PROVINCE OF QUEBEC

FOREST INSECT SURVEY

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INTRODUCTION

The general conduct of forest insect surveys in Quebec again followed the pattern adopted in 1955. Favourable early spring weather started insect activity much earlier than usual but a period of cold, dry weather soon brought seasonal insect development back to normal.

The spruce budworm continued to decline in 1959 and serious defoliation was recorded only in very restricted areas, particularly in the Lower St. Lawrence and Gaspé regions. The special aerial and ground surveys conducted for several years in connection with the aerial spray program, were discontinued. The Swaine jack-pine sawfly increased in abundance, particularly in parts of the St. Maurice watershed where special surveys were conducted this year. No appreciable change has been reported in other infestation areas. The larch sawfly is becoming abundant over a wider area each year; in 1959 outbreak conditions extended from the Abitibi district eastward through the central regions of Quebec. Numbers of the European spruce sawfly also increased in 1959 and it is now fairly common in several regions. Other forest insects mentioned in this report, are associated with projects of the Laboratory or are of particular interest to the Survey. The information received from various project leaders and the collections submitted by cooperators are gratefully acknowledged.

IMPORTANT INSECTS

Spruce Budworm, *Choristoneura fumiferana* (Clem.)—Outbreaks of the spruce budworm, which have been declining since 1957, showed further decreases in 1959. Although this budworm is still prevalent, infestations have now reached the stage where larvae can only be found in significant numbers in a few restricted areas.

In the eastern regions, particularly the Lower St. Lawrence and Gaspé, where the Quebec Laboratory has been involved with aerial spray operations, the outbreak is now terminated. The very low population levels anticipated in 1959, on the basis of the 1958 egg survey, made further spraying unnecessary. Observations made in these regions during the period of larval activity indicated that the insect was relatively rare through most of the 13,000 square miles of territory. Light traps in the Matane watershed, an area seriously affected in previous years, caught no budworms for the second year. Extensive surveys usually conducted each fall were, therefore, discontinued.

Forest operators were requested to report any evidence of increased abundance. The Provincial Bureau of Entomology reported one such area of approximately 10 square miles at the headwaters of the Kedgwick and Mistigougèche rivers. Ground checks revealed patches of light to medium defoliation for the current and preceding year. Egg counts made at 20 locations included one high count while the rest were low or negative. Even though budworm numbers are relatively low, this area may possibly become the focal point of a renewed outbreak. Spraying is being contemplated, but no decision will be reached until larval counts can be made next spring.

With this one exception, the condition of the forest has improved considerably during the last two years. Trees which were not seriously affected are recovering and some of the dead timber has been salvaged.

Swaine Jack-pine Sawfly, *Neodiprion swainei* Midd.—No important variation in the outbreaks of the Swaine sawfly was recorded except in the central sector of Quebec. The most important change was in the St. Maurice River watershed where substantial increases were evident, particularly in Livernois, Picard, and Dupuis townships, better known as the Chapeau de Paille–Lake Gagnon area. In the Chienne Depot area the outbreak decreased considerably in 1957 and no appreciable change has been recorded during the past two years. Sampling was done in 39 areas well distributed thoughout the watershed, to determine the relative abundance of the insect on the basis of the average number of egg clusters per tree. Five trees located 200 feet apart along a line extending 1,000 feet from the road were cut at each sampling point and the clusters counted. The data summarized below indicate the relative abundance of eggs in the main area of infestation.

Area	No. of localities	Percentage of trees affected	No. colonies per tree	
			Average	Range
Chienne Depot	3	53	0.7	0–3
Chapeau de Paille	4	40	1.7	0–12
Lake Gagnon	5	89	7.0	0–26
Flamand Road	2	80	1.4	0–4
Oriskany Club	5	72	1.8	0–5

Increased numbers were also recorded around Lake Brochet in the Shipshaw River watershed, Lake St. John district. At Lake Docteur, where the sawfly was abundant a few years ago, a decrease was observed.

