

INVASIVE SPECIES ON GUAM



**College of Natural
& Applied Sciences**
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Spathodea campanulata
African tulip tree

African tulip trees have been introduced as ornamental plants in many tropical locations, popular because of its spectacular reddish-orange flowers. Its ability to profusely produce seeds, fruits, and suckers when trees are cut down makes it a perfect invasive for tropical islands like Guam.

This fast-growing tree tends to colonize disturbed areas and native forests forming thick groves that compete with native plants for resources. Its shallow root system makes it susceptible to typhoon damage, but it recovers quickly with new growth. It is listed as one of the top 100 invasive species by the ISSG (Invasive Species Specialists Group).

Photo credits: Lauren Gutierrez



Aulacaspis yasumatsui Cycad Aulacaspis Scale

An insidious insect, cycad aulacaspis scale has helped to decimate what was once the most abundant tree species on the island, *Cycas micronesica*. This armored scale insect was first detected on Guam in 2003 and by 2005 it had spread to the native limestone forest habitat close to the initial outbreak. Cycad seedlings were the first to die then juvenile plants. Two other invasive insects have also contributed to the stresses upon this endemic cycad: the cycad blue butterfly, *Chilades pandava*, and a tiny moth, *Erechthias* sp. Controlling cycad aulacaspis scale is difficult. Spraying plants with horticultural oil has been somewhat effective in controlling scale infestations without harming beneficial insects that may feed on the scale.

Photo credit: F.W. Howard/University of Florida/Bugwood.org

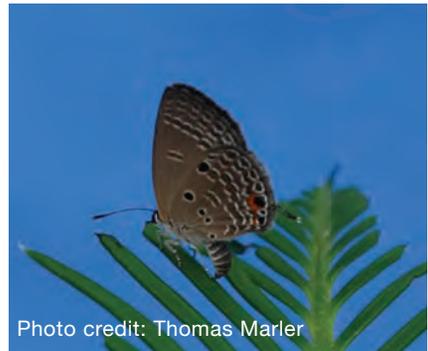


Photo credit: Thomas Marler



Wasmannia auropunctata
Little fire ant

Listed on the Global Species Database as possibly the top threat to biodiversity in the Pacific, the little fire ant was first detected on Guam in November 2011. If not controlled, the invasive little fire ant (LFA) will change the quality of life on Guam in many ways including the reduction of biodiversity. People will not be able to spend time in nature without getting stung making it impossible to plant or harvest crops.

CNAS faculty and staff are conducting research on pest management tools to control LFA on Guam and are collaborating with scientists around the world to find biological control methods to control fire ants. In order to prevent LFA from spreading around the island, do not move plants, potted plants, soil, or green trimmings from an area infested with LFA.

Photo credit: G. Curt Fiedler



Photo credit: Tel Aviv University

Vespa tropica
Greater Banded Hornet

A newly discovered species on Guam (July 2016), the greater banded hornet has been found in multiple sites around the island. These hornets are large and aggressive, therefore a possible health hazard to individuals with allergies to bees and wasps as well as children and the elderly. The sting from this large wasp is very painful.

Originally from Asia, the greater banded hornet has a distinct, bright yellow band around its abdomen. They build their nests in hollow trees and other protected areas or underground.

Extension entomologist Dr. Aubrey Moore has prepared an informative fact sheet on the greater banded hornet at <http://cnas-re.uog.edu/insect-fact-sheets/>

Photo credits: Olympia Terral



Achatina fulica
Giant African Land Snail

Introduced to Guam in 1943, this large snail is listed as one of the top 100 invasive species by the ISSG (Invasive Species Specialists Group). The voracious giant African land snail is an agricultural pest, can pose a health risk to humans, and is a threat to Guam's native snails. Although edible with proper preparation, this snail is a vector of the rat lungworm, which causes eosinophilic meningoencephalitis in humans.

Photo credits: G. Curt Fiedler



Boiga irregularis
Brown Tree Snake

The negative impacts of the brown tree snake on Guam are legendary. Since its accidental introduction in 1945, this invasive snake has devastated native bird, bat and lizard populations. This has impacted native plants through the loss of pollination services formerly provided by birds and bats. Ten species of forest birds have been eliminated from the island's ecosystem due to predation by this invasive serpent. Agriculture has been affected by the loss of insect control previously provided by birds and lizards. The legacy of this invasive snake on the island of Guam is a potent example of the dangers of the introduction of non-native animals to vulnerable island ecosystems.

Photo credits: Gordon H. Rodda/U.S. Fish and Wildlife Service



Antigonon leptopus
Coral Vine, Chain-of-Love

Native to Mexico, the prolific coral vine was introduced to Guam as an ornamental and was recorded as being present on Guam in 1905 by William Safford. It is considered highly invasive on islands in the Pacific. This plant produces many seeds, which are spread by birds, wind and water. This fast-growing vine can reproduce by tubers and stems and can survive in most any soil type. Coral vine climbs into the canopy covering trees with a thick mat preventing plants in the understory from receiving sunlight killing native plants.

