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FORESTRY BULLETIN

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Forest Insect and Disease Conditions in Ontario



Damage to oak trees east of Thessalon, Ontario caused
by the basswood looper, *Erannis tiliaria* Harr.

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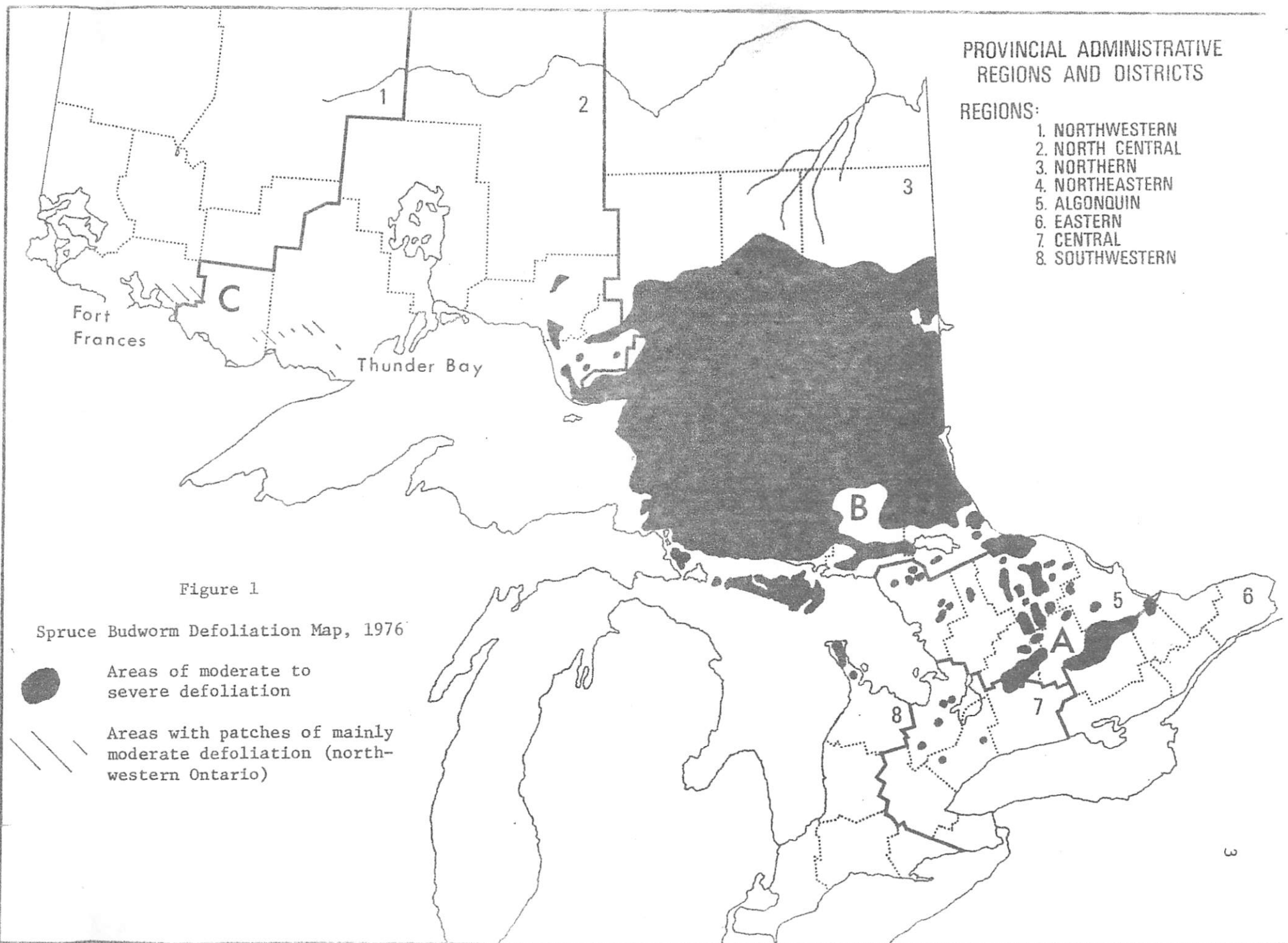
FOREST INSECTS

The Spruce Budworm, *Choristoneura fumiferana* (Clem.)

