

# Cycad pest uses small size to hide from predators

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Aubrey Moore inspects cycad leaves in search of an insect pest that threatens the cycad populations in Guam and nearby islands. Moore and fellow researcher Thomas Marler have shown how the small insect can hide in secretive locations on the plants. Credit: Thomas Marler

One way to keep from getting eaten is to run. But recent research at the University of Guam's Western Pacific Tropical Research Center shows that sometimes it's better to just hide.

"The small size of an alien insect that feeds on a native tree from the western Pacific island of Guam allows it to hide in cracks and other locations that are out of reach for its only local natural enemy," said UOG entomologist Aubrey Moore.

Moore has teamed up with UOG ecologist Thomas Marler to study the relationship between the native cycad tree, known as "fadang" in the Chamorro language, and a minute alien insect pest called cycad aulacaspis scale (CAS). The pest arrived on Guam in 2003, and then spread to Rota 50 miles north and Palau 800 miles southwest of Guam. The pest has killed 90% of Guam's wild cycads. Findings about the ability of CAS to go undetected in secretive locations on cycad plants were published by Marler and Moore in the May issue of

the journal *HortScience*.

The researchers have been interested in using biological control efforts to save the native fadang populations on Guam, Rota, and Palau. A predatory [lady beetle](#) that feeds on CAS was introduced to the three islands to control the pest. "Our initial Guam release was in early 2005 and the beetle established quickly and appeared to be doing a good job of controlling the scale insects by preying on them," said Moore. But then a second epidemic outbreak of the scale pest occurred in late 2008 on Guam and early 2010 on Rota. Ecologists call this type of population behavior an "irruption" and it was this secondary increase in the pest population that caught the attention of the researchers.

"We wanted to know how the insect pest population could increase to such a serious threat level after the initial threat was brought under reasonable control by the predatory beetle," said Marler. When some of the tiny insects find a hiding spot where they can feed and make babies without fear of being eaten by the beetle, all it takes for a sudden increase in the pest population is for the beetles to migrate away from the area after they run out of accessible scale insects.

The *HortScience* article also explains a more insidious outcome of this ability to hide. Cycads are valuable landscaping plants. Many species of cycads are susceptible to the pest, and the out-of-sight crannies on the plants can harbor a few undetectable scale insects. "We believe this is one of the reasons the insect has been so successful in spreading throughout many countries in recent years, as visual inspection of imported plants cannot detect the hiding insects," said Marler.

Most programs for control of a pest that causes major agricultural or ecological damage do not rely on a single biological control organism. So the Guam team is making plans to introduce a second

natural enemy of CAS. They contend that the findings about the secretive nature of the scale [pest](#) help inform what sort of natural enemy is needed on Guam and Rota. "Our work has shown that we need to find a biological control organism that is small enough to follow CAS into its tiny hiding places," concluded Moore.

Provided by University of Guam

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