

## *Stenoma catenifer*

### Introduction

*Stenoma catenifer* (Walsh), is an important pest of avocado (*Persea Americana*). The larva of this pest causes significant damage to the fruit and seed of its primary host, avocado in the New World. It also damages the stem, twigs, fruits/pods and seeds of its many host plants belonging to the family Lauraceae. There is evidence to suggest that the pest has spread to other avocado growing parts of the world such as Hawaii (Ebeling, 1959). The moth was previously placed in the Family Stenomidae but has now been re-classified to the Family Oecophoridae (CAB International, 2001).

### Identity

Authority : Walsingham

Classification

Kingdom : Animalia

Phylum : Arthropoda

Class : Insecta

Order : Lepidoptera

Family : Oecophoridae

Subfamily : Stenomatinae

Genus : *Stenoma*

Species : *catenifer*

Common names : Avocado moth, Avocado seed moth, Oruga de la semilla del Aguacate, Barrenador del hueso y del tallo del aguacate, Barrenador del fruto, Pasador del fruto del aguacate, Palomilla barrenadora del hueso del aguacate, Chenille de la graine de avocatier, Broca do fruto do abacateiro.

Role : Pest

### Signs & Symptoms

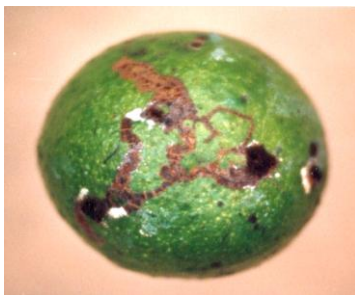


Fig. 1: Tunnels of *Stenoma catenifer* larva on the surface of avocado fruit



Fig. 2: Tunnels of *Stenoma catenifer* larva into the flesh of avocado fruit

Stems, growing points, fruits/pods and seeds may be damaged by *S. catenifer*. Infested fruit

and seed may be severely damaged by random tunneling of the larva on the surface of the fruit (Fig. 1) or into the flesh (Fig 2) and seed. Fruits may also show entrance and exit holes and frass exuded by the larva; there may also be some necrosis around the holes. Larvae may also cut the stem or base of young fruits resulting in early and significant drop of immature fruits. Larvae on terminal shoots may tunnel as far as 25 cm into the twig(s) causing dieback of affected parts and in severe infestation, dieback of the entire plant (Ebeling, 1959; Wolfenbager and Colburn, 1979).

## Morphology

### Egg

The egg is oval-shaped, about 0.6 mm long and 0.4 mm in diameter and light green when first laid. The corium is transparent at first then cream-coloured. It is rugose and reticulate with longitudinal grooves resembling irregular hexagons (Anonymous, 1980).

### Larva

The body of the newly emerged larva is creamy white, becoming light rose to reddish by the third instar, and dorsally violet and ventrally greenish at the fifth instar. The head is light brown to black, the thoracic shield light brown but darker on anterior margin. The fully-grown larva is 20-25 mm long (Ebeling, 1959; Anonymous, 1980; FAO, 1989; FAO, 1990).

### Adult

The adult moth (Fig. 3) is grayish brown, with a wing span about 25 mm; fore-wing with about 25 small dots described as forming an 'S' pattern (Ebeling, 1959; Anonymous, 1980; FAO, 1989; FAO, 1990) towards the outer margin. However, these dots can be more accurately described as forming a 'boomerang-shaped' pattern. There is also a black dot located medially on the forewing (Fig. 4). The frenulum on hind wing of females consists of three long sclerotised bristles, whereas the male frenulum has only one bristle. In addition, there is a large tuft of hair-like scales emanating from between the base of the costa and the subcosta (Anonymous, 1980; FAO, 1989; FAO, 1990).



