

Acalolepta aesthetica (Olliff), a longhorned beetle (Coleoptera: Cerambycidae)

BACKGROUND

A single longhorned beetle was found resting on a screen door of a Hawaiian Acres (Puna, Hawaii) resident in July 2009. This unusually large cerambycid beetle was identified by Dr. G. A. Samuelson (Bernice Pauahi Bishop Museum) and A. Tishechkin [United States Department of Agriculture, Agricultural Research Service (USDA-ARS), Systematic Entomology Laboratory] as *Acalolepta aesthetica* (Olliff), a species endemic to Australia and a new state record for Hawaii. Hawaii Department of Agriculture (HDOA) staff surveyed for additional specimens and infestations in the surrounding area. No other individuals were recovered until 2013 when several adult beetles were collected by residents in the Hawaiian Acres and Orchidland subdivisions of lower Puna. In 2014, the first host plant association for *A. aesthetica* in Hawaii was documented when a declining breadfruit (*Artocarpus altilis*) tree was cut down and a cerambycid larva was found tunneling into the rotting trunk base. The larva was reared to an adult and confirmed as *A. aesthetica*. In the following years, increasing numbers of adults have been collected and reported from lower Puna, most attracted to lights of homes at night. Several additional hosts have since been identified.

DESCRIPTION

A. aesthetica is one of the largest cerambycid longhorned beetles in Hawaii, reaching lengths of around 4.5 cm (Fig. 1; 1.8 in) from the front of its head to the tip of its elytra, and the smallest individual collected being 2 cm (.8 in). As with other wood boring beetles, the size and quality of the host material may determine its maximum adult size. The base color of *A. aesthetica* is dark brown and covered by slightly lighter in color, dense pubescence, giving it a velvet-like finish. Below the pubescence, covered with dense punctations (Fig. 3). The pronotum has two sharp spines (Fig. 2) and its antennae extend beyond the length of its body (male antennae can be twice as long as its body, female antennae are shorter). Larvae (Fig. 8) are legless, cream-colored, and can reach lengths of over 5.75 cm (2.23 in). There are many other longhorned beetles which may be mistaken for adult *A. aesthetica*.

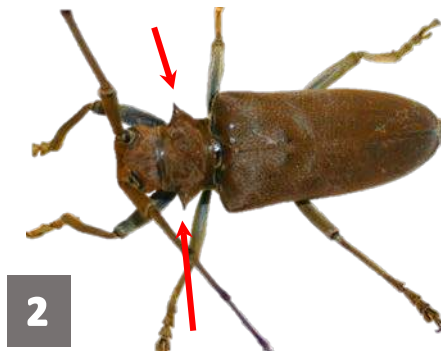


Figure 2. Arrows showing the two sharp spines on the sides of the pronotum.

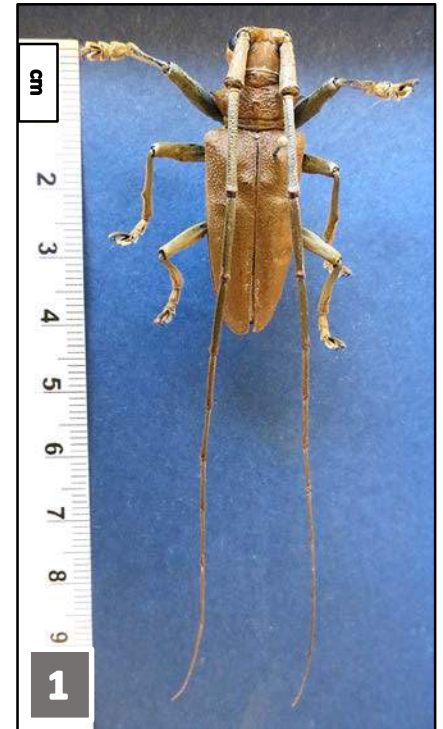


Figure 1. Adult male *Acalolepta aesthetica*.

