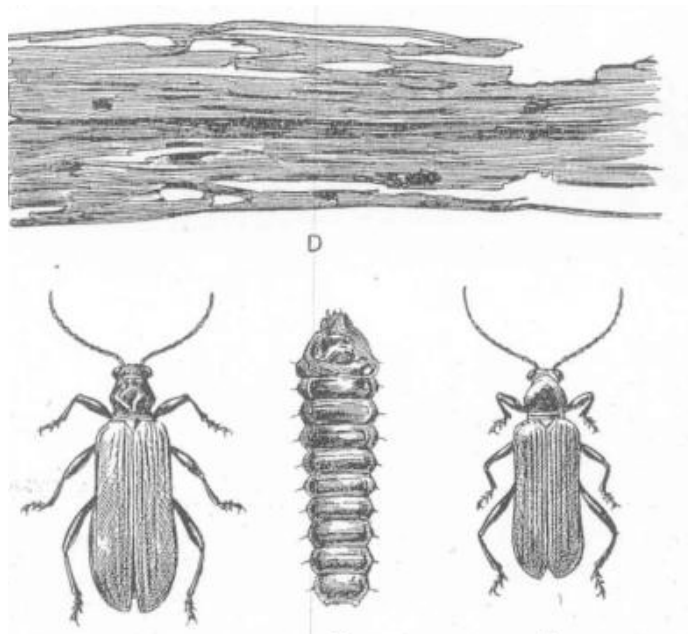


## Extension Fact Sheet 60: *Promecothea* Leafminer



**Common name:** Coconut leafminer; Cococnut leaf hispid

**Scientific name:** *Promecothea* spp. Several species are recorded from Solomon Islands.

**Hosts:** Coconuts are the most important crop attacked, but the beetle also infests betel nut, sago palm, and a number of ornamental and wild palms. It is not a pest of oil palm.

### Damage

The adults feed on the lower surface of the furthest third to a half of the leaflets, leaving narrow furrows; by contrast, the larvae mine the inner parts of the leaflets, closest to the midrib. The youngest three to four leaves are first attacked. In general, the beetles are more damaging to mature palms, 25 m or more in height, although seedlings may become infested. Occasionally, the green tissue on all leaflets is destroyed, and, consequently, young nuts fall, yield is severely reduced, flower production ceases, and palms may die. Entire coconut plantations may turn brown completely. Severe outbreaks set back nut production for at least 2 years. Such events are rare, however.

Outbreaks appear to be cyclical, every 10-15 years or so, and may be brought about by droughts. If this is the case, more frequent outbreaks of *Promecothea* can be expected in future, as El Nino events intensify due to climate change.

### Biology and Life Cycle

Eggs, about 1.5 mm long, are laid on the underside of the leaflets of younger fronds, either singly or 2-3 together – depending on the species – and covered with digested leaf fragments cemented together. The larvae hatch after 2-3 weeks (depending on the temperature), and penetrate the leaflets and form a mine parallel to the midrib. More than one larva can be

present in each mine. The larvae moult 2-3 times, and during this time the mine enlarges from 1 to 5 mm wide. The mines are 80 to 400 mm long, depending on the species and the number of larvae in the mine. The larval stages vary, too, up to 40 days before pupation, which also occurs in the mine. The pupal stage last about 12 days.

After emergence, males and females fly to younger leaflets on the same palm or to a young leaf of a palm nearby, grouping together on the underside of the fronds. The beetles are not strong fliers; but they prefer the tallest trees, especially ones in sunlight. The adult is about 1 cm long. Colours vary, but they are often colourful. One species from the Santa Cruz group has a black head with wings of orange nearest the front and brilliant bluish purple to metallic green behind. About 2 weeks after emergence, they mate. The adults live for about 4 weeks.

## **Detection and Inspection**

On mature coconuts, look for signs of adult feeding on the lower parts of young fronds; the adults eat the lower epidermis making long grooves into the leaf, parallel to the veins. Hold the leaflets to the light to see these grooves as fine white lines. The leaflets become brown, then grey, and almost white, and the tips shrivel and curl under. Look for the beetles during the day, 7-9 mm long, and brightly coloured. Look for signs of the larvae in the upper part of the leaflet. The older larvae should be visible at the end of the mines, which are straight, parallel, and similar in shape, when the leaflet is held to the light.

## **Management**

### **Natural enemies:**

It is believed that *Promecothea* is under natural control in Solomon Islands, as it is elsewhere, and only rarely do outbreaks occur. Several parasitoids, mostly minute wasps, that parasitise eggs and larvae, and parasitic fungi, have been reported from other countries. The ant, *Oecophylla smaragdina* was found to be of the greatest importance in controlling one species in Papua New Guinea, which also occurs in Solomon Islands. And the ants, *Pheidole* and *Technomyrmex*, are also known to attack egg masses.

### **Cultural control:**

- Hand pick *Promecothea* eggs and adults on seedlings in nurseries, and young palms in the field;
- Prune and burn infested fronds. Burning of infested leaflets while still on the palm is reported. Whether these are good practices is unclear, as they will also destroy any parasitoids present.

### **Chemical control:**

- The use of insecticides to control this insect is not recommended. Not only is it difficult to spray mature coconuts, and probably uneconomic to do so, but it will harm the parasitoids and delay the re-establishment of natural control. If sprays are needed in the nursery, use malathion or synthetic pyrethroids, such as lambda cyhalothrin or permethrin. READ THE INSTRUCTIONS BEFORE USING ANY PESTICIDE.