Larch Sawfly

Pristiphora erichsonii (Hartig)
Hymenoptera: Tenthredinidae

Ives, W. G. H.; Prentice, R. M. 1958. A sequential sampling technique for surveys of the larch sawfly. Canadian Entomologist 90: 331–338.

Objective: To describe a sequential sampling procedure for the eggs of *P. erichsonii* useful for predicting the infestation level and corresponding expected percentage defoliation.

Abstract: Larch sawfly, *Pristiphora erichsonii* (Hartig), is a significant defoliator of larch, *Larix* spp., across its range in North America, including plantations and ornamental plantings. Larvae feed in gregarious colonies and consume entire needles. Trees may releaf following defoliation, but severe defoliation results in thin crowns, branch dieback, and growth loss. Repeated defoliation over consecutive years may cause tree mortality.

Female *P. erichsonii* lay eggs in small slits in the sides of new shoots, which often curl in a characteristic manner due to the injury. Even if shoots do not curl, the oviposition slits in new shoots are readily observable and are a means of estimating the density of *P. erichsonii*. A sequential sampling plan was developed for *P. erichsonii* eggs in larch stands in central Canada. The plan requires a minimum of 10 shoots and a maximum of 400 shoots to classify infestations as light, moderate, or severe. Light, moderate, and severe infestations correspond to <8, 12–22, and >28% of shoots used for oviposition and <20, 30–60, and >70% expected defoliation, respectively.

Sampling Procedure: Sample trees after oviposition has ended, usually in mid-August. Randomly select larch trees in each plot. Using pole pruners, sample two whole branches from the mid-crown of each tree. Starting at the apical tip, examine the current-year shoots on each branch in groups of 10 shoots. If the last group of shoots on the first branch does not equal 10, carry over to the second branch. Record the number of shoots in each group of 10 that show oviposition damage (i.e., curling and/or egg slits) as a cumulative tally. Reference Table 3 or Fig. 1 after processing each group of 10 shoots. Stop sampling when the cumulative tally falls out of either the light-moderate or moderate-severe bands in Table 3, or crosses one of the decision lines into the light, moderate, or severe areas of Fig. 1. If 400 shoots are examined without reaching a decision, and the cumulative count in Table 3 remains in the light-moderate band, classify the infestation as light if the count is <39 but as moderate if >40. If the cumulative count remains in the moderate-severe band, classify the infestation as moderate if the count is <99 and severe if >100. Refer to Table 2 to determine the approximate expected percentage of defoliation corresponding to the infestation level and observed percentage of damaged shoots.

Note: Severe defoliation by *P. erichsonii* may result in decreased shoot production with changes in the relationship of pest density to expected defoliation.

Figure and Tables

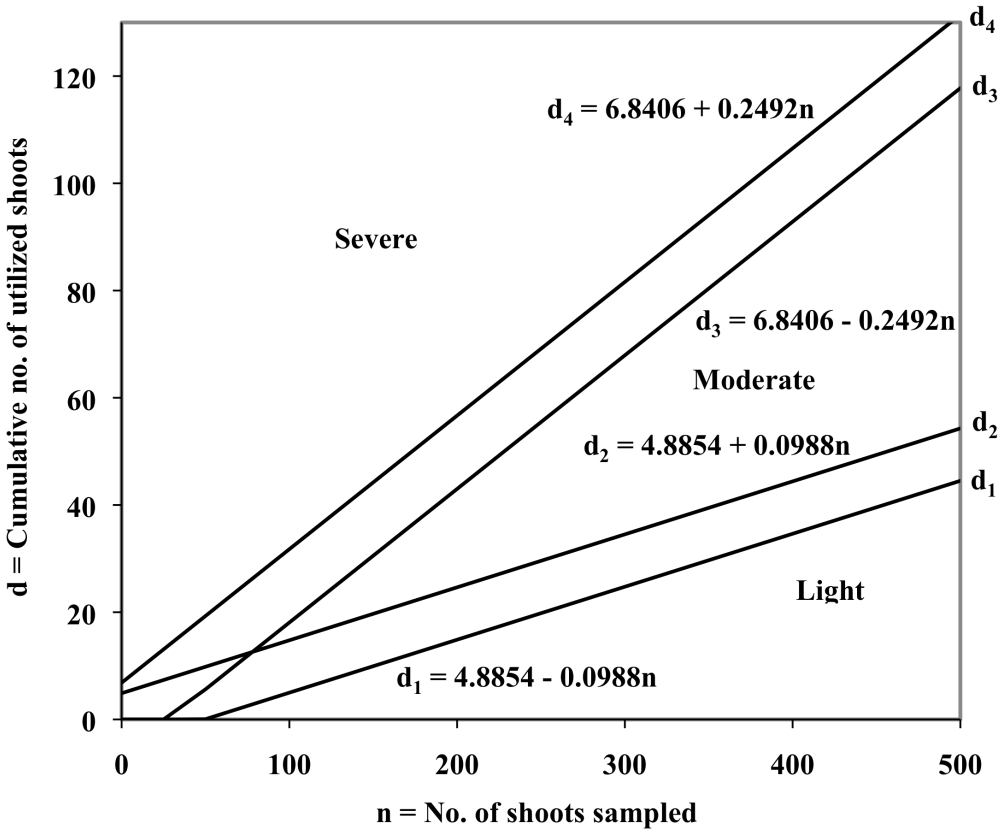

Fig. 1. Sequential graph for sampling larch sawfly populations.

Table 2. Larch sawfly infestation classes based on the proportion of shoots utilized for oviposition and the percentage of defoliation.

Infestation class	Proportion of shoots utilized for oviposition	Approximate percentage of defoliation
Light	<0.08	<20
Moderate	0.12–0.22	30–60
Severe	>0.28	>70

Table 3. Sequential table for use by field parties in classifying infestations. Sampling continues until the cumulative number of shoots utilized for oviposition falls outside of either of the two bands into one of the three zones.

No. of shoots examined	Cumulative No. of shoots utilized for oviposition				
	Light-moderate band			Moderate-severe band	
10	LIGHT ZONE	—	MODERATE ZONE	-9	SEVERE ZONE
20		—		-11	
30		—		-14	
40		—		-16	
50		1-		-19	
60		2-		-21	
70		3-		-24	
80		4-12		14-26	
90		5-13		16-29	
100		5-14		19-31	
110		6-15		21-34	
120		7-16		24-36	
130		8-17		26-39	
140		9-18		29-41	
150		10-19		31-44	
160		11-20		34-46	
170		12-21		36-49	
180		13-22		39-51	
190		14-23		41-54	
200		15-24		43-56	
210		16-25		46-59	
220		17-26		48-61	
230		18-27		51-64	
240		19-28		53-66	
250		20-29		56-69	
260		21-30		58-71	
270		22-31		61-74	
280		23-32		63-76	
290		24-33		66-79	
300		25-34		69-81	
310		26-35		71-84	
320		27-36		73-86	
330		28-37		76-89	
340		29-38		78-91	
350		30-39		81-94	
360		31-40		83-96	
370		32-41		86-99	
380		33-42		89-101	
390		34-43		91-104	
400		35-44		93-106	

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