Larch Sawfly, *Pristiphora erichsonii* (Htg.)—Significant changes occurred in 1959. In 1958, severe infestations were reported only in the Abitibi district but this year marked increases were apparent in southern and central Quebec and sawflies were fairly common throughout the western half of the Province. Defoliation was so evident that reports were received from many sources. Sequential sampling* was conducted in several localities of western and central Quebec in 1959. The estimates are based on the cumulative number of new shoots used for oviposition. The results are presented in the following synopsis:

Locality	County	Infestation class 1959
Amos	Abitibi-Est	Severe
Senneterre	Abitibi-Est	Severe
Louvicourt	Abitibi-Est	Severe
LaVerendrye Park	Pontiac	Moderate
Grand Remous	Gatineau	Severe
Mont Laurier	Labelle	Moderate
Lacoste Station	Labelle	Light
Quebec	Quebec	Light
Laurentide Park	Montmorency	Light

*Ives, W. G. H. and R. M. Prentice. 1958. A sequential sampling technique for surveys of the larch sawfly. Can. Ent. 90: 331-338.

In the localities sampled in Abitibi-Est County, trees appeared in very poor condition and produced very little foliage and new shoots, which may account for the reduced number of sound cocoons in the soil. Parasites were scarce; two species were recovered from the rearings, *Mesoleius tenthredinis* Morley and *Bessa harveyi* (Tns.), the former being the more numerous.

European Spruce Sawfly, *Diprion hercyniae* (Htg.)—According to reports, this insect was more common than usual in 1959. Intensive sampling in the Québec–Three Rivers–Mégantic area indicated a further small increase in abundance. Larvae were found on over 95 per cent of the 20-year-old spruce trees sampled. Annual comparisons are best made on the basis of the number of larvae in beating samples taken when the first generation larvae are in the third and fourth instars. The last three years' results are presented in the following table.

Locality	Average larval population per tree		
	1957	1958	1959
Mégantic	9.3	10.6	—
Cap de la Madeleine	10.7	13.9	16.1
St-Féréol	10.7	15.8	32.7
St-Nicolas	12.5	13.2	—
St-Sylvestre	13.8	11.4	15.6
Ste-Agathe	13.2	17.4	23.1

Sampling during the second generation always indicates a decrease attributable in large part to a virus disease. This year's decrease was greater than usual and mortality was higher both in the laboratory and in the field.

Parasitism was again extremely low and *Bessa harveyi* (Tns.) was recorded for the first time.

European Pine Shoot Moth, *Rhyacionia buoliana* (Schiff.)—Observations were continued in 1959 on mugho pines in the Quebec City area. The condition of infested trees has improved considerably since 1957 when insect numbers were greatly reduced by unfavourable winter conditions. Deep snow last winter protected the larvae but parasitism increased sufficiently to keep the population level low. A collection received from a nursery at Sayabec, Matapedia County, represents the most northern record for the Province.

Red-headed Jack-pine Sawfly, *Neodiprion virginianus* complex—Numbers of this insect increased noticeably in the main area of infestation previously reported in Settrington Township, Charlevoix County. The insect was also more common in jack pine stands in surrounding areas but only light defoliation was recorded. Parasitism was generally high again this year and several species of parasites were recovered from the rearings.

Larch Casebearer, *Coleophora laricella* (Hbn.)—For a number of years special sampling* has been conducted for this insect. The plains of the St. Lawrence River and the Eastern Townships appear to be the only regions

*Webb, F. E. 1957. Sampling techniques for the overwintering stage of the larch casebearer.—Bi-Mon. Prog. Report Vol. 13 (4).

where the casebearer is important. The infestation was classed as light throughout these areas in 1959. Several species of parasites were recovered including two imported species, *Agathis pumila* (Ratz.) and *Chrysocharis laricinellae* (Ratz.), which are important control factors.

