with a B.A. from Queen's University in 1940 and an M.A. from the University of Toronto in 1947. Art has made many contributions during his career but his most recent and perhaps best known are the insect handbooks that he has authored with O.H. Lindquist.

L.L. (Mac) McDowall joined the department in 1946 as a forest insect ranger in Manitoba and Saskatchewan. Mac transferred to Sault Ste. Marie from Winnipeg in the spring of 1970 when he became Chief of Survey Technicians for the Ontario Region.

P.E. (Ed) Buchan started with the department as an insect ranger in 1947. Ed worked in various districts in northern Ontario from 1947 to 1951, and spent the next 17 field seasons in Sioux Lookout (1952-1968). Ed became senior pathology technician in 1969, a position he held until his retirement.

A.A. (Angus) Harnden started as an insect ranger in the spring of 1946. Angus worked in Port Arthur, North Bay, Sault Ste. Marie and Lake Simcoe districts until he was appointed senior entomology technician in 1968. For the past 12 years Angus has been closely involved with the timing and assessment of provincial spraying operations and with special surveys for major forest insect pests such as spruce budworm.

FOREST INSECT SURVEY OFFICER (FIELD)

Joseph H. Meating has been appointed Forest Insect Survey Officer (Field) with the Forest Insect and Disease Survey Unit at the Great Lakes Forest Research Centre (GLFRC). Joe assumed his duties at GLFRC in early December and has since attended several working committee meetings dealing

with the planning of provincial spraying operations for 1981.

Joe holds a B.Sc. in biology from the University of New Brunswick (1976) and is in the process of completing an M.Sc. in biology from the same university. He spent several summers working for Forest Protection Limited on the New Brunswick spruce budworm spraying program, was employed as a research assistant by the University of Guelph, and did contract work with the Maritimes Forest Research Centre.

ANNUAL FOREST PEST REVIEWS

The Fourth Annual Forest Pest Review for Ontario was held this fall, as in previous years, in two sessions--one in southern Ontario and the other in northern Ontario. These reviews represent a consolidation of information collected by staff of GLFRC's Forest Insect and Disease Survey Unit concerning major forest pest problems in Ontario, and are conducted primarily for the benefit of those involved or interested in forest resource management.

The southern Ontario review, which was held in Toronto on 26 November, 1980, was attended by 46 people. The agenda included Scleroderris, spruce budworm, aerial spraying operations, maple decline, control of redheaded pine sawfly with virus, white pine plantation survey, a slide presentation of spruce budworm in New Brunswick and Nova Scotia, and a film about the spruce budworm problem in New Brunswick.

The northern Ontario review was held in Dryden on 3 December, 1980 and was attended by 39 people. The agenda at this review included spruce budworm, aerial spraying operations, spruce budworm control with virus, black spruce plantation survey, black spruce cone and seed insects, sawyer beetles, the current status of herbicides for forestry use, a slide presentation of spruce budworm in New Brunswick and Nova Scotia, and a film entitled "Decisions" produced by the British Columbia Forest Service.

The reviews were attended by Ontario Ministry of Natural Resources (OMNR) staff from districts, regions and headquarters, Canadian Forestry Service staff from GLFRC and representatives of the forest industry, universities and colleges (including Guelph, York and Sir Sandford Fleming), Pollution Probe and the Ontario Pesticides Advisory Committee. New features of the reviews this year were films and presentations by staff of OMNR's Pest Control Section and the Forest Pest Management Institute, Sault Ste. Marie.

PEST COMMITTEES

Working committees consisting of representatives from OMNR's Pest Control Section, districts and regions, and from GLFRC's FIDS Unit are considering several pest problems in detail in order to be able to formulate recommendations for management action.

The oak leaf shredder and spruce budworm (southern Ontario) committees met at Maple on 11 December, 1980. Another spruce budworm committee (Northern Region) met at Timmins on 17 November and 17 December, 1980. The standing committee on Scleroderris is planning to meet in Richmond Hill on 20 January, 1981.

