

Elongate Hemlock Scale

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Elongate Hemlock Scale (*Fiorinia externa* Ferris), sometimes called fiorinia scale, is a significant pest of hemlock (*Tsuga* spp.) in its invaded range in eastern North America. This scale insect mainly infests hemlocks, including eastern (*T. canadensis*), Carolina (*T. caroliniana*), and northern Japanese (*T. diversifolia*) hemlock, but is also known to infest species of fir (*Abies* spp.) and spruce (*Picea* spp.). Elongate hemlock scale is native to Asia and was introduced to New York in 1908. It existed locally in New York for many years before invading parts of the East Coast beginning in the 1970s.

Description

The flattened, elongate, light yellowish orange-brown waxy covering covers and protects adult females, observed on the lower needle surface as well as on new cones (Figure 1). Adult females (about 1.5 mm in length), eggs, and crawlers are all yellow. Adult males resemble tiny wasps as they crawl across needles, only having one pair of wings. Major infestations with many settled crawlers can result in a tangled mass of waxy strands that, if abundant enough, can be misdiagnosed as hemlock woolly adelgid, the major pest of hemlock throughout the East Coast.

Lifecycle

Elongate hemlock scale has two, overlapping generations in most of its invaded range, and because of this, many life stages can be found throughout the year. Fertilized females or eggs overwinter, and females will then deposit eggs beneath their waxy covers and may continue to do so through the spring and early summer. Eggs will then hatch after three-four weeks, producing crawlers that disperse. Crawlers (first instar nymphs) are fairly limited in how far they will travel, typically not moving beyond the stem where they hatched. Long-distance dispersal occurs by

Figure 1: Adult female elongate hemlock scale (orange-brown) on the lower needle surface



way of wind or birds. Crawlers will settle on the lower needle surface, insert their needle-like mouthparts, and feed for three-four weeks before molting into second instar nymphs. After another four weeks of feeding, nymphs will reach maturity, where the winged males emerge, mate with females, and die. Mated females begin laying second-generation eggs roughly six-eight weeks after mating, and the individuals that develop from these eggs will overwinter.

Damage

Elongate hemlock scale causes injury by withdrawing nutrients from a layer of tissue in needles called the mesophyll, and does not target vascular tissues like many other piercing/sucking insects. Pest populations build slowly in healthy trees and quickly in stressed ones. The scale can, but usually does not, kill healthy trees, but generally gives hemlocks a dull, less green, sickly appearance. Continued feeding will cause needles to yellow and drop prematurely, thinning the crown and resulting in generally unsightly trees (Figure 2). Once they have reached this stage, recovery can be difficult and these trees may succumb to secondary pests such as hemlock borer and Armillaria root disease.

Figure 2: Stressed eastern hemlock tree due to major elongate hemlock scale infestation



Management

Overlapping generations make elongate hemlock scale challenging to manage and require close monitoring of the insect. Additionally, the scale will readily infest, build up its population, and stress otherwise healthy hosts. Complicating management further, there are several key insect and mite pests of hemlock with which this scale is often found. However, there are many treatments for elongate hemlock scale including horticultural oil applications and other very effective products. Please contact your Bartlett Arborist Representative to develop a monitoring program and learn about management strategies.



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