

Preliminary report on the Spruce budworm situation in the Lower  
St. Lawrence and Gaspé, September, 1956.

By Lionel Daviault



The 1956 season was in general cold and rainy and as a consequence, budworm development was greatly retarded. However, about the middle of June a spell of warm weather permitted the larvae to catch up in their development and spraying operations were carried out at approximately the same period as in previous years. The weather remained favourable until completion of the treatment, but deteriorated afterwards and insect development was again retarded. By the end of August a good percentage of pupae were still unemerged and at the higher elevations eggs were deposited much later than in any previous year. At the time this report is being written, a certain percentage of eggs, in a few stands at high altitudes, have not yet hatched, and it is impossible to predict what will happen to these.

Notwithstanding these apparently adverse climatic conditions, budworm populations remained exceedingly high in most areas in Gaspé, and serious defoliation resulted. The heavy production of cones in 1956 undoubtedly contributed to a higher survival of young larvae by providing an abundance of staminate flowers for food. It is a well established fact that young larvae having access to such a diet are exceptionally vigorous and resistant to natural factors of mortality.

As mentioned earlier, the spray operations were carried out under very favourable conditions. Ground surveys conducted at strategic points throughout the season showed that the treatment was, in general,

quite effective as indicated by the high percentage of larvae killed and the high percentage of foliage saved.

Again this year, surveys were made to obtain information as to location and status of the infestation throughout Gaspe and the Lower St. Lawrence in the same manner as in 1955 by:

- (1) A detailed aerial reconnaissance at the completion of the larval feeding period;
- (2) A general ground inspection of infested stands throughout the territory under budworm attack;
- (3) A defoliation and egg-mass survey conducted at the end of the summer.

Unfortunately, at this time, the egg-mass survey is not complete and all data have not yet been analysed. However, enough is known to give a general idea of the situation and to advance some tentative conclusions, but when all facts are known, a more detailed final report will be prepared. The greatest hazard areas (as far as can be determined at the present time) are shown on the accompanying map. These areas have been under budworm attack for 2 to 3 years and further defoliation would greatly weaken the trees. It remains to be determined whether or not enough eggs have been deposited to provide a high population next year. First reports on the egg-mass survey do not give much hope of a respite in the activity of the insect in all areas surveyed to date, except in those which have been recently treated. The heavily infested areas shown on the map have been measured with a planimeter and results are given in the first column of Table 1. Reference to this table will show that the area severely damaged totals 2,705 square miles, approximately one third larger than the territory severely damaged this year. It should not be necessary,

however, to treat this entire area. In keeping with past procedure, the treatment should be applied only to stands of high commercial value. Areas supporting timber of low value, or containing high percentage of hardwoods should be eliminated from the total. When these are subtracted from the total, there remains a territory of approximately 1,843 square miles, as indicated in the last column of Table 1. All figures given in the table are preliminary ones and should be revised and checked by companies' personnel who are better acquainted with conditions existing in their territories. It is possible that burns, areas recently cut-over or that will be exploited in the immediate future are included in the tentative areas to be sprayed. It is only with the active cooperation of the companies concerned that they can be deleted from the territories to be sprayed.

Included in the total territory susceptible to receive treatment in 1957, is a relatively small proportion of the areas treated in 1954. This does not mean that they were missed or that the control operation was not well executed, on the contrary, surveys showed that the results were quite satisfactory as evidenced by the high degree of recovery of the trees, but for one reason or another the budworm population is again gradually building up to damaging level.

The fact that certain areas previously treated are now re-infested to the point where further treatment is necessary is quite distressing and may throw some doubt on the usefulness of chemical control to minimize budworm damage. This brings about the necessity of reconsidering the problem in the light of this new development. It does not come within the scope of this report to discuss the whole question in detail, but a short reference to the subject is not out of order.