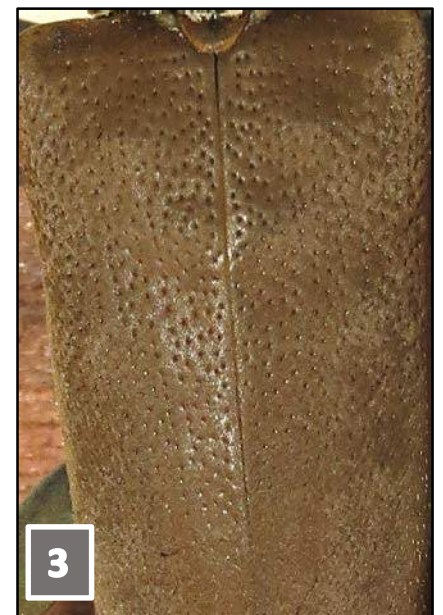


Figure 3. Punctations on the elytra and velvet-like pubescence.

Acalolepta aesthetica (Olliff)

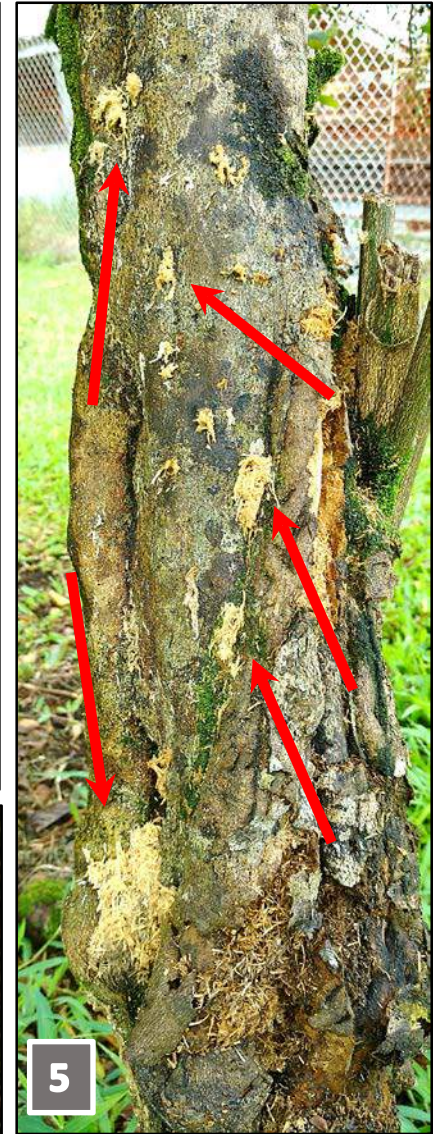
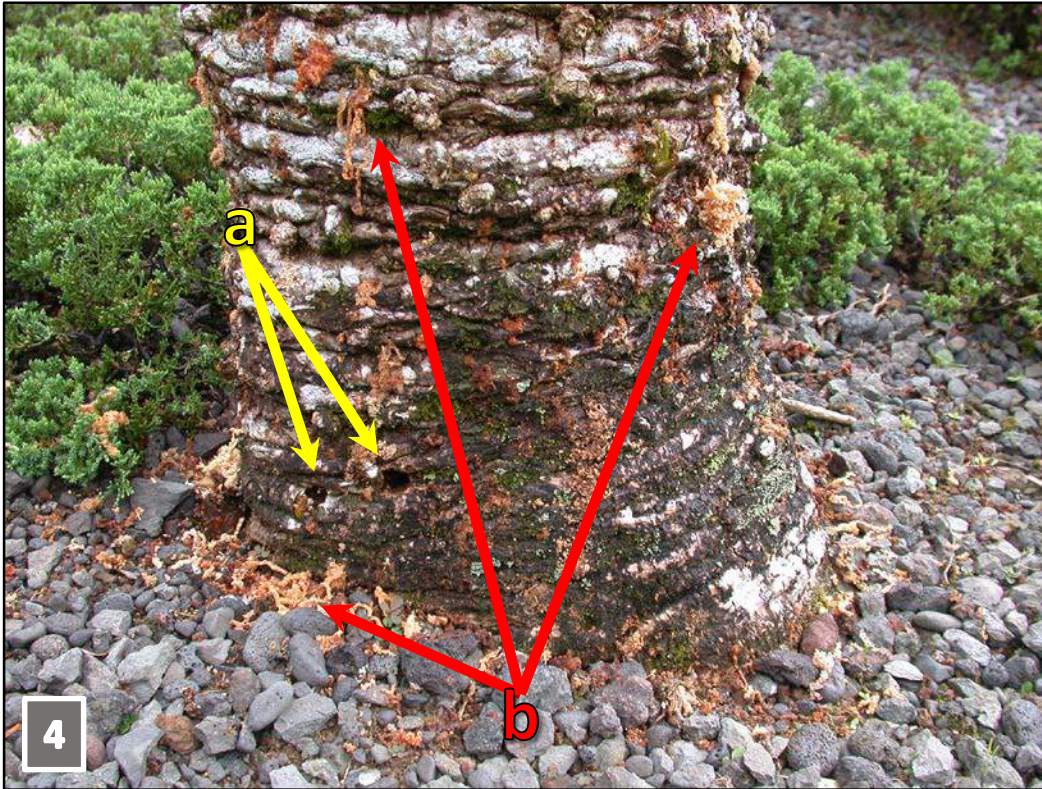