Fig. 3 : Adult of *Stenoma catenifer*

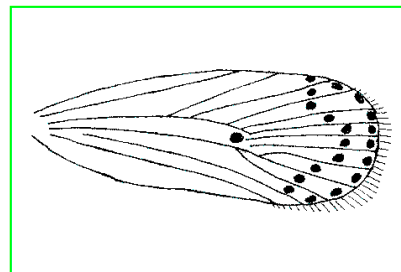


Fig. 4: Forewing of *Stenoma catenifer* (Photo credit : Cushman; USDA)

## Biology & Ecology

Boscan de Martinez and Godoy (1982)

The female lays 180-240 eggs deposited individually on terminal shoots, stems, or the fruit surfaces. Larvae hatch in 5 - 6 days (Anonymous, 1980; Boscan de Martinez and Godoy

1982). There are five larval instars with a developmental time ranging from 16 - 33 days (Anonymous, 1980; Boscan de Martinez and Godoy 1982). Pupation lasts duration is 7 - 17 days (Boscan de Martinez, and Godoy, 1982). An adult's lifespan is 3 - 7 days (Boscan de Martinez, and Godoy, 1982).

### Dispersal / vectors

Infected seed and fruit are transported to new sites by man.

### Management

Blacklight traps have been advocated as a control measure because adults are nocturnal and are attracted to light (Anonymous, 1980). In Brazil where *Apanteles* is believed to be a significant factor in controlling the pest, it was recommended that infested fruit be stored in such a manner as to allow the parasitoid wasp to escape (Ebeling, 1959). Varietal susceptibility to attack has been demonstrated (Salazar *et al.*, 1977; Ventura *et al.*, 1999) and it was suggested that such susceptible varieties could be used as trap plants in orchards (Ventura *et al.*, 1999).

### NATURAL ENEMIES

Egg parasitism of up to 40 %, by mainly *Trichogramma pretiosum* and *Trichogrammatoidea annulata* (Hymenoptera: Trichogrammatidae), has been reported in Brazil (Hohmann and Meneguim, 1993). The ichneumonid wasp *Xiphosomella stenomae* Cushman, a larval parasitoid, has been recorded in the Panama Canal Zone (Ebeling, 1959; Anonymous, 1980). A braconid wasp (*Apanteles* sp.), also a larval parasitoid is believed to be an important, causing 31 - 33 % parasitism of larva in Venezuela (Boscan de Martinez and Godoy, 1982). In Peru, seven species of parasitoids (five Hymenoptera, and two Dipetra: Tachinidae) were found to be efficient natural controllers of *S. catenifer*. The level of parasitism reached 70.37% from which natural control was mainly exerted by two species of *Apanteles* (Hymenoptera: Brachonidae) (Arellano, 1998).

### Host Notes

The known host range is restricted to members of the family Lauraceae. The **primary host** is *Persea americana* Mill (avocado). **Secondary hosts** include *Persea schiedeana* (coyo); wild *Persea*, *Beilschmiedia* spp. (Ebeling, 1959; Jamarillo, 1976; Anonymous, 1980; FAO, 1989), and *Chlorocardium rodei* (Schomb) Greenheart (Cervantes, 1999).

### Distribution

*Stenoma catenifer* occurs in the tropical and subtropical regions of the New World. It has been reported from Mexico, Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama, Venezuela, Colombia, Ecuador, Peru, Guyana and Brazil (CAB International, 2001); Argentina and Hawaii (Ebeling, 1959). The latter is more likely to have been an introduction (Ebeling, 1959).

## **PEST SIGNIFICANCE**

An infestation of *S. catenifer* can lead to significant economic loss. Fruit infestation levels may reach 90 % and more (Ebeling, 1959; Wolfenbager and Colburn, 1979), quite apart from losses due to premature fruit drop as a result of stem cutting (Ebeling, 1959). Dieback of twigs and even death of trees in heavy infestation (Ebeling, 1959; Wolfenbager and Colburn, 1979) are also of concern.

## **INSPECTION PROCEDURES FOR THE PEST**

Entrance and exit holes and exuded frass could be indicative of infestation by *S. catenifer*. The surface of the fruit may also show random scarring from feeding. Early fruit drop and dead or dying twigs are also strong indicators in the field.

### **Bibliography**

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### **Web Resources -**

[http://www.tarwi.lamolina.edu.pe/~acg/stenoma\\_catenifer.htm](http://www.tarwi.lamolina.edu.pe/~acg/stenoma_catenifer.htm)

[http://www.redpav-fpolar.info.ve/agrotrop/v34\\_1-3/v343a016.html](http://www.redpav-fpolar.info.ve/agrotrop/v34_1-3/v343a016.html)