

CONE AND SEED INSECT PEST LEAFLET No. 9

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

LARCH CONE ADELGID (*Adelges lariciatus*)



Adelges lariciatus winged adult on a spruce needle

TAXONOMY:

Order (Family): Homoptera (Adelgidae)

HOST: Spruces (primary host) and larches (secondary host).

DISTRIBUTION: Alberta, Saskatchewan, and adjacent areas in USA; relatively recent introduction to BC.

DAMAGE: On spruce, *A. lariciatus* causes short, pineapple shaped galls to form from vegetative and reproductive buds. This destroys current and future cone sites and is unsightly on Christmas trees.



Pineapple shaped galls on spruce (**is this really spruce???**)

On larch, populations grow in developing cones causing much pitch production in early summer, but **apparently with no serious effects on seed production (is this true??)**. This species is not known to feed upon larch foliage.



Larch cones infested with *A. lariciatus*. The pitch makes it difficult for the seed to be extracted.

IMPORTANCE: *Adelges lariciatus* alternates hosts between larch and spruce, but it does not usually seriously affect the health of its hosts. The adelgid is not usually abundant in spruce seed orchards, except where larch is grown in close proximity. Galling tends to be most prevalent on lower to mid crown branches and therefore may not be a serious problem for seed production on larger spruce trees. However, the amount of energy put into gall production by host trees may adversely affect cones elsewhere on the tree.

(taken directly from your web blurb-does it need updating?)

DESCRIPTION

Life History: Complex life cycle involving six generations, asexual and sexual reproduction, and host alternation between spruce and larch over two years.

Egg: Oval, pale yellowish-green to reddish-brown, 0.5 mm in length. Eggs occur in large numbers on and around individual females. Eggs hatch as reproductive buds flush (May or June).



We need a good picture of eggs and a female

Nymph: Nymphs swarm onto female buds and attach to developing conelet scales. A second generation is usually produced on cones. There are four nymphal stages, typically oval and 0.3-0.7 mm long. In spring, nymphs are yellow to reddish-brown aging to brownish-black (with cotton-like woolly wax on spruce when sessile).



Are these nymphs on spruce?

On larch, nymphs overwinter at base of buds and resemble tiny black specks of dirt. Prior to budburst, nymphs enlarge dramatically, mature and begin egg production.



A. lariciatus nymphs prior to budburst on larch

Gall: On spruce, similar to the galls of *A. cooleyi*, except that the galls are short, stubby and pineapple-shaped, green to purple, with the base of needles growing and forming chambers in which adelgid nymphs are found (see above photo). They become dry, hard and brown after needles separate to allow emergence of mature adelgids. Galls are not formed on larch.



Gall from which mature adelgids have emerged.

Adult: Oval, light brown to purplish-black, covered with a white, woolly waxy covering at maturity. Wingless forms are approximately 1 mm long, winged forms are often larger (up to 3.4 mm long). Mature winged adults exit larch cones and fly to spruce.



Wingless *A. lariciatus* adult within woolly covering
(Not really sure if this is *A. lariciatus* or *A. cooleyi*-
should we still use the photo?)



Winged adult *A. lariciatus*

DETECTION AND MONITORING

Population sizes on spruce can be accurately estimated in late winter using the survey methodology developed by Ward Strong and others (REF). Unfortunately, population size appears to have no bearing on the number of resultant galled buds later in the spring and no economic thresholds have been established. **Is this still true??**



We could also use this photo for woolly adults (if they are in fact adults). Which do you like better???

Should we do some sort of drawing because adelgid life cycles are so complex?

CONTROL

If control is believed warranted, measures are best taken when a majority of eggs have hatched and the nymphs are actively migrating to new sites (buds on spruce, foliage on larch). To be successful, one has to and regularly monitor the females as the insects mature and

begin egg production in the spring. When the foliage is dry (i.e. no dew or rain) and when nymphs are active, spraying trees thoroughly to runoff with 2% insecticidal soap should provide effective control.

On larch cones, this adelgid appears to be mostly a visual problem, although heavy populations may have some impact on seed production. No pesticides tested in British Columbia have proven effective in reducing populations of *A. lariciatus*. **(Has more work been done on this insect- is there new information??)**. Avoid planting seed production spruces in close proximity to other conifers (e.g. larches).



Healthy western larch cone unaffected by *A. lariciatus*

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.