



Branching out

from the Canadian Forest Service

Laurentian Forestry Centre



SPRUCE BUDWORM: EARLY RESPONSE STRATEGY

Spruce budworm is the most destructive insect eating its way through North American softwood forests. For quite some time, researchers at the Laurentian Forestry Centre of the Canadian Forest Service have been studying this pest, looking for ways to limit damage to our forests. They now propose a new method for fighting spruce budworm.

The current spruce budworm control strategy is aimed at protecting foliage (keeping defoliation levels under 50%) so that trees stay alive through an epidemic. The use of *Bacillus thuringiensis* (*B.t.*), a biological insecticide, has been limited to dense, commercially valuable balsam fir stands.

This approach has certain inherent weaknesses: if the moths are migrating at a high rate, the outbreak



Spruce budworm caterpillar.
Photo: C. Moffet

may get out of control; and if defoliation exceeds 50%, the most vulnerable conifers (fir, spruce) will

through successive applications of *B.t.* from the very outset of an epidemic.

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stop growing and hard-hit, untreated stands then become sources of infestation.

An early response strategy would solve these problems. The objective of this new approach is to limit the reach of spruce budworm populations at the local level (rather than control defoliation in specific stands)



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Forest attacked by spruce budworm.
Photo: C. Moffet

THE TEAM

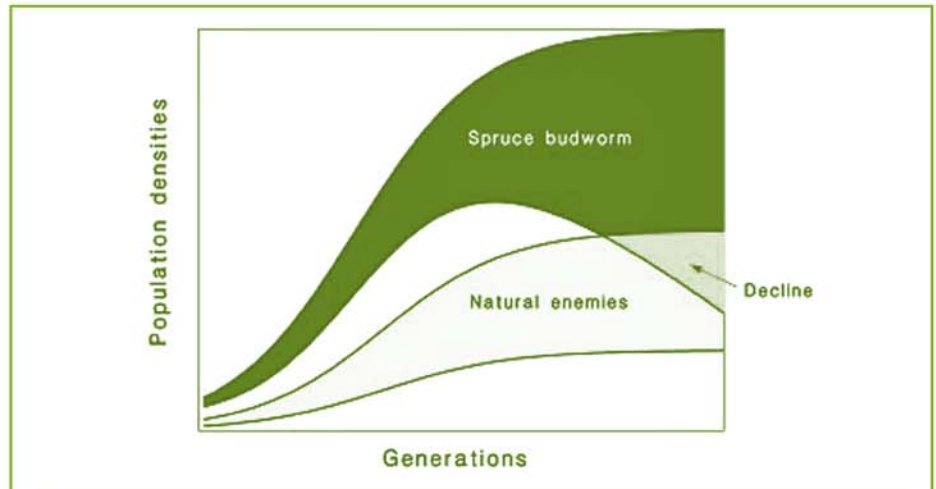
CFS-LFC researchers work in collaboration with several partners:

- Société de protection des forêts contre les insectes et maladies (SOPFIM)
- Québec's Ministère des Ressources naturelles (MRN)
- Université Laval
- Carleton University (Ottawa)
- Forest Protection Ltd. (New Brunswick)
- Provincial governments of Ontario and Manitoba

There may be considerable advantages to this approach:

- With defoliation levels kept under 20%, tree growth would be unaffected;
- The growth rate and severity of the epidemic would be reduced because *B.t.* would be applied throughout a region, regardless of the commercial value of the stands treated;
- The epidemic might be shorter because pest populations would be reduced by natural enemies which would have a greater impact in the treated sector (see box).

The abundance of natural enemies and the seriousness of epidemics are directly related to stand composition and density; implementing the strategy would therefore create new knowledge about the role stand management can play in preventing spruce budworm epidemics.



Progress of a Spruce Budworm Epidemic.

Spruce budworm populations decline as soon as they enter the overlap area, where the rate of mortality caused by natural enemies is high enough to have a lasting effect.

FOR FURTHER INFORMATION, PLEASE CONTACT:

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