



Red Pine Scale (*Matsucoccus matsumurae*)



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Hosts:

Red pine (*Pinus resinosa*), as well as Japanese red pine (*P. densiflora*), Japanese black pine (*P. thunbergii*) and Chinese pine (*P. tabulaeformis*). Aside from red pine, it is not known to affect any other native trees in Maine.



Figure 1: (left) The intermediate stage larvae are small, flat, and white-fringed; (center) adult females are mobile and dark red; (right) male cocoons and female egg ovisacs are covered in a conspicuous white cottony substance.

General Information:

A species native to Japan, the red pine scale is considered a serious pest in its introduced range in China, Korea, Europe and the United States. It was initially observed in North America in 1946 in Easton, Connecticut, before spreading throughout New York, New Jersey, Pennsylvania, and New England. The first detection in Maine occurred in Mount Desert in September 2014. It continues to affect areas of coastal Maine (as of this publication, infestations have been detected in Hancock, Washington and York Counties).

Red pine scale is a general tree stressor capable of causing pockets of large-scale tree mortality. Where it is found in the United States, it is one of the most significant pests of red pine. This species seems relatively intolerant of cold winter temperatures, evidenced by its slow northward expansion and the results of a single study on cold tolerance in the 1950's. It is likely primarily spread by wind.

Life Cycle:

There are two generations of red pine scale per year. Generally, eggs are laid in May, with first-instar larvae appearing by June. The larvae settle down and feed, usually under a bark scale. They transform to an intermediate stage by mid-July. Pre-adult males emerge in August and spin a loosely woven cocoon in which they transform into winged true adults. Adult females emerge from the intermediate stage, mate and lay eggs from August into September. The crawlers that hatch from this overwintering generation settle down and become dormant. They will transform to the intermediate stage beginning in April before rapidly developing into adults.

Adult females are brick-red, wingless, soft-bodied insects with well-developed legs and antennae. They are approximately 1/16" - 3/16" long, pear shaped, and coarsely wrinkled. Adult males are smaller (1/32" - 1/16"), two-winged, midge-like insects. First-instar larvae resemble females but are much smaller (~0.01"). Intermediate stage larvae

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are elliptical in shape and lack both legs and antennae. They resemble smooth, waxy pods and have sparse tufts of white wool. Females deposit small, yellow eggs in a white, woolly ovisac, and sub-adult males spin white, capsule-shaped, loosely woven cocoons.

Symptoms and Signs:

Individuals of this species are quite small, and symptoms of infestations can easily be attributed to diseases and abiotic causes, which may result in red pine scale remaining undiagnosed for multiple seasons. Off-color needles progress from an olive-green color to red. Discoloration is first seen on individual branches, then throughout the entire tree.

These scales (pre-adult males and egg-laying females) produce small white tufts of a cotton-like substance often seen on twigs. Individuals may be found underneath bark flakes and towards the ends of branches.



Figure 2: (left) Infestation causes discoloration of red pine needles; (right) A severe red pine scale infestation can result in the eventual death of all red pine in a stand, leaving other species such as white pine unaffected.

Management:

Maintain tree vigor but avoid tree fertilization, as this may exacerbate the infestation. Some control can be attained on ornamentals by two applications of horticultural oil (early June and early September) at a two percent rate.

Winter harvests of infested trees will reduce the risk of spread, as the scale is settled on the host. This is opposed to spring through fall when eggs and mobile nymphs and adults are present, and there is some risk of picking up the insect on clothing and machinery when working in infested stands or trees, as well as moving the insect on cut top material.

Further Reading:

Bean, J.L. and P. A. Godwin. 1971. Red Pine Scale. Forest Pest Leaflet 10. USDA Forest Service.

Choi, J., Cha, D., Kim, D.S. and Lee, S., 2019. Review of Japanese pine bast scale, *Matsucoccus matsumurae* (Kuwana)(Coccothraupidae: Matsucoccidae), occurring on Japanese black pine (*Pinus thunbergii* Parl.) and Japanese red pine (*P. densiflora* Siebold & Zucc.) from Korea. *Forests*, 10(8), p.639.



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