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Management Guide for

Pinyon Needle Scale

(*Matsucoccus acalyptus* Herbert)

This native sap-sucking insect was first described in southern Idaho but has been found throughout the Southwest including California, Idaho, Nevada, Utah, Arizona and New Mexico.

Hosts:

- on single-leaf pinyon
- common pinyon
- bristlecone pine
- sugar pine

Topics

Damage	1
Life History	1
Identification	2
Management	3
Other Reading	4-5
Field Guide	
Management Guide Index	

Key Points

- Pinyon needle scale infestations seldom kill trees but are a concern on ornamental trees.
- Tree mortality more often results from a combination of scale feeding, drought, and pinyon ips.
- Control scale with horticultural oils,insecticide treatments and thinning option.

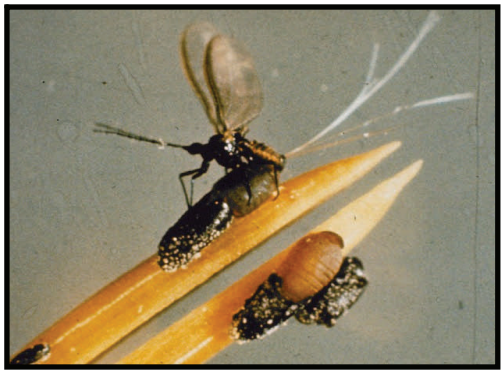
Damage

These insects feed on the sap of needles older than one year. Individual needles are often killed, and successive years of defoliation can damage or weaken trees. Repeated attacks often reduce new growth and cause needle stunting.

Pinyon needle scale infestations seldom kill trees. Tree mortality more often results from a combination of scale feeding, drought, and pinyon ips (*Ips confusus*) that subsequently attack severely stressed trees. However, repeated feeding may result in death of smaller trees. Scale infestations are more of concern on ornamental trees where the damage could affect shade or aesthetic values.

Life History

Pinyon needle scale has a one-year life cycle. Males overwinter on the ground as pupae while females overwinter as second-stage larvae on the previous year's needles. In late April winged males emerge from their ground cocoons to mate with females as the females back out of their immobile waxy covers. Large numbers of flying males can be seen swarming around scale-infested trees. Mated females then crawl to oviposition sites and lay an oval cluster of yellow eggs that are loosely held together by thin cottony webbing. Preferred oviposition sites include the root collar, crotches of large branches, along the underside of large branches, and in fissures of rough bark.



Winged males mating with emerging females. Photo by Bob Cain.

Life History

Generally outbreaks subside after a few years with most trees recovering from an infestation.

In late May or early June, small red eyespots become visible in the eggs. Within another 7-10 days the yellow crawlers emerge and make their way to the ends of branches to settle on the needles formed the previous year. Within the next 24 hours the crawlers will usually align themselves with their heads toward the base of the needle, insert their small feeding tubes into the soft needle tissue, become immobile, cover their bodies with wax, and turn black.

Cluster of yellow eggs at the base of tree.
Photo by Bob Cain.

Scales remain in place on the needle through the nymph stage. When the young scale outgrows its waxy outer shell, the shell ruptures smoothly along the middle of the back with a larger shell developing. Female scales never move until the next spring when the adults emerge and mate. Male scales emerge from their immobile protective cover in October or November as mobile crawlers with legs. In this form the males crawl to the ground, spin a loose cottony web under sticks or pebbles, and transform into the prepupal stage. After 3-4 days the prepupae molt within their cocoons, spending the winter in the pupal stage. In some instances, male prepupal and pupal stages may be delayed until early spring.

Life history information was gathered from Grand Canyon, Arizona and Mesa Verde, Colorado. Life cycles may vary in other portions of its native range.

Identification

Pinyon needle scales are most often seen in the protected larval state and appear as small, black, bean-shaped, motionless objects on the needles of infested trees (McCambridge 1974).

Pinyon needle scale in larval state.
Photo by Britton Steed.

Management Considerations

Few alternatives for managing pinyon needle scale outbreaks in forested landscapes exist. Generally outbreaks subside after a few years with most trees recovering from an infestation.

Oils
Pinyon needle scale is more readily controlled with horticultural oils than are some other armored scales such as oystershell scale (Cooper & Cranshaw 2004). Oils applied during the dormant season (dormant oils) are recommended for pinyon needle scale. Also, summer oils that can be applied during the growing season can be effective treatments. Summer oil applications can kill young, settled scales in addition to the crawler and egg stages. Do not apply horticultural oils when new growth emerges or if plants are under stress from drought.

Chemical
Sometimes the most effective control for pinyon needle scale is "crawler stage" insecticide applications. The insecticide treatments are timed to coincide with the vulnerable crawler stage of the insect. Many yard and garden sprays are labeled for this purpose, including insecticidal soaps, Sevin (cabaryl), Orthene and related products.

- Apply insecticide treatments shortly after egg hatch when the "yellow" crawler stage is visible on the bark or found by shaking a branch over a piece of white paper.
- Survey for the crawler stage from May through June. If egg laying and crawler activity continues over a period of several weeks, a second application may be required.
- If an insecticidal soap is used, several applications may be required because of the short efficacy associated with this product. To protect natural enemies, only apply insecticide treatments when the crawler stage is present. Scale infestations may be localized on the tree, therefore only spot treatments using an insecticide may be required.
- Pesticide treatments, however, are not recommended for use in pine nut production areas for safety reasons (McCambridge 1974).

Silvicultural treatments (thinning, sanitation, etc.) may improve tree vigor in dense stands but are not considered effective in controlling scale populations or reducing stand susceptibility to pinyon needle scale. This is particularly true when scale outbreaks are related to drought-stress. If thinning treatments are undertaken, silvicultural treatments should not be applied during drought years or in areas with very active pinyon ips activity.

Thinning applications for pinyon needle scale. Photo by James-Steed.

Other Reading

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