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SURVEY BULLETIN

GREAT LAKES FOREST RESEARCH CENTRE
DEPARTMENT OF THE ENVIRONMENT - BOX 490 -

CANADIAN FORESTRY SERVICE
SAULT STE. MARIE, ONTARIO

FOREST INSECT AND DISEASE CONDITIONS IN ONTARIO

JULY - MID-AUGUST 1971

(The second in a series of three bulletins issued annually)

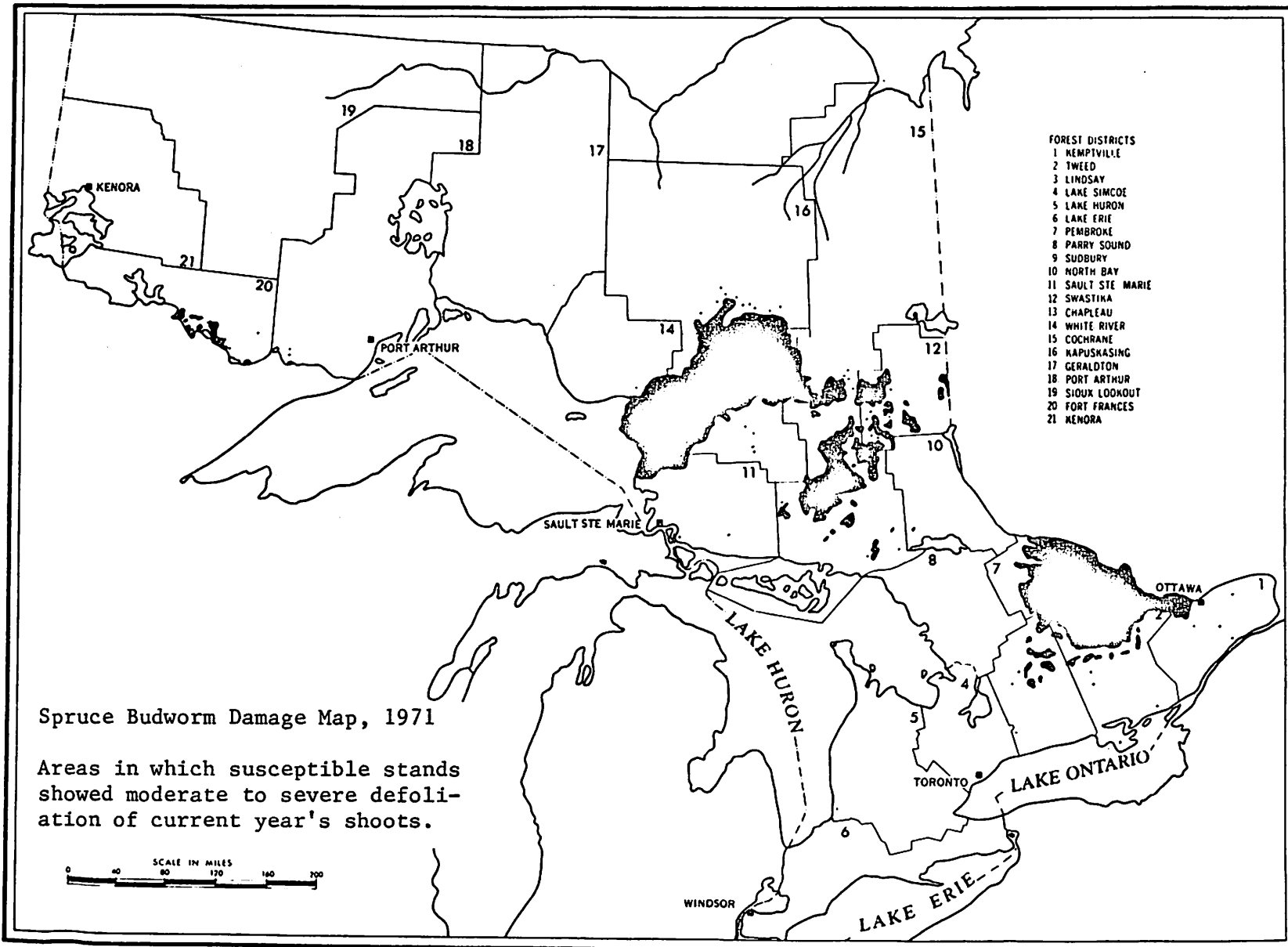
FOREST INSECTS

Spruce Budworm, *Choristoneura fumiferana* (Clem.)

