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SURVEY BULLETIN

Forest Insect and Disease Conditions in Ontario

Summer 1979



Feeding damage caused by the pine false webworm,
Acantholyda erythrocephala (Linn.)

GREAT LAKES FOREST RESEARCH CENTRE
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FOREST INSECT AND DISEASE CONDITIONS IN ONTARIO

Summer 1979

This bulletin is the second of three to be issued in 1979. Major forest pest problems are described for the period mid-May to mid-July. Most of the information presented is based on collections and reports received from Survey personnel. If more detailed information is required on any of the forest pest problems mentioned in this Bulletin, readers should contact the Survey field technicians in their area or the Head, Forest Insect and Disease Survey Unit, Great Lakes Forest Research Centre, in Sault Ste. Marie.

FOREST INSECT CONTROL OFFICER

Robert S. Hodgkinson has been appointed Forest Insect Control Officer with the Forest Insect and Disease Survey Unit at the Great Lakes Forest Research Centre. Since assuming his duties in early May, Bob has been involved with biological assessment of Ontario Ministry of Natural Resources spraying operations, primarily against oak leaf shredder in Huronia District and spruce budworm in the Northern Region.

Bob holds a diploma in Forest technology from Algonquin College, a diploma in Environmental Forest Technology from Lakehead University, and a Bachelor of Science degree in Natural Science from Lakehead University. He is in the process of completing the requirements for a Master of Science in Pest Management at Simon Fraser University. Bob also has considerable field experience, having been employed on insect control projects by the Chemical Control Research Institute in Ottawa, the British Columbia Forest Service and the British Columbia Ministry of Agriculture.

FOREST INSECTS

Spruce Budworm, *Choristoneura fumiferana* (Clem.)

The 13-year-old spruce budworm outbreak is showing no signs of letting up in Ontario's susceptible forests. On a province-wide basis, the total area infested this year amounted to 18 209 592 ha (44,995,903 acres), an increase of some 3 053 105 ha (7,544,223 acres) over last year. Incidentally, data presented in this Bulletin concerning the 1979 budworm situation are preliminary estimates and are subject to revision. The primary hosts of budworm in Ontario are balsam fir, white spruce and, to a lesser extent, black spruce growing on upland sites in mixed stands. Aerial surveys to map the extent of budworm-caused damage were carried out by FIDS personnel using aircraft time provided by OMNR during the first two weeks of July when the color of damaged trees was at its peak. The following information was synthesized from maps and reports prepared by Survey field technicians.

As stated previously, the total extent of defoliation and damage in 1979 amounted to 18 209 592 ha (44,995,903 acres), compared to 15 156 488 ha (37,451,680 acres) mapped in 1978. It should be kept in mind that these figures represent the total area within which defoliated and damaged stands occur. Infestations are present in three major regions of the province: southern, northeastern and northwestern Ontario (Fig. 1). All increased in