First of all, it should be pointed out that at the time the first treatment against the spruce budworm was recommended, (fall 1953) the consensus of opinion was that the insect then presented a serious menace to the extensive softwood stands in Gaspé, and if nothing was done to reduce the population many valuable stands would be endangered. It was considered that spraying the most infested areas would at least give the trees a respite and give the natural factors of control a chance to become effective. There was no assurance that the application of the treatment would be final and that no further treatment would eventually be necessary - but in view of the seriousness of the situation, it was difficult not to do anything and let vast forest lands be destroyed without at least attempting to prevent such extensive destruction, however experimental and incomplete the effort might be. This last attitude was taken and results of the large scale operations carried out in Gaspé have proven that temporary control of spruce budworm is possible at a reasonable cost per acre. Unfortunately the outbreak has persisted much longer than anticipated for reasons not yet explained. It is suspected that the present stands of softwoods with their heavy mature balsam fir content are responsible for this extensive and persistent outbreak in Gaspé. Such forests are ideal ground for budworm multiplication. In these forests, it appears as if all the factors favourable to the spread of the insect are able to overcome the main adverse factors. There is no reason to believe that in Gaspé the spraying operations are responsible for the prolongation of the outbreak, for the present at least. No one can tell when the outbreak will disappear, but there is little hope that this will happen in the immediate future since there is no sign of an increase in the effectiveness of the natural factors of control.

As can be seen, the situation is far from being encouraging and the problem now is to decide whether or not treatment should be continued. It is probable that without any treatment all the mature balsam fir stands will be destroyed. On the other hand, if these stands are sprayed there is a strong possibility that the operation will have to be repeated once or even several times at intervals of two or three years, until the stands are ready for harvest or until the outbreak disappears through natural causes. Economics should dictate whether or not further treatment is warranted. Such decisions are better arrived at by forest economists and owners.

Quebec, September 30, 1956.

Table 1

Distribution of Spruce Budworm Infestations - 1956  
(in square miles)

Watersheds or Regions	Total	Areas to be subtracted				Extent of Areas to be Treated *
		Old Cut	Colon- ization	Hard- wood	Young Stands	
Gaspe South	600	90	22	-	-	488
Port Daniel-Newport	178	53	30	-	-	95
Head Gr.Pabos R.	26	-	-	-	-	26
Bonaventure-New Carlisle	36	26	10	-	-	0
Maria-Carleton	130	15	79	-	-	36
Nouvelle	428	-	-	-	23	405
La Verendrye	130	-	-	-	-	130
North Causapsca R.	49	-	-	-	-	49
North St.Anne R.	12	-	-	-	-	12
Head Little Cap Chat R.	6	-	-	-	-	6
Petite St.Anne R.	14	-	14	-	-	0
Cap Chat and Gr. Capucin R.	89	-	89	-	-	0
Little Matane R.	17	-	-	-	-	17
Gagnon Cr.	4	-	4	-	-	0
Bernier Lake	4	-	4	-	-	0
Matane R.	2	-	2	-	-	0
Matapedia Seignior	29	15	14	-	-	0
North Humqui L.	35	35	-	-	-	0
Mistigougeche & Rimouski	150	-	-	-	-	150
Rioux Seignior	117	5	-	-	-	112
South Mitis L.	76	-	-	5	49	22

\* Some of these areas will likely be modified when all data are available.

Milnikek	71	-	-	-	-	71
Patapedia	237	13	20	2	-	202
Restigouche & Mann	235	-	85	150	-	0
Nouvelle R.	14	-	-	-	-	14
Marsoui-A Claude R.	16	8	-	-	-	8
Grand Total	2,705	260	373	157	72	1,843

Table 2

Distribution of Areas to be Treated in 1957  
by Regions and Limit Holders

Watersheds or Regions	Limit Holders	Areas in square miles *
Gaspé South	Consolidated Paper	146 + 10 = 156
	Gaspesia Sulphite	58
	Gr. Riviere Co.	102
	Howard Smith	99 89
	Gr. Pabos Seigniory	14
	Gr. Riviere Seigniory	12
	Colonization	57
		488
Port Daniel-Newport	Gaspesia Sulphite	65
	Colonization	30
		95
Gr. Pabos Watershed	Gaspesia Sulphite	26
		26
Maria-Carleton	N.B.I.P.	1
	Ed. Lacroix	7
	Seigniory Timberland	13
	Colonization	15
		36
Nouvelle	N.B.I.P.	191
	Price Bros. Co.	1
	Ed. Lacroix	82
	Paradis & Frères	34
	Seigniory Timberland	14
	Cascapedia Mfg. & Trading	28
	Vacant Crown Land	55
		405
La Verendrye	N.B.I.P.	97
	Restigouche Co.	24
	Ed. Lacroix	3
	Colonization	6
		130
North Causapschal R.	N.B.I.P.	24
	Price Bros. Co.	25
		49
North St. Anne R.	Gaspesia Park	12
		12
Head Little Cap Chat	J. Richardson Co.	6
		6
Little Matane R.	Price Bros. Co.	2
	Canton Reserve	15
		17
Rimouski-Mistigougeche R.	Price Bros. Co.	120
	Colonization	25
	Fraser Companies	5
		150

\* Some of these areas will likely be modified when all data are available.