Detectable defoliation of balsam fir and spruce by the spruce budworm was concentrated in three different parts of Ontario, as shown on the accompanying map: southeastern Ontario, including Algonquin Provincial Park and the Ottawa Valley; northeastern Ontario centered around Chapleau; and northwestern Ontario along the International Border. Minor changes in infestation boundaries are expected as the results of continuing work become available.

A comparison of the total areas affected in 1970 and 1971 indicates the magnitude of change that has taken place over the past year in each of the three Ontario segments.

Section of Ontario affected	Approximate area within which moderate to severe defoliation occurred (millions of acres)	
	1970	1971
Southeastern	1.6	4.5
Northeastern	5.2	8.6
Northwestern	-	0.1
	6.8	13.2



A near tripling of the size of the southeastern Ontario infestations over 1970 resulted from a marked surge in population levels in the eastern half of Pembroke and the northern part of Tweed districts, evidently brought on by a massive influx of moths combined with a buildup of localized budworm populations. The intensity of damage declined somewhat in a few of the areas infested longest in the Ottawa Valley.

Most of the infestations in northeastern Ontario enlarged, especially the largest one which swept to the south and west across Lake Superior Provincial Forest, as forecast, and nudged slightly northward. The result was a browning mainly of balsam fir and white spruce over a total area one-half again as large as in 1970.

Along the Ontario-Minnesota border in Quetico Park, infestations were confined to approximately 130,000 acres but these were joined by more extensive infestations south of the border (Minnesota Department of Agriculture).

In the May-June issue of the Survey Bulletin, mortality of balsam fir and white spruce caused by the combined effects of budworm defoliation and other causes was reported in Admaston Township west of Renfrew. This township is actually located in Tweed District and not in the Pembroke District as stated. It was ascertained further during August that the mortality occurred in scattered stands within an area of approximately 100 square miles, mainly in the Bonnechere River Watershed and centered on the town of Renfrew. Some mortality of budworm-damaged trees was also found on ridges in Pakenham Township in the Kemptville District.

In late July, massive flights of moths occurred in, and adjacent to, the described outbreak centres, for example, in the Ottawa area. Also, moths in flight were attracted to the lights of municipalities considerable distances beyond the boundaries of infestation, for example, Toronto.

Jack-pine Budworm, *Choristoneura pinus pinus* (Free.)

Over the past 3 years, this defoliator has caused serious mortality and top-killing of jack pine in central Ontario, in the districts of Pembroke, Parry Sound, Sudbury, North Bay and Sault Ste. Marie. Most outbreaks appeared to be on the wane in 1970, following a limited amount of insecticide spraying in 1969; but infestations have been unusually persistent and in 1971 it became evident that some infestations have shifted and that others have even enlarged. In northwestern Ontario, a new outbreak was found in Kenora District.

In the Pembroke District, jack pine stands north of Round Lake in Richards Township and south of Achray in Guthrie Township showed moderate to severe defoliation. In the vicinity of Lake Traverse, moderate to severe defoliation recurred but it was confined mainly to understory jack and white pine. Pockets of moderate defoliation were found northwest of the Petawawa River and in Wylie, Stratton, Head, Rolph and Fitzgerald townships.

In the Parry Sound District, jack pine stands between Georgian Bay and Highway 69, from Pickerel River in the north to Pointe-au-Baril in the south, have either been killed as the result of previous budworm attack, or were infested in 1971. The infestation crosses Highway 69 near the Magnetawan and Still rivers and in one area extends eastward from the Highway for a distance of 10 miles. North of the Pickerel River, another segment of this outbreak, evidenced by moderate to severe defoliation, extended northward into the south-east corner of the Sudbury District. Farther to the east in the Parry Sound District, near Illfed Lake in Wilson Township where top-kill and limited tree mortality had resulted from previous attack, the infestation largely subsided this year. Two small areas of moderate to severe defoliation were detected and mapped farther to the south in Wilson and McKenzie townships.

In adjoining parts of the Sudbury and North Bay districts southwest of Lake Nipissing, where jack-pine budworm infestations also have occurred over the past few years, feeding damage was much reduced. Defoliation of consequence was confined to 80 square miles of the Sudbury District in 1971 as compared to 140 square miles in 1970 and in the North Bay District to pockets in Bertram and Latchford townships. A heavy infestation in a Scots pine plantation in Gordon Township on Manitoulin Island declined to light intensity. No infestations were found in the Sault Ste. Marie District.

