

Brontispa longissima

System: Terrestrial

Kingdom	Phylum	Class	Order	Family
Animalia	Arthropoda	Insecta	Coleoptera	Chrysomelidae

Common name**Synonym**

Brontispa froggatti , Sharp
Brontispa palmivora , Gres
Brontispa simmondsi , Mlk.
Brontispa reicherti
Brontispa simmondsi
Oxycephala longipennis
Oxycephala longissima
Brontispa castanea
Brontispa froggatti
Brontispa longissima , var. *Javana*
Brontispa longissima , var. *Selebensis*

Similar species

Octodonta nipae, *Plesispa reichei*, *Anadastus sp.*

Summary

The Hispid palm leaf beetle attacks palm leaf fronds (as the name suggests) especially those of the coconut tree. It is an introduced pest in many islands in the Pacific Ocean and also some nations of the Pacific Rim including Taiwan. Its impact on tropical and subtropical cropping systems can be severe.



[view this species on IUCN Red List](#)

Species Description

Descriptions vary. A small orange and black beetle; 10 mm long by 4 mm wide. The head and antennae are black and a small part of the wing cover is yellow-brown. The remainder of the wing cover is black (French 2006). The adult beetle is reddish brown in colour and is about 7.5 to 10 mm long and 1.5 to 2 mm wide; females which are generally larger than the males (Wickramananda 2007). Eggs are wide brown and measure 1.4mm by 0.5mm; larvae measure 8 to 10mm long; pupae measure 9 to 10mm long and 2mm wide (FAO 2007; ASEAN IPM 2007). For an illustration please see: Gressitt (1960): page 105.

IDENTIFICATION OF SYMPTOMS: Young leaves appear burned or scorched resulting from the feeding damage of *B. longissima* (ASEAN IPM 2007). Larvae and adults feed on unopened fronds chewing narrow lines parallel to the midrib causing the leaf to look striped (French 2006).

Notes

Behavioural notes: The beetles are nocturnal and fly well. They always live in the still-folded leaflets and move outside only to infest the nearby palms or for mating.

Lifecycle Stages

Eggs are laid in the still-folded leaflets of both young and mature coconut palms. The eggs are surrounded by debris and excrement, and laid longitudinally in rows of an excavated area of leaf tissue. They hatch between three to seven days. In two to five days they hatch to feed as larvae on the unopened leaves. In 36 days they form pupae which open 6 days later. The adult beetle matures two weeks after emergence from the pupa and lives for two to three months (French 2006; ASEAN IPM 2007; FAO 2007). The whole cycle from egg to adult occupies about five to seven weeks in Java and Sulawesi, but can extend to nine weeks in other (presumably cooler) places (Kalshoven 1981, Lever 1969, in FAO 2007).

Habitat Description

Temperatures between 24 and 28 deg;C are favourable for the growth of the beetle (Yihai *et al.* 2005). Young palms less than four years old are particularly attractive to the beetle and at greater risk of infestation; the young leaves of older trees are firmer and less suitable as breeding habitats (FOA 2007). The microenvironment of the beetle is in the heart leaves of the crown of palm trees (Liu Lin & Shiau 1989).

Reproduction

The female on average lays 120 eggs in the course of several weeks (Kalshoven 1981, in FAO 2007), which produce 40 larvae.

Nutrition

Hispid beetles *Brontispa longissima* are palmivorous insects (Creighton 1973, Lever 1979, in He *et al.* 2005/06). The larvae and adults are mostly found in the partly opened young leaflets of palms. Both adult and larvae typically feed on the epidermis and parenchyma of the leaves removing strips of tissues from the leaflets and destroying the growing points of the palms (Fenne 1996, Howard *et al.* 2000, in He *et al.* 2005/06; Gutierrez 1978).

General Impacts

Host range: Up to 36 species in 26 genus have been recorded as host plants for the coconut hispid beetle; these include (APFSIN Undated): Coconut *Cocos nucifera* (most favored host); Royal palm *Roystonea regia*; Alexandra palm *Archontophoenix alexandrae*; Sago palm *Metroxylon sagu*; California fan palm *Washingtonia filifera*; Mexican fan palm *Washingtonia robusta*; Bottle palm *Hyophorbe lagenicaulis*; Chinese fan palm *Livistonia chinensis*; Madagascar palm *Chrysalidocarpus lutescens*; and Areca nut palm (betel palm) *Areca catechu*.