PROVINCIAL ADMINISTRATIVE
REGIONS AND DISTRICTS

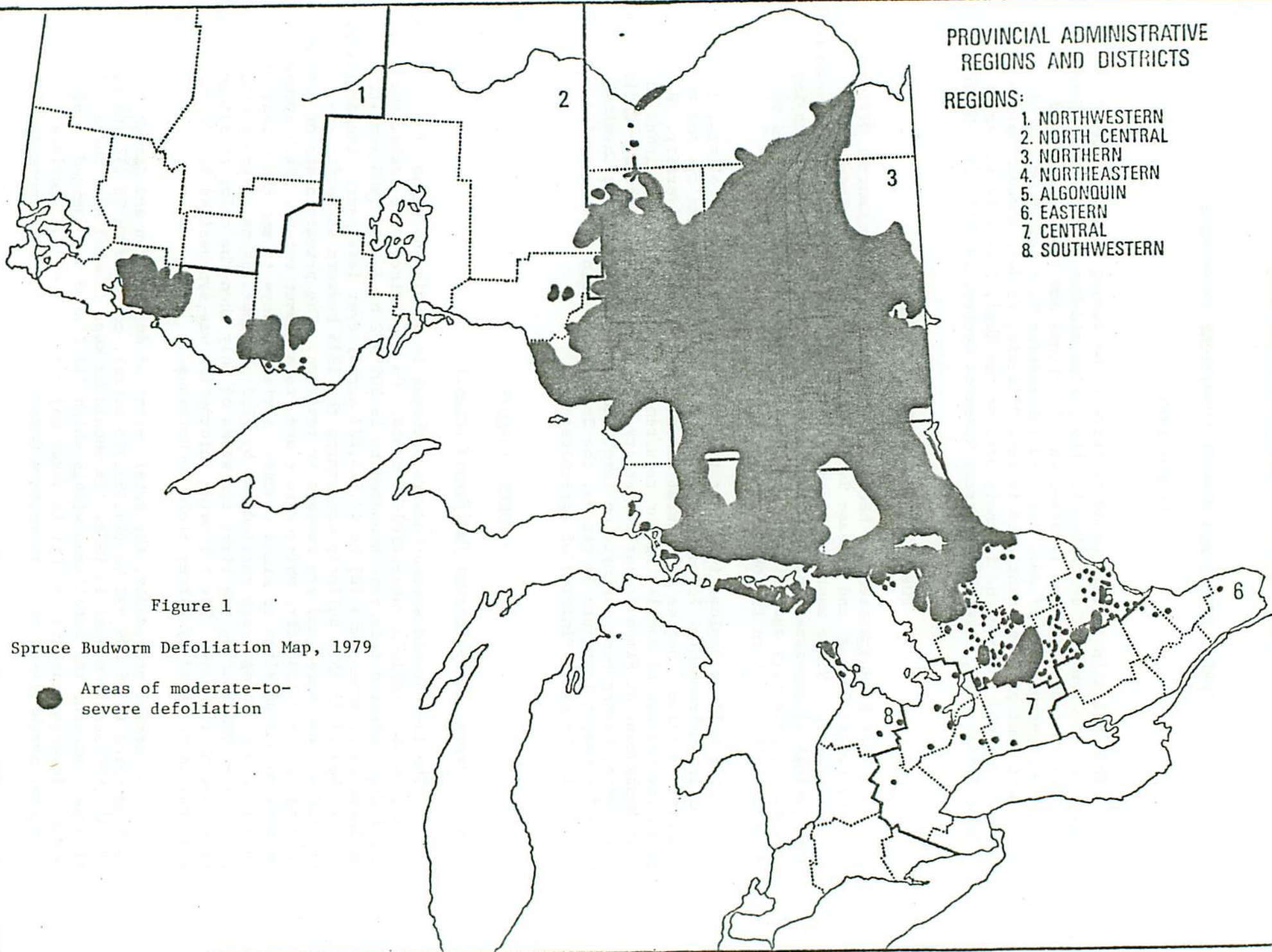
REGIONS:

1. NORTHWESTERN
2. NORTH CENTRAL
3. NORTHERN
4. NORTHEASTERN
5. ALGONQUIN
6. EASTERN
7. CENTRAL
8. SOUTHWESTERN

Figure 1

Spruce Budworm Defoliation Map, 1979

● Areas of moderate-to-severe defoliation



extent substantially this year.

In southern Ontario, where the outbreak appeared to be collapsing, the infestation has reversed its pattern of decline and increased to 781 748 ha (1,931,700 acres) in 1979 compared to only 24 282 ha (60,000 acres) in 1978. Most of the increase occurred in the Bracebridge, Parry Sound and Minden districts. In addition, many new small pockets of defoliation were detected in the three districts mentioned as well as in Bancroft and Pembroke districts.