Numbers of jack-pine budworm increased generally across southern Ontario, with scattered small infestations ranging in intensity from light to moderate in the districts of Kemptville, Tweed, Lake Simcoe and Lake Huron.

A new infestation was detected in northwestern Ontario, in the southern parts of the Kenora and Sioux Lookout districts near the Fort Frances border, around Jones, Pekagoning and Islets lakes.

White-pine Weevil, *Pissodes strobi* Peck

Weevil damage was again plentiful in pine plantations in southern Ontario. In the Lake Simcoe District, the incidence of weeviling ranged from 11 to 39% in the townships of Essa, Whitchurch, E. Gwillimbury, Matchedash and Oro; and a Norway spruce plantation in Oro Township showed 57% of the

trees weeviled. In the Lake Huron and Lake Erie districts, damage levels were generally lower than in recent years. In the Kemptville, Tweed and Lindsay districts, heavy infestations persisted in a number of areas, affecting white pine, jack pine, red pine and white spruce. Of these, the highest level of damage was in a white pine plantation in Augusta Township, Kemptville District (83%).

In northern Ontario high damage also was reported at several locations in the Pembroke and Parry Sound districts (up to 70%); appreciable weevil damage was reported on various species of pines and spruces from the Sudbury, North Bay, Swastika, Thunder Bay and Sioux Lookout districts.

Forest Tent Caterpillar, *Malacosoma disstria* Hbn.

For the third consecutive year, moderate to severe defoliation of trembling aspen has occurred in northwestern Ontario, in the general area north and west of the town of Fort Frances. Although a slight decline in numbers was observed in 1971, some extension of infestation boundaries was recorded north and west of the village of Emo where defoliation was particularly severe. Moderate to severe defoliation of aspen was also evident on islands of Rainy Lake east of Fort Frances.

In the Kenora District, a new moderate infestation covering approximately 15 square miles was noted near the upper end of Pipestone Lake and another new infestation causing light defoliation was located along the Eagle River. The discovery of a very light infestation 5 miles west of Onaman Lake in the Geraldton District was the first report of a forest tent caterpillar infestation in this district since 1965.

No other infestations were found in Ontario, and collection records would indicate that over a large part of eastern and southern Ontario numbers were extremely low.

Large Aspen Tortrix, *Choristoneura conflictana* (Wlk.)

Mid-season aerial surveys for the detection of significant insect and disease problems have revealed numerous additional infestations of the large aspen tortrix. Some of these infestations were located in districts mentioned in the May-June Bulletin, namely, Sioux Lookout, Thunder Bay, Geraldton, Cochrane, Chapleau, Swastika and North Bay; but others were located and mapped in the districts of Kenora, Fort Frances, Kapuskasing, Sault Ste. Marie and Pembroke. Detailed descriptions of these infestations seem unnecessary for the purposes of this Bulletin. If required more information on infestations in any particular area may be obtained by contacting the Insect and Disease Survey Unit at the Great Lakes Forest Research Centre.

A Tortricid on Oak, *Croesia semipurpurana* (Kft.)

Reports of additional damage caused by this insect have also been received since the May-June issue of the Survey Bulletin. Moderate to severe defoliation occurred in a stand of red oak covering approximately 85 acres of Durham County Forest in the Lindsay District. Single small pockets of heavy infestation were reported in the Kemptville and Tweed districts. High numbers of moths were observed in and around these and other infested areas.

The Aspen Leaf Tier, *Enargia decolor* Wlk.

For the second consecutive year, moderate to heavy infestations were common on trembling aspen through the North Bay and Swastika districts with defoliation usually confined to the upper portion of tree crowns. The insect was also abundant in the Pembroke District, with damage to mainly understory and roadside aspen ranging from moderate to severe. A heavy infestation was observed in the northwest corner of the Parry Sound District. In the Lake Huron District, light populations were reported at several locations on the Bruce Peninsula. Elsewhere in Ontario populations were reported to be low.

Mountain-ash Sawfly, *Pristiphora geniculata* (Htg.)

