



Hala Scale

Thysanococcus pandani Stickney (Hemiptera: Halimococcidae)

Background

The hala scale was originally detected in Hana, Maui in 1995. Within a decade, it spread throughout the island and now infests all but the most remote hala trees. It was not until 2013 that a small Oahu infestation was detected. In 2014, hala scale was confirmed from Pukoo and Waiehu, Molokai, but the widespread distribution is likely due to its presence for several years.

Importance and Damage

The hala tree is an iconic tree in Hawaii and one of the most important plants in native Hawaiian culture. It continues to be threatened by this invasive scale insect, which causes significant damage to the plant. The hala scale can cause leaf deformities, discoloration, stunting, twisting, yellowing, and leaf blade length can be greatly reduced, all of which render leaves useless to weavers. It also attacks the tree's fruit, can cause entire crowns of the plant to fall off, and premature death of the tree.

Hala is also an important indigenous tree of coastal ecosystems in the Hawaiian Islands and throughout the Pacific. Hala trees play a role in preventing coastal erosion and block invasive plants, such as red mangrove, from taking over the coastline.

The hala scale also attacks the fruit, kills young seedlings, and prevents new trees from regenerating current hala stands. It is a huge concern that the remaining trees will be the last, as the infestation of the hala scale puts these ecosystems at risk of disappearing and being replaced by invasive species.



Figure 1. Canoe with sails made from lau hala.

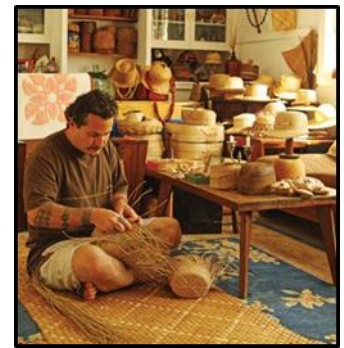


Figure 2. Traditional weavers use hala leaves for mats, hats, baskets, and more.

Photo: Nina Kuna
<http://www.mauimagazine.net/Maui-Magazine/March-April-2013/The-Weave-of-History/>



Figure 3 & 4. Yellowing seen on top of leaf (left) and hala scales infesting the underside of the leaves (right).

Description

The hala scale is a member of the pupillarial palm scale family, Halimococcidae. Adult females of this family are encased within their hard, shell-like exuviae. Like other scale insects, the hala scale disperses from its mother while in the first instar/crawler stage, and is spread by moving infested plants, leaves, and fruit. Crawlers can also be carried by wind, birds, other animals, insects, or people. These newly hatched hala scales are extremely tiny at about 0.3 mm long, impossible to see without high magnification. Once crawlers begin feeding and developing, they settle and (females) become sessile (stay in place for the remainder of their lives). Mature females are oval, black, with a white waxy ring around their bodies (fig. 7). Other stages may not have the white waxy ring. They are around 0.6 mm long, still difficult to spot on the underside of large hala leaves, and in the crevices of seeds (fig. 6) and plants. The hala scale's inconspicuous size can make it difficult to detect, and easily moved around on infested plant material.



Figure 5. Visible dead leaves and dying crowns on an infested hala tree from the coastal hala forest of Hana, Maui.



Figure 6. Hala scales also infest the fruit, making this another distribution pathway.

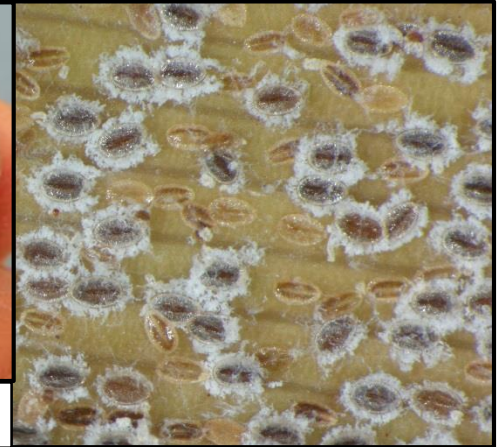


Figure 7. Magnified females with black oblong bodies with white waxy fringe.

Distribution

Currently only known from Java, Indonesia and Singapore (Stickney 1934). In Hawaii, it is widespread on Maui and Molokai. A population has been found on Oahu, and is currently being treated.

Hosts

Hala scale has been recorded from *Pandanus* species (family Pandanaceae) including *P. penangensis*, *P. tectorius*, and *P. utilis* (Stickney 1934), however, all species within the genus *Pandanus* may be a potential host for hala scale, with some being more susceptible to higher infestations than others. Further investigation into the host range is necessary.

Control and Management

Chemical treatments are not effective at eliminating this invasive scale insect. In a low infestation, ultra pure oils may slow the spread of the scale, but may not kill the entire population. No natural enemies have been found attacking the hala scale in Hawaii thus far. HDOA is looking into exploration for biological control agents of the hala scale, as this is now our last option to save the remaining culturally important Hawaiian hala stands.



Figure 8. Heavily infested hala tree crown.

To prevent the further spread of this invasive species:

- Do not move any hala plants (*Pandanus* spp.), seeds, or green leaves interisland
- Do not visit other areas with hala after being exposed to infested trees
- When moving brown leaves from an area of infestation, or interisland, double bag and freeze for at least 48 hours
- Monitor your hala plants regularly and look for signs of yellowing or discoloration of leaves, or check the undersides for black and brown scales

If you suspect a new infestation of hala scale, please call:

Hawaii Island: 974-4146; Kauai: 241-7132; Oahu: 973-9525 ; Or Email: hdoa.ppc@Hawaii.gov

Reference:

Stickney, F.S. 1934. The external anatomy of the red date scale *Phoenicococcus marlatti* Cockerell, and its allies. United States Department of Agriculture Technical Bulletin 404: 1-162.