Photo credit: G. Curt Fiedler



Photo credit: Else Demeulenaere



Oryctes rhinoceros Coconut rhinoceros beetle

The coconut rhinoceros beetle was first discovered on Guam in the tourist area of Tumon Bay in 2007, and since that time has spread throughout the entire island. Coconut and other palms are damaged when adult beetles bore into the crowns to feed on sap. Tree mortality occurs when beetles destroy the growing tip (meristem). Adult beetles lay their eggs in decaying organic matter including dead palm tree trunks and stumps, compost piles, and bags of potting soil.

CNAS scientists and staff are working with a network of scientists around the world to find long-term biological solutions to this severe threat to tropical palms in the Pacific.

Please visit: cnas-re.uog.edu/crb for more information.

Photo credits: Olympia Terral



Mikania micrantha
Mile-a-minute Vine

First reported on Guam in 1963, this vigorous vine is considered an invasive weed in much of the Pacific and Southeast Asia. Originally from South and Central America, this prolific weed is on the top ten list of important weeds of Pacific island countries and territories (PICTs) due to its aggressive climbing ability, which allows it to strangle young establishing plants. This affects agriculture and agroforestry plants, greatly impacting plant biodiversity in the areas it colonizes. Seed production is profuse with seeds spread by wind, animals, and people. It also easily reproduces vegetatively requiring only a piece of stem with one node to sprout roots and leaves.

Photo credits: Olympia Terral



Leucaena leucocephala
Tångantågan

This highly invasive small tree is native to Mexico. It was planted on Guam to revegetate and contain soil erosion after the island was devastated during WW2. Tångantågan flowers and produces seeds year round, which allows it to reproduce quickly and form dense thickets. The trees are tenacious and difficult to eradicate, readily sprouting after burning or cutting. Locally, the nutritious tångantågan leaves are used to feed livestock and the wood is considered to be excellent for barbeques. CNAS researcher Thomas Marler has recently found that this non-native tree changes soil chemistry in unexpected ways that lead to a decrease in soil retention of nitrogen.

See cnas-re.uog.edu for more information.

Photo credits: Lauren Gutierrez



Babuvirus **Banana Bunchy Top Virus**

One of the most economically destructive diseases of bananas, banana bunchy top virus (BBTV) can devastate a plantation. Spread by the banana aphid (*Pentalonia nigronervosa*), once a plant becomes infected with BBTV all subsequent shoots will carry the virus. It is necessary to first kill the aphids that live in the whorls of the plant and then kill the entire plant and corm. Diseased banana plants cease to produce fruit, and become a source of the virus that can infect other healthy banana plants. CNAS and the Guam Department of Agriculture have been making disease-free tissue culture banana stock available to the public for several years.

Photo credits: Alicja Wiecko



Chaetomorpha vieillardii Angel Hair Alga

In the spring of 2014, fishermen, natural resource managers and biologists raised concerns over the wide-spread green algal blooms along the eastern and southern shores of Guam. The culprit was an unidentified member of the green algal genus *Chaetomorpha*. DNA sequence analysis revealed that the nuisance alga in question is *Chaetomorpha vieillardii* and confirmed that the species is native to the Western Pacific. The bloom-forming strain of *Chaetomorpha vieillardii*, which is responsible for the outbreaks in Guam and more recently in Saipan, is characterized by a unique DNA microsatellite region. Researchers of the University of Guam and the Victoria University of Wellington are now investigating the distribution of the bloom-forming strain in the Indo-Pacific and its availability in the aquarium industry.

See guammarinelab.org for more information.

Photo credits: Tom Schils



Platydemus manokwari
New Guinea flatworm

Originally introduced to Guam as a biocontrol agent for the giant African land snail in 1943, its predatory habits have contributed to the decline of endemic snails throughout the Pacific. Manokwari flatworms are adept at hunting and capturing their prey using the sticky mucus they secrete to entrap snails and other invertebrates.

This flatworm needs the humid conditions of tropical islands in order to survive; they are often found in leaf litter and moist soils where they stalk their prey using chemicals in their body to follow the mucus tracks of snails.

The Global Invasive Species Database recommends the use of hot water to kill invasive pests such as the manokwari flatworm that may enter the island through the ornamental plant business. Hot water treatment can be utilized on potted plants held in quarantine.

Photo credits: G. Curt Fiedler





Sources:

CABI Invasive Species Compendium:
www.cabi.org

Invasive Species Specialists Group:
www.issg.org

Food and Agriculture Organization of the
United Nations: www.fao.org

Global Invasive Species Database:
www.iucngisd.org

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