A notable population buildup occurred near the leading edge of this insect's expanding range, especially in the Thunder Bay District. Defoliation was generally light from Nipigon to the village of Rossilyn and moderate to heavy at several points on the outskirts of the city of Thunder Bay. This introduced pest was found commonly through the Kapuskasing and Cochrane districts with moderate to severe defoliation of mountain ash noted at many locations. Most mountain ash trees were heavily infested in the Chapleau District; but in the Pembroke and Parry Sound districts where the sawfly has been present for more than 10 years, sawfly populations were light and scattered.

Birch Leaf Miner, *Fenusa pusilla* (Lep.)

Population densities of this leaf miner remained essentially unchanged in the Thunder Bay District and heavy mining recurred at Black Sturgeon Lake, Gull Bay and at points along Highway 800. In the Geraldton District, infestations were moderate to heavy in the western part but light elsewhere. Damage to foliage was light to moderate at many locations in the North Bay and Swastika districts, but severe in the Balsam Creek, Redbridge and North Bay areas.

Yellow-headed Spruce Sawfly, *Pikonema alaskensis* (Roh.)

Moderate to severe defoliation of open-grown roadside and ornamental white spruce was reported in the Kapuskasing and Cochrane districts. Infestations were general through the Kenora and Fort Frances districts but most noticeable on hedgerows along Highway 11 near Devlin and Stratton and on ornamentals in the city of Kenora. Light to moderate damage occurred in Neelon and Foster townships in the Sudbury District, and severe damage, along Highway 17 in the Cutler area.

Moderate to severe defoliation was reported in Lanark and Ramsay townships and in the Limerick Forest of the Kemptville District. In the Tweed District, severe defoliation occurred along Highway 509 in Oso Township and along Crowe Lake Road in Bedford Township.

TREE DISEASES

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

This summer, positive samples of Dutch elm disease were recorded as far north as Lorrain Township south of Cobalt in the North Bay District. They represent a considerable northern extension of the known range of this disease in northeastern Ontario. Diseased trees were also observed at four locations along the White River Road (Highway 546) north of Blind River in the Sault Ste. Marie District.

In southern Ontario, elm mortality was severe again this summer, particularly in the central and northern parts of Simcoe and Ontario counties. Several trees suspected of showing a measure of disease resistance up to 1970 became infected in 1971.

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

Although these rusts were found commonly in several districts, infection levels were usually classed as light. Moderate to heavy levels of infection were recorded on black spruce at numerous points in the Kenora and Fort Frances districts.

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

This rust of jack pine was reported in varying degrees of intensity from several districts of northern Ontario. Infections ranging from light to severe intensity occurred in the Kenora, Fort Frances, Sioux Lookout and

Thunder Bay districts. In the Geraldton District, although infections were generally light to moderate, a particularly high incidence of the disease was recorded in the Nezah area in Vincent Township.

Other Noteworthy Diseases

Scattered light infections of the ink spot of poplar, *Ciborinia whetzellii* (Seaver) Seaver, were reported in the Pembroke, Parry Sound, Lindsay, Sudbury and Chapleau districts. A needle rust of pine, *Coleosporium asterum* (Diet.) Syd., was recorded as causing light damage in the Kapuskasing and Cochrane districts and light to moderate damage in the Geraldton and Parry Sound districts.

Light infection by a needle cast fungus, *Davisomycella ampla* (Davis) Darker, was reported in the Cochrane District, moderate in the Geraldton District, and heavy in the northeast portion of the Pembroke District. The usual host is jack pine. The disease was also found in the Lindsay District at the trace level of infection.

A stem rust of pine, *Peridermium stalactiforme* Arth. & Kern, was reported at the trace to light level in several areas in the Geraldton District and moderate at one location in the Sioux Lookout District.

Rodent Damage

Considerable damage caused by rodent feeding was reported to planted and regeneration jack pine at three locations in the Thunder Bay and Kenora districts. Within damaged areas, tree mortality averaged 40% but ranged as high as 55%. Extensive surveys conducted thus far in southern Ontario for the presence of oak wilt and beech bark disease have indicated no positive returns.

SPECIAL CIRCULAR

A circular is presently being distributed by the Plant Protection Division, Canada Dept. of Agriculture, to Christmas tree growers in Ontario concerning the cereal leaf beetle and the special handling and treatment of Christmas tree shipments originating in southern Ontario and destined for Vermont, Florida or states west of the Mississippi River. To ensure that this circular reaches as many Christmas tree growers and shippers as possible, we have agreed to include it in this issue of the Survey Bulletin. We believe that other persons in Ontario concerned more generally with the growing of trees would also be interested.

