



United States Department of Agriculture
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Natural Resource Manager (NRM)



FSVeg Common Stand Exam User Guide Gallmaker Insects (Category 17)

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(17-002) EASTERN SPRUCE GALL ADELGID

<u>Species:</u>	<i>Adelges abietis</i>
<u>Host:</u>	Norway spruce, Englemann spruce, white spruce
<u>Secondary host:</u>	Red spruce, black spruce, blue spruce
<u>Range:</u>	Northeastern and Lake States
<u>Injury:</u>	Forms pineapple shaped galls on the new shoots. The galls are green at first, but later turn pink and finally brown after they break open. Galls prevent twig growth and, if they are abundant, may affect entire trees. Individual trees vary in susceptibility to attack; some appear immune, others suffer growth reduction, and some are killed. Trees growing on good sites are less susceptible than those on poor sites.
<u>Description:</u>	Partially grown females hibernate in twigs near the terminal buds. Pear-shaped, soft-bodied green insects with long antennae; they lack the two tube-like projections that characterize other adelgids. They mature in spring and deposit eggs at the bases of the buds. Upon hatching, the nymphs crawl to the expanding buds and begin to feed. The injection of their saliva into the plant tissue causes the cells to enlarge to form bulb-like hollows. Thousands of cells within these hollows join to form a gall, which may contain a dozen nymphs. This adelgid does not require an alternate host. Do not confuse it with the Cooley spruce gall adelgis, which forms galls near the terminal portion of twigs.

(17-003) COOLEY SPRUCE GALL ADELGID

<u>Species:</u>	<i>Adelges cooleyi</i>
<u>Host:</u>	Brewer spruce, Englemann spruce, Sitka spruce, white spruce, Douglas-fir
<u>Range:</u>	Washington, Oregon, California, Idaho, Montana, Wyoming, Colorado, Utah, Alaska, the northern tier of states
<u>Injury:</u>	Cone-like galls, 12-75 mm long, are formed on spruce branch tips. In late spring galls are light green to purplish and nymphs may be found inside. In late summer and fall galls dry up and open and nymphs emerge. Galls may persist on branches for many years. On Douglas-firs the insect feeds on the sap of the new needles, new shoots, and developing cones. Feeding on Douglas-fir does not cause galls to form, but rather yellowing and twisting of needles. Heavy infestations on poor sites can cause defoliation.

Description: Nymphs are oval and black with a white waxy fringe. Adults are dark brown and covered with white, wooly wax.

Figure 1: Gall



Figure 2: Gall



Figure 3: Infested Douglas-fir needles



Figure 4: Infested Douglas-fir needles



(17-004) HORNED OAK GALL

Species: *Callirhytis cornigera*

Host: Pin oak, scrub oak, black oak, blackjack oak, water oak

Range: Northern states to Georgia and Iowa

Injury: Death of twigs and large branches, due to development of rough, woody swellings. Often several galls are fused together into a continuous formation of abnormal woody tissue.

Description: Swellings up to 1½ inches in diameter, containing numerous small larvae, which develop into gall wasps. The insects hibernate in the galls, emerge in the spring, and lay eggs in the developing buds. The galls have cone-like projections which are hollow at the base.

(17-005) GOUTY OAK GALL

Species: *Callirhytis quercuspunctata*

Host: Scarlet oak, red oak, pin oak, black oak

Range: Northern states to Georgia and Iowa

Injury: Death of twigs and large branches, due to development of rough, woody swellings. Often several galls are fused together into a continuous formation of abnormal woody tissue.

Description: Swellings up to 1½ inches in diameter, containing numerous small larvae, which develop into gall wasps. The insects hibernate in the galls, emerge in the spring, and lay eggs in the developing buds.

(17-006) GALL MIDGE

Species: *Cecidomyiidae*

Host: Maple, ash, Jack pine

Injury: In spring as leaves expand; look for characteristic gall formations on the upper surfaces of leaves.

