Scale Insects

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Scale insects are a peculiar group and look quite different from the typical insects we encounter day to day. Small, immobile, with no visible legs or antennae, they resemble individual fish scales pressed tightly against the plant on which they are feeding. There are over l50 different kinds of scales in Virginia. Many are common and serious pests of trees, shrubs, and indoor plants.

Damage

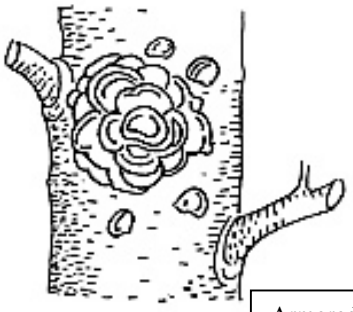
Scale insects feed on plant sap. They have long, threadlike mouthparts (stylets) six to eight times longer than the insect itself. Feeding by scales slowly reduces plant vigor. Heavily infested plants grow poorly and may suffer dieback of twigs and branches. Occasionally, an infested host will be so weakened that it dies.

Control

Dormant oils are effective on the overwintering stage of most species, but they can only be applied in early spring before leaves appear. Adult scales are protected from insecticides by waxy coverings. Control measures, therefore, must be aimed at unprotected immatures (crawlers) or the overwintering stage. During the summer, control requires accurate identification of the pest species so that hatching dates of crawlers can be determined. Once the pest is identified and proper timing known, any one of several common insecticides can be used. Consult your local Extension Agent for current insecticide recommendations.

Armored Scales

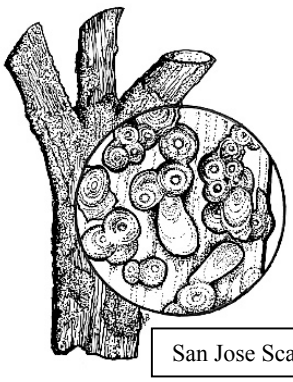
Scale insects can be roughly divided into two groups: armored scales and soft scales. Armored scales are so named because they secrete a protective cover over their bodies. Most species overwinter as eggs beneath the female cover. In spring, eggs hatch into tiny mobile crawlers which migrate to new feeding sites. After a few days, crawlers settle, insert their mouthparts, and begin feeding. Soon they secrete a protective cover and lose their legs. Large populations can build up unnoticed before plants begin to show visible symptoms. Our most common armored scale pests are described and illustrated below.



Armored scales

San Jose Scale

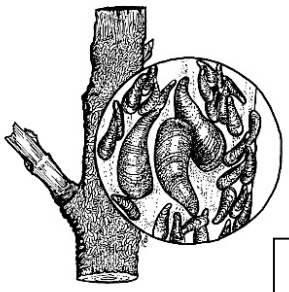
Mature scales are circular, slightly convex, and smoky black. They are about l/l6 inch across. Under a magnifying glass, a conspicuous, dark gray, concentric ring is visible. San Jose scale is perhaps the most widely distributed and most destructive scale insect pest of fruit trees, shade trees, and ornamental shrubs in the United States. Over 60 host plants are known, including apple, pear, peach, cherry, ash, poplar, lilac, elm, willow, pyracantha, and cotoneaster. There are at least three generations a year in Virginia; broods often overlap. When necessary, treat June l0-l5, July l0-l5, and September l0-l5.



San Jose Scale

Oystershell Scale

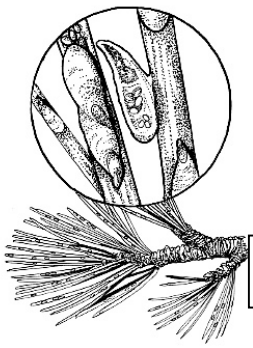
These scales are shaped like the shell of an oyster. They are chestnut to dark brown, sometimes with lighter transverse bands. Twigs are often completely encrusted with scales. This is a common and destructive pest of over l20 different species of fruit trees, shade trees, and woody ornamental shrubs. Hosts include apple, lilac, dogwood, boxwood, birch, elm, sycamore, viburnum and many others. There are two generations per year with crawlers active May l-20 and July l5- 25.



Oystershell Scale

Pine Needle Scale

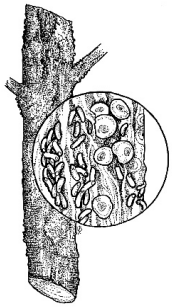
Mature scales are pure white and shaped like oyster shells. This is a common and serious pest of ornamental pines and various spruces. Less preferred hosts include hemlock and fir. Ornamental plants, Christmas tree plantations, and nursery stock are more frequently infested than forest trees. In heavy infestations, needles may be completely whitened by a continuous layer of scales. There are two generations per year in Virginia. Crawlers are active between April 20-May 30 and July l0- 20.



