

COOLEY SPRUCE GALL ADELGID—*Adelges cooleyi*

HOSTS: Spruce and Douglas-fir

IDENTIFICATION, LIFE CYCLE, AND DAMAGE: Nymphs are oval, reddish- to yellowish-brown, aphid-like insects which cover themselves with a white waxy or cottony substance. Adults are oval, reddish-brown, 1 mm long, and may be winged or wingless.

Cooley spruce gall adelgids normally alternate between spruce and Douglas-fir. Nymphs overwinter at the bases of spruce needles and buds, and mature in spring. Eggs are laid under masses of cottony material on the needles and hatch in about a week. Nymphs migrate to the new growth and begin to feed on sap at the bases of needles. On spruce, this feeding causes a cone-like gall to develop around the colony of nymphs. Up to 30 nymphs feed within chambers formed between the bases of needles and the stem. In July or August the chambers open and the mature nymphs crawl to the needles where they transform to winged adults. Females fly to Douglas-fir and deposit eggs on needles. Young nymphs emerge in late



Cooley spruce gall adelgids in cut gall

summer or fall and overwinter at the bases of needles. On Douglas-fir adelgids feed on needles beneath a white woolly material, but no galls are produced. In late summer winged adults develop and fly to spruce to lay eggs. The complete cycle from spruce to Douglas-fir and back to spruce takes two years. Adelgids also can develop asexually on one tree species in the absence of the alternate host.

The elongated cone-shaped galls on spruce are 25 to 75 mm long and 12 to 18 mm in diameter. Galls initially are light green to dark purple, then turn reddish-brown or brown, and become dry and hard after adelgids emerge. Old galls may persist on trees for several years. On Douglas-fir, needles are covered with tufts of white cottony material and become twisted and yellowish. Heavy shedding of foliage may result from severe infestations on poor sites.

CONTROL: Spray trees with carbaryl in early spring (late March in Colorado) and late September. When only a few small spruce trees are infested, remove galls by hand before they open in June. Avoid planting spruce and Douglas-fir near each other.



Gall of Cooley spruce gall adelgid