Description: This family is represented by a large number of species. The small larvae vary from reddish pink to yellow or orange. They are usually present in large numbers. They are not vigorous feeders, but may cause significant indirect damage by forming galls, which fuse seeds to scales, or robbing seeds of nutrients. The adults are tiny, fragile, and not readily identifiable without special preparation.

(17-007) DOUGLAS-FIR NEEDLE GALL MIDGE

Species: *Contarinia pseudotsugae*

Host: Douglas-fir

Range: California, Oregon, Washington

Injury: The yellowish larvae feed on the needles, usually several per needle. Heavy infestations cause much of the foliage to drop and sometimes kill twigs. It develops in the new needles.

(17-008) GALL MITE

Species: *Eriophyidae*

Host: Ash, oak, Lombardy poplar, quaking aspen, maple

Injury: In spring as leaves expand; look for characteristic gall formations on the upper surfaces of leaves.

Description: Tiny, elongate, four-legged, translucent creatures that average 0.2 mm in length. The legs are far forward and the abdomen has many narrow transverse rings. They feed on leaves, buds, stems, flowers, and fruit. Many cause galls.

(17-009) SPRUCE GALL MIDGE

Species: *Mayetiola piceae*

Host: White spruce

Range: Alaska

Injury: Severe injury is unusual. Galls are formed in shoots.

Description: The two-winged, reddish brown midge emerges from the galls formed the previous year in late May, and lays eggs on the new shoots. Upon hatching, the larvae bore into the shoot and form cells. The gall is formed by the swelling of the tissue about the larvae cells. Larvae are orange and about 1.5 mm long.

(17-010) HACKBERRY NIPPLEGALL MAKER

Species: *Pachypsylla celtidismamma*

Injury: Conspicuous galls can be found on the undersurface of the leaves. When abundant, they seriously deform the leaves and may cause early leaf fall.

Description: The nipple-like gall is light green and about 1/6 inch in diameter. It forms on the under leaf surface and causes depressions on the upper leaf surface. The nymphs, which inhabit the galls, are pale yellowish green with red eyes. The adults are small, jumping plant lice.

(17-012) LEAF STEM GALL APHID

Species: *Phylloxeridae caryaecaulis*

Host: Hickory

Injury: Produces almost spherical galls, form 16 to 18 mm in diameter, on the twigs and leaf stems. The galls are green when first formed; later after the aphids vacate them, they turn brown or black.

Description: The most commonly observed form of the insect is a minute, sac-like body covered with dense woolly wax. Winged adults may occur, usually in conjunction with sexual reproduction or dispersal between alternate host plants.

(17-013) GALL APHID

Species: *Phylloxeridae*

Description: Many members of the family have complex life cycles. The most commonly observed form of the insect is a minute, sac-like body covered with dense woolly wax. Winged adults may occur, usually in conjunction with sexual reproduction or dispersal between alternate host plants.

(17-014) ALDER GALL MITE

Species: *Phytoptus laevis*

Host: Alder

Injury: Causes beadlike galls on the leaves.

(17-015) PSYLLID

Species: *Psyllidae*

Description: Adults resemble cicadas, but are the size of aphids. They have stout legs for jumping and tough bodies. The nymphs are flat with large wing pads. They are plant feeders, and some cause leaf galls.

(17-017) MOUNTAIN APPLE PSYLLID

Species: *Trioza vitiensis*

Range: Pacific Islands including Hawaii

(17-019) SPIDER MITES

Species: *Oligonychus spp.*

Host: Spruce, fir, juniper, pine, hemlock, beech, maple, oak, pine, longleaf pine, sycamore, northern red oak

Range: Thrives under hot, dry conditions.

Injury: Foliage may appear mottled, stippled, flecked or off-color. Conspicuous basal needle discoloration is often the first sign of a problem. Infested trees may appear brownish-gray, and needle loss may occur. Look for mites, starting in May and continuing on a periodic basis, by sharply beating branches over white paper and examining the paper for reddish-brown mites, about the size of pepper grains. You may also be able to see eggs with a hand lens, which appear as tiny, shiny red or brown balls laid singly on the twigs and needles. In heavy infestations, webbing may also be conspicuous.