

# CONE AND SEED INSECT PEST LEAFLET No. 3

British Columbia Ministry of Forests and Range, Tree Improvement Branch, Saanichton, BC

## FIR CONEWORM (*Dioryctria abietivorella*)



*Dioryctria abietivorella* adult with wings spread

### TAXONOMY:

Order (Family): Lepidoptera (Pyralidae)

**HOST:** Most conifers in North America especially Douglas-fir, pines, spruces, and true firs.

**DISTRIBUTION:** Widely distributed across North America. In BC, the fir coneworm is **most common on the coast and is not usually abundant in the dry interior.**[Help me here](#)

**DAMAGE:** Larvae feed voraciously and tunnel throughout the cone, destroying the scales and seeds.



Douglas-fir cones with *D. abietivorella* frass

Damaged cones are frequently found in clusters, held together with coarse frass and webbing (usually relatively pitch free, unlike the damage due to *Barbara colfaxiana*). Externally, one or more entrance holes or excavations may be visible. *D. abietivorella* larvae will also mine into tree trunks, feed on tree wounds, stem galls and graft unions. They will also chew on needles.

**IMPORTANCE:** Fir coneworm does not typically damage trees, but may pose a large threat to seed and cone crops in seed orchards. The fir coneworm is capable of destroying entire cone crops, primarily of Douglas-fir. In some years, particularly when cone crops are small, almost all seeds may be destroyed. One larva may destroy an entire cone.

### DESCRIPTION

**Life History:** One generation per year, however the life cycle is variable and poorly understood. Adults are present throughout the spring and summer. Eggs have never been seen in natural populations. Presumably they are laid singly in bark crevices.

**Egg:** Oval (0.6 mm x 1.0 mm), pale green-white turning orange at maturity. The eggs are visible to the naked eye.

**Larva:** When larvae first hatch, they burrow into developing cones. They feed from June through September, and within the developing and mature cones, larvae can be found at various stages of development at any one time. The larvae are extremely active when disturbed.

Young larvae have a brown head capsule and amber body, while older larvae are darker with faint longitudinal stripes and usually rows of spots (18-20 mm long).

In spite of life cycle variability, it appears that in the northern part of its range, fir coneworm has a single full generation per year with brood overlap accounting for simultaneous occurrence of different size classes of larvae.



Mature *D. abietivorella* larva

Mature, fifth instar larvae leave the cones and drop to the ground with the onset of cold wet weather. They spin a hibernaculum and overwinter in the duff layer beneath the trees.

**Pupa:** In the spring and early summer, the larvae moult into pupae in the duff layer. The pupae are reddish-brown in colour and about 11 mm long.

**Adult:** Medium-sized moth (wingspan 25-28 mm); forewings narrow, grey, marked with transverse lighter bands bordered by black (making a distinctive “w” mark near wing tip), hindwings lighter, unmarked.

Need a photo of a live adult

**DETECTION AND MONITORING**

I don't know what to write for this section. It seems that your blurb on the BCFS website may be out of date.

Is there a population monitoring system using pheromones? Do people do larval surveys in the seed orchards? And what about the population variability which would make monitoring a

challenge? Is there a management protocol for this bug



Fresh damage by the fir coneworm

**Insect stage calendar to be added by me**



**Which cone damage picture do you prefer?**

**CONTROL**

When necessary, fir coneworm larvae can be controlled in cones through foliar or stem injection of systemic insecticides. However, some damage to the cones will have already occurred. (**Robb-I must have help**)

Other possibilities include sanitation methods such as removing infested cones (while the larvae are still within them, i.e. before September) and burning them, which may help to reduce populations.

**KEY REFERENCES**

Hedlin, A.F. 1974. Cone and seed insects of British Columbia. Canadian Forestry Service,

Pac. For. Res. Cen., Victoria, BC. BC-X-90. 63  
pp.

**PHOTOGRAPHS:** Dion Manastyrski unless  
otherwise noted.