

Magnolia Scale



Introduction

Scales are among the most devastating and difficult to control of all insect pests, and magnolia scale (*Neolecanium cornuparvum*) is no exception. Native to the eastern United States where it is widely distributed, magnolia scale is prone to sudden and dramatic outbreaks that can quickly overwhelm, weaken, and even kill susceptible plants.

The most important hosts of magnolia scale are star magnolia (*Magnolia stellata*), lily magnolia (*M.liliiflora*), and their hybrids. Saucer magnolia (*Magnolia x soulangiana*) can also be severely infested.



Magnolias native to the United States are much more resistant, perhaps because they have developed natural defenses by virtue of their shared evolutionary history. Cucumber tree magnolia (*M. acuminata*) and southern magnolia (*M.grandiflora*) can be infested but are rarely damaged, while sweetbay

magnolia (*M. virginiana*), bigleaf magnolia (*M. macrophylla*), and umbrella magnolia (*M. tripetala*) are rarely colonized.

Life History

Magnolia scale has one generation per year, with females maturing and producing eggs from mid-summer through mid-fall. Eggs are held internally, creating the illusion that they give birth to living young. As with many species of scales, these newly hatched nymphs (immature form) are the only mobile life stage and are thus termed "crawlers."

Crawler emergence begins in late August and can continue into October. Crawlers are very difficult to detect, appearing on small twigs and branches as very small (1/25 inch in length), flattened, oval flakes that vary in color from yellow to reddish-brown.

Upon emergence, crawlers set out in search of a suitable feeding site, often settling to feed on the same twig or branch as their mother. They become immobile once they insert their mouthparts into the plant, spending their entire life at the spot they initiate feeding.

The vast majority of crawlers are unable to establish for various reasons and die without ever feeding. As adult females are immobile, infestations probably spread most often when crawlers are carried on the feet of birds from one plant to another.

After overwintering the nymphs molt and begin growing about the time

leaves begin emerging in spring (when large quantities of nutrients are mobilized by the plant sap). Growth is rapid as scales increase their size by several orders of magnitude in just a few weeks, and copious amounts of honeydew are produced during this growth spurt. Magnolia scale has become quite conspicuous (for a scale insect) as they mature, appearing as large, oval, convex bumps on twigs and branches. Twigs can be completely encrusted when populations are high.



As they mature, scales can vary in color from pinkish to purplish to brown, depending on the degree to which they are covered with a white, waxy material that disappears as eggs are produced by mature females, which are brown. Males mature earlier than females and do not grow as large. They emerge as small gnat-like insects in late spring to mate with immature females.

Females continue to grow through the summer, maturing in August-October. Adult females can obtain a diameter of one-half inch, making it the largest species of scale occurring in the United States. The adult females die in the fall after reproducing, leaving behind their hollow, brown shell (exoskeleton) that may continue to adhere to the plant for many months.

Host Impact

Magnolia scale feeds on sap extracted from twigs and small branches by means of suck-

ing mouthparts inserted through the bark into phloem tissue. Plant sap contains high concentrations of sugars but low concentrations of protein and other nutrients. Consequently, magnolia scales must extract great quantities of sap to obtain the nutrition they need. Much of this sap is excreted as a clear, sticky substance known as honeydew that coats twigs, leaves, and other objects beneath feeding sites.

The black fungus commonly known as *sooty mold* that often colonizes honeydew can be quite unsightly but is generally harmless to plants (although, in extreme cases, it can interfere with photosynthesis by blocking light). Sooty mold can become a nuisance when it coats cars and patio furniture, and this mold is often the first sign of the infestation that people notice. Yellow jackets, other wasps, and ants are often attracted to the honeydew, upon which they feed.

The large quantity of energy-rich sap consumed by high populations of magnolia scale represents a severe energy drain on even mature plants. Stress imposed by this energy drain can result in small yellowing leaves, twig dieback and a thinning canopy. When left unchecked, even mature plants can be killed by high populations. Generally, though, plants can tolerate low to moderate infestations fairly well, which provides time to implement a management program before plants are severely injured.



Management

As with all insect pests, effective management of magnolia scale requires a good monitoring program so infestations are detected before they build to damaging numbers. Plants should be regularly inspected for signs and symptoms of infestations. The absence of foliage makes winter a good time to observe the large brown shells on twigs and branches that are the remnants of the previous generation of adults. Close inspection is required to observe the small overwintering nymphs and a good hand lens can be a great help.

Magnolia scale nymphs grow rapidly in spring, becoming much more obvious. The presence of sticky honey dew on and beneath plants is a good sign of the existence of an infestation. Low populations are often clustered on one or a few branches that can be pruned without distorting the growth habit of the plant.

Natural enemies do not seem to effectively suppress high populations of magnolia scales, which is unusual for a native insect pest, making insecticide treatments necessary to maintain plant health. As with all scales, timing is critical. Their waxy covering and exoskeleton provides them with substantial protection, rendering conventional insecticides and horticultural oils ineffective during much of the growing season.

Insecticide Sprays

The crawler stage is quite susceptible to many insecticides, but the protracted period of crawler emergence dictates multiple applications from late summer through mid-fall. Biorational products, such as insecticidal soap and horticultural oil, can be very effective provided thorough coverage is obtained.

However, because these products lack resid-

ual activity, applications must be repeated every seven to 10 days throughout the eight to 10-week period of crawler emergence in order to be effective. Insecticides with longer residual activity, such as synthetic pyrethroids, require fewer applications.

No matter what product is used, thorough coverage of all twigs and small branches is essential, as many crawlers settle in protected area such as bark crevices or under the shells of dead scales.



Another option may be a dormant application of horticultural spray oil targeted at overwintering nymphs in the spring before budbreak, a strategy that has proven effective for related species. A single application should be very effective if coverage is thorough. Applications can be made in late winter or early spring as long as the temperature is above freezing at the time of application.

Systemic Insecticide

Imidacloprid basal soil drenches should be applied in August or September. On large trees (>12 inches in diameter), use twice the recommended rate. This insecticide is taken up by the roots and transported throughout the plant where it is ingested by the scale insect. Application can also be done in late April through early May.

In Summary

Magnolia scale can have a devastating impact on susceptible species.

Successful management of this pest can be challenging, but it is possible. The key is a vigilant monitoring program.

Would you like additional information?

Additional information is available on-line. Please see [MSU Extension-Oakland County's publications](#) as well as the [MSU Extension Bookstore](#) on campus.

Please contact our office (248/858-0880) for assistance.

Source: Herms Daniel A. and Neilson David G. "The Magnolia Scale: Biology and Management of a Key Pest of Magnolia" Department of Entomology, The Ohio State University Ohio Agricultural Research and Development Center, Wooster. http://ohioline.osu.edu/sc193/sc193_8.pdf

Reviewed & edited by: Charlene Molnar, Horticulture Advisor, MSU Extension Oakland County. July 2011 updates based on information provided by Dr. David Smitley, Michigan State University Extension, Department of Entomology.

Distributed by: MSU Extension- Oakland County, 1200 N. Telegraph Rd., Pontiac, MI 48341, 248/858-0880, <http://www.msue.msu.edu/oakland>

MICHIGAN STATE
UNIVERSITY

Extension
OAKLAND COUNTY

MSU is an affirmative-action equal opportunity employer. Michigan State University Extension programs and materials are open to all without regard to race, color, national origin, gender, gender identity, religion, age, height, weight, disability, political beliefs, sexual orientation, marital status, family status or veteran status.