



Acalolepta aesthetica (Olliff), “Queensland longhorn beetle” (Coleoptera: Cerambycidae)

BACKGROUND

Acalolepta aesthetica (Fig. 1) is a large longhorned beetle native to Queensland, Australia. Although not considered a pest in its native range, the species has become an invasive wood-borer in Hawai‘i, affecting agricultural, cultural, and ornamental tree species. Since its establishment, the beetle has demonstrated a capacity to infest a broad range of stressed or declining trees, causing significant damage to cacao, breadfruit, kukui, citrus, and other hosts. As populations expanded throughout Hawai‘i Island, the pest has become a growing concern for farmers, land managers, and invasive species programs due to limited control options and the potential for inter-island spread.

FIRST DETECTION

The first known detection in Hawai‘i occurred in July 2009, when a resident in Hawaiian Acres (Puna) found a large longhorned beetle on a screen door. The specimen was confirmed as *A. aesthetica* by specialists at the Bishop Museum and USDA-ARS. Despite initial surveys, no additional beetles were recovered until 2013, when more adults were reported from the lower Puna subdivisions. In 2014, the first host association was documented when a larva extracted from a declining breadfruit tree in Hawaiian Acres was reared to an adult and confirmed as *A. aesthetica*. This verified establishment of a breeding population.

CURRENT SITUATION

Originally confined to lower Puna, *A. aesthetica* has expanded beyond the initial “hot zone” and is now established in **Hilo** and throughout the **Hāmākua Coast**, with confirmed presence as far north as **Honoka‘a** and **Āhualoa**. Reports from cacao and breadfruit farms indicate sustained larval infestation, repeated attacks on mature trees, and increasing economic impacts. Farmers have documented tree loss, reduced yields, and significant labor required for monitoring and tree removal. Anecdotal evidence suggests that localized ecological interactions (e.g., naturally occurring fungi, potential predators) may be reducing pest pressure in portions of Puna, but the species remains a high-risk invasive with demonstrated geographic expansion. Because adults may hitchhike on vehicles or firewood, and infested logs can harbor larvae for many months, the risk of spreading to other islands remains high.

DESCRIPTION

A. aesthetica is one of the largest cerambycid longhorned beetles in Hawai‘i, reaching lengths of around 4.5 cm (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 it is covered by a dense pubescence which is slightly lighter in color, giving it a velvet-like finish. 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).

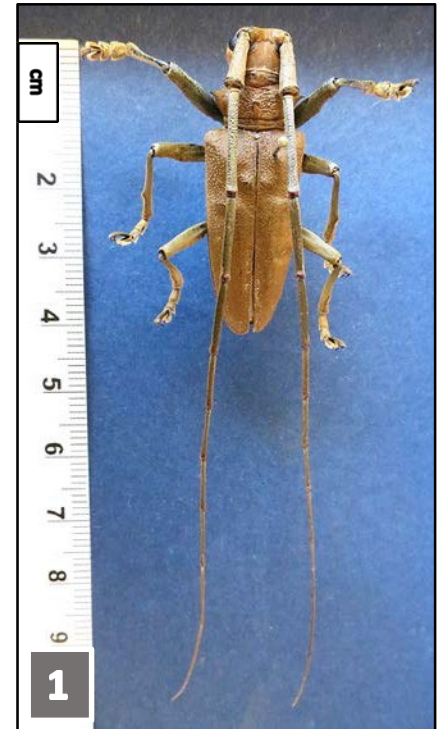


Figure 1. Adult male *Acalolepta aesthetica*.

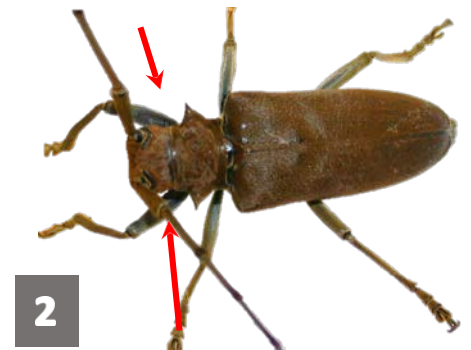


Figure 2. Arrows showing the two sharp spines on the sides of the pronotum.



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DESCRIPTION CONTINUED

On the elytra, there are dense punctations (Fig. 3). 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*. The largest cerambycid species in Hawai‘i, *Aegolipton reflexa* (Fig. 10), is endemic to Hawai‘i 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.