Pine Needle Scale

White Peach Scale

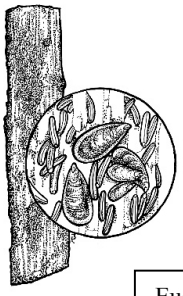
Females are circular and white with an orange- yellow central spot. Males are elongate and pure white with a slight ridge down the back. White peach scale is a serious pest of stone fruits, especially peach and cherry. Flowering cherry, plum, and peach are also infested. There are three generations per year. Crawlers are active April 25-May l5, July l-l5, and August 20- September l5.



White Peach Scale

Euonymus Scale

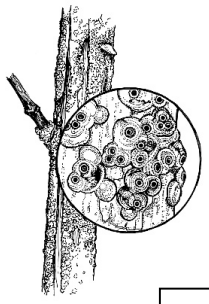
Females are pear-shaped and blackish-brown. Males are elongate and white. This is a common and serious pest of evergreen euonymus, often causing defoliation and dieback. Pachysandra and bittersweet are also suitable hosts. There are two generations per year. Crawlers are active May 5-June l0 and August l-25. When required, four treatments are recommended: May l0 and 20, and August 5 and l5.



Euonymus Scale

Gloomy Scale

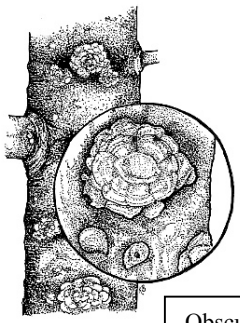
Both sexes are circular, strongly convex, and dark gray or black. Mature scales have a central, light-gray, circular right which is visible with a magnifying glass. Gloomy scale is a common and serious pest of silver maple and red maple. It is also found on sugar maple, hackberry, elm, boxelder, sweetgum, redbud, buckthorn, gallberry, mulberry, and soapberry. There is one generation per year in Virginia with crawlers active June l0-20.



Gloomy Scale

Obscure Scale

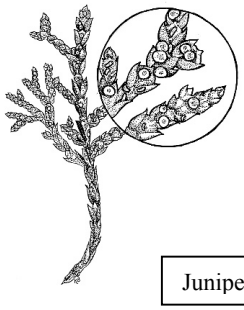
Mature scales are dark gray, often identical to the color of the bark. Crawlers tend to settle close together, resulting in patches of scales several layers deep. This is a serious pest which causes dieback of branches, limbs, and sometimes entire trees. Oaks, especially pin oak, are the primary host, but it has also been reported on chestnut, pecan, beech, English walnut, willow, maple, hickory, and other trees. Crawlers on red oaks are active in mid-July, but on white oaks in mid-August.



Obscure Scale

Juniper Scale

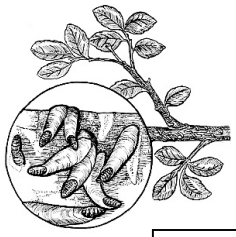
Females are round and dirty-white with yellow centers. Under a magnifying glass they resemble miniature fried eggs. Males are also white, but smaller and narrower. Hosts include junipers, arborvitae, incense cedar, and cypress. There are two generations annually. Crawlers are active April 5-20 and June 5-20.



Juniper Scale

Japanese Scale

Mature scales are grayish white, long, and narrow. Japanese scale is a pest of maple, privet, boxwood, holly, Japanese quince, and rose. Use dormant oil sprays or treat for crawlers every two weeks between June l and September l.



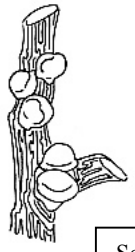
Japanese Scale

Other Armored Scales

Fern Scale: Males white and narrow; females brown and pear- shaped. On ferns, African violet, begonia, camellia, citrus, fig,

geranium, hibiscus, liriope, orchids, palms, violet, and many others. Greedy Scale: Attacks apple, birch, cactus, camellia, cherry, cotoneaster, English ivy, English walnut, euonymus, grape, locust, magnolia, maple, oak, palm, pyracantha, redbud, rose, willow, and many others. Grape Scale: Found on grape, peach, hickory, and sycamore. Latania Scale: On palms, orchids, canna, gladiolus, raspberry rose, and other plants. Hemlock Fiorinia Scale: On hemlock, fir, spruce, and yew. Hemlock Scale: On hemlock, Douglas-fir, Monterey, yellow, and some other pines. Elm Scurfy Scale: Found on elm and hackberry. Scurfy Scale: Attacks pear, apple, quince, cherry, peach, black raspberry, dogwood, mountain ash, black walnut, elm, hickory, maple, willow, and others. Dogwood Scurfy Scale: On dogwoods.

