

CONE AND SEED INSECT PEST LEAFLET No. 6

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

SPRUCE SEEDWORM (*Cydia strobilella*)



Cydia strobilella adult on interior spruce foliage

TAXONOMY:

Order (Family): Lepidoptera (Tortricidae)

HOST: Most native spruces.

DISTRIBUTION: Widespread throughout range of spruce in Canada and the western and northeastern United States.

DAMAGE: Young larvae bore into individual seeds, consume the contents, and then tunnel to new seeds. Seeds are partially to completely consumed and fused to the scale. They leave no external evidence of their presence. *Cydia* larvae can sometimes cause serious losses to the seed crop.

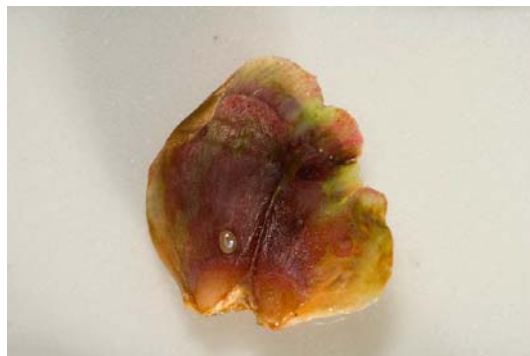
Is there a definitive picture of *Cydia*-consumed seeds?

Importance: The spruce seedworm may sometimes cause serious losses of spruce cone crops. **Are they more of an issue on the coast or in the interior? Are there any stats about seed loss due to this insect?**

DESCRIPTION

Life History: One generation per year. Adults emerge and the females lay their eggs individually on the conelet scales during the pollination period. **Any idea of the number of eggs laid?**

Egg: Eggs are pale to dark orange, spherical, flattened, about 0.5 mm in diameter, and are deposited between conelet scales during or shortly after cone pollination.



Spruce seedworm egg in a dissected cone scale
Which photo? Or would you like both

Larva: Larvae are creamy white with a brown head capsule and thoracic shield, measuring approximately 10 mm long at maturity. There are 4 larval instars, which develop over the summer. Younger instars consume the seeds, then in late summer, mature larvae tunnel into the central cone axis to overwinter. A portion of the population may go into an extended diapause. One larva may destroy from 10-20 seeds.



C. strobilella adult on a spruce cone



Spruce coneworm (early instar) on cone tissue
Do you think this is a Cydia?



Late instar *C. strobilella* larva in cone axis

Pupa: Light amber, later darkening to black, about 4.0 mm to 6.5 mm long, within the cone axis. Pupation occurs in the spring just prior to budburst. **It says in Hedlin, that if there is more than one larva present in the axis, they may separate themselves using frass plugs. Cool....**

Adult: Small moth (wingspan 8mm – 11 mm), greyish-brown wings with silvery crossbands on the forewings. Adults are most often seen at the time of cone pollination.

DETECTION AND MONITORING

Protocols have not been well developed for management of this insect.

Is it enough of an issue for there to be a pheromone program for this wee beastie?

Does one sample the conelets for eggs and young larvae after pollination? Does one dissect cones to estimate population levels and percent seed loss?

Insect stage calendar to be added by me

CONTROL

If chemical control is warranted, and substantial numbers of coneworm eggs are observed on the bracts, apply systemic insecticides (**This needs more information**)

Biocontrol options?

Where and / or when this insect is known to be present, non-crop cones should be picked and destroyed to eliminate overwintering populations. Because the larvae overwinter in the cones, their removal will ensure the removal of the resident population.

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.

Cerezke H. 2003. blurb on the Alberta Sustainable Resource Development site..... www.srd.gov.ab.ca/forests/health/seedandconepests/spruceonemaggot.aspx.

PHOTOGRAPHS: Dion Manastyrski unless otherwise noted.