GYPSY MOTH IN NORTHERN ONTARIO

In 1979, FIDS staff were asked to assist in the gypsy moth (*Lymantria dispar* [L.]) detection program being conducted by Agriculture Canada's Plant Quarantine Division, by deploying pheromone traps to capture gypsy moth males in provincial parks and other major parks with campgrounds across northern Ontario. FIDS survey technicians placed two traps, one near the campground entrance and one within the camping area, at each designated park in the Northern, North Central and Northeastern regions. Traps were set out at chest level by 15 July and were picked up at the end of August. Trap catches, if any, were examined at the laboratory. The exercise was repeated in 1980.

In 1979 all returns from 36 parks were negative, but in 1980 two gypsy moth males were caught in one trap within the Rabbit Blanket Lake Campground of Lake Superior Provincial Park. The moths were identified in the GLFRC laboratory and the identification was confirmed at the Biosystematics Research Institute, Ottawa. The results have been forwarded to Agriculture Canada's Plant Quarantine Division.

This capture in Algoma marks a significant westward and northward extension of gypsy moth captures in Ontario.

FOREST INSECTS

Spruce Budworm, *Choristoneura fumiferana* (Clem.)

As noted in the summer (1980) Survey Bulletin the spruce budworm outbreak in Ontario continued to expand in 1980. Aerial surveys supported by ground observations showed that the major outbreaks had increased in size, and several new infestations were found. Over all, the area infested by budworm, as evidenced by moderate-to-severe defoliation and/or signs of previous damage within the province in 1980, totalled some 18 850 000 ha (46,580,000 acres), an increase of 420 000 ha (or slightly more than one million acres) over last year. The extent of defoliation in 1980 is compared with that in 1979 on the following page.

Gross area defoliated in millions
of hectares (acres)

Outbreak region in Ontario	1979	1980	Changes
Southern	1.002 (2.475)	1.007 (2.488)	+ .005 (.013)
Northeastern	16.940 (41.859)	17.119 (42.302)	+ .179 (.443)
Northwestern	.488 (1.206)	.724 (1.790)	+ .236 (.584)
Total	18.43 (45.54)	18.850 (46.58)	.420 (1.040)

Spruce budworm egg-mass and defoliation surveys were carried out during August and September. More than 600 locations were sampled in 1980. Over all, egg-mass densities decreased by some 44% in 1980 in comparison with densities recorded in similar locations in 1979. The largest regional decline in budworm egg-mass numbers, 64%, occurred in southern Ontario. The decrease was general throughout southern Ontario in that 16 of the 18 districts sampled had significant decreases. As a consequence, the total area of moderate-to-severe defoliation will likely diminish in 1981 although a large part of the Algonquin Region will remain heavily infested.

In northeastern Ontario, there was a decrease of some 51% on an overall basis. Decreases occurred in 11 of the 14 districts sampled in the Northeastern and Northern regions. In spite of the decline, little change is expected in the extent of defoliation in northeastern Ontario in 1981 since populations are still high enough on the average to cause moderate-to-severe defoliation. In the eastern part of the North Central Region, egg-mass densities increased considerably in Geraldton and Terrace Bay districts whereas populations which had been low in Nipigon District declined even further. A spread to the west in Geraldton and Terrace Bay districts is expected in 1981.

In northwestern Ontario, egg-mass densities decreased by some 14% over all. There was little change in Fort Frances District, a relatively small decrease in Thunder Bay District and a large decrease in Atikokan. Modest expansion of infested areas will likely occur in 1981.

The extent of budworm-associated tree mortality continued to increase in 1980 as shown in the following summary:

Region in Ontario	Gross area of budworm-associated tree mortality in millions of hectares (acres)		
	1979	1980	Increase
Northwestern	.020 (.05)	.024 (.06)	.004 (.01)
Northeastern	6.111 (15.10)	6.839 (16.90)	.728 (1.80)
Southern	1.384 (3.42)	1.493 (3.69)	.109 (.27)
Total	7.515 (18.57)	8.356 (20.65)	.841 (2.08)

A total of some 8.276 million ha (20.45 million acres) of mortality was mapped in 1980 within the province (Figure 1). In southern Ontario the area of mortality increased by some 109 000 ha (270,000 acres) with most of the new mortality occurring in the Algonquin Park, Bracebridge and Minden districts. In northeastern Ontario, the amount of budworm-associated tree mortality increased by .648 million ha (1.6 million acres) to a total of 6.759 million ha (16.7 million acres). New mortality was detected in stands in virtually every district. More pockets of white spruce mortality are becoming evident, particularly in Chapleau District, although levels of mortality are generally quite low. Similarly, a few instances of light mortality in black spruce were recorded. In northwestern Ontario, several pockets of mortality in Fort Frances District expanded to cover a total of about 24 282 ha (60,000 acres).