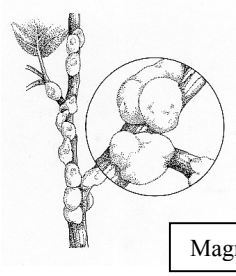
Soft Scales



Soft Scales

In general, soft scales are larger and more convex than armored scales. Many resemble miniature tortoise shells. Soft Scales usually cover themselves with wax, but they lack the detachable protective cover for which armored scales are named. Most soft scales overwinter as immature, fertilized females. In spring they resume feeding, mature, and lay eggs. These hatch into tiny crawlers. After locating suitable feeding sites, crawlers settle and begin feeding. Some species lose their legs once they've settled, but others retain them and are able to crawl short distances to find suitable overwintering sites in the fall. Except for soft scales which infest indoor plants, most have only a single generation per year at our latitude. Our most common soft scale pests are described and illustrated below:

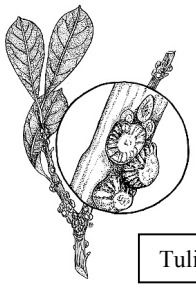
Magnolia Scale



Magnolia Scale

Our largest scale insect, this species reaches l/2 inch in length. Color ranges from dark brown to pink-orange and older scales are covered with a white waxy powder. Large amounts of a sticky waste product called honeydew are secreted by the scales. Wasps and ants are attracted to the honeydew and black fungi called sooty molds grow on surfaces where honeydew collects. There is one generation per year with crawlers active from September l-20, much later than most other species.

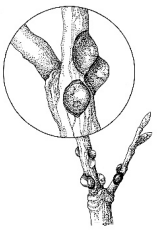
Tuliptree Scale



Tuliptree Scale

This is our second largest scale, reaching l/3 inch in length. Color varies from gray-green to pink-orange, mottled with black. It is easily mistaken for magnolia scale but lacks the white, waxy powder. Both tulip tree and magnolia are attacked and may be seriously weakened. Large amounts of honeydew are produced. There is one generation per year with crawlers active September l-20. A single female can produce over 3000 young!

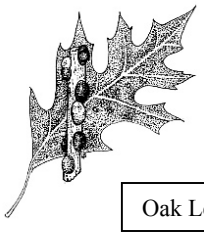
European Fruit Lecanium



European Fruit Lecanium

Typical scales are l/8 inch long, oval, and very convex. Color varies considerably with age and host, but usually they are brown to reddish-brown, smooth and shiny. The host list of this insect includes a wide range of fruit and shade trees, shrubs, and other woody ornamentals. Favorite hosts include peach, cherry, plum, apple, ash, blueberry, black walnut, boxelder, elm, grape, hickory, locust, magnolia, maple, oak, redbud, willow, and many others. There is one generation per year with crawlers active between June l-20.

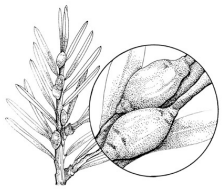
Oak Lecanium



Oak Lecanium

This species is similar in appearance to European fruit lecanium. Oak is the favored host, but hickory and birch are also attacked. There is one generation per year with crawlers active from May 25-June 25. When necessary, treat June l5 and 20.

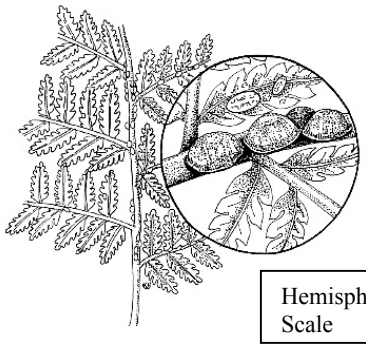
Fletcher Scale



Fletcher Scale

Mature scales are shiny, dark brown, and very convex. They are similar in appearance to European fruit lecanium and oak lecanium which are close relatives. Arborvitae and yew are the most frequently attacked hosts, but pachysandra and Eastern Red cedar are also susceptible. Honeydew excreted by the scales supports unsightly, sooty molds. There is one generation per year with crawlers active June 5-25. When necessary, treat between June l0-l5.