Rioux Seigniory	Price Bros. Co.	101	
	Colonization	11	
		<hr/>	112
South Mitis L.	N.B.I.P.	4	
	Price Bros. Co.	18	
		<hr/>	22
Milnikek	N.B.I.P.	6	
	Restigouche Co.	3	
	Colonization	31	
	Vacant Crown Land	31	
		<hr/>	71
Patapedia R.	N.B.I.P.	98	
	Restigouche Co.	87	
	Paradis & Frères	4	
	Colonization	8	
	Vacant Crown Land	5	
		<hr/>	202
Nouvelle R.	Colonization	14	
		<hr/>	14
Marsoui-A Claude R.	Marsoui Lumber	1	
	Mont Louis Seigniory	7	
		<hr/>	8
		<hr/>	
	Grand Total		1,843
		<hr/>	

Table 3 a

Distribution of Areas to be Treated in 1957  
by Limit Holders

Limit Holders	Watersheds or Regions	Areas in square miles *	
Consolidated Paper	Gaspe South	146	
			146
Gaspesia Sulphite	Gaspe South	58	
	Port Daniel-Newport	65	
	Gr. Pabos	26	
			149
N.B.I.P.	Maria - Carleton	1	
	Nouvelle	191	
	La Verendrye	97	
	Causapsca R.	24	
	South of Mitis L.	4	
	Milnikek	6	
	Patapedia	98	
			421
Price Brothers Co.	Nouvelle	1	
	Causapsca	25	} 18
	Little Matane	2	
	Rimouski - Mistigougeche	120	
	Rioux Seigniory	101	
	South of Mitis L.	18	
			267
Restigouche Co.	La Verendrye	24	
	Milnikek	3	
	Patapedia	87	
			114
Gr. Riviere Co.	Gaspe South	102	
			102
Howard Smith	Gaspe South	99	
			99
Ed. Lacroix	Maria - Carleton	7	
	Nouvelle	82	
	La Verendrye	3	
			92
Paradis & Fils	Nouvelle	34	
	Patapedia	4	
			38
Seigniory Timberland	Maria - Carleton	13	
	Nouvelle	14	
			27
Cascapedia Mfg. & Trading	Nouvelle	28	
			28
Marsoui Lumber Co.	Marsoui R.	1	
			1
Mont Louis Seigniory	Marsoui - A Claude R.	7	
			7
Gr. Pabos Seigniory	Gaspe South	14	
			14
Gr. Riviere Seigniory	Gaspe South	12	
			12

\* Some of these areas will likely be modified when all data are available

Fraser Companies	Rimouski - Mistigougeche	5	
J. Richardson Co.	Little Cap Chat	6	5
Canton Reserve (Crown)	Little Matane R.	15	6
Colonization	Gaspe South	57	15
	Port Daniel - Newport	30	
	Maria - Carleton	15	
	La Verendrye	6	
	Rimouski - Mistigougeche	25	
	Rioux Seigniory	11	
	Milnikek	31	
	Patapedia	8	
	Nouvelle	14	
Gaspesia Park (Crown)	St. Anne R.	12	197
Vacant Crown Land	Nouvelle	55	12
	Milnikek	31	
	Patapedia	5	
			91
	<b>Grand Total</b>		<b>1,843</b>

Table 3 b

SUMMARY

Limit Holders

Areas in square miles

Consolidated Paper	146 - 132
Gaspesia Sulphite	149
N.B.I.P.	421
Price Brothers Co.	267 - 150+
Restigouche Co.	114
Gr. Riviere Co.	102 - <i>en l'air 60, 000 acres</i>
Howard Smith	99 - 89
Ed. Lacroix	- 92 - 85
Paradis & Fils	38
Seigniory Timberland	- 27 - 13
Cascapedia Mfg. & Trading	28 - 200
Marsoui Lumber Co.	- 1
Mont Louis Seigniory	- 7
Gr. Pabos Seigniory	14
Gr. Riviere Seigniory	12
Fraser Co.	5
J. Richardson Co.	- 6
Canton Reserve (Crown)	15
Colonization	197
Gaspesia Park (Crown)	12
Vacant Crown Land	91
<b>Grand Total</b>	<b>1,843</b>