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

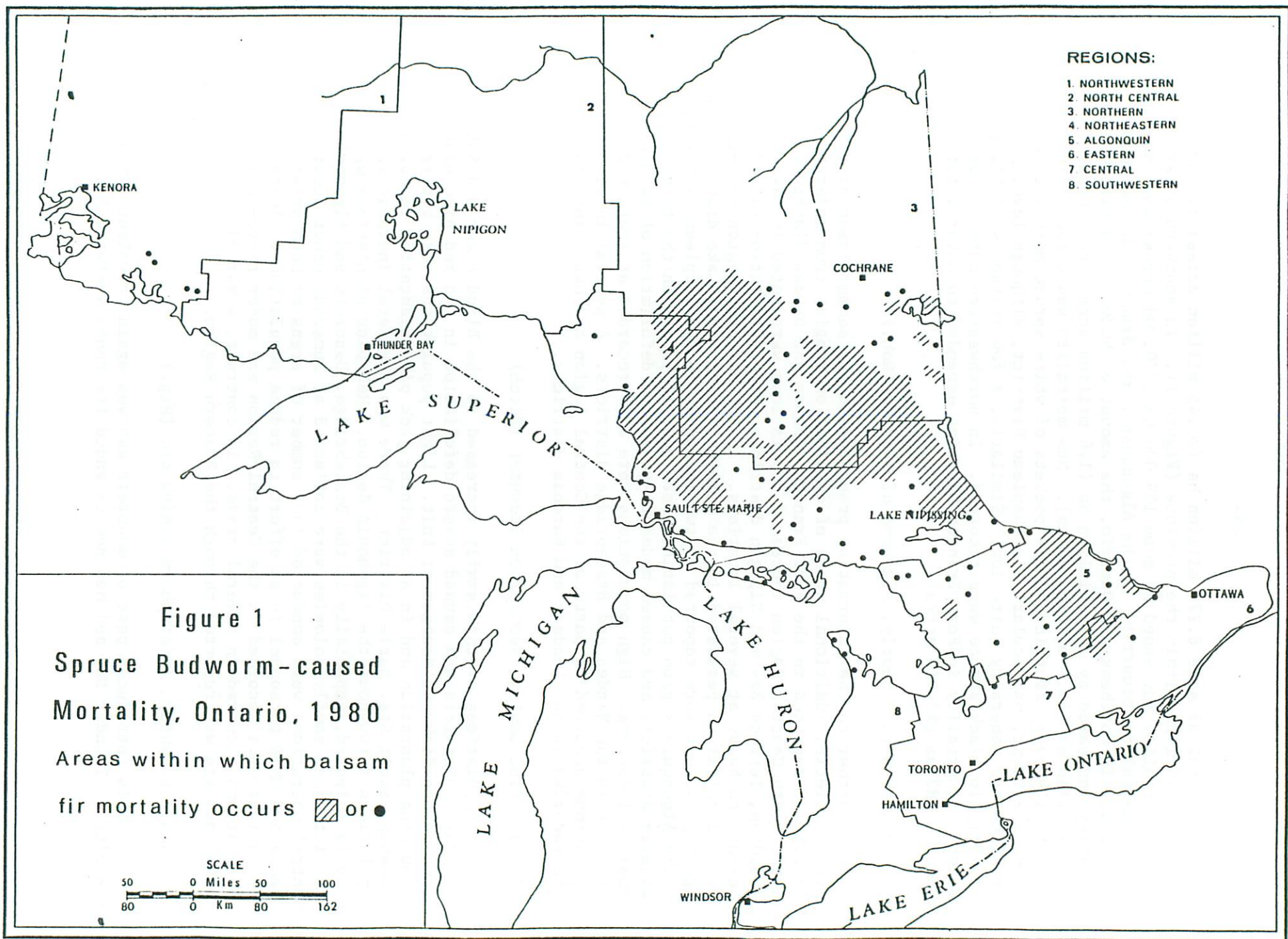
Further to the information presented in the summer issue of the Survey Bulletin, additional areas of defoliation ranging from moderate to severe were reported in the Fort Frances, Kenora and Dryden districts. In the North Central Region increased populations were noted in the Geraldton, Terrace Bay and Nipigon districts where defoliation ranged from moderate to heavy at several locations. In the Northern Region pockets of severe defoliation persisted in the Timmins and Kirkland Lake districts and high populations were reported at two locations in the Chapleau District. In the Algonquin Region populations were generally high in the three most easterly districts and caused moderate-to-severe defoliation of spruce at numerous locations. High populations were also recorded at scattered locations in the Minden and Bracebridge districts. A general increase in populations occurred in parts of the Central Region and heavy infestations were recorded in the Lindsay and Huronia districts.