Figure 4. Trunk of queen sago showing (a) adult emergence holes and (b) frass pushed out by feeding larvae.

Figure 5. Trunk of citrus showing frass being pushed out by feeding larvae.

Figure 6. Kukui branch opened up to expose adult *A. aesthetica* undergoing sclerotization in gallery and showing frass packed behind it.

Figure 7. *A. aesthetica* pupa.

Figure 8. Late instar larva extracted from queen sago.

Figure 9. Cross section of Tahiti lime trunk showing galleries

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Figure 10. *Aegolipton reflexa*.
Photo: Karl Magnacca.



Figure 11. Exit hole after adult emergence.



Figure 12. Girdling on trunk of kukui by feeding larvae.

DESCRIPTION CONTINUED

The largest cerambycid species in Hawaii, *Aegolipton reflexa* (Fig. 10), is endemic to Hawaii and its larvae bore into dead trees such as *Acacia koa* and *Metrosideros polymorpha*. *A. reflexa* is about 5 cm (2 in) and has raised ridges on its elytra versus dense punctations. Other lookalike longhorned beetles are much smaller in size than *A. aesthetica* or will be different in coloration. Many have patterns such as lines and spots, which *A. aesthetica* lacks.

DAMAGE

Adult feeding habits remain unknown although they likely feed on leaves, petioles or bark of plants, without causing significant damage. Damage to trees is caused by the larvae which feed and tunnel within the woody portion of the host, compromising the structural integrity of the branches

and trunk. Larval feeding creates entry points for pathogens, making the host plant more susceptible to secondary disease infections and attack by additional wood boring pests, further compromising host plant health. Heavy infestation of already weakened trees may lead to plant death. Because cerambycid larvae are wood borers which feed within dead or dying trees, infestation of by other species of longhorn beetles may be mistakenly attributed to *A. aesthetica*.

Key symptoms of *Acalolepta aesthetica* infestation:

- Sawdust-like frass being pushed out of holes of trunk (Figs. 4 & 5)
- Round exit holes about 1.25 cm (.5 in) (Fig. 11)
- Girdling on trunk (Fig. 12)
- Sap oozing at oviposition sites (Fig. 13)
- Branch dieback and dropping

HOSTS

Hosts confirmed in Hawaii thus far include breadfruit (*Artocarpus altilis*), kukui (*Aleurites moluccanus*), queen sago (*Cycas circinalis*), *Citrus* spp., and cacao (*Theobroma cacao*). Gunpowder tree (*Trema orientalis*) is a probable host, as early instar larvae were extracted from a tree exhibiting key infestation symptoms (exit holes, girdling, etc.) but still needs to be verified. Avocado (*Persea americana*) is another possible host, however, HDOA could not confirm that the submitted sample truly came from an avocado tree branch and this still needs to be verified.



Figure 13. Sap oozing from entrance point in trunk of kukui.