Eastern Hemlock Looper, *Lambdina fiscellaria fiscellaria* (Guen.)—No appreciable changes have been reported in the abundance of this destructive insect in the two areas where outbreaks have occurred during the past decade. According to information received from the Vachon and May Islands watersheds, the 1956 outbreak area, there was no evidence of defoliation in 1959. Sampling in Gaspé-Nord County, where an infestation occurred around 1950, showed that the population level was very low.

Maple Leaf Cutter, *Paraclemensia acerifoliella* (Fitch)—In 1959, several samples were received from Brome and Stanstead counties in the Eastern Townships where some defoliation has been recorded since 1957. Some sugar maple stands have been severely defoliated for the last three years.

Poplar Sawfly, *Trichiocampus viminalis* (Fall.)—In 1959, the numbers of this sawfly were again very low on poplars in the Quebec City area. A virus disease has been responsible for the destruction of most of the larvae in recent years. Diseased larvae were collected again in 1959.

Poplar Leaf Miner, *Phytagromyza populicola* (Hal.)—In recent years, special studies have been conducted within a 30-mile radius of Quebec City and the number of localities where this introduced insect is present increased considerably in 1959. Occasional collections of the insect were also made outside the main area of investigation, namely, at St. Pascal, Kamouraska County; Baie St. Paul, Charlevoix County; and Three-Rivers. Laboratory rearings showed that parasitism was important in most localities and that it was particularly high at Three-Rivers.

A European Alder Sawfly, *Eriocampa ovata* (Linn.)—A slight decrease in the population level of this insect on *Alnus incana* (L.) was noted in 1959 at St. Augustin, Portneuf County. Defoliation in this small infestation was approximately 30 per cent. No parasites were recovered from the rearings.

Satin Moth, *Stilpnotia salicis* (L.)—In 1959 larvae were occasionally found on poplars in Quebec and Ste. Foy. Satin moths were also reported as quite abundant on poplars in northeastern Montreal.

Nursery Pine Sawfly, *Gilpinia frutetorum* (F.)—This species was found in a Scots pine plantation near Shawinigan, St. Maurice County, in the fall of 1959. Although the insect was quite common, no defoliation was apparent. This is the first Survey record of this insect occurring in Quebec.

Willow Shoot Sawfly, *Janus abbreviatus* (Say)—Shoots bored by this sawfly were very common on eastern cottonwood near Berthierville. However, the insect was not found in the numerous localities where this tree species was sampled in 1959.

White grubs, *Phyllophaga* spp.—Serious damage to white pine transplants was reported from near the Normandin nursery in Roberval County. Roots of the specimens submitted showed typical white grub injury. This is a common problem in newly established nurseries.

OTHER NOTEWORTHY INSECTS

Insect	Hosts	Locality	Remarks
Altica carinata Germ.	Elm	Sutton, Brome-Missisquoi Co.	Few trees severely infested.
Alsophila pometaria (Harr.)	Maple, red and sugar	St. Vallier, Bellechasse Co.	Marked decrease in abundance from previous years of this and associated loopers.
Anchylopera burgessiana Zell.	Oak, red	Ste. Foy, Quebec-Montmorency Co.	First Survey record.
Erannis tiliaria (Harr.)	Oak, red	Ste. Foy and Cap Rouge, Quebec-Montmorency Co.	Common on this and other deciduous trees.
Neodiprion pratti banksianae Roh.	Pine, jack	Chateau d'Eau, Quebec-Montmorency Co.	New locality record at southern limit of jack pine range.
Operophtera bruceata (Hlst.)	Oak, red	Ste. Foy, Quebec-Montmorency Co.	Rare; associated with loopers in mixed hardwood woodlots.
Phenacaspis pinifoliae (Fitch)	Spruce, blue	Quebec	Fairly common on ornamental spruce plantings.
Sparganothis sulfureana Clem.	Pine, Scots and red	Low, Gatineau Co.	Moderate infestation in a plantation of 100,000 pines.