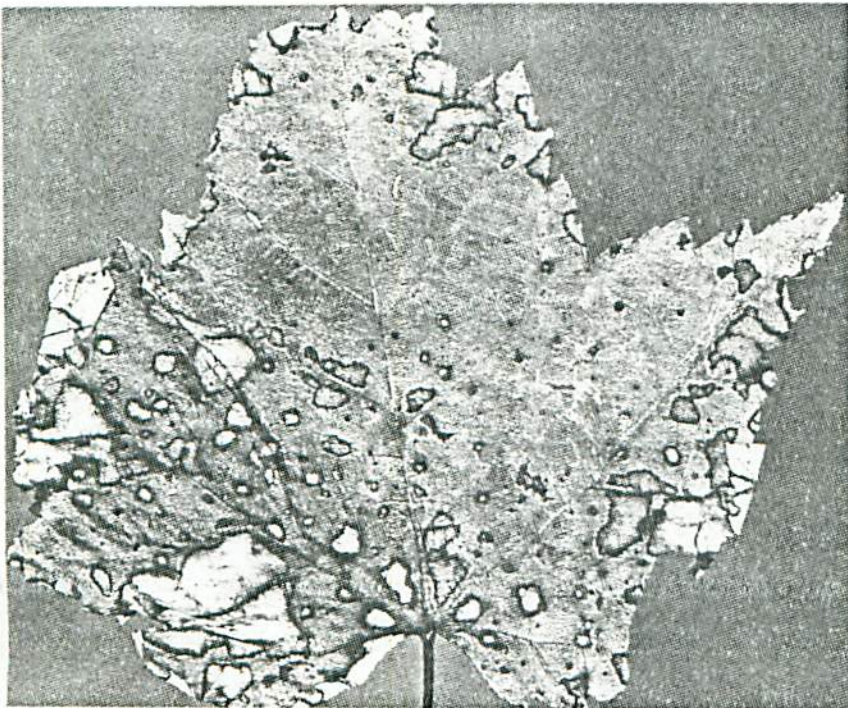
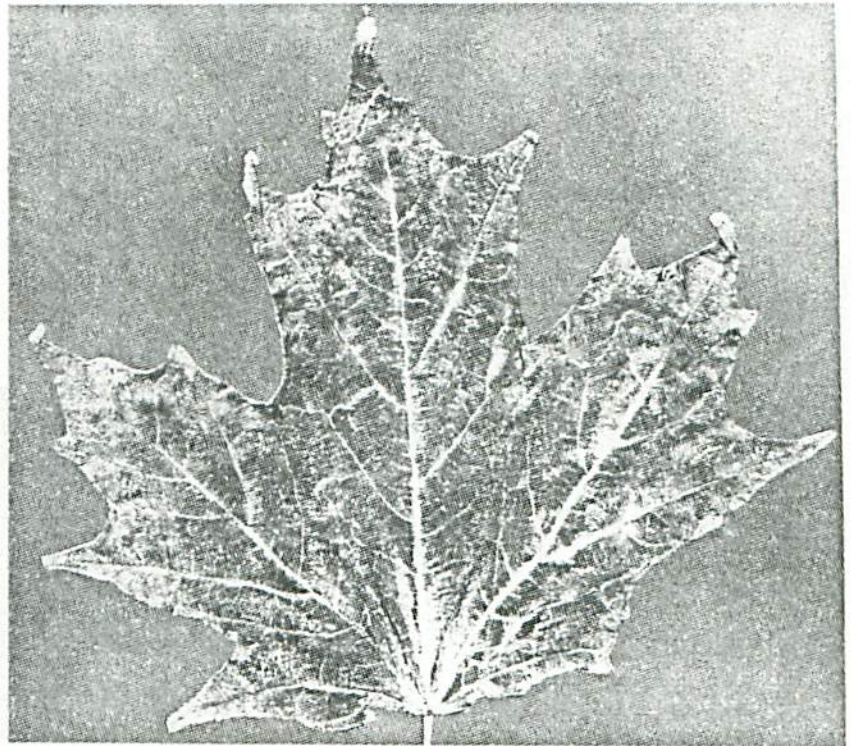


SURVEY BULLETIN

Forest Insect and Disease Conditions in Ontario

Fall 1979

Early stage of maple foliage deterioration caused by Anthracnose disease.



Later stage of foliage deterioration caused by Anthracnose disease.