Redheaded Pine Sawfly, *Neodiprion lecontei* (Fitch)

Populations of this sawfly increased in the Blind River and Sault Ste. Marie districts and caused severe defoliation in two red pine plantations in the Kirkwood Management Unit. Light populations were recorded in a red pine plantation and in an adjoining jack pine plantation in Curtis Township, Sault Ste. Marie District. There was a general increase in populations throughout the Algonquin Region. Red pine plantations were heavily infested, especially in the Bracebridge, Bancroft and Algonquin districts, and sawfly colonies were collected at numerous other locations. Control operations were conducted in a number of areas by both private owners and OMNR personnel in an effort to reduce populations. Increased populations were recorded in the Central Region and moderate-to-heavy infestations occurred in several areas. In contrast, a marked decrease in larval numbers was reported through the Eastern Region.

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

This introduced pest of mountain ash was again prevalent throughout the city of Thunder Bay and has now extended its range westward from the



Thunder Bay District into the Atikokan District of the North Central Region. Elsewhere in the above-mentioned region, moderate-to-heavy defoliation occurred at a number of locations in the Nipigon and Terrace Bay districts and larvae were commonly found at many other locations. In the Northern Region defoliation ranging from light to moderate and moderate to heavy was reported at a number of locations in most of the districts. Generally light defoliation occurred in the western half of the Northeastern Region.

Larch Sawfly, *Pristiphora erichsonii* (Htg.)

In general, populations of this sawfly were at low levels throughout the northern half of the province although in a few instances small pockets of moderate-to-heavy defoliation were reported on native larch in the North-western and North Central regions. Plantations in a number of areas in the Central and Southwestern regions suffered moderate-to-heavy defoliation of both native and European larch, reflecting a population increase in 1980.

Swaine Jack Pine Sawfly, *Neodiprion swainei* Midd.

Continued attacks on jack pine stands have caused appreciable mortality in the Elk Lake Management Unit, Temagami District. Heavy infestations were reported along shorelines on Banks and Makobe lakes and in the vicinity of Big Boot Lake.

Redheaded Jack Pine Sawfly, *Neodiprion virginianus* complex

Defoliation of jack pine attributed to this sawfly was mainly light in the areas where it was observed in the eastern half of the North Central Region and through the Northern Region. However, single, open-grown trees in the Chapleau District occasionally suffered heavy defoliation.

Forest Tent Caterpillar, *Malacosoma disstria* Hbn.

Infestations in the western part of the province have all but disappeared (summer Survey Bulletin) and recent egg-band surveys would indicate that this condition will continue in 1981. Only light defoliation is anticipated in the western part of the Fort Frances District and the infestation in the Thunder Bay District is expected to recur, probably with a slight increase in size. Egg-band surveys in the Northern Region show that infestations in the Cochrane and Kirkland Lake districts are expected to continue at moderate-to-severe levels. Three separate infestations, one in each of the Espanola, Sudbury and North Bay districts of the Northeastern Region, should continue and relatively high populations are expected.

Aspen Leafblotch Miner, *Lithocolletis ontario* Free.

Higher populations and increased foliar damage of aspen were reported from several districts in 1980. In the Northwestern Region leaf mining was common in most districts and scattered severe infestations were recorded in the more southerly districts. Low populations were noted

in the western half of the North Central Region with higher numbers occurring in parts of the eastern portion. In the Northern Region populations were widespread, although heavy leaf mining was noted at only a few locations. High numbers of this leaf miner were recorded in the Algonquin Park District of the Algonquin Region.