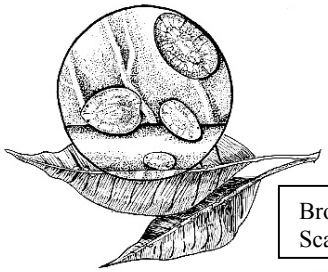
Hemispherical Scale



Hemispherical Scale

Mature scales are brown, smooth, glossy, and very convex (thus the name), with a slightly flared margin. They measure about l/8 inch in length. Hemispherical scale does not overwinter outdoors at our latitude and is, therefore, primarily a pest of houseplants and greenhouse plants. Among the most commonly attacked host plants are ferns, palms, avocado, begonia, citrus, chrysanthemum, fig, lily, orchids, and many others. In a constant indoor environment, reproduction is continuous and generations overlap. Successful treatment requires two to three insecticide applications at l0-day intervals. When feasible, large numbers of these scales can be physically dislodged by gently wiping the leaves with a dilute mixture of water and dishwashing detergent. Combine manual and chemical control for best results.

Brown Soft Scale



Brown Soft Scale

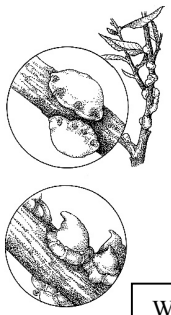
Adults are oval, soft, rather flat, and l/8 inch long. Color is usually yellowish-brown or greenish-brown. Brown soft scale is found indoors throughout the state and outdoors along the eastern seaboard. It has a very long host list and is common on gardenia, fern, camellia, oleander, fig, and many others. Reproduction is continuous with overlapping generations. Recommended controls are the same as for hemispherical scale.

Pine Tortoise Scale

Pine Tortoise Scale

Mature scales are shaped like miniature tortoise shells, thus the name. They are reddish-brown, mottled with dark spots. Scots, Austrian, jack, and red pines are preferred, but several other species of pines are susceptible. There is one generation per year with crawlers active June l0- July 5. When necessary, treat between June 20-25.

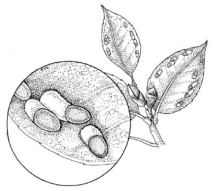
Wax Scale



Wax Scale

Immature scales have spots of wax on the back and around the margin. As they mature, more and more wax is produced until it eventually covers the entire scale in a thick, white, irregular coat. Wax scale is found only in eastern Virginia. Hosts include azalea, blueberry, camellia, Chinese holly, mulberry, pear, persimmon, plum, quince, and others. There is one generation per year with crawlers active June l-25. When necessary, treat June l0-30.

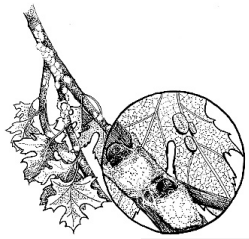
Cottony Camellia Scale, Cottony Taxus Scale



Cottony Camellia Scale

Long, white, cottony egg sacs produced by this scale are much more conspicuous than the scales themselves. After completion of the egg sac, the female dies, dries up, and falls to the ground. Host plants include camellia, holly, taxus, rhododendron, hydrangea, maple, and English ivy. There is one generation per year with crawlers active June l- l0. When necessary, treat June l0-20.

Cottony Maple Scale



Cottony Maple Scale

Large, conspicuous, white egg sacs are produced on the twigs and small branches of host plants. During summer, immature scales feed on leaves, but they migrate to twigs as fall approaches. Honeydew excreted by the scales supports unsightly, sooty mold growth. Cottony maple scale is most common on silver maple, but also found on other maples, boxelder, linden, black locust, red mulberry, white ash, apple, beech, cherry, dogwood, elm, hickory, holly, honeylocust, peach, plum, sycamore, willow, and others. There is one generation per year with crawlers active June 5-25. When necessary, treat on both June l0 and 20.

Cottony Maple Leaf Scale

Conspicuous, cottony egg sacs, similar to cottony maple scale, but produced on the leaves. Occurs on maple, dogwood, holly, andromeda, and gum. There is one generation per year with crawlers hatching June l-l0. When necessary, treat between June l5-30.

Oak Kermes

Mature scales are tan, globular, and hard. They are easily mistaken for galls or buds. Oak is the only host. This species is not particularly injurious to host trees, but, if necessary, treat between June l0-l5.

Revised by Eric Day, August 2008. Department of Entomology, Virginia Polytechnic Institute and State University, Blacksburg, Virginia 24061-0319.