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PROVINCE OF QUEBEC

FOREST INSECT SURVEY

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INTRODUCTION

No changes were made in the general arrangements which have prevailed since 1955 for the Forest Insect Survey in Quebec, and again in 1958 the Survey was limited to problems of particular interest. The spruce budworm and the Swaine jack-pine sawfly were again the two insects of major importance while the larch sawfly attracted more attention than in former years. Ground surveys of the spruce budworm were conducted with the same intensity as in previous years in the Lower St. Lawrence and Gaspé regions. The aerial survey was reduced to 17 hours of flying compared with 71 in 1957, because of the more uniform conditions brought about by the marked reductions in population level. In previous years a general survey was made of all jack pine areas, but in 1957 the survey for jack pine sawflies was restricted to Settrington Township, Charlevoix County. The other information presented in this Report was obtained from observations connected with the various projects of the Laboratory. Several insect species were recorded this year by the Forest Insect Survey in Quebec for the first time. They were as follows:

Species	Host
<i>Argyresithia laricella</i> Kft.....	European larch
<i>Exartema appendiceum</i> Zell.....	Sugar maple
<i>Proteoteras moffatiana</i> Fern.....	Sugar maple
<i>Argyrotoza semipurpurana</i> Kft.....	Red oak
<i>Acrocercops striginifitella</i> Clem.....	Red oak
<i>Bucculatrix ainshiella</i> Murtf.....	Red oak
<i>Phytagromyza populicola</i> (Hal.).....	Poplars
<i>Eriocampa ovata</i> (Linn.).....	Speckled alder

The co-operation received from the Quebec Forest Industries Association Limited in connection with the spruce budworm egg survey in the Gaspé Peninsula is gratefully acknowledged.

IMPORTANT INSECTS

Spruce Budworm, *Choristoneura fumiferana* (Clem.)—The spruce budworm has been a serious pest of the spruce-fir forests of Quebec since the first signs of an infestation were reported in Abitibi-Ouest County in 1939. The outbreak has progressed eastward each year and all regions have suffered severe damage from the Ontario border to the Gaspé Peninsula where the insect has been most active in recent years. Extensive aerial spraying started in the Lower St. Lawrence and Gaspé regions in 1954 and, since then, millions of acres of balsam fir forest have been sprayed with most satisfactory results. Significant population reductions largely attributable to unfavourable weather conditions were recorded during the past 2 years. In 1957, surveys showed reduced abundance almost everywhere except for southeastern Bonaventure and Gaspé-Sud counties where high population levels were expected in 1958. Larval counts

made early in 1958 showed that the population level was slightly lower than expected and later checks showed a further reduction which, combined with spraying, resulted in much lighter damage than in previous years. In effect, only light defoliation was recorded in 1958 compared to large areas of medium and severe defoliation in previous years. The gradual decrease in abundance is well shown by the records of the egg survey made each fall. According to those records, 61 per cent of the localities were classified as severely infested in 1956, 30 per cent in 1957, and none in 1958. Only 9 per cent of the localities sampled in 1958 contained new budworm egg masses and only small numbers were found. It is evident that the insect will not be abundant in 1959 and no spraying is contemplated.

Jack-pine Sawflies, *Neodiprion* spp.—The special survey of jack pine stands was discontinued in 1958 and only occasional observations were made on *Neodiprion swaini* Midd. An increase in the numbers of this insect was noticed in the lower section of the St. Maurice watershed and in the infestation centres in Tremblay and Falardeau townships, Chicoutimi County. In the Clova area conditions were comparable to 1957.

In contrast, a significant decrease in population level was recorded in the moderate infestation of *Neodiprion virginianus* complex in Settrington Township, Charlevoix County, reported in 1957. Larvae collected in 1957 were heavily parasitized by *Diplostichus hamatus* (Ald.) and *Spathimeigenia* sp.

A few specimens of *Neodiprion compar* (Leach) were collected in the same area.

European Spruce Sawfly, *Diprion hercyniae* (Htg.)—A slight increase in the numbers of this insect was noted in 1958 in the Quebec-Three Rivers-Megantic area which has been surveyed each year since 1955. Sawflies were present on 87 per cent of the 377 white spruce trees sampled. This compares closely with data obtained in 1957.

Again in 1958, diseased specimens were collected from the six localities investigated and mortality from the virus disease was about the same as in 1957. Parasitism was generally low, but in addition to *Drino bohémica* Mesn. a few specimens of *Amblymerus verditer* (Nort.) were obtained in 1958.