White Pine Weevil, *Pissodes strobi* (Peck)

Although this insect was found commonly throughout the northern portion of the province, in most instances populations were light. However, in the Northeastern Region high populations persisted and caused considerable leader damage to white pine plantations in several townships of the Blind River District. In a few areas of the Espanola and Sudbury districts populations were relatively high. In the southern part of the province high populations were recorded in many areas of the Algonquin Region where a high percentage of trees were attacked. Here, too, the main host was white pine. In the Eastern Region populations were high at several locations in the Tweed District.

Birch Leafminer, *Fenusa pusilla* (Lep.)

In addition to the infestation reported in the summer Survey Bulletin, infestations were observed on white birch throughout the Chapleau, Gogama and Cochrane districts. They caused varying degrees of leaf mining damage ranging from light to heavy. Relatively high populations were recorded in parts of the Northeastern Region and in several districts of the Algonquin Region.

Birch Skeletonizer, *Bucculatrix canadensisella* Cham.

Increased populations of this skeletonizer on white birch were reported from two regions in 1980. In the Northwestern Region, where the insect had been absent for several years, population levels increased and pockets of heavy infestation were observed east of Fort Frances along Highway 11. In the Northeastern Region increased numbers were evident in the Wawa, Sault Ste. Marie and Blind River districts. Severe browning occurred along Highway 108 and 639 and along Highway 17 east of Iron Bridge. Elsewhere populations were mainly light.

Fall Webworm, *Hyphantria cunea* Dru.

This insect was observed in a number of areas throughout the province. The heaviest infestations were reported to be in the four regions in southern Ontario where unsightly nests were common on various hardwood trees and roadside shrubs.

Eastern Pine Shoot Borer, *Eucosma gloriola* Heinr.

Populations and infested shoots of jack pine were widely scattered through several districts in the Northwestern and North Central regions. However, leader damage in most instances was minimal and a reduction in populations was evident.

In the Bracebridge District of the Algonquin Region high populations occurred at two locations, whereas low numbers were observed in the Parry Sound District. Relatively high populations were reported in Orono Forest Station in the Lindsay District. In the Parry Sound and Lindsay districts the host was red pine.

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

High populations again caused moderate-to-severe defoliation in 1980 at numerous locations throughout the Southwestern Region, especially in the Chatham, Aylmer and Simcoe districts. An increase in populations was reported in the Central Region and heavy infestations occurred in parts of the Cambridge and Maple districts. There was an increase in larval populations in the Huronia District, where individual trees were lightly infested. Larvae were found commonly throughout parts of the Napanee and Lanark districts in the Eastern Region, where single trees and groups of trees were defoliated. Host trees were mainly black walnut and hickory.

Orange-striped Oakworm, *Anisota finlaysoni* Riotte

Considerable defoliation on open-grown oak persisted at a number of locations in the Simcoe, Aylmer and Chatham districts in the Southwestern Region. Population levels increased over 1979 in the Cambridge District in the Central Region and several small pockets of heavy infestation were recorded. In the Eastern Region severe defoliation occurred at numerous locations in the Napanee District.

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

Additional surveys of red pine in the Algonquin Region have shown that this pest is widely distributed. Damage was noted in the Pembroke, Algonquin, Bancroft, Minden and Bracebridge districts. A young red pine plantation in the Tweed District of the Eastern Region showed a high incidence of damage.

Other Insects of Note

The maple leaf cutter, *Paraclemensia acerifoliella* (Fitch), rarely collected in Ontario, caused conspicuous foliar damage in two districts in the southern part of the province. In the Central Region a heavy infestation was recorded in a stand of sugar maple in Halton Regional Forest, Cambridge District. Relatively high populations occurred south of Uxbridge, Maple District. A heavy infestation was recorded in the Bobs Lake area in the Napanee District of the Eastern Region. This insect favors sugar maple but larvae feed on the foliage of other hardwoods as well. Trees can be severely defoliated for up to several consecutive years.

A needle midge, *Contarina* sp. of pine, caused heavy infestations at two locations in the Huronia District; severe damage was also recorded at several locations in the Bancroft and Pembroke districts. Scots pine was the preferred host in all areas.

