

## Hawthorn Diseases and Insects

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Hawthorns are deciduous trees in the apple family that are often used in the landscape because of their attractive clusters of white or pink spring flowers, dark green leaves, appealing shape and size (usually between 15 to 30 feet tall), and bright red berries that attract birds in fall and winter. They are not without their problems though. They are susceptible to several diseases including fire blight and several types of rust and they are troubled with a variety of insect pests including lacebugs, leafminers and roundheaded appletree borers. If planting a hawthorn tree look for disease and insect resistant varieties. Below are the pests that we most commonly encounter on this host.

### Fire Blight (187)

Fire blight caused by the bacterium, *Erwinia amylovora*, affects hawthorn in addition to other members of the rose family such as apple, mountain ash, firethorn, pear, and quince. Affected twigs become diseased when *Erwinia* is often inadvertently carried to the blossoms by honey bees and other pollinating insects. It is also spread by wind, splashing rain and pruning tools.

Symptoms occur in the form of crooked, shriveled and blackened shoots. Numerous infected branches on heavily affected trees cause them to appear as if they had been hit by a flame thrower. The bacterium can grow from the branch tips to larger branches and eventually the main stems in years to come. It is more likely that advancement of each shoot infection will stop as barrier zones in the host develop and as weather for bacterial growth becomes less favorable.

Controls include growing resistant cultivars. Avoid over-fertilization, especially heavy spring applications of nitrogen because fertilization causes development of more succulent shoot and more possible infection courts. Cankers and blighted branches should be cut between November and March when the tree is dry, making cuts at least 1 foot below the visible limits of infection. Cover wounds with shellac or other wound dressing. Disinfect tools between cuts.

### Gymnosporangium Rusts (129–133)

Two different types of gymnosporangium rusts are common on hawthorns in the Northeast—quince rust and hawthorn rust. Like many other rust fungi these rusts require two different hosts to complete their lifecycle. In this case, *Juniperus* and Rosaceous plants are the hosts of these pathogens. During moist spring weather, usually in May, gelatinous tendrils protrude from the galls on junipers. The disease spores are discharged from these tendrils and the spores blow in the wind to infect the secondary broad-leaved hosts.

**Cedar-hawthorn rust**, caused by *Gymnosporangium globosum*, cause bright yellow-orange spots on leaves of hawthorns and to a lesser extent serviceberry, quince, pear and mountainash. The orange spots can be seen from the upper and lower side of the leaves. (On eastern red cedars and other species of *Juniperus*, this rust forms small (1/8–3/4 inch diameter), rough-surfaced, irregularly shaped galls. In the spring orange tongue-shaped gelatinous tendrils protrude from the galls on junipers.) In mid- to late August, the lesions on hawthorn will begin to form small but noticeable membranous

“hairs” on the undersides of leaves or on fruit and twigs. Then it will be time to consider management strategies to protect junipers. Protection of hawthorn must be done in the spring. If you are still planting trees this year or guiding the preparation of landscape plans for next year, choose disease resistant varieties. To do otherwise means you are simply planting lifelong maintenance liabilities.



Hawthorn leaf rust causes yellow-orange spots on leaves. © Dawn Dailey O'Brien

**Cedar-quince rust**, caused by fungus *G. clavipes*, is a more serious pathogen on broadleaved hosts like hawthorn, because it infects the fruit, twigs, petioles and thorns and causes more significant damage than hawthorn rust. This disease stunts and kills fruit and causes swelling, distortion, and death of twigs and petioles. Infected leaves curl and die. Spindle-shaped cankers on branches of the broadleaved hosts can girdle the branches causing significant dieback. Severely infested trees, with twig dieback throughout the canopy may appear to have fire blight. Other common broadleaved hosts include quince, serviceberry, apple and crabapple among other rosaceous trees. (It forms spindle-shaped, often inconspicuous galls on juniper twigs and branches but can be lethal to junipers.) The distorted fruit and galled twigs are starting to send out the horn-like protrusions at this time of year and will continue to mature into late summer when they will look like pinkish-orange tubes and will produce spores that are windblown to the juniper hosts.



Quince Rust—Swollen, spindle-shaped cankers that distort growth. © D.D.O'Brien

## Hawthorn Lacebug (205)

The hawthorn lacebug, *Corythucha cydoniae*, attacks its namesake, hawthorn, but also a wide variety of other woody rosaceous plants including quince, pyracantha, cotoneaster, crabapple and serviceberry. Look on undersides of leaves for the immature and adult lace bugs. The nymphs are black with long spines. The adults have lace-like wings and are  $\frac{1}{8}$  inch long with an overall flattened appearance. Their bodies are tan with brown markings. The nymphs and adults cause injury by sucking chlorophyll from the leaf tissue causing stippling damage. Examine the foliage of deciduous plants for stippled foliage and black fecal spots on the undersides of the leaves. Heavily infested leaves turn yellow then brown. Dieback may occur.