All three segments of the current outbreak in Ontario changed appreciably this year. Segment A in the eastern Algonquin Region broke up and was greatly reduced in size; Segment B in the Northeastern and Northern regions, as well as in the extreme eastern part of the North Central Region, spread considerably northward and somewhat to the west; Segment C in northwestern Ontario between Fort Frances and Thunder Bay built up and covered a larger area than in 1975 but remained limited in size (see Fig. 1). The area affected increased by 1.3 million ha (3.2 million acres) over that of 1975 to a total of 14.7 million ha (36.4 million acres).

Segment A which covered some 2.5 million ha (6 million acres) last year broke up into about 20 patches of defoliation totalling 485 000 ha (1.2 million acres) in 1976. Defoliation was negligible at many locations where moderate-to-severe or severe infestation was forecast. In addition, a sizeable, relatively new infestation in the western part of the Algonquin Region south of the French River was reduced to four small pockets of defoliation. It appears to be more than coincidence that these budworm populations crashed within the same general area from which forest tent caterpillar infestations also disappeared owing evidently to a premature partial hatch of eggs during the unusually warm Easter weekend of April 16-19. It is known that variable proportions of overwintering budworm populations also emerged during this warm spell, following which the weather again turned cold. Spruce budworm damage levels across the three southernmost regions were also lower than forecast and seldom exceeded the moderate intensity. Moreover, defoliation seemed to be confined to portions of susceptible stands or to small groups of trees.

Defoliation in Segment B (northeastern Ontario) was extensive and severe, but in areas where appreciable balsam fir mortality occurred defoliation was variable and generally much less severe. Towards the north and east much backfeeding was evident on old balsam foliage after the new shoots had been stripped. Moderate-to-severe defoliation was mapped for the first time in the current outbreak over a large area bounded by Kapuskasing on the west, Lake Abitibi on the east, Timmins in the south and Guilfoyle Township in the north. Farther west in the Kapuskasing, Hearst and Wawa districts, defoliation extended between 15 and 65 km (9-40 miles) beyond the 1975 infestation boundaries. A sizeable area in central White River District contained patches of moderate-to-severe defoliation and infestations detected in that district in 1975 increased in size. A new infestation with a small core of severe defoliation was found on the Pic River Watershed including part of Davies Township in the Terrace Bay District. New areas of suspected tree mortality were observed in parts of northeastern Ontario affected for 4 years or more but these areas must be confirmed on the ground before being reported.



The population trends of 1975 in northwestern Ontario (Segment C) continued upwards in 1976. An area of some 35 000 ha (87,000 acres) near Bennett Lake was treated successfully by the Ontario Ministry of Natural Resources to keep the larger of two surging infestations from erupting and spreading over much larger areas. Outside of the treated area, however, survival rates appeared to be unusually high and an intensive survey was carried out during July to delineate areas of moderate-to-severe defoliation. The two hatched areas shown on the accompanying map in the Fort Frances and Atikokan districts delineate a total area of 227 000 ha (560,000 acres) within which new pockets of mainly moderate defoliation occurred. New defoliation also appeared in a small part of Aldina Township in the Thunder Bay District and the infestation found near the Pigeon River in 1975 remained virtually unchanged. More larvae were procured than one year ago during quantitative sampling northeast of Thunder Bay in the Nipigon District, but no defoliation of more than light intensity could be found.