All inquiries concerning the circular are to be directed to the Plant Protection Division.

"Production and Marketing Branch
Canada Department of Agriculture
Ottawa, Ontario

File No. 881.2C1
885.1T11

CEREAL LEAF BEETLE - HAZARD ASSOCIATED
WITH CHRISTMAS TREE SHIPMENTS

- "Red, Scotch and Austrian pine Christmas trees have been found to be a hazard in spreading cereal leaf beetle. This beetle is a pest of grains and grasses and overwinters as an adult. Adults can be found in pine needle bundles and under bark scales. This is a pest, which if it were to reach the prairie grain growing areas, could do a great deal of damage. It has a natural spread which follows wind directions to the east.
- "Cereal leaf beetle is found in the United States in most states east of the Mississippi River. The States of Vermont and Florida have not reported the beetle. In Canada it is in Ontario south of the area between Sault Ste. Marie and Mattawa.
- "The United States proposes to regulate red, Scotch and Austrian pine Christmas trees from cereal leaf beetle regulated areas. Shipments of these trees into Eastern States, except Vermont and Florida, will be exempt from treatment, permit and certification requirements.
- "Treatment schedules have been worked out which will be used to certify Christmas trees going to markets west of the Mississippi River. These treatments apply to United States Christmas trees produced in the cereal leaf beetle quarantine area as well as to Canadian trees grown in the Canadian quarantine area (The Province of Ontario south of a line between Sault Ste. Marie and Mattawa.)
- "The treatments proposed are as follows:
1. Methyl bromide. Fumigation of painted or unpainted trees using the schedule established for cereal leaf beetle control in hay and straw:

<u>Av. Commodity Temp. °F</u>	<u>lbs. M/B per 1000 cu. ft.</u>	<u>Minimum oz to be maintained</u>	<u>Exposure period - hrs</u>
0-9	15	92	5
	12.5	79	6
10-19	11.	70	4
20-29	9.5	62	4
30-39	7	41	4
40-49	5	36	4
50-59	3.5	34	3
60 and above	2.5	31	3

Reading of gas concentrations should be made $\frac{1}{2}$ hr. after fumigation has started and hourly thereafter with the last reading 15 minutes before the end of the exposure period.

Fumigation must take place in a gas proof chamber or under tarpaulins and must be supervised by the Plant Protection Division.

2. Lindane, 20 percent emulsion: Dosage is 3 pints per 100 gallons of water. Apply uniformly to a point of runoff to the trunk (tip to butt) and needle accumulations. (A 6- to 7 foot tree will use approximately 2 quarts of total material.)

When lindane is used, the only means by which adequate coverage can be obtained is either by spraying into the tip of the unbaled tree or by dipping the baled tree into an insecticide "bath".

Spraying standing trees, baled trees, or piled trees (baled or unbaled) gives unsatisfactory control. Spraying only into the butt end of the tree will not be sufficient.

Application equipment is limited to those sprayer systems which will adequately "drench" trunk and needle accumulations.

Trees will be marked with an ultraviolet (invisible, except under black-light) detection powder. The powder will either be formulated into the lindane or mixed into the insecticide at time of treatment.

"The United States is endeavoring to arrange for a fumigator to be located at St. Louis, Missouri. All trees destined to the U.S.A. west of the Mississippi River could be routed through this area for fumigation at an approximate cost of \$60.00 per boxcar. This arrangement is not confirmed at the present time but if it becomes available could be used by Canadian shippers.

"As the pest potential of the cereal leaf beetle is as great in Canada as in the United States it will be necessary to fumigate red, Scotch and Austrian pine Christmas trees leaving the quarantine area of Ontario. Any fumigation carried out must be done by a licensed operator using methyl bromide and not a mixture of methyl bromide and chloropicrin. Any trees sprayed with lindane will have to have the ultraviolet detection powder included in the spray.

"Certificates for movement of treated Christmas trees will be available to trees treated under the supervision of the Plant Protection Division."

Original signed by
W.P. Campbell
Acting Director
Plant Protection Division

Great Lakes Forest Research Centre,
Box 490,
Sault Ste. Marie, Ontario.

L. L. McDowall,
Chief Technician,
Insect and Disease Survey Unit.

August 26, 1971.