In northeastern Ontario, the outbreak increased from 14 789 543 ha (36,544,960 acres) in 1978 to 16 939 972 ha (41,858,670 acres) in 1979, an increase of 2 150 429 ha (5,313,710 acres). Most of the increase occurred in the Northern Region, and was due, in particular, to a northward spread in Cochrane and Moosonee districts. Budworm infestation was mapped along the Missinaibi, Mattagami and Abitibi rivers as far north as the mouth of the Moose River at James Bay. It spread to the north and west in Hearst District, and the infestation centred in Clavet Township in Geraldton District is now linked with the main outbreak to the east. North of the Hearst District, in the western part of Moosonee District, budworm defoliation was detected along the Kenogami and Albany rivers. There was considerable spread in the White River District, with the result that two-thirds or more of this district was infested. Infestations at Manitouwadge and Hour Glass Lake in the Terrace Bay District increased in extent. Increases or new infestations also occurred in all districts in the Northeastern Region. Aerial spraying operations were carried out in June to protect high-value areas in Kirkland Lake, Kapuskasing, Cochrane, Gogama, Chapleau, Hearst and Geraldton districts. In general, the operations were delayed because of poor weather and second applications were not completed in some cases. *Bacillus thuringiensis* (Thuricide and Novabac), Matacil and Orthene were the materials used. The total area treated was approximately 17 807 ha (44,000 acres). In addition, five provincial parks in Chapleau District were ground sprayed with *Bacillus thuringiensis* (Dipel).

In northwestern Ontario, an increase of some 145 210 ha (358,813 acres) of moderate-to-severe defoliation was mapped in Fort Frances, Atikokan and Thunder Bay districts. The infested area totalled 487 873 ha (1,205,533 acres) in 1979 compared to 342 663 ha (846,720 acres) in 1978. The two major areas of infestation both increased in extent. The larger of the two, which is primarily in the Fort Frances District between Bennett Lake and the town of Fort Frances, increased this year to 306 000 ha (756,126 acres) from 255 566 ha (631,505 acres) in 1978. The second infestation, which extends eastward from Kawnipi Lake in the Atikokan District to Lower Shebandowan Lake in the Thunder Bay District, increased from 87 096 ha (215,215 acres) in 1978 to 181 873 ha (449,407 acres) in 1979. New infestations were detected at Win Lake in the Atikokan District and at Arrow Lake, Melvin Lake and near Granite Lake in the southern part of the Thunder Bay District.

Province-wide egg-mass surveys to determine population changes and to provide infestation forecasts for 1980 are under way. Results of the survey will be summarized in the fall issue of the Survey Bulletin.

Forest Tent Caterpillar, *Malacosoma disstria* Hbn.

Generally infestations have declined in size and intensity throughout the province, although in the Thunder Bay and Atikokan districts heavy defoliation persisted in the same areas that were infested in 1978 (Fig. 2).