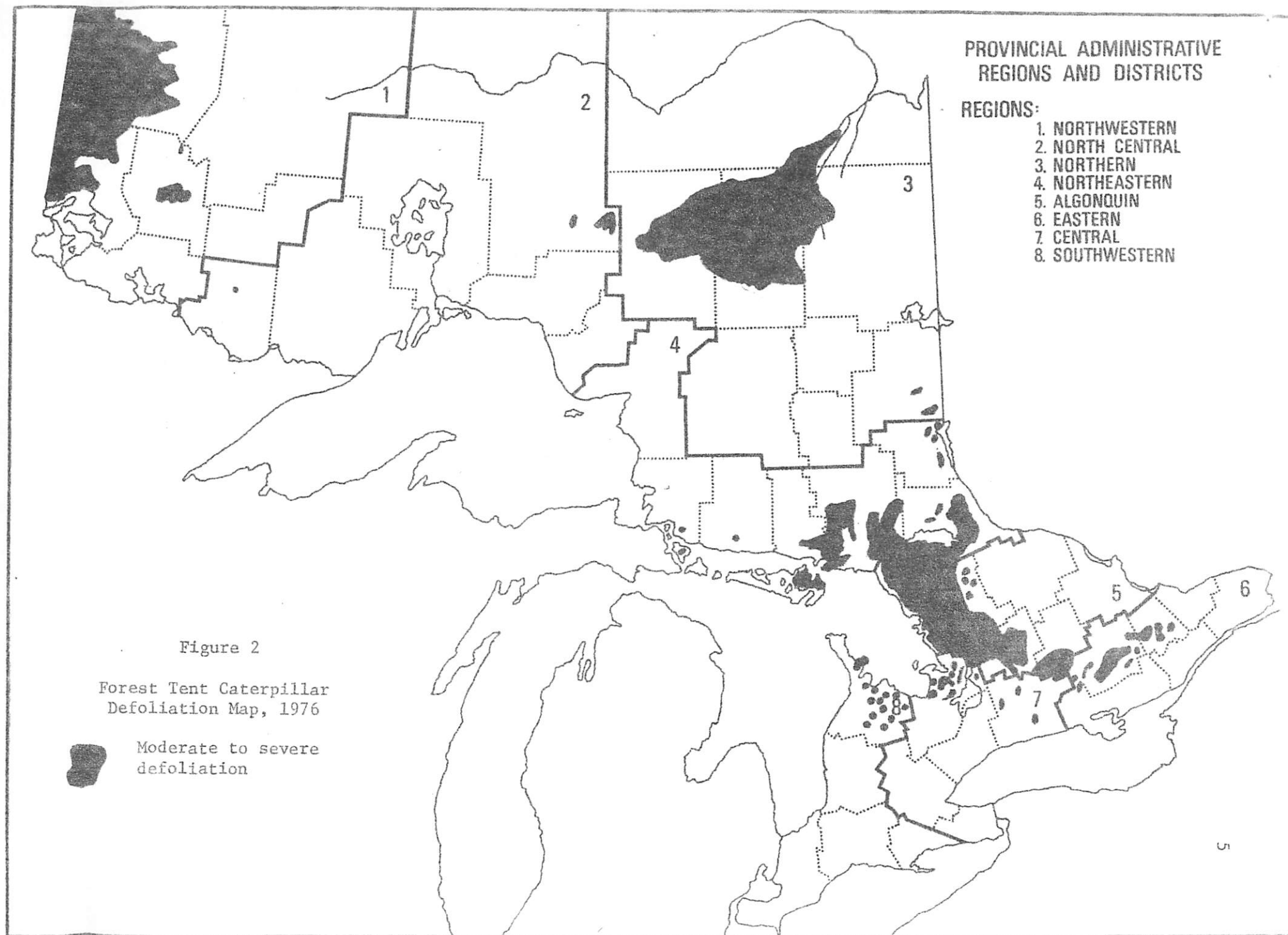
An extensive egg survey is currently under way which will provide the data upon which 1977 infestation forecasts for the various segments will be based.

Forest Tent Caterpillar, *Malacosoma disstria* Hbn.