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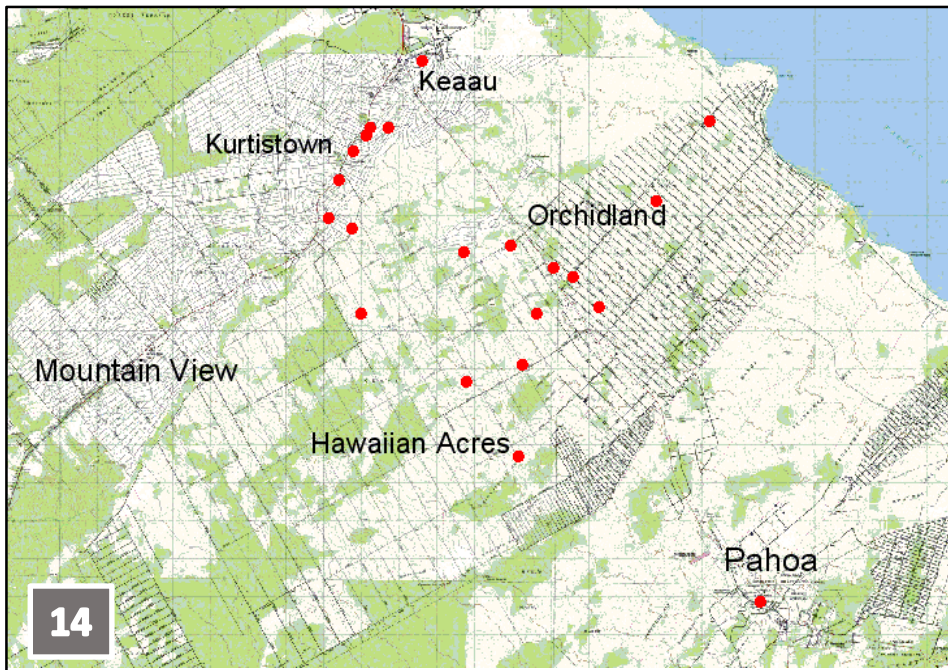


Figure 14. Map of lower Puna showing sites where larval infestations were verified by HDOA and adults have been collected and submitted to HDOA. This map does not include sightings of adults which were not submitted to or identified by HDOA.

protected by layers of plant tissue, deep in galleries and tunnels. Systemic insecticides may be an effective preventative measure as studies with related pest cerambycids have suggested.

To prevent the further spread of *A. aesthetica*, it is important that seedlings and trees of known host, originating from the infested areas be inspected carefully for signs of infestation. Infested trees should be destroyed and not relocated to uninfested areas such as neighbor islands or other communities on Hawaii Island.

IF YOU FIND AN ADULT BEETLE:

Collect the beetle and contain it in a secure container. Take clear digital photos of the beetle and record the location, date, person whom collected the beetle, and describe how you found the beetle (e.g. on a specific type of plant/tree, on your screen door at night, etc.)

Email the photos and the information to: HDOA.PPC@HAWAII.GOV

IF YOU SUSPECT DAMAGE TO HOST PLANTS BY LARVAL FEEDING

Take many clear digital photos of the damage. Use an object (coin or ruler) next to any emergence holes for a size reference. Record the location of the infestation, date observed, and what infestation symptoms you saw.

Email the photos and the information to: HDOA.PPC@HAWAII.GOV

Hawaii Island: 974-4146, Kauai: 241-7132, Maui County: 873-3555, Oahu: 973-9525

ACKNOWLEDGMENTS

We thank G. A. Samuelson, M. Day and J. Barlett (Department of Agriculture, Fisheries & Forestry, Biosecurity Queensland), A. Slipinski (Commonwealth Scientific and Industrial Research Organisation, Australian National Insect Collection), and A. Tishechkin.

DISTRIBUTION

- Native to Australia: Queensland
- Hawaii: Hawaii Island- Lower Puna District (Fig. 14; Hawaiian Acres, Kurtistown, Orchidland, Keaau, Pahoa).

CONTROL, MANAGEMENT, PREVENTION

There are no specific control or management techniques developed for *A. aesthetica* as it is not considered a pest in its native range of Australia. Information on the biology, ecology, and management of this species remains unknown. USDA-ARS is experimenting with lures for possible monitoring or control. Contact insecticides are not effective against boring larvae which are