European Pine Shoot Moth, *Rhyacionia buoliana* (Schiff.)—Observations were restricted to the Quebec City area in 1958. The cold weather during the winter of 1956-57 had much reduced the population level, but the survivors were favoured by mild weather the following winter and appreciable numbers of eggs were laid in 1958. If conditions are favourable during the winter 1958-59, there will be increased numbers of shoot moths in 1959.

Larch Sawfly, *Pristiphora erichsonii* (Htg.)—Tamarack trees were sampled in the Abitibi district, the Eastern Townships, Quebec City and vicinity, and in Laurentide Park. Relatively severe infestations were again recorded in western Quebec, where trees are in a very weakened condition from previous attacks. The larch sawfly is increasing in abundance around Quebec City and reports were received of severe infestations in the Rimouski, Lake St. John, and Clova areas.

Larch Casebearer, *Coleophora laricella* (Hbn.)—Surveys for this insect were made in the same areas as for the larch sawfly. The insect was found as far north as Mont Laurier, Labelle County, and was common in all other areas sampled except in Laurentide Park. Only light infestations were recorded.

Eastern Hemlock Looper, *Lambdina fiscellaria fiscellaria* (Guen.)—Only small numbers of hemlock looper larvae were observed near the Vachon and May

Islands rivers on the North Shore of the St. Lawrence River in 1958. A few foliage samples taken from balsam fir in the Grande Vallée River watershed, in Gaspé-Nord County, where an outbreak of this insect occurred 10 years ago, showed that larvae were a little more common than usual.

Fall Cankerworm, *Alsophila pometaria* (Harr.)—Light to moderate defoliation was caused by several species of loopers in a small stand of red and sugar maples near St. Valier, Bellechasse County, in 1957. Over 80 per cent of the larvae were fall cankerworms but at least four other geometrids were also responsible for the damage. The four other species already identified are as follows: *Itame pustularia* Gn., *Erannis tiliaria* (Harr.), *Protoboarmia porcelaria* Gn., and *Ennomos subsignarius* Hbn.

Fall cankerworm adults were also collected in the fall of 1958 on red oaks at Ste. Foy and Cap Rouge, near Quebec City.

A Twig Borer on Maple, *Exartema appendiceum* Zell.—This twig borer was reported causing damage in a sugar maple woodlot at Ste. Foy, Quebec in the spring of 1958. Observations made during the summer revealed that the insect was present in other areas near Quebec City. Rearings showed that another insect, identified as *Proteoteras moffatiana* Fern., was associated with the above species and partly responsible for the damage.

Poplar Sawfly, *Trichocampus viminalis* (Fall.)—The poplar sawfly was quite abundant on ornamental Lombardy poplars in Quebec City in 1956, and it was later found on balsam poplar and cottonwood as well. However, numbers declined in 1957 due to a virus disease. Observations in 1958 showed that the population level remains low and that the virus disease was still present.

Satin Moth, *Stilpnotia salicis* (L.)—The occurrence of the satin moth was reported on ornamental poplars in the cities of Quebec and Ste. Foy during the summer 1958. Only small numbers were found and light defoliation recorded.

Poplar Leaf Miner, *Phytomyza populicola* (Hal.)—This dipterous species of European origin was first found in Quebec City in August 1956 on Lombardy poplars. The insect has since been reported as quite abundant and has been found on *Populus tremuloides*, *P. grandidentata*, and *P. deltoides* in several cities in Quebec, namely, Hull, Montreal, Sherbrooke, Three Rivers, and Ste. Anne des Monts (Gaspé-Nord County).

A Leaf Roller on Oak, *Argyrotoza semipurpurana* Kft.—In 1957, medium to severe defoliation was noted early in the summer in a mature red oak stand on the campus of Laval University. Damage was also observed in a similar stand and on younger trees near Cap Rouge. In addition to this species another of secondary importance was recorded and identified as *Acrocercops strigini-fitella* Clem. Later in the same season the stands were damaged by the oak skeletonizer, *Bucculatrix ainshiella* Murtf. All three species were less abundant in 1958.

A European Alder Sawfly, *Eriocampa ovata* (Linn.)—A small infestation of this alder sawfly was found on alder at St. Augustin, Portneuf County, in the fall 1957. The insect was quite abundant in the same locality again in 1958. It was also collected in small numbers from the same tree species in nearby localities.

Larch Shoot Moth, *Argyresthia laricella* Kft.—Special surveys were made during the spring to ascertain whether this species occurred on European larch in Quebec. A few cities were visited and the insect was found at Ste. Anne de Bellevue, Berthierville, and in Lachute.