Forest Insects and Disease Conditions in Ontario

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NOTICE TO SURVEY BULLETIN READERS

We are in the process of updating the Survey Bulletin mailing list. If your address has changed or if you wish to have your name removed from or added to the list, please notify the Information Office, Great Lakes Forest Research Centre, before the end of March, 1980.

This is the third and final bulletin on forest insect and disease conditions in Ontario during the 1979 field season. Collectively, these bulletins describe the more important forest pest problems detected and evaluated in the province from early May to early October. Detailed descriptions and results of forest pest surveys on a regional basis will be forthcoming in the spring of 1980.

FOREST PEST REVIEW

The third annual review of forest pest conditions in Ontario was held in October. The purpose of this review conducted by the Forest Insect and Disease Survey (FIDS) Unit of the Great Lakes Forest Research Centre (GLFRC) is to provide the Ontario Ministry of Natural Resources (OMNR), the forest industry and other interested organizations with information on the current status and, where possible, forecasts of major forest pest problems in Ontario.

As in previous years, the review was in two parts. The northern Ontario meeting, attended by 44 people, was held in Sault Ste. Marie on October 11, 1979. The agenda included information transfer, spruce budworm, forest tent caterpillar and other aspen defoliators, jack pine plantation survey, pest problems of white birch, sawyer beetles, *Rhizina* survey, and spruce coneworm. The southern Ontario review was held in Toronto, on October 15, with 42 persons in attendance. The agenda for this session included spruce budworm, oak leaf shredder, hemlock looper, forest tent caterpillar, maple decline, pine false webworm, Scleroderris, red pine plantation survey, gypsy moth and cedar leaf miners. An added feature at both reviews was an overview of the program of the Forest Pest Management Institute by its Director, Dr. G.W. Green.

The reviews were attended by OMNR staff from districts, regions and headquarters, Canadian Forestry Service staff from Sault Ste. Marie and representatives from the federal Department of Agriculture, the provincial Ministry of the Environment, the University of Toronto and the Temiskaming Environmental Action Committee.

PEST COMMITTEES

Working committees with representatives from OMNR districts and regions,

the OMNR Pest Control Section, and the FIDS Unit of GLFRC will be considering several pest problems in greater detail. The purpose of these committees is to formulate recommendations for management action. The oak leaf shredder committee met at Maple on November 13, 1979 while the spruce budworm committee met in Timmins on November 20 (Northern, Northeastern and Algonquin regions) and in Thunder Bay on November 22 (North Central Region).

Previously formed committees concerned with the maple decline problem in southern Ontario and Scleroderris remained active, meeting several times in recent months. The maple decline committee met in Parry Sound on June 7 and September 20. Updated reports on research and field activities under way were presented and recommendations for future work were made. The Scleroderris Standing Committee met on September 19 at Richmond Hill. It was agreed that a workshop for OMNR field staff would be held at Bracebridge in early May, 1980.

FOREST INSECTS

Spruce Budworm, *Choristoneura fumiferana* (Clem.)

Aerial sketchmapping of current defoliation of the major host species, balsam fir and white spruce, indicates that the spruce budworm outbreak in Ontario expanded considerably in 1979. The results of this year's egg-mass survey confirm the increases noted in July and higher populations and further expansion of infestations are expected in 1980. The situation in terms of the extent of defoliation in 1979 is compared to that of 1978 in the following summary.

Outbreak region in Ontario	Gross area defoliated in millions of hectares (acres)		
	1978	1979	Change
Southern	.024 (.060)	1.002 (2.475)	+ .978 (2.415)
Northeastern	14.79 (36.54)	16.940 (41.859)	+2.15 (5.319)
Northwestern	.343 (.847)	.488 (1.206)	+ .145 (.359)
Total	15.16 (37.45)	18.43 (45.54)	+3.273 (8.093)

Spruce budworm egg-mass surveys were carried out during August and September. In 1979, 585 locations were sampled, egg masses were counted and forecasts for 1980 were prepared. The following account summarizes 1979 egg-mass numbers, compares them with those of 1978, and outlines infestation forecasts for southern, northeastern, north central and northwestern Ontario in 1980. Over all, egg-mass densities increased by some 60% in 1979 over those of 1978.

