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Mahogany Webworm, *Macalla thyrsisalis* Walker (Insecta: Lepidoptera: Pyralidae: Epipaschilinae)[1]

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Introduction

The mahogany webworm, *Macalla thyrsisalis* Walker, is a moth species whose caterpillar is a defoliator of West Indies mahogany, *Swietenia mahagoni* Jacquin, in Florida. The strikingly colored caterpillars and their extensive webbing often attract the attention of southern Florida residents during the spring.

Distribution

The mahogany webworm has been reported in southern Florida, Grand Bahama (Bahamas), Hispaniola, southern Mexico, Central America, Trinidad and near the Amazon Delta in Brazil, which suggests that this species is probably distributed throughout the range of *Swietenia* spp. in the Americas.

Description

The moth of the mahogany webworm has a dull, brown body. The forewings are of the same color with indistinct bands. In nature, the resting moth usually extends its forewings posteriorly with the hindwings beneath them. The dorsal surface of the hindwing, easily seen in spread specimens, is off-white in color with brown outer margins. The lower surfaces of both forewings and hindwings are off-white in color with thin brown margins. The antennae of the moths are filiform, which is a typical form of antenna in Pyralidae.

The larva is colorful, with a deep yellow ground-color and lateral bands that consist of three narrow black stripes alternating with two white stripes. An intermittent black line runs dorsally when the caterpillar is extended. This appears as a continuous line when the caterpillar contracts. The head is black with a brown labrum and mandibles. A white band along the anterior margin of the prothorax appears as a white collar. The six thoracic legs are black. As in Pyralidae in general and most other families of Lepidoptera, abdominal segments 3, 4, 5, 6 and 10 bear prolegs.

Biology

The adult moths fly in spring. The eggs have been obtained in the laboratory, but not seen in nature. They are probably oviposited on the foliage of

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Figure 1. An adult mahogany webworm, *Macalla thyrsisalis* Walker. Credits: F.W. Howard, University of Florida

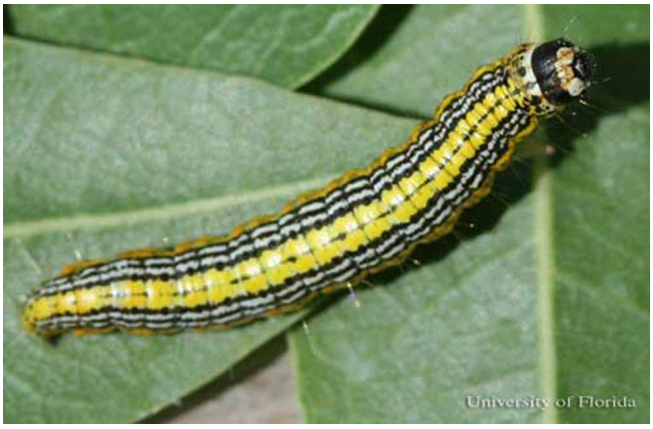

Figure 2. The larva of the mahogany webworm, Macalla thyrsisalis Walker. Credits: F.W. Howard, University of Florida

Figure 3. Lateral view of section of abdomen of larva of the mahogany webworm, *Macalla thyrsisalis* Walker, showing distinctive black and white lateral band. Credits: F.W. Howard, University of Florida

Figure 4. Close-up dorsal view of larva of the mahogany webworm, *Macalla thyrsisalis* Walker, showing intermittent black medial line. Credits: F.W. Howard, University of Florida

the host tree. Presumably the young larvae eat the eggs from which they hatch, a common behavioral trait in Lepidoptera. The larvae are solitary and each one spins a web to pull several leaves together and consume leaves from the leaf margins inward. The larval activity coincides with the period of spring flush and leaf expansion, and the larvae feed primarily on young leaves before they have matured. The larval stage is completed in about 10 days.

The mature caterpillars descend from the trees by ballooning, then crawl beneath objects or penetrate leaf litter or the upper surfaces of the soil. They enter a prepupal stage for five to seven days during which they build cocoons. The pupal period has been observed to last 18 to 20 days, but there are some indications that the pupal period may be extended in some individuals. The populations of larvae decline after the spring leaves mature.

Since mahogany webworm larvae feed only on young mahogany foliage which is primarily available in spring, and the populations of both the adult moths and larvae are concentrated in this period and are virtually absent the rest of the year, it is likely that the insect survives from spring to spring in an inactive state, perhaps as pupae.

Figure 5. Close-up dorsal view of larva of the mahogany webworm, *Macalla thyrsisalis* Walker. Note white anterior margin of prothorax and continuous dorsal medial line when caterpillar is contracted. Credits: F.W. Howard, University of Florida

Figure 6. A mahogany webworm larva, *Macalla thyrsisalis* Walker, in its webbing. Credits: F.W. Howard, University of Florida

Host Plants

In Florida, the mahogany webworm attacks only West Indies mahogany, *Swietenia mahagoni*. Both the tree and insect species are native to this region. The larvae will feed and develop on the foliage of some other species of Meliaceae if placed on it, including Honduras mahogany (*S. macrophylla* King), Nyasaland mahogany (*Khaya anthotheca* (Welw.) C.

Figure 7. Leaves of West Indies mahogany, *Swietenia mahagoni* Jacquin, tied together by a larva of mahogany webworm, *Macalla thyrsisalis* Walker. Credits: F.W. Howard, University of Florida

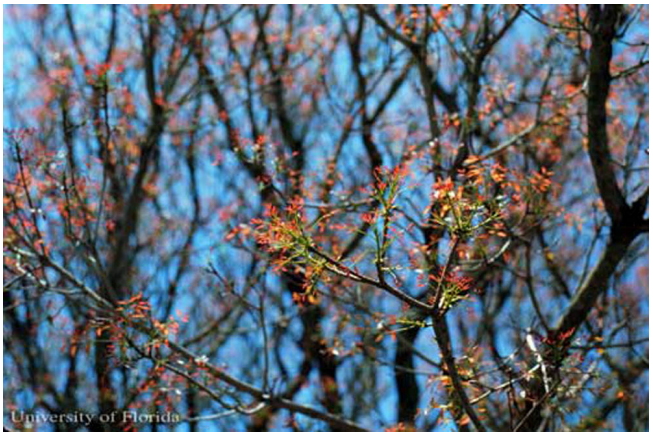

Figure 8. Young spring foliage of West Indies mahogany, *Swietenia mahagoni* Jacquin, has a reddish color. Credits: F.W. Howard, University of Florida

DC) and tropical-cedar (*Cedrela odorata* (L).). The latter are not native to Florida but are occasionally

Figure 9. Mature foliage of West Indies mahogany, *Swietenia mahagoni* Jacquin, is deep green in color. Credits: F.W. Howard, University of Florida

Figure 10. Cocoon of the mahogany webworm, *Macalla thirsisalis* Walker. Credits: F.W. Howard, University of Florida

grown here as specimen trees.

Honduras mahogany is distributed on mainland Tropical America from Mexico and Central America through the tropical regions of South America. Throughout the range of Honduras mahogany it is sympatric with tropical-cedar. However, the range of tropical-cedar extends beyond that of Honduras mahogany into the West Indies and further in South America. One or both of these are presumably the hosts of the mahogany webworm on the mