

Spruce Beetle *(Dendroctonus rufipennis Kirby)*

Introduction

The spruce beetle (*Dendroctonus rufipennis Kirby*) is native to Nova Scotia and attacks mature and overmature spruce. Once established in a forest stand it can become very destructive. Its preferred host in Nova Scotia is white spruce, but all spruce species can be attacked and killed. The spruce beetle has a two year life cycle. Adults overwinter in blow-downs and in the bases of standing trees.



Spruce beetle adult. (4-6 mm)

Host

Farm abandonment in the first half of this century has resulted in many even-aged stands of white spruce throughout the province.

White spruce is a relatively short lived tree, maturing at about 50 years of age. When mature, it starts to become vulnerable to attack by insects and disease. Rot also begins to set in and the trees are more susceptible to blowing down. These two factors (tree stress and blow-downs) are critical for spruce beetle populations to build and spread.

Damage

The adult and larva stages of the spruce beetle cause the damage. Spruce beetles begin to attack trees in late May and continue through June. Adults bore through the bark down to the outer surface of the sapwood where they mate and lay their eggs. After hatching, the larvae feed together for a short time then form individual feeding tunnels or "galleries" that eventually girdle the tree. Adult beetles leave the tree in the fall of the year to seek overwintering sites in the bases of standing trees and blowdowns.

When beetle populations are low, the trees are able to resist attack. When the beetle population reaches epidemic levels, they "mass attack" spruce trees (white, red, and occasionally black) in an area. Eventually they will overcome any resistance the tree produces, girdle the stem with galleries and kill it.



Detection

Look for:

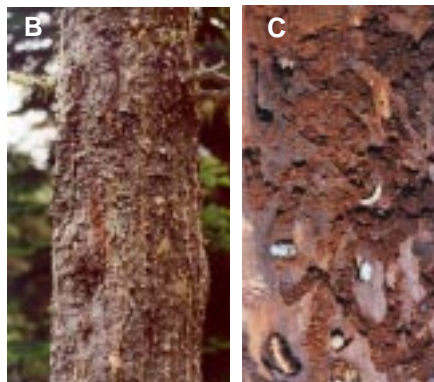
Holes in the bark on the main stem of spruce trees. These holes are about 1mm in diameter and may have sap dripping from them.

Blobs of dried sap or pitch (commonly called pitch tubes) partially covering the holes. If the tree is weak from numerous attacks, little or no sap may be visible and the entrance holes will be easy to see.

Reddish-brown boring dust (like sawdust) visible on the bark and at the base of trees.

Foliage on spruce trees turn yellow then reddish-brown by late summer. This usually occurs 1 or 2 years after the tree is first successfully attacked.

Outer bark of trees flaked off or missing from the standing tree. This is caused by woodpecker feeding activity as they search for adults and larvae.



A) Spruce beetle damage, Cape George, N.S.

B) Pitch tubes and oozing sap on white spruce.

C) Feeding galleries.

D) Close up of pitch tube.



Control

Carry out regular inspections of your wood lot and harvest spruce trees before they become overmature. Older trees are not able to produce the extra sap necessary to "pitch out" the invading adult beetle.

Blowdowns should be removed from the area as soon as possible. Widely scattered blowdowns (more than 2 per ha) are a prime source of outbreaks.

Minimize high stumps, cull logs and large diameter slash in harvesting operations.

Sanitation logging is the most effective method for treating areas under heavy attack. Harvesting the infested and mature/overmature trees can reduce the spread of beetle populations to neighbouring woodlots. Because white spruce usually grows in even-aged stands, all the trees in the stand should be harvested. To help stop the spread of beetles to other areas, wood from harvested sites should be trucked and processed promptly. All bark and slabs should be destroyed.

Logs may be stored by placing them in water so that beetles still within the logs are killed.

References:

Ministry of Forests, Province of British Columbia, 1980 Spruce Beetle Management Seminar and Workshop; proceedings in abstract. Pest Management Report Number 1.

Schmid, J.M. and Frye, R.H., 1977 Spruce beetle in the Rockies. USDA Forest Service, General Technical Report RM-49

For more information:

Integrated Pest Management Section
Nova Scotia Dept of Natural Resources
PO box 130
Shubenacadie, Nova scotia
B0N 2H0

Phone (902) 758-2232
Fax (902) 758-3210

Information Leaflet No. IPM - 4

1998



	June	July	August	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May
Year 1	Adults emerge and attack trees.											
	Eggs laid											
	Eggs hatch											
	Larvae feed											
						Larvae overwinter						
Year 2	Larvae resume feeding											
					Larvae pupate							
					Adults overwinter							
	Adults emerge to lay eggs											