**Hemlock woolly adelgid**

*Adelges tsugae,*
Order Hemiptera, Family Adelgidae; pine and spruce adelgids
Introduced pest

**Host plants:** Eastern and Carolina hemlock are preferred.

**Description:** Adult female adelgids are about 1.5 mm long, black, and are usually covered with a white, cottony wax mass about 3 mm in diameter. Eggs are covered with wax.

**Life history:** Adults and nymphs overwinter. Eggs are deposited in spring. Crawlers start feeding on needles and settling on twigs at the base of needles. There are two generations a year.

**Overwintering:** Adults and nymphs on twigs.

**Damage symptom:** White waxy masses on trees spoil their appearance. Heavy infestations lead to needle yellowing, loss of vitality, premature needle drop, defoliation, and tree death.

**Monitoring:** Look for the white cottony wax masses on twigs throughout the year. Look also for needle yellowing and premature drop.

**Chemical control:** A dormant oil spray may be effective against overwintering immatures. Horticultural oil or insecticidal soap sprays control immatures from July through October. Soil applications of imidacloprid by early summer can control populations.

**Cultural control:** Choose resistant varieties, such as Western, mountain, and Japanese hemlock.

**Biological control:** Biological control agents from areas of origin are being evaluated for introduction, such as lady beetles, *Scimus ningshanensis, Pseudoscimus tsugae,* and a derodontid beetle, *Laricobius nigrinus.*

**Plant mortality risk:** High

**Biorational pesticides:** insecticidal soap, horticultural oil

**Conventional pesticides:** chlorpyrifos (nursery only), deltamethrin, imidacloprid
Hemlock woolly adelgid (continued)

Close-up of hemlock woolly adelgid eggs and adults. Eggs are light brown and darken near hatch. (144)
Photo: John Davidson

Hemlock woolly adelgid nymphs in summer location. (143)
Photo: John Davidson

Hemlock woolly adelgid winged adult. (67)
Photo: John Davidson

Hemlock woolly adelgid immatures, newly hatched, before a waxy cover is made. Nymphs are almost black. (143)
Photo: John Davidson