BIOLOGY & DAMAGE

Adult beetles are nocturnal and may feed lightly on bark or foliage, but adults cause minimal damage. The larvae, however, are aggressive wood-borers that tunnel within trunks and branches, feeding on the cambial tissues responsible for nutrient transport. As larvae feed deep within woody tissue, infestations are difficult to detect early and nearly impossible to control chemically. Larval feeding also creates entry points for secondary pests and pathogens, further weakening host trees.

The risk of widespread ecological and agricultural damage is substantial as *A. aesthetica* can attack nearly 20 different tree species. However, cerambycid larvae are wood borers which feed within dead or dying trees. Infestation by other species of longhorned beetles may be mistakenly attributed to *A. aesthetica*.

Key characteristics of larval biology and damage include:

- Larval galleries that compromise structural integrity of the host
- Sawdust-like frass extruded from entry and feeding holes (Figs. 4 & 5)
- Round exit holes about 1.25 cm (.5 in) (Fig. 11)
- Girdling, sometimes encircling the trunk and killing all tissue above the damage line (Fig. 12)
- Sap exudation from oviposition sites (Fig. 13)
- Dieback, branch decline, or full tree mortality in heavily infested hosts

HOSTS

Verified true hosts in Hawai‘i include breadfruit (*Artocarpus altilis*), kukui (*Aleurites moluccanus*), queen sago (*Cycas circinalis*), *Citrus* spp., cacao (*Theobroma cacao*), mulberry (*Morus alba*), trumpet tree (*Cecropia obtusifolia*), Norfolk pine **cut logs** (*Araucaria heterophylla*), avocado (*Persea americana*), kalamungay (*Moringa oleifera*), gunpowder tree (*Trema orientalis*), hibiscus (*Hibiscus* spp.), croton (*Codiaeum variegatum*), and elderberry (*Sambucus nigra*). Probable hosts which either exhibited symptoms of larval infestation or adult emergence and need to be confirmed by rearing larvae to adulthood include durian (*Durio* sp.), tree spinach/chaya (*Cnidoscolus aconitifolius*), passion fruit (*Passiflora edulis* var. *flavicarpa*), and various cycads.

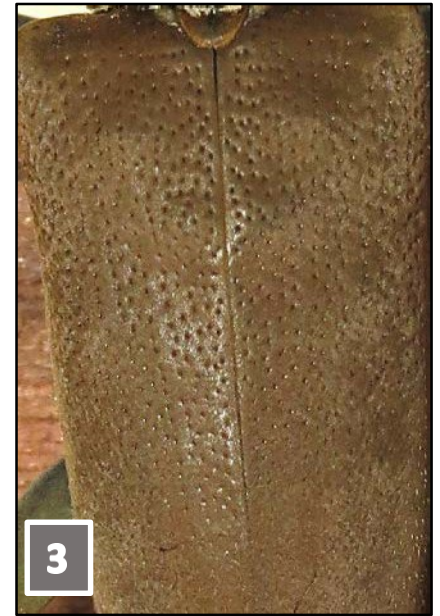


Figure 3. Punctations on the elytra and velvet-like pubescence.