Direct damage: Seedlings, mature coconut trees and ornamental palms are all affected; however, palms up to five years old are at the greatest risk of infestation by the coconut hispid beetle (ASEAN IPM 2007; PestNet 2002). The coconut beetle attacks unopened young fronds; as the spear unfurls the beetle moves on to other palms or the next emerging spear; it does not attack leaves that are already emerged. Beetle larvae chew large areas of the leaflets killing underlying tissues and reducing leaf photosynthesis; photosynthesis may be reduced to zero in the case of multiple beetle attacks. Beetle attacks result in the reduction of the amount of reserves available to the plant to produce new growth or form reproductive structures; flower and fruit and subsequently "nut" production are significantly reduced. Infested palms are more susceptible to drought and diseases such as fungal rot (PestNet 2002). Severe infestations may result in the complete defoliation of the palm (Lu et al. 2008); in the worse cases palms, especially young ones, die from severe infestation (Kalshoven 1981, Stapley 1980, He et al. 2005/06).

Economic impacts: Agricultural: Coconut *Cocos nucifera*, oil palm *Elaeis* spp. And ornamental palms are all affected by the coconut hispid beetle and are all important industry crops. Coconut industries are at risk of reduced yields due to beetle infestations. Coconut production losses due to the coconut hispid beetle have been recorded to be as high as 30% to 50% in Vietnam and 50% to 70% in Samoa (Tan Viet 2004; Voegelé 1989). South East Asia and the Pacific are particularly affected. Infestation by the coconut hispid beetle has the potential to have a drastic affect on the livelihoods of whole villages; in some localities 90% of the people rely on the coconut for their livelihood (Quirante 2007). Where the coconut hispid beetle has been left unchecked coconut processing factories have been shut down, thousands of workers have been let off and farmers have been left without work (Bernama 2007).

Tourist industry: Idyllic tropical island landscapes dotted with tall palm trees are an essential pull-factor employed to entice people to travel to South East Asia and the Pacific. Browning and dying palms degrade these landscapes, are unmarketable and have negative consequences for the tourism industry and the people whose livelihoods depend on tourism. The natural environment and its use for recreational activities is also spoiled for local people and residents.

Please follow this link for more information on the [management and impacts of the coconut hispid beetle](#).

Management Info

Preventative measures: Prohibition of the movement of host palm seedlings (including ornamental palms) and potential habitat material, including palm produce (eg: coconut leaves, items made from palm fibers) is necessary to prevent spread of the beetle pest to new areas. The use of check points, emergency legislation and emergency measures are all useful management tools. This might include cutting down infested palms and hanging insecticide bags on palms up to three kms from the area of infestation. Raising awareness among stakeholders and the general public and training programs are important for the ongoing monitoring of beetle presence and to increase awareness of the risks involved in shifting palms and palm products. Phytosanitary measures in plantations and nurseries should also be encouraged.

Inspection and monitoring: Adult beetles, larvae and eggs are all located inside the tightly folded leaves young heart leaves in the throat of the palm; these leaves should be targeted during inspection. Symptoms of infestation by *B. longissima* include necrotic patches on the young leaflets which appear as white streaks and are caused by the beetle chewing the leaf (Fenne 1996, Howard et al. 2000, in He et al. 2005/06). Injured leaves of coconut seedlings show large, dead patches resulting from the coalescing of feeding strips; the leaves finally tear leaving a ragged appearance (He et al. 2005/06).

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Pathway

Lack of strict quarantine on the movement of palms (particularly ornamentals) is considered as a major factor in the spread of *B. longissima* (FAO 2007). It is suspected that this pest was accidentally introduced into Vietnam, the Maldives and the Philippines with shipments of ornamentals. The beetle can travel long distances by various means of transportation (Jian 2007). The spread of *B. longissima* and other coconut pests in Oceania is mainly attributed to human activities (Dharmaraju 1984, in FAO 2007).

Principal source: FAO (Food and Agriculture Organization of the United Nations). 2007. Developing an Asian-Pacific Strategy for Forest Invasive Species: The Coconut Beetle Problem - Bridging Agriculture and Forestry. [Report of the Asia-Pacific Forest Invasive Species Network Workshop 22-25 February 2005, Ho Chi Minh City, Viet Nam (RAP PUBLICATION 2007/02)]. FAO: Regional Office for Asia and the Pacific: Bangkok.

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BIBLIOGRAPHY

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