Increased populations of the saddled prominent, *Heterocampa guttivitta* (Walker), caused several light infestations in the northern portion of the Huronia District in 1980.

Conspicuous foliar damage on balsam poplar attributed to the poplar flea beetle, *Altica populi* Brown, was common throughout several districts in the Algonquin Region. Elsewhere populations were very light.

Light defoliation caused by the gypsy moth, *Lymantria dispar* (L.), was observed on Cornwall Island and in the city of Cornwall, in all instances on silver maple.

The cottony maple scale, *Pulvinaria innumerabilis* Roth., was widely distributed through the Chatham District and severe defoliation of silver maple was noted in a number of locations.

High populations of the willow blotch miner, *Microrapteryx salicifoliella* Cham., caused severe browning of willow foliage in the northern half of the Red Lake and Sioux Lookout districts. Further east this same condition was prevalent in the area north of Hornepayne in the Hearst District.

Populations of the greenstriped mapleworm, *Dryocampa rubicunda rubicunda* Fabr., continued to increase in the Blind River District where small pockets of heavy defoliation of red maple and sugar maple occurred near Iron Bridge and Elliot Lake.

Additional reports of the presence of the jack pine tip beetle, *Conophthorus banksianae* McPherson, were received. Moderate infestations were present at two locations in the Cochrane District; numbers were low elsewhere in the Kapuskasing and Hearst districts.

TREE DISEASES

Rhizina Root Disease (*Rhizina undulata* Fr.)

Recently burned areas (summer of 1980) in the Northwestern Region were examined for this disease. Heavy fruiting of the fungus was observed in a number of areas in the Kenora, Red Lake and Ignace districts. Its occurrence in all instances was confined to higher sites where the duff had been burned off. Areas where the fungus was found adjacent to young jack pine seedlings were pinpointed and will be examined in 1981 for signs of chlorotic seedlings. Reports of fruiting were also received from the Thunder Bay, Chapleau and Wawa districts.

Two heavy infection centres were recorded in the Huronia District, one in the Orr Lake Tract in Simcoe County Forest and another in Dufferin County Forest. Both areas were burned in 1979 and the Orr Lake Tract was replanted with white pine and red oak in 1980.

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

These rusts were generally found at low infection levels and enjoyed a wide distribution through the northern half of the province. An occasional high incidence was reported in a few districts.

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

Although heavy infection levels of this disease were reported at several locations through the Southwestern and Central regions, a decline in the overall intensity was evident in 1980. In the Eastern Region this disease was reported to be affecting young sugar maple in a compartment in the Kemptville Forest Station. Symptoms were observed commonly through the eastern half of the Algonquin Region, mainly at light infection levels. Light-to-severe infection levels were recorded at scattered locations along the Sylvan Valley Road in the Northeastern Region.

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

It is now evident that this disease of elm is well established in the town of Fort Frances and was reported this year in the towns of Rainy River and Kenora and in the Lake of the Woods Provincial Park.

Authorities in the town of Fort Frances initiated a control program in 1979 for the removal of infected trees and such a program was continued in 1980. This disease was first reported in the town of Fort Frances in 1977.

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

Reports of this twig blight were received from several districts in 1980, but with the exception of one or two areas where noticeable damage occurred, it was of little consequence.

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

Although this shoestring root rot has been associated with varying degrees of tree mortality across the province over a number of years, present reports show that the incidence has remained more or less static.

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

This disease was widely distributed, although it appeared to be more prevalent in the northern portion of the province. Foliar damage ranged from trace to light.

Horse Chestnut Leaf Blotch, *Phyllosticta paviae* Desm.

Infection levels of this disease increased considerably in the Southwestern Region, especially in the districts of Owen Sound and Niagara

and also to a lesser degree in the Simcoe and Aylmer districts. Heavy infections occurred in the cities of Guelph, Cambridge, Kitchener-Waterloo and Brantford in the Cambridge District of the Central Region and at a number of locations in the Huronia and Maple districts.

Storm Damage

A severe windstorm on 09 August in the Temagami District caused severe damage to private property and timber in an area from LeRoche Township eastward through the townships of Cynthia, Chambers, Cassels, South Lorrain and Hebert, and on into Quebec.

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