In southern Ontario, egg-mass counts increased over all by about 35% over counts made in the same locations in 1978. This year's increase is the third since 1976 when budworm populations reached their lowest levels in this part of the province in recent years. It appears reasonably certain that the Algonquin Region is faced with a renewal of the outbreak that started in the

late 1960s and seemed to die out by 1976. The largest increases occurred in Algonquin Park (+95%) and Parry Sound (+79%) districts, with smaller increases of 14% and 19% being recorded in Pembroke and Bracebridge districts. There was little change in Minden District but Tweed experienced an increase of 50%. In fact, only 4 of 16 districts sampled showed decreases although, in general, the number of samples in many of the districts is too few to permit valid comparison between 1978 and 1979. However, the general trend is upward. Egg-mass counts have increased to the point at which moderate or higher levels of defoliation should occur throughout much of the Algonquin Region in 1980.

In northeastern Ontario, there was an increase of some 48% in egg-mass counts on an overall basis. Decreases occurred in only two (Temagami and Gogama) of the 14 districts sampled in the Northeastern and Northern regions. The northern districts of Hearst, Kapuskasing, Cochrane and Timmins experienced the largest increases, although Sault Ste. Marie, Blind River, Wawa and Kirkland Lake were not far behind. Modest increases occurred in Espanola, Sudbury, North Bay and Chapleau. Populations are likely increasing in the Moosonee District which was ground sampled at three locations for the first time this year.

In north central Ontario, egg-mass densities increased over all by 140% in the districts of Geraldton, Nipigon, White River and Terrace Bay. For 1980, it appears that most of the White River District will be heavily infested and infestations in the eastern part of the Terrace Bay and Geraldton districts will expand. Nipigon, most of Geraldton and the western part of Terrace Bay districts should remain relatively free of budworm.

Egg-mass densities increased by some 150% over all in northwestern Ontario. Large increases occurred in the three districts that were intensively sampled, i.e., Thunder Bay (185%), Atikokan (272%) and Fort Frances (109%). For 1980, the infestation in the southwestern part of Thunder Bay District will likely expand on all fronts and defoliation may become evident in the vicinity of Lac des Mille Lacs. The Fort Frances infestation will likely expand to the north, possibly into the Kenora District and further east into the Atikokan District. Budworm populations in the forest have increased between these two outbreaks but defoliation beyond light levels is not likely to occur next year.

As expected, the budworm-associated tree mortality situation continued to worsen in 1979 as shown in the following summary:

Gross area of tree mortality in
millions of hectares (acres)

	1978	1979	Increase
Southern	1.347 (3.33)	1.384 (3.42)	.037 (.09)
Northeastern	4.735 (11.70)	5.949 (14.70)	1.214 (3.00)
Northwestern	.008 (.02)	.020 (.05)	.012 (.03)
Total	6.090 (15.03)	7.353 (18.17)	1.263 (3.12)

Most of the new stands mapped as dead in northeastern Ontario were in the Hearst, Kapuskasing, Chapleau, Gogama, Timmins and Kirkland Lake districts. Over all, average mortality in balsam fir stands was approximately 75%, an increase of 10% over 1978. Generally speaking, white spruce tree mortality in northeastern Ontario seems to be minimal except in the Chapleau District. In 1979, eight locations in which white spruce mortality was present were detected in Chapleau. At one location that was ground checked, 50% of the white spruce were dead but levels of mortality elsewhere ranged from 10 to 30%. Tree mortality has been confirmed in the Bruce Peninsula, Owen Sound District.

Detailed descriptions of current damage, infestation forecasts and spraying operations will appear later in a more comprehensive report on the spruce budworm situation in Ontario in 1979.

Jack Pine Budworm, *Choristoneura pinus pinus* Free.

Egg-mass surveys for this species were conducted in jack pine stands in the western portion of the Kenora District, mainly along the Ontario-Manitoba border. Ten locations were sampled, and eggs were found at five of the locations.

The number of eggs recovered from branch samples indicates that defoliation could range from light to moderate, depending on climatic conditions in the spring of 1980. In 1979 trace-to-light populations were reported along with heavy flowering in this area. Infestations of jack pine budworm occurred in Manitoba along the border and in some instances only a few kilometres from locations in Ontario where populations were present.

Forest Tent Caterpillar, *Malacosoma disstria* Hbn.

Populations and areas infested declined noticeably in 1979 (see summer issue of Survey Bulletin). Egg-band surveys carried out recently indicate that infestations will continue to dissipate in 1980, although heavy defoliation can still be expected in several districts in the northern portion of the province. Widely scattered defoliation ranging from light to severe can be expected in parts of the Fort Frances, Kenora and Dryden districts, a decline in populations is expected in the Sioux Lookout District, and high numbers are forecast for much of the Ignace District.

The infestations in the Thunder Bay and Atikokan districts should continue and expand slightly. In the Hearst, Kapuskasing and Cochrane districts a further breakup of infestations is predicted. In the Kirkland Lake District, infestation will be confined to the Kap-Kig-Iwan Provincial Park area. In the Sudbury District a small area of moderate-to-severe defoliation is expected to recur.

White Pine Weevil, *Pissodes strobi* (Peck)

Across the northern half of the province populations remained essentially the same as in 1978, when leader damage was mainly high with pockets of light to moderate. In some instances, however, the distribution and incidence increased to some degree. In the Blind River District of the Northeastern Region white pine weevil populations remained high. In southern Ontario in the Algonquin Region a number of pine plantations showed considerable damage and light damage was recorded at several locations in the Eastern Region. Elsewhere population levels remained low.

Larch Sawfly, *Pristiphora erichsonii* (Htg.)

Generally low and declining populations were reported through the northern half of the province, although an occasional patch of moderate-to-heavy defoliation was noted. In southern Ontario severe defoliation of native and European larch was again recorded through a good portion of the South-western Region, with frequent spots of light-to-moderate damage. Populations in the Eastern and Algonquin regions were mainly light except for a few pockets of severe defoliation in the Bracebridge and Lindsay districts. In the Central Region populations continued to decline, although heavy defoliation was still present in several plantations.

Redheaded Pine Sawfly, *Neodiprion lecontei* (Fitch)

Populations of this pest continued to increase in the Eastern and Algonquin regions and caused heavy defoliation to pine at numerous locations. Control programs initiated in 1978 by OMNR and private owners were continued in 1979. Very low populations were reported in the western half of the Northeastern Region. Light infestations and scattered colonies were general through the Huronia District in the Central Region. A heavy infestation in Orillia Township was treated with Malathion, and positive results were achieved.

Elm Spanworm, *Ennomos subsignarius* (Hbn.)

This insect, which is usually not common, occurred in infestation proportions in a 50-acre (20 ha) hardwood stand at Maple Ridge east of Thessalon in 1979. The stand which consisted mainly of sugar maple and oak, suffered defoliation ranging from 10% to 75%. Understory hosts such as birch and ironwood were also heavily defoliated.

Hemlock Looper, *Lambdina fiscellaria fiscellaria* Gn.

High populations of this insect reported in 1978 in the Minden and Bancroft districts in the Algonquin Region declined to extremely low levels in 1979. A high percentage of larval parasitism, as yet unidentified, was reported from a mass collection taken around mid-July. Tree mortality is still evident and in one area increased from 1% to 13% near Cold Lake.

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

In addition to the information presented in the summer issue of the Survey Bulletin, this insect was reported as causing moderate-to-severe defoliation in the Atikokan, Geraldton and Terrace Bay districts in the North Central Region and in the Timmins and Kirkland Lake districts in the Northern Region. Control measures were carried out against this pest on windbreaks in the Swastika Tree Nursery and in a plantation north of Hurkett in the Nipigon District. In southern Ontario moderate-to-severe defoliation occurred at several locations in the Pembroke and Bancroft districts and there were light-to-moderate infestations in scattered plantations in the Lanark District. Elsewhere populations ranged from trace to light.

Aspen Leafblotch Miner, *Lithocolletis ontario* Free.

Leaf mining of trembling aspen by this insect was more common in a number

of districts through the Northwestern, North Central and Northern regions in 1979. Increased populations showed foliar damage ranging from moderate to heavy in many areas, especially on regeneration-type stands. A general increase in populations occurred in the Algonquin Park and Pembroke districts.

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

High populations were again reported at many locations in the North Central and Northern regions in 1979. Mountain ash trees in a number of these areas were completely defoliated. In the Southwestern Region populations increased and widely distributed defoliation ranging from light to severe was recorded.

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

Increased populations were reported in the southern portion of the Southwestern Region where black walnut, hickory and butternut trees suffered moderate-to-severe defoliation in the Chatham, Aylmer and Simcoe districts. In some instances trees were completely defoliated. In the Central Region populations were mainly light except at several locations in the Cambridge District where high populations prevailed.

Greenstriped Mapleworm, *Dryocampa rubicunda rubicunda* Fbr.

Populations increased somewhat in the southern portions of the Sault Ste. Marie and Blind River districts, but generally defoliation ranged from trace to light except on occasion where small red maple trees were completely defoliated. For the second consecutive year high populations continued in the south central portion of the Fort Frances District and caused moderate-to-heavy defoliation.

Mourningcloak Butterfly, *Nymphalis antiopa* (L.)

In the Kapuskasing and Cochrane districts heavy defoliation to single trees was commonly recorded. This same condition occurred in the Chapleau and Gogama districts. This represents an increase in populations over 1978. Increased populations were also reported in the Wawa, Sault Ste. Marie and Blind River districts, although no infestations occurred. Small aspen and willow were heavily defoliated through several districts in the Algonquin Region and increased populations were recorded throughout the Southwestern Region.

Other Insects of Note

The jack pine tip beetle *Conophthorus banksianae* McPherson was widely distributed through several districts in the North Central and Northern regions. The red pine cone beetle *C. resinosae* Hopk. again caused heavy damage to mature trees in the northern part of the Temagami District.

Leader damage caused by the eastern pineshoot borer, *Eucosma gloriola* Heinr., was apparent in plantations and natural stands of jack pine and white pine in parts of the Northwestern, North Central, Northern, Northeastern, Algonquin and Southwestern regions.

Additional reports of feeding damage attributed to adult sawyer beetles, *Monoctonus* spp., have been received. The major areas of concern are in the

Sioux Lookout and Ignace districts, Northwestern Region and in the Chapleau, Gogama, Kapuskasing and Cochrane districts, Northern Region. This year feeding damage was reported in a large stand of semimature jack pine at Pakashkan Lake, Thunder Bay District. The stand also shows hail damage, which is thought to have occurred in 1977. Also, in the North Central Region a small pocket of light feeding damage was noted in the Geraldton District.

Localized infestations of the fall webworm, *Hyphantria cunea* Dru., occurred through the Eastern and Southwestern regions. Various hardwood trees and shrubs were subjected to attack. Elsewhere throughout the province populations remained low.

TREE DISEASES

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

This disease was reported at damaging levels through the Southwestern, Central and Eastern regions in 1979. In the Southwestern Region damage to maple foliage was common and in the Niagara District reached a high of 92%. Infection levels remained high in the Central Region, especially in parts of the Cambridge and Maple districts. In the Eastern Region the heaviest infections occurred in the Napanee District and noticeable damage was widely scattered through the remaining districts. Early leaf fall was attributed to this disease in a number of areas. In the Parry Sound District infection levels declined in 1979.

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

Generally these rusts occurred at low infection levels and were reported mainly from the northern regions on both black and white spruce. In the Northeastern Region, however, increased infections were recorded in the Wawa and Sault Ste. Marie districts and were commonly noted in parts of the Sudbury and Espanola districts.

Gall Rust, *Endocronartium harknessii* (J.P. Moore) Y. Hiratsuka

This rust was reported from a number of areas although it appeared to be more prevalent in the Northwestern and North Central regions where, in several districts, it was commonly recorded.

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

This root rot was reported to be present at widely scattered locations in the province. However, infection and mortality associated with it ranged from trace to very light.

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

Additional reports received during the latter part of the season indicate that damage by this blight remains light. There was only one report of high incidence on regeneration aspen in the eastern portion of the Fort Frances District.

Several disease organisms occurring usually in isolated instances but causing very noticeable damage in southern Ontario are the Diplodia Tip Blight, *Diplodia pinea* (Desm.) Kickx, mainly on Austrian pine in the southern portion of the Southwestern Region, a needle cast, *Dothistroma pini* Hulb., on Austrian pine in the Owen Sound, Huronia and Maple districts, Southwestern and Central regions, and a leaf spot, *Marssonina brunnea* (E. & E.), on hybrid poplar in parts of the Eastern Region.

Hail Damage

A severely damaged area of regeneration jack pine attributed to hail storms in late 1978 or early 1979 was reported in the Fark Lake area, Sioux Lookout District. Considerable tree mortality also occurred at Madden Lake in the Red Lake District, in an area damaged by hail in 1978.

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