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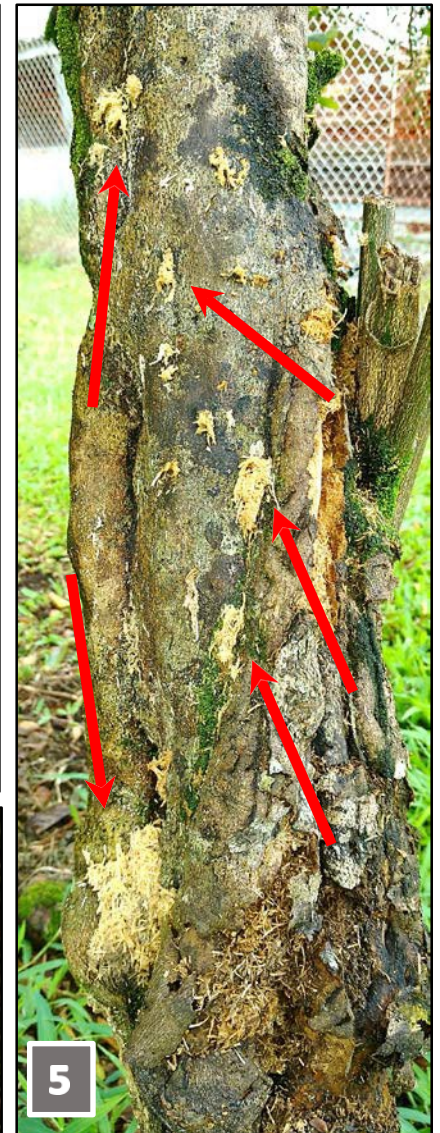
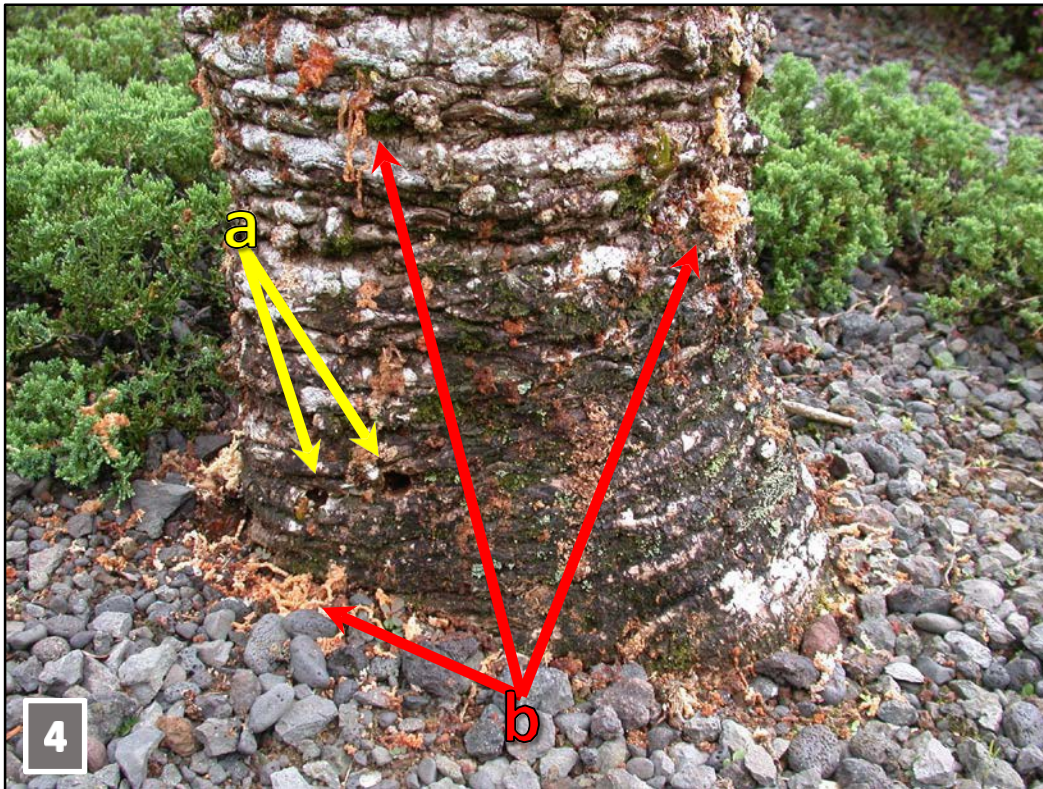


Figure 4. Trunk of queen sago showing (a) adult emergence holes and (b) frass pushed out by feeding larvae.

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.

DISTRIBUTION

- Native to Australia: Queensland
- Hawai'i as of December 2025
 - Established: Lower Puna (Ainaloa, Hawaiian Acres, HPP, Orchidland, Kea'au, Kurtistown)
 - Expanded Range: Hilo District and the Hāmākua Coast (Honoka'a, Āhualoa)
 - Pathways: Hitchhiking adults, infested logs, movement of green waste, firewood, and wood products

CONTROL, MANAGEMENT, PREVENTION

There are currently no effective conventional insecticides that can reach larvae inside deep galleries. Management relies heavily on sanitation, host removal, and unnecessary movement to prevent spread.

Recommended Management Actions:

- Remove and destroy infested trees: Chip or mulch material in place whenever possible.
- Do not transport host logs, branches, mulch, or green waste from infested zones.
- Regularly monitor high-risk hosts (breadfruit, kukui, cacao, citrus, avocado).
- Improve tree health and reduce stress, since larvae preferentially attack weakened hosts.
- Educate farm and community partners regarding signs of infestation and proper disposal methods.

If Found Outside Known Infested Areas:

- Collect adults securely and report immediately
- Take photographs of beetles or damage with a size reference such as a coin
- Submit observations to DAB.PPC@hawaii.gov or 643pest.org
- Call (808) 643-PEST

This beetle's spread has been tied to human-assisted movement of infested materials. Controlling the movement of host materials and rapid reporting are currently the best tools for protecting uninfested areas, including neighbor islands.

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

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