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Coconut Rhinoceros Beetle Behavior and Biology

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1 Taxonomy

The coconut rhinoceros beetle (CRB) is a species of scarab beetle belonging to the subfamily Dynastinae which contains over 300 species of rhinoceros beetles distributed throughout the world. There are several rhino beetles that attack coconut palms. The species which has invaded Guam is *Oryctes rhinoceros*.

2 Life Cycle

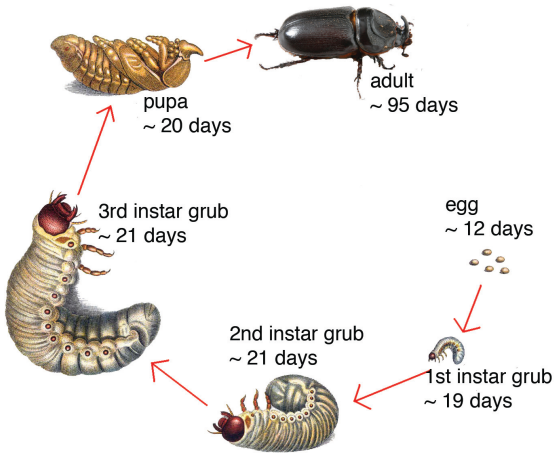

Figure 1: Coconut rhinoceros beetle life cycle.

CRB has four life stages: egg, larva, pupa and adult. The female rhino beetle lays about 100 eggs in decaying logs and other organic matter. It is important to remove dead coconut trees and other organic material from your yard and surrounding areas as they serve as rhino beetle breeding sites. CRB larvae (grubs) do no damage because they feed only on dead organic matter, helping to break it down into compost. After about 60 days, grubs leave breeding to pupate. Inside the pupa, the CRB transforms into an adult beetle.

3 Adult Behavior

CRB only damage coconut palms and other palms as adults. They fly for a few hours following dusk. Damage is done when they bore large holes, about one-inch in diameter, into the crowns of palm trees. They bore into the heart of the palm to feed on sap. They feed in the tree for two or three days and then fly off to look for mates and and a place to lay eggs.

4 Difference Between Sexes

Adult females (Fig. 2) can be easily distinguished from adult males (Fig. 3) as they have many reddish hairs on their posterior. Males may have some reddish hairs on their posterior but they appear in very small quantities. Both have a single horn.

Figure 2: Female coconut rhinoceros beetle.

Figure 3: Male coconut rhinoceros beetle.

5 Geographical Range of CRB

The native range of CRB is southeast Asia including the Philippines. During the past century, it has invaded many Pacific Islands including those of Fiji, Tonga, Samoa, and Palau. It was first detected on Guam in 2007 and on Oahu, Hawaii in 2013.

6 Recognizing CRB Damage

Figure 4: Coconut leaves damaged by coconut rhinoceros beetles.

Adult coconut rhinoceros beetles attack coconut, other palms, pandanus, and occasionally banana. CRB has not been observed to affect betel nut trees on Guam. When the beetles bore holes into the crowns of coconut trees to feed on the sap, they damage developing fronds. When these fronds grow out of the crown, the damage becomes apparent as distinctive v-shaped cuts (Fig. 4). A coconut palm will die if its growing tip (meristem) is destroyed by CRB. However, this is a rare occurrence in mature palms. Even badly defoliated palms can be nursed back to health if further CRB attacks are prevented.

Figure 5: Coconut rhinoceros beetle bore hole through a coconut petiole.

7 CRB Control Tips

- Clear all green waste including dead palm trees, stumps and trunks
- Manage coconut trees by removing dead fronds and inflorescences
- Monitor compost piles for larvae and destroy any larvae found

8 CRB Biocontrol

Green Muscardine Fungus (GMF) is an effective biocontrol agent that targets the adult and larval stages of CRB. GMF has been found effective for controlling rhino beetle populations on Guam. Successful auto dissemination of the fungus has been observed, as dead CRB have been found in areas that have not been treated with GMF.

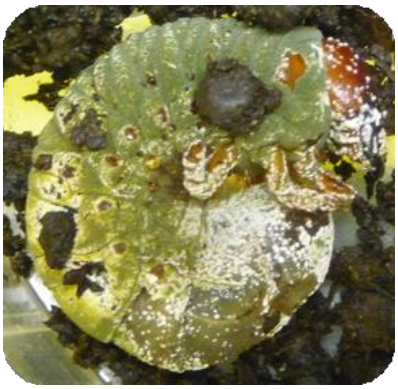

Figure 6: Male coconut rhinoceros beetle.

Guam Invasive Species Hotline
475-PEST (475-7378)