They overwinter as adults and in the spring, eggs are laid in small groups on the lower surfaces of leaves. They nymphs emerge and feed. The adults mate, and the female inserts her eggs into the leaf tissue. This second generation feeds, matures and eventually overwinters until the following spring.

Natural enemies are rarely abundant enough to make an impact on the pest populations. An insecticide application may be required to reduce the population to acceptable levels. A registered pesticide can be applied in mid-May 293–363 GDD<sub>50</sub> and again in mid-July 1266–1544 GDD<sub>50</sub>. Sprays should be directed at the leaf underside.



Hawthorn lacebug feeding causes stippling on leaf surface. © D.D. O'Brien

## Hawthorn Leafminer (86)

The adult hawthorn leafminer, *Profenusa Canadensis*, is a small black sawfly, a bee-like insect, like the birch leafminer. They emerge in May when leaf and flower buds are beginning to open. They lay their eggs in the new leaf and the larvae feed on tissue between the leaf surfaces, usually leaving the upper and lower layers for protection. Earlier in the season, if infested leaves are held up to the light, the larvae can be seen in the mined leaf area. The tissue around them turns brown and expands into large, blotch like mines in the leaves in the tip of the leaves. By early summer the larvae drop out of the leaf to the ground to pupate. There is one generation per year. With heavy infestations, entire leaves and trees may turn brown and look scorched from a distance.

*Crataegus crus-galli*, *C. persimillis* and *C. erecta* are the most susceptible species. It is also reported to be a pest of sour cherries, *Prunus cerasus*. Although the leafmines aren't very attractive they don't cause enough damage to significantly harm established trees. They could be more troublesome to newly planted trees.

Treatment is not usually necessary but if necessary leaves should be fully expanded before pesticide application. Treatment with foliar sprays can be made in the last two weeks of May, first two weeks of June (295–610 GDD<sub>50</sub>). Raking up fallen leaves is not beneficial because the insect overwinters in the ground, not in the leaves.



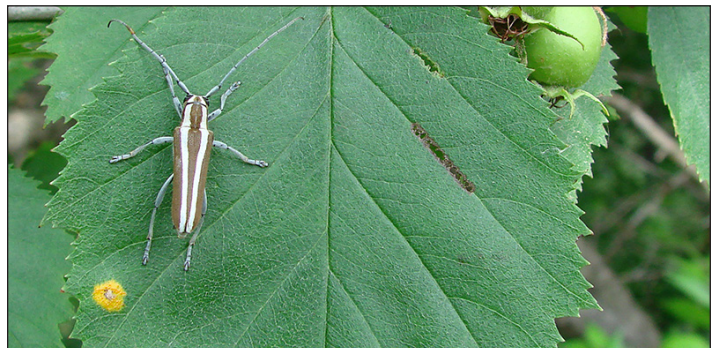
Hawthorn leafminer damage. © D.D. O'Brien

## Roundedheaded Appletree Borer (131)

These borers are the most serious of pests of hawthorns discussed in this article. It is a potentially fatal pest of hawthorn. They are a part of the group of insects referred to as longhorned beetles. Adult females have bodies that are about  $\frac{1}{8}$  inch wide and  $\frac{3}{4}$  inch long (with antennae that extend another  $\frac{3}{4}$  –  $\frac{7}{8}$  inches). They have five stripes of approximately equal widths running from head to wing tip and alternating from the outside olive brown, white, olive brown, etc. Adult males are about 20 percent smaller but have the same general shape and color pattern. In addition to hawthorn, species of *Amelanchier*, *Malus*, and *Sorbus* are hosts as well as pear, quince, and cotoneaster.

Females start laying eggs in early June in southeast NY (1–2 weeks later farther north) and will continue at the rate of 1–2 eggs per day for up to 40 days. Eggs are laid in longitudinal slits chewed in the bark at the root collar, often where the scion and rootstock join. Unlike so many other species of borers which are attracted to stressed trees, roundheaded appletree borer females seem to prefer the healthiest, most vigorous specimens for their egg-laying activities. At first, the egg laying sites are inconspicuous, but they become more noticeable when frass from developing larvae feeding on host cambium gets pushed out of the entrance holes.

Management of roundheaded apple tree borers has been directed toward preventing females from laying eggs and toward early detection and elimination of the young larvae. To prevent egg laying and to improve chances for detection of castings signaling new infestations, keep the root collar/graft union area free of weeds and sprouts. Egg laying should also be less if soil is hilled up over the graft union. Use wire mouse guards rather than plastic ones to allow predators and parasites ready access to egg-laying adults when they do venture out. Populations of feeding adults can also be reduced by foliar applications of a registered pesticide. Treat the last 10 days of June (802–1029 GDD<sub>50</sub>) and again during the last 10 days of July (1514–1798 GDD<sub>50</sub>).



Roundheaded appletree borer adult on hawthorn leaf. © D.D. O'Brien