Infestations of this pest which moved into northwestern Ontario from Manitoba greatly enlarged as did many of the infestations originating in Ontario, especially those on sugar maple in the southern half of the province (see Fig. 2).

In the Northwestern Region moderate-to-severe defoliation of aspen extended over 6 500 km² (2,500 sq miles) including large parts of the Red Lake and Kenora districts. A localized infestation which has been centered around Dryden since 1972 persisted and defoliated aspen over a slightly larger area of 800 km² (330 sq miles). Light infestations also occurred in the town of Atikokan and around the city of Thunder Bay. Small areas of defoliation in Bicknell and Boyce townships in the Geraldton District were attributed to the forest tent caterpillar.

In the Northern Region an extensive infestation continued and caused widespread defoliation of aspen over 21 000 km² (8,000 sq miles) in parts of the Hearst, Kapuskasing, Cochrane and Moosonee districts. This represents an increase of 15% over 1975. Near Lake Temiskaming in the Thorneloe-New Liskeard area, infestation boundaries remained essentially the same but larval numbers were only a fraction of those in 1975 and except for scattered pockets of moderate infestation defoliation was light. Conditions unfavorable for the survival of the young larvae following egg hatch appeared to be the cause of this decline. Farther south in the Northeastern Region, infestations continued in parts of the Sudbury and North Bay districts, but here again numbers were only a fraction of those experienced in 1975 and infestations disappeared altogether north of Lake Nipissing. A few widely scattered pockets of defoliation occurred in the Blind River and Sault Ste. Marie districts.



In parts of the Northeastern and Algonquin regions, defoliation levels fell far short of those that were forecast based on egg-mass counts last fall. This resulted from a partial hatch of eggs brought on by a spell of unusually warm weather over the Easter weekend, April 16-19, followed in early May, when warm weather resumed, by a poor second hatch. Colonies of young larvae were small and survival so low that noticeable defoliation was confined to those stands with extremely high numbers of egg bands. Recommendations were made to the Ontario Ministry of Natural Resources to cancel spraying operations in three provincial parks because of the high probability that infestations would collapse before feeding damage became evident. Spraying was cancelled and populations in these parks did disappear. In the remainder of the Algonquin Region scattered infestations were reported over most of the Parry Sound District, a large part of the Bracebridge District and the southwest corner of the Bancroft District.

In the three southernmost regions moderate-to-severe defoliation continued on aspen in the Tweed District of the Eastern Region and extended eastward on aspen and maple in the Lanark District. Damage was much more extensive on sugar maple than in 1975 in the Huronia District of the Central Region and in the eastern half of the Owen Sound District where sugar maple producers expressed concern over possible reductions in the sugar content of their sap run next spring.

Complex of Leafrollers on Aspen

A number of regions have reported damage to aspen by a combination of various poplar defoliators that changed in composition from location to location. These included *Choristoneura conflictana* Wlk., *Pseudexentera oregonana* Wlsh., *Malacosoma disstria* Hbn., *Epinotia criddleana* Kft., *Enargia decolor* Wlk., and *Sciaphila duplex* Wlsh.

Fall Cankerworm, *Alsophila pometaria* Harr.

This pest proved to be troublesome this year in various districts of southern Ontario. Moderate-to-severe defoliation of hardwoods, mainly sugar maple and oak, occurred in parts of the Owen Sound and Simcoe districts in the Southwestern Region, Cambridge and Niagara districts in the Central Region and Napanee, Lanark and Ottawa districts in the Eastern Region. Damage was also noted in the eastern part of the Pembroke District.

Oak Leaf Shredder, *Croesia semipurpurana* Kft.

In the Northeastern Region oak foliage was again brown, tattered, and often missing from Batchawana Bay north of Sault Ste. Marie, eastward as far as Spragge Township in the Blind River District, and on Manitoulin Island. Damage was somewhat lighter than usual in the Algonquin and Eastern regions but a few pockets of moderate damage persisted in the Ottawa and

Lanark districts. Heavy damage was mapped in Tiny and Tay townships north of Midland in the Huronia District but elsewhere in the Central Region defoliation was mainly of moderate intensity, and scattered.

The Basswood Looper, *Erannis tiliaria* Harr.

The large and unusually severe outbreak of the basswood looper (linden looper) which erupted in the Wawa District in 1974, and continued in 1975, disappeared in 1976 owing largely to the effects of a naturally occurring nuclear polyhedrosis virus disease. Meanwhile, the outbreak appears to have spread south and caused moderate-to-severe defoliation on white birch and trembling aspen in the central and northeastern parts of the Sault Ste. Marie District and to have extended into four townships of the Blind River District (see cover page). Scattered, moderate defoliation was evident in parts of the Blind River, Espanola and North Bay districts. In the more southerly parts of the province populations continued to increase with heavy defoliation in various woodlots through the Huronia and Cambridge districts of the Central Region and in the Lanark and Ottawa districts of the Eastern Region.

Cedar Leafminers, *Argyresthia canadensis* Free., *A. aureoargentella* Brower, *A. thuiella* Pack. and *Pulicalvaria thujaella* Kft.

A widespread and welcome natural decline of cedar leafminer infestations was evident in southern Ontario this summer. Each year since 1962 eastern white cedar in parts of southern Ontario have been badly discolored and have borne thin foliage as the result of the activities of this complex of small moths. In general, the outbreak has shifted sufficiently and the intensity of attack has been inconsistent enough in any one area that tree mortality has been scattered and localized and often associated with some other damage factor. The browning condition has been the cause of great public concern over the past 14 years and has resulted in a large number of inquiries and requests for information on insect habits and control.

Scattered infestations of leafminers were found in 1976 but the intensity of damage seldom exceeded the moderate level.

Web-spinning Sawfly, *Cephalcia* spp.

Until recently this insect had been considered a rare, or at most an occasional, pest of pine which seemed to concentrate its attack on a few trees here and there throughout pine plantations. In 1976 it caused severe defoliation in parts of several Scots pine Christmas tree plantations in Oro and Mono townships in the Huronia District, was common in two red pine plantations in the Lindsay District and was generally much more numerous than usual in a number of other red pine plantations in southern Ontario.

European Pine Sawfly, *Neodiprion sertifer* Geoff.

Numbers of colonies on Scots pine and red pine continued to decline throughout southern Ontario where defoliation rarely exceeded light intensity this year. Counts which were again made in Scots pine plantations on Manitoulin Island were also much lower than in previous years.

Balsam Fir Sawfly, *Neodiprion abietis* complex

Moderate-to-severe defoliation of balsam fir caused by this sawfly was observable from the air at two locations, north of Vermilion Bay in the Dryden District and north and east of Lake Nipissing in the North Bay District. Attack of lesser intensities was evident in parts of the Atikokan, Thunder Bay, Pembroke, Huronia and Cambridge districts.

Bruce Spanworm, *Operophtera bruceata* Hlst.

In the Nipigon District in the North Central Region, a small, heavy infestation on aspen occurred north of Armstrong and light infestation was recorded as far south as the Black Bay Peninsula. High populations persisted for the second consecutive year on maple at Robertson Lake in the Sault Ste. Marie District of the Northeastern Region and additional pockets of defoliation were observed along the Tribag Mine Road. In the Algonquin Region where considerable defoliation had occurred in 1975 only two pockets of moderate defoliation could be found.

Maple Leafroller, *Cenopsis pettitana* Rob.

Noticeable damage to maple foliage was observed from the air in parts of the Chapleau and Gogama districts during the aerial mapping of spruce budworm infestations in early July. Later it was ascertained that the discoloration was caused by the maple leafroller. Many complaints of insect feeding and leaf rolls on sugar maple shade trees were received from other parts of the Northeastern Region and attributed to this pest. Although annual numbers are not available, the insect evidently was more common in 1976 than over the previous 25 years.

Three unusual infestations were recorded in the Sault Ste. Marie District this summer. The uncommon boxelder leafroller, *Archips negundanus* Dyar again caused defoliation of Manitoba maple trees in the city of Sault Ste. Marie; severe defoliation of beech and sugar maple by saddle prominent, *Heterocampa guttivitta* Wlk., was found adjacent to infestations of forest tent caterpillar on St. Joseph Island; and some patches of sumac trees were defoliated by the noctuid *Marathyssa inficita* Wlk.

TREE DISEASES

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

Cultures made from suspected Dutch elm disease samples which were collected a few miles south of Thunder Bay turned out to be positive for *C. ulmi* and it must be assumed that this dreaded disease of elm has now reached the city of Thunder Bay. Disease symptoms were evident on elms along Highway 61 in the direction of Pigeon River and apparently the disease has moved in from that direction. No other distributional changes were recorded this year.

Cylindrocladium root rot, *Cylindrocladium floridanum* Sob. & Seymour, was found to be causing some mortality of black spruce seedlings in a compartment at the Midhurst Nursery and of white pine seedlings at the St. Williams Nursery.

Conifer Foliage Diseases

Reduced damage by most foliar pathogens probably was the result of the fair weather which occurred throughout most of Ontario during the spring and early summer. Thus far, foliage diseases that infect needles and cause necrotic spots or bands in the first year and then fruit and kill the infected needles in the following year were the only diseases that occurred at significant defoliation levels.

Coleosporium asterum (Diet.) Syd., needle rust of pine, caused less damage than in previous years, but was common throughout most of the province at the trace defoliation level. Moderate defoliation occurred in a stand of pine in Glenelg Township of the Southwestern Region and low defoliation was reported for stands in Whigham Township, Chapleau District; Gill Township, Hearst District; Avon Township, Cochrane District; and Clarendon Township, Tweed District.

Davisomycella ampla (Davis) Darker, jack pine needle cast, caused light defoliation in a few stands of the Atikokan, Algonquin and Thunder Bay districts. Trace defoliation was reported for a number of other locations throughout the province.

Lophodermium pinastri (Schrad. ex Hook.) Chev., pine needle cast, caused light defoliation in a Scots pine windbreak and a compartment of red pine seedlings at the Kemptville Nursery. Light defoliation also occurred in pine stands in Herschel and Moys townships of the Bancroft District, and trace defoliation was observed at several other locations in the Algonquin Region.

Spruce needle rust, *Chrysomyxa ledi* d By. and *C. ledicola* Lagh., were at low levels throughout most of Ontario. A few stands with trace defoliation were reported from most regions and one stand with a low level of defoliation occurred near Atikokan.

Snow mold again caused extensive mortality of white spruce and black spruce seedlings at the Dryden Provincial Nursery.

Hardwood Foliage Diseases

Ciborinia whetzellii (Seaver) Seaver, ink spot of aspen, was common throughout the range of trembling aspen at the trace defoliation level. A few stands with light or moderate defoliation were observed in the Northern and Northeastern districts, but the general level of damage was considerably lower than for the past several years.

Damage by *Pollaccia radiosa* (Lib.) Bald. & Cif., shoot blight of aspen, was also reduced from that of previous years. Light defoliation occurred in one stand in Fell Township in the North Bay District and in several young sucker stands in the Terrace Bay District.

Shoestring root rot, *Armillaria mellea* (Vahl ex Fr.) Kummer, was reported as causing occasional mortality of young conifers in the northern and northwestern parts of Ontario. The especially dry spring may have hastened the death of trees with rotted root systems.

Winter drying was common throughout much of southern Ontario this year. Moderate defoliation, mainly of pine trees, occurred in many areas, particularly in Huronia and Cambridge districts of the Central Region and Parry Sound and Bracebridge districts of the Algonquin Region.

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