FPL 20 – Engraver Beetles

The information accessed from this screen is based on the publication: Woods, T.A.D. 1973. Engraver Beetles in British Columbia. Forestry Canada, Forest Insect and Disease Survey, Forest Pest Leaflet No. 20 5p.

Introduction

The engraver beetles, Scolytus species (Coleoptera: Scolytidae), attack most native conifers in British Columbia. Small trees may be killed, but damage is usually confined to tree tops, limbs and logging slash. *Scolytus spp.* have been of minor importance in British Columbia, although S. ventralis (Le Conte) has killed some small grand fir on Southern Vancouver Island and caused extensive damage to true firs in Oregon and California. S. unispinosus Le Conte and S. tsugae Swaine common in British Columbia, are often found in association with the Douglas-fir beetle, Dendroctonus pseudotsugae Hopkins. Other species in this province are S. subscaber (Le Conte), S. sobrinus Blackman and S. picea Swaine.

General Description

Egg: The oval, whitish eggs are less than 1 mm long. They are laid singly in small niches cut into the wall of the gallery by the adult. Between 12 and 45 eggs are laid by the smaller species; 80 to 300 by the larger ones.

Larva: The tiny larvae are up to 5 mm long, legless, whitish and soft except for distinct, dark brown sclerotized heads.

Pupa: The pupae are soft and yellowish white at first but darken as they mature. There are no coverings and many of the adult features become visible.

Adult: The adult beetles are 2 - 4 mm long. The stout body is shiny brown to black with a slight reddish tinge on the wing covers of some species. The head, flattened in front, supports a hairy "brush". On the concave (undercut) abdomen, there may be a posterior spine.

Life Cycle and Habits

Climate and elevation influence the life cycle. Generally, one generation only is produced each year. After emergence in the spring, the adults feed upon the thin bark of twigs and branches before tunnelling into the bole, dead and dying branches, tops and logging slash of their hosts to mate and lay eggs. Young adults of some species mine small twigs, which then droop and turn red (flagging). Attacks occur from May to August. The adult, after entering the bark, makes a small turning niche or nuptial chamber between the bark and wood and cuts a short tunnel, usually in two directions, away from the entrance. The scoring of the wood surface helps distinguish engraver beetles from other bark beetles. The adult galleries and the larval mines radiating from them may be of three types: (1) 2 to 12 inches long, galleries extend across the wood grain (circumferential), larval mines follow the grain; (2) 1.5 to 3.5 inches long, galleries run with the grain, larval mines extend across the grain initially, then following it; (3) S. subscaber constructs a gallery that resembles a large, rounded capital E. Scolytid larvae usually complete their feeding in the fall and overwinter in the fourth or final instar. Pupation is in the spring at the end of the mines, and the adults emerge shortly afterward.

Detection

The presence of these bark beetles is indicated by dead or dying tops of large trees, woodpecker activity, boring dust and flagging (reddening) of small branches and branch tips. Boring dust, a mixture of red and white particles resulting from the engraving of both bark and wood, may be seen in the bark crevices. However, for positive identification, bark must be removed from a damaged portion of the attacked tree, as some other insects produce similar symptoms. Scolytus galleries are unique. The adults of this genus are the only bark beetles with a concave abdomen.

Table 1 may assist the observer in identifying the engraver beetles of B.C. using host, gallery type and external adult

characteristics.

Table - Principal Engraver Beetles of B.C., Hosts

	F	**D**	**wH**	**eS**	**sS**	**wS**	**eL**	**wL**	**lP**
S. ventralis	X	X	X	X					
S. subscaber	X	X						X	
S. unispinosus		X	X	X	X				
S. tsugae	X	X	X						
S. sobrinus		X	X					X	
S. picea			X	X	X	X	X		X

DDouglas Fir, pseudotsugae menziesii
wHWestern Hemlock, Tsuga heterophylla
eSEnglemann spruce, Picea engelmanni
eSSitka spruce, Picea engelmanni
wSSestern white spruce, Picea glauca
wLWestern larch, Larix occidentalis
eLEastern larch, Larix laricinia
lPLodgepole pine, Pinus contorta
FGrand fir, Abies grandis
Amabilis fir, Abies amabilis

Table - Principal Engraver Beetles of B.C., Gallery

Species with ventral spine on abdomen indicated in **bold**

	Circumf.	E-shaped	Longit.
S. ventralis	X		
S. subscaber		X	
S. unispinosus			X
S. tsugae			X
S. sobrinus			X
S. picea			X

Control

Natural: Up to 80% of broods may be destroyed by parasites and predators such as certain beetles and braconid wasps. Clerids and ostomids also feed on attacking adult bark beetles.

Direct: Control is not practical unless treatment involves many trees in a small stand, ornamentals or high-value trees as in parks. If natural enemies are not abundant, infested logs can be stripped of their bark or submerged in water for six weeks.

Information on control may be obtained from:

Canadian Forestry Service Forest Insect and Disease Survey Pacific Forest Research Centre 506 West Burnside Road Victoria, B. C.

References

McMullen, L. H. and M. D. Atkins. 1959. Life history and habits of Scolytus tsugae (Swaine) (Coleoptera: Scolytidae) in the interior of British Columbia. Can. Entomol. 91: 416-426.

McMullen, L. H. and M. D. Atkins. 1962. Life history and habits of Scolytus unispinosus Le Conte (Coleoptera: Scolytidae) in the interior of British Columbia. Can. Entomol. 9L: 18-25.

Struble, George R. 1957. The fir engraver, a serious enemy of western true firs. Production research report No 11, U.S.D.A., Forest Service.