## American palm cixiid (Haplaxius crudus)



Planthopper nymph (left) and adult (right) Photo: J.D. de Filippis, University of Florida, Bugwood.org (right)

- The adult stage of this planthopper, formerly known as Myndus crudus, is the vector of lethal yellowing (LY), a highly destructive disease of palms in Florida and the Caribbean Basin region. LY disease is spread when the planthopper feeds on an infected palm and then feeds on healthy palms.
- The adult female is about 1/4 inch long from its head to the tips of its wings.
- Immature stages (nymphs) develop in the roots of grasses or under organic mulch or litter spread over soil. Moist areas with tall grass support a greater number of nymphs than grass that is regularly maintained and mowed.

#### What to look for

- Premature dropping of coconuts that are black or brown at the stem end
- Blackening at inflorescence tips (flower clusters)
- Yellowing of older fronds, followed by younger fronds
- Ultimately, palm tree crown withers and topples from trunk within 3 to 6 months of infection



Symptoms of lethal yellowing: (Fronds yellow, dry, and droop (left); coconuts drop prematurely, blackened at stem end (right)

Photos: USDA Forest Service – Region 8 Southern Archive, USDA Forest Service, Bugwood.org (left); Nigel A. Harrison, University of Florida, Institute of Food and Agricultural Sciences (right)

These pests have not yet been detected in Hawai'i. To report sightings or suspicious damage symptoms, call the Pest Hotline for any island: 643-PEST (7378).

#### For more information, call the Hawai'i Department of Agriculture or Cooperative Extension Service Office in your county:

Hawai'i:	HDOA Hilo (16 E. Lanikaula St.) 974-4146
	CES Hilo (875 Komohana St.) 981-5199
Maui:	CES Kahului (310 Kaahumanu Ave.,
	Bldg. 214) 244-3242
Oʻahu:	HDOA Honolulu (1428 S. King St.) 973-952

Kaua'i: HDOA Lihu'e (4398 Pua Loke St.) 274-3072 CES Lihu'e (State Office Bldg., 3060 Eiwa Street, Room 210) 274-3471

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All photographs were taken by the authors unless otherwise specified.



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# Coconut and Palm Pests Alert





# These pests have <u>not</u> yet been detected in Hawai'i.

Please report sightings or suspicious damage, by calling 643-PEST (7378).

# **Coconut rhinoceros beetle** (Oryctes rhinoceros)





CRB adult (left) and CRB larva (right) Photos: Aubrey Moore, University of Guam (left); Yolisa Ishibashi, USDA (right)

Coconut rhinoceros beetle (CRB) is a pest of coconuts, other palms, and Pandanus species (lauhala). It is native to Southeast Asia and has been introduced throughout Asia and the western Pacific.

#### WHAT TO LOOK FOR

- Adult beetles, 1¾ inches long, feed nocturnally on plant juices by boring holes into the tree's crown, cutting into developing fronds within. When the frond emerges, characteristic V-shaped cuts are visible.
- Adult beetles live between 4 to 5 months and breed in dead standing palms and decaying organic material. Females can produce over 100 eggs in their lifetime. Eggs are whitish brown, 1/8 inch long, and take 8 to 12 days to hatch.
- Larvae (grubs) feed on rotting wood and leaf litter. When mature, they are C-shaped, 2 inches long, and white with brown head capsule and legs. Pupae develop within cocoons for 11 to 20 days. Development from egg to adult ranges from 82 to 207 davs.



V-cuts due to CRB boring into crown

USDA photo by Yolisa Ishibashi

#### WHAT TO DO

- Inspect palms and Pandanus trees with damaged fronds or crown for holes that may be caused by adult CRB. Inspect the leaf litter at the base of palms for CRB grubs.
- Monitor high-risk areas (transportation hubs, landscape with palms, especially coconut trees) with traps using CRB pheromone or rotting wood and leaf litter.

## **Red palm weevil** (Rhynchophorus ferrugineus)



Adult RPW with typical coloring, alongside larva (white) and pupa (left); Color type found in Laguna Beach, CA Photos: Christina Hoddle, Univ. of CA-Riverside, Bugwood.org (left); John Kabashima, Univ. of CA-Riverside (right)

Red palm weevil (RPW) is native to Southeast Asia and has made its way to other parts of Asia, Africa, Middle East, Europe, Oceania, Caribbean, and California, most likely in palm shipments.

#### WHAT TO LOOK FOR

- Larvae tunnel and feed from the top of a palm tree through the trunk; damage is often undetected until the tree dies and the crown topples.
- Feeding debris (frass) and thick white fluid may ooze from entry holes.
- · Gnawing sounds can be heard within a tree when large numbers of larvae are feeding.
- Adult weevils are large (1.5 inches long), typically reddish-brown with black markings (above left). RPW collected in Laguna Beach, CA, since 2011 are dark brown to black with a single red stripe on their heads (above right).



RPW damage Photo: Mike Lewis, Center for Invasive Species Research.

Bugwood.org

#### WHAT TO DO

- **Inspect** palm trees with damaged fronds or trees that have toppled for presence of RPW larvae.
- Monitor high-risk areas (transportation hubs, landscape with palms) with traps using RPW pheromone and kairomone ("magnet"), food bait (yeast, molasses), and solution to prevent escape (antifreeze or soapy water).

### **Red palm mite** (Raoiella indica)



Red palm mites

Photo: Daniel Carrillo

Red palm mites (RPM) attack palms and some fruit trees (banana, plantain) and are spread by wind dispersal. RPM occurs in Florida and throughout the Caribbean.

#### WHAT TO LOOK FOR

- Young palm plants are most affected: RPM feed on the undersides of leaves, causing yellow splotching on the upper leaf surface.
- Damage symptoms include:
- vellowing fronds
- underdeveloped inflorescence (flower clusters)
- small nut production



damage

Photo: Jorge Pena, Tropical Research and Education Center, Homestead. University of Florida

#### WHAT TO DO

• **Inspect** for mites (all life stages, including the eggs, are bright red). RPM does not produce silk as other spider mites do.