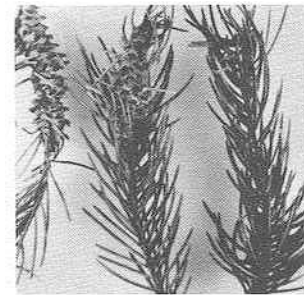


## **INSECT PROBLEMS ON NARROW-LEAVED EVERGREENS**

### **Cooley Spruce Gall Aphid**

The Cooley Spruce Gall Aphid, *Adelges cooleyi*, is responsible for the formation of cone-shaped galls on terminal twigs of blue, Engelmann, Sitka, Oriental, and Colorado blue spruce. Its common name is a misnomer since it is quite capable of reproducing continuous generations on Douglas fir where it feeds but does not produce galls. And it is not technically an aphid.



On Douglas fir, this insect appears as small, cottony tufts on the underside of the needles. During the winter the form found is that of the hibernating females. These females lay eggs in early spring that hatch and soon settle on the new year's growth. As this spring brood matures, it develops into both winged and wingless females. The wingless forms deposit eggs which later hatch into females that will hibernate. The winged forms fly to spruce and lay eggs at the base of the needles.

The young hatching on spruce cause the formation of the cone-shaped galls. About mid-July, the forms in the galls become full grown, winged migrants, which return to Douglas fir and lay eggs. These hatch to produce more hibernating females.

The "cones" formed on spruce develop from the growing together of basal portions of the needles. The adelges inside may number three to 30 individuals in separate, non-connecting chambers. These galls are of little consequence in forest situations but are important on seedlings and ornamental trees because they kill the branch tips and stunt or deform the trees.

Control must be attained on spruce prior to the formation of the galls. The correct timing is just as the new growth is unfolding. It may also be possible to remove and destroy the galls of the insect when timing is missed.

On Douglas fir, most effective control is obtained by spraying infected trees after new growth is fully expanded in the spring. This catches the young nymphs out on the new growth feeding prior to their possible migration to spruce. Thiodan, Lindane, Diazinon and Malathion are recommended in order of preference and persistence.

## Scale Insects on Pine

Two species of scale, the pine needle scale, *Phenacaspis pinifoliae* and the black pineleaf scale, *Nuculaspis californica*, frequently attack Mugho, Monterey, and Ponderosa pine in the Northwest. It is of interest that these scale are more troublesome in conditions where dust and smoke are found in the atmosphere. Thus, these insects are often man-related. It has been suggested (Keen) that the choking of stomata by foreign particles renders trees susceptible to scale attack.

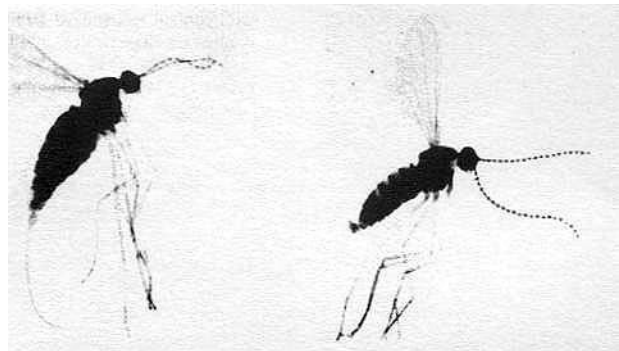
When pine needle scale is abundant, trees look white. Needles turn brown and whole branchlets may die. Pine needle scale are pure white when mature. Eggs are laid in the fall and overwinter under the female scale. These eggs hatch in the spring and are full grown by mid-summer. The males are seldom seen but have wings and are capable of flight.

Early spring applications of 2% light medium oil often give effective control of the young crawlers. Heavy infestations may require two additional summer sprays of Diazinon or Malathion about 30 days apart.

The black pineleaf scale is dark and more circular in shape. It is also reported on Douglas fir and hemlock in the literature on the subject but most specimens received at OSU are from pine, particularly Ponderosa. The young hatch in the spring and two or more generations may be produced in a single year. The winter is spent in an immature stage. No insecticides are registered for the control of this pest.

## Douglas Fir Needle Midge

A small (1/8 inch) fly has caused severe damage to Douglas fir in Christmas tree plantations in the Northwest twice in the past ten years. This insect, called the Douglas fir needle midge, *Contarinia* spp. (several species have been identified in the Northwest), mines the needles - yellowing and distorting them to the point where needle drop is prevalent. The orange adults emerge from the soil beneath infested trees in the spring. Males appear first and then females, which may be distinguished by a long ovipositor (egg-laying tube) nearly as long as their bodies.

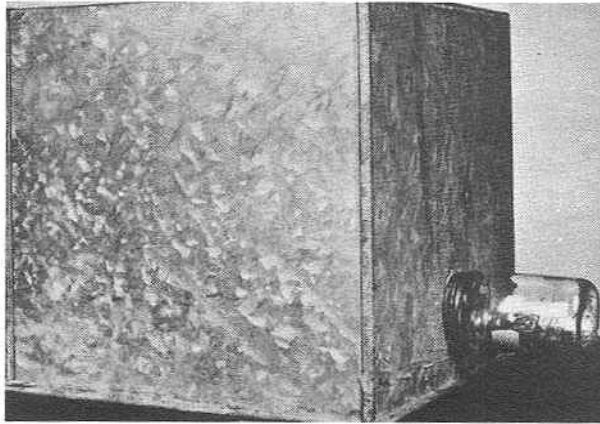


The female Douglas fir needle midge (left) can be distinguished from the male (right) by the long ovipositor and heavier body.

Females lay eggs on the new needles. Eggs are laid elsewhere too on the tree but successful development of these to maturity is very limited. The emergence period is usually short, about ten days, so chemical control should be implemented after several successive days of female emergence. Needle length or bud burst is a poor criteria for determining time of application.

The laid eggs hatch in four to six days. Maggot (midge larvae) damage to needles is not easily observable until late summer. Growers may not note injury until shearing or harvest preparation.

Damage lowers market value and may force delay of harvest for one or two years. Therefore, evidence of any injury is cause for concern and makes emergence trapping a worthwhile project.



Constructed from galvanized sheathing, this midge trap is 15 inches square. Light attracts midges into wide-mouth pint or quart glass jar soldered to side of trap.

Open-bottom, light-tight containers should be placed under trees suspected of being infected. These containers may be of metal, wood, or cardboard. Plans for a cage are described in OSU Extension Fact Sheet 164 "Douglas fir needle midges" obtainable from local county extension offices.

Control with Thiodan at 2 lbs. actual insecticide applied by ground or air has proven effective when timing has been correctly determined.

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**Pesticide Use** - Due to constantly changing laws and regulations, no liability for the suggested use of chemicals in this Newsletter is assumed by the ONW Newsletter. Pesticides should be applied according to label directions on the pesticide container.

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