



PEST ALERT

Cycad Aulacaspis Scale



Scale covers, male & female (3 mm long)



Adult female (1 mm long) & egg after removal of scale cover

Scientific name: *Aulacaspis yasumatsui* Takagi (Order: Hemiptera; Family: Diaspididae)

Other common names: Asian cycad scale, snow scale, Thai scale

Description: Adult females are immobile, with a white, waxy, ovate cover 3 mm in diameter (above left). Underneath, the living female is 1 mm long and orange in color (above right). Adult males are immobile, elongate, 1 mm long, white with three longitudinal ridges. Infestations on leaves first appear as flecks of white (below left) and may rapidly cover foliage and reproductive parts within days or weeks, giving them a snow-covered appearance (below right).

Native range and hosts; artificial introductions: Native to tropical SE Asia including India, Andaman Islands, Thailand, Vietnam, and probably Cambodia, Laos, Myanmar, southern China, and peninsular Malaysia, where it specializes on cycads of the genus *Cycas*. Recent introductions outside of its natural range include the United States (Florida, Alabama, California, Georgia, Hawaii, Louisiana, South Carolina, Texas) and its territories (Guam, Puerto Rico, U.S. Virgin Islands), as well as the Cayman Islands, St. Kitts, Singapore, and Taiwan.

Mode of attack: Living mainly on the surface of leaves and sucking plant juices, in the absence of effective control this scale will multiply rapidly and engulf foliage within a few weeks. Repeated attacks on successive flushes of leaves, without intervention of effective control, are fatal to *Cycas* plants within a year. This insect also feeds on reproductive parts and will persist on stems and roots. Young of this insect (crawlers) are the dispersal stage and are easily spread to other plants by wind.

Vulnerable species: All *Cycas* species outside of the natural range of this pest are at risk, including those in Australia and New Guinea and those in the *C. rumphii* complex, which occur from islands in Micronesia and Indonesia to Madagascar and East Africa. Other cycad genera are also susceptible to varying degrees. *Stangeria* is highly susceptible, as is *Macrozamia lucida*. The cones of some species are completely engulfed by this plant, preventing successful seed production – *Encephalartos manikensis* and *Ceratozamia robusta* (Belize) are two examples. In the absence of natural predators, even cultivated plants of *Cycas* from within the native range of this pest may become heavily infested with this scale.

Control: Insecticides such as chlorpyrifos and diazinon are briefly effective in knocking down populations of this pest, but pest numbers usually recover quickly. Systemic insecticides such as dimethoate may be more effective, for a month or more, in keeping its number down. Two insect growth regulators, pyriproxyfen and dinotefuran, have been shown to be effective in keeping scale populations under control in south Florida. Two natural insect predators of this scale have been identified, a parasitoid wasp, *Coccobius fulvus* (Compere & Annecke), and a beetle *Cybocephalus binotatus* Grouvelle (Howard *et al.*, 1999); they have been released in south Florida for biocontrol, but have been slow to establish and have not reduced its virulence to acceptable levels. Introduction of ladybird beetles (Coccinellidae), such as *Rhyzobius lophanthae* (Blaisdell), has been locally successful in Hawaii.

Currently, no reliable control, besides repeated, labor-intensive applications of insecticide or mechanical removal with water pressure sprayer, are available. More research on the natural predators of this scale is urgently needed. Prevention is the most effective action for this pest. Pest quarantine measures to prevent the introduction of this pest should be established into areas where it is currently absent. In countries free of this pest, customs/agricultural quarantine authorities should consider all host plant materials from infected countries as possible conduits of infestation; host plants are primarily *Cycas revoluta*, but include other species of *Cycas* and other cycad genera from infected areas. Possible quarantine measures include: 1) prohibit entry of host cycad plants from countries known or suspected of having infestations; 2) mandatory insecticide treatment as a condition of entry for host plants coming from infected countries; and 3) close inspection of host plants for scale infestations with subsequent insecticide treatment if infestations are found. Effective treatments for plants infested with scale may include exposure to methyl bromide in a chamber under 15 inches of vacuum or soaking infected plants in pesticide solutions of chlorpyrifos or other insecticide for 12 hours. Approved treatments for such scale insects vary from country to country.

Additional Information:

Howard, F., A. Hamon, M. McLaughlin, T. Weissling & S. Yang (1999) *Aulacaspis yasumatsui* (Hemiptera: Sternorrhyncha: Diaspididae), a scale insect pest of cycads recently introduced into Florida. *Florida Entomologist* 82:14-27.

Hodges, G., F. Howard & E. Buss (n.d.) Update on management methods for cycad aulacaspis scale. Website: www.doacs.state.fl.us/pi/enpp/ento/aulacaspis.html

Howard, F. & T. Weissling (1999) Questions and answers about the cycad aulacaspis scale insect. *Cycad Newsletter* 22(4):19-22. Website: www.cycad.org/Howard&Weissling-1999.html

Montgomery Botanical Center website (n.d.) Links page containing cycad aulacaspis scale information: www.montgomerybotanical.org/Pages/CASlinks.htm



Left: *Cycad aulacaspis* scales on the underside of a *Cycas* leaf.

Right: Heavy infestation on *Cycas rumphii*; note leaves are so heavily infested that insects appear like snow.