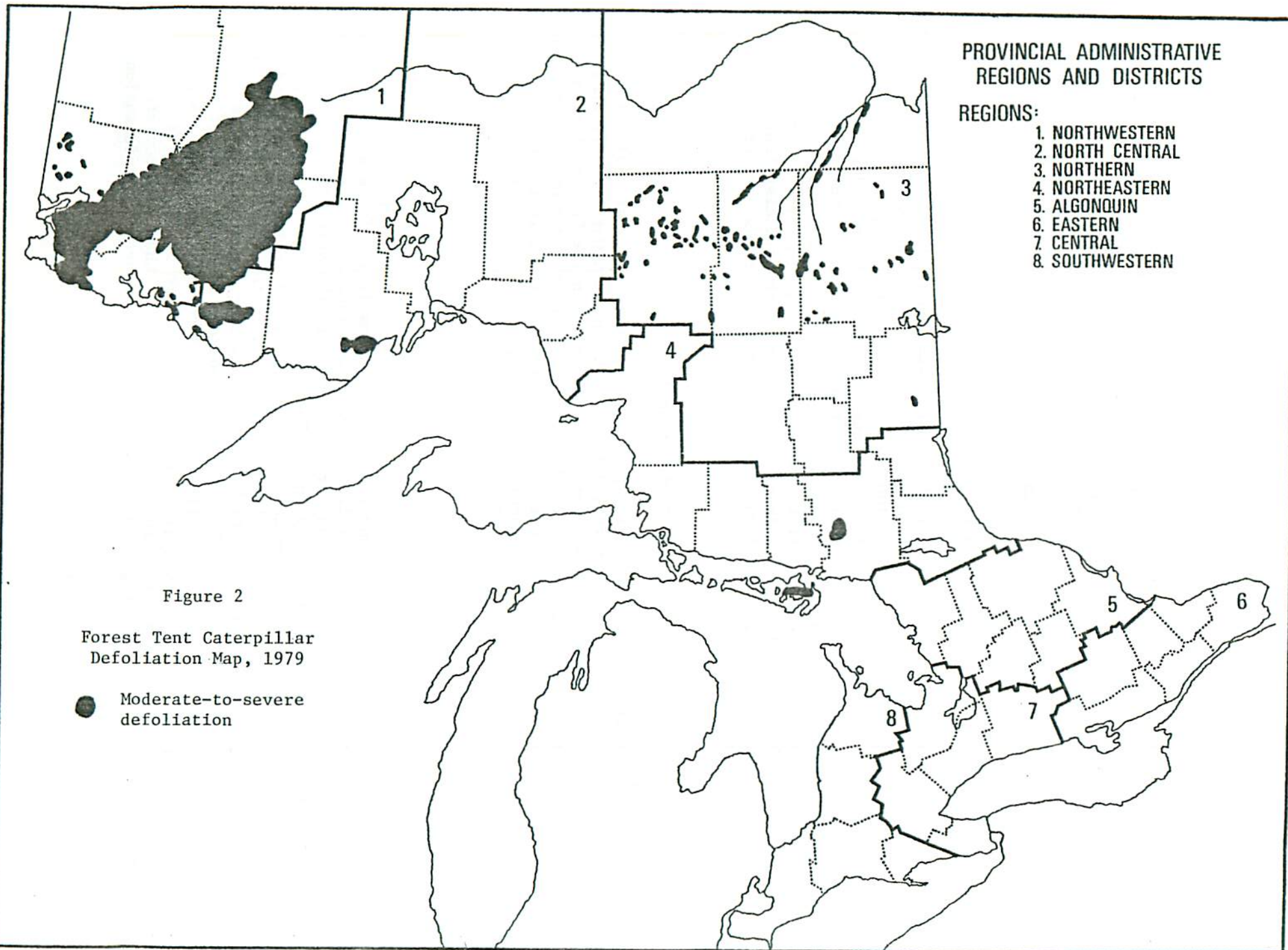
The most significant change in the Northwestern Region occurred in the Red Lake and Kenora districts where the outbreak has virtually disappeared except for a small area in the southeast corner of the Kenora District and a few small scattered pockets elsewhere. In Sioux Lookout District infestation boundaries were also reduced and moderate-to-heavy defoliation was confined mainly to the southern portion. Moderate-to-heavy defoliation was reported through most of the Dryden District and over approximately two-thirds of the Ignace District. Heavy infestation continued in the area west of Thunder Bay in the Thunder Bay District, and in the Atikokan District severe defoliation recurred in three separate pockets of infestation. The large infestation which has persisted for the past few years in the Hearst, Kapuskasing and Cochrane districts of the Northern Region has declined considerably and now only scattered small pockets of moderate and light defoliation remain. In the Kirkland Lake District heavy defoliation was reported in Kap-Kig-Iwan Provincial Park. A marked reduction in populations and area infested was reported through the Northeastern Region. Except for a few colonies observed, the infestation in southern Ontario has collapsed.

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

This pest continues to plague oak stands in several areas in the northern part of the Huronia District in the Central Region. In the Maple District heavy infestations and considerable tree mortality were reported south of Uxbridge. A number of smaller pockets are scattered through the above districts. High populations were reported at scattered locations in the Niagara District. Light populations were observed in the Eastern Region and in the Algonquin Region. Heavy infestations were reported in the Parry Sound and Bracebridge districts and light-to-moderate defoliation occurred in the Bancroft and Pembroke districts. Population levels showed a further decrease in the Northeastern Region.

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

A general increase in populations of this species was reported in southern Ontario. In the Huronia District heavy infestations continued and expanded to include a number of additional pine plantations. In the Lindsay District moderate-to-heavy infestation persisted at several locations and also in the Brockville, Ottawa, Minden and Bancroft districts, in the Eastern and Algonquin regions, respectively. Light populations were recorded at a number of locations elsewhere. Control operations were carried out in several pine plantations by the owners, who used different insecticides and achieved varied results.



Cedar Leafminers, *Argyresthia thuiella* Pack., and
Pulicalvaria thujaella Kft.

A major increase in populations and areas affected occurred in southern Ontario, especially in the Southwestern and Central regions. Severe browning of cedar foliage was evident in a number of districts, and although trees have produced new growth, some branch and top mortality was recorded where repeated defoliation has been a problem. In the Eastern Region conspicuous defoliation occurred in the Ottawa and Brockville districts and in the southern portions of the Minden and Bancroft districts in Algonquin Region.

Birch Leafminer, *Fenusa pusilla* (Lep.)

A general distribution of this insect was reported over all of southern Ontario and severe damage to birch foliage occurred in a number of districts. In some instances mining reached 100% in the Southwestern Region. Virtually all districts in southern Ontario had a number of areas where moderate-to-severe damage was common. In the northern section of the province populations were usually light, although heavy damage was present at several locations in the Kirkland Lake and Timmins districts and moderate damage in parts of the Chapleau, Gogama and Cochrane districts. An extension of the northern distribution was recorded north of Geraldton and once again heavy infestations were present in and around the city of Thunder Bay.

European Pine Sawfly, *Neodiprion sertifer* Geoff.

Generally low and declining populations, which have been evident for several years, more or less prevailed throughout southern Ontario. Probably the most conspicuous defoliation was noted on Scots pine in the Eastern Region on individual trees and hedgerows. In the Algonquin Region new distribution points were recorded when collections were made at three locations in the Pembroke District. A few colonies were recorded at widely separated points in the Northeastern Region.

Aspen Leafroller, *Pseudexentera oregonana* (Wlsh.)

Populations and boundaries of the area infested in 1978 were greatly reduced in 1979 in the Fort Frances District and now just a few widely scattered pockets of moderate-to-heavy defoliation remain. Elsewhere in the Northwestern Region only traces of defoliation were detected. In the North Central Region populations also declined sharply in the Thunder Bay District; however, in the Atikokan District west of Price Lake pockets of heavy defoliation continued. Declining numbers of this leafroller were reported in the Timmins District in the Northern Region, but in the Kirkland Lake District pockets of severe defoliation persisted. In the Eastern Region pockets of heavy infestation were recorded at widely separated locations in three of the six districts. A complex of leafrollers of deciduous hosts, mainly *Choristoneura conflictana* Wlk., *Choristoneura rosaceana* Harr., *Anacampsis niveopulvella* Cham., *Anacampsis innocuella* Zell. and *Xylomyges dolosa* Grt. were also reported at infestation

levels in aspen stands at a number of locations in the Central and Eastern regions.

Jack Pine Sawfly, *Neodiprion pratti paradoxicus* Ross

In the Pembroke District of the Algonquin Region populations increased and caused severe defoliation to jack pine in North Algona and Sebastopol townships. Light-to-moderate populations were reported at several points in the Parry Sound District. Populations were widespread through the Eastern Region; however, except for a few locations in the Lanark and Tweed districts where moderate-to-heavy defoliation was reported, infestations were generally light.

Jack Pine Budworm, *Choristoneura pinus pinus* Free.

Light infestations recurred on Scots pine in Oro and Essa townships in the Huronia District in southern Ontario. A few larvae were also collected elsewhere in the Huronia and Maple districts. Trace-to-light populations were reported at High Lake and on the west side of Tetu Lake in the Kenora District in the Northwestern Region.

Sawyer Beetles, *Monochamus* spp.

In the Northern Region feeding damage caused by adults was again reported to be commonplace, especially in the Chapleau, Gogama, Kapuskasing and Cochrane districts. In the Northwestern Region conspicuous damage has recurred over the past few years and was usually confined to fringes of stands in strip cutting areas in the Sioux Lookout and Ignace districts. Both spruce and pine were reported damaged. The majority of insects causing the damage were identified as the white spotted sawyer, *Monochamus scutellatus* (Say).

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

This species was reported as being present in a number of regions; however, except for a few instances, populations were generally light. The heaviest damage was recorded in the Northern Region where moderate-to-severe defoliation occurred through several districts and in the Bracebridge District of the Algonquin Region. This insect is common, and in most instances foliar damage is confined to regeneration type aspen.

Larch Casebearer, *Coleophora laricella* Hbn.

In southern Ontario this casebearer was relatively common on native and European larch. Conspicuous browning of foliage was reported at various locations in the Simcoe, Wingham and Aylmer districts in the Southwestern Region and light, moderate and heavy infestations were recorded at scattered locations in the Huronia, Maple, Cambridge and Lindsay districts in the Central Region. In the Eastern and Algonquin regions populations were lower, although severe browning recurred at one location in the Bracebridge District. In the Northeastern Region populations increased for the second consecutive year at the sampling point east of Sault Ste. Marie in the Garden River Indian Reserve, and an average of

19.5 larvae per 45.72 cm (18 inch) branch tip was reported. Elsewhere in the province, populations were trace to low.

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

Preliminary reports on this sawfly, a pest of spruce, indicate that populations are widespread through the Northwestern Region and heavy defoliation, in fact, has occurred at several locations, namely, in the Sioux Lookout, Dryden, Kenora and Fort Frances districts. Heavy defoliation recurred west of Atikokan in the North Central Region but was reported as light elsewhere. It should be noted that feeding is still in progress in many areas and additional information may be forthcoming in the fall Survey Bulletin.

Other Insects of Note

The jack pine tip beetle, *Conophthorus banksianae* McPherson, was observed frequently in jack pine plantations and natural stands throughout a number of districts in the Northern Region. A number of reports were received indicating that populations of the spruce coneworm, *Dioryctria reniculelloides* Mut. & Mun., had increased in 1979. In most instances it was found in conjunction with the spruce budworm.

In the Eastern Region populations of the satin moth, *Stilpnotia salicis* Linn., increased in the Ottawa and Brockville districts and severe defoliation of lombardy and silver poplar was reported at several locations. The aspen casebearer, *Coleophora innotabilis* Brown, a species not commonly collected, occurred in relative abundance in pockets of balsam poplar in the Huronia and Owen Sound districts in southern Ontario.

Populations of the oak leafroller, *Pseudexentera cressoniana* Clem., were usually light and widespread; however, high population levels were reported in the Aylmer, Cambridge and Huronia districts in southern Ontario and in the Fort Frances District, Northwestern Region.

TREE DISEASES

In addition to routine surveys for various tree diseases, several specific studies begun earlier were continued. Information received from one of these revealed that all checks of pine stands made in southern Ontario in 1979 proved negative in the search for the European race of Gremmeniella disease, *Gremmeniella abietina* (Lagerb.) Morelet. Tree diseases reported on thus far in the season are discussed briefly below.

A Needle Rust of Jack Pine, *Coleosporium asterum* (Diet.) Syd.

Reports of this needle rust were received from several regions. In most instances it was found at trace or light damage levels, although in the Thunder Bay District foliar damage ranged up to 30%.

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

This disease was widely distributed through the Northeastern and Northern regions. Infection levels varied between districts and the most conspicuous foliar damage occurred in the Chapleau, Blind River, Espanola and Sudbury districts.

Davisomycella ampla (J.J. Davis) Darker

This needle cast of jack pine was recorded at numerous locations throughout the Thunder Bay and Atikokan districts. Observations were also made in the Geraldton, Terrace Bay, Ignace, Dryden, and Fort Frances districts and heavy infection occurred at two locations in the Cochrane and Kapuskasing districts.

Winter Drying

This condition was apparent again in the Southwestern and Central regions, but with one or two exceptions was less severe over all than in 1978. Very light damage occurred in the Sudbury and North Bay districts in the Northeastern Region. Moderate-to-severe damage was recorded in and just west of the city of Thunder Bay, and in the Northwestern Region this condition was observed at two locations south of Sioux Lookout.

Frost Damage

Only two districts in the Northern Region report damage of any consequence. In the Chapleau District scattered areas of mainly light damage recurred and in the Kapuskasing District one area of severe frost was recorded. In the North Central Region heavy frost damage was reported north of Thunder Bay. Both balsam fir and white spruce were affected.

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

The level of damage by this blight appeared to be approximately the same as it was last year. Reports from the Northern and Northeastern regions indicate that damage was generally confined to roadsides and small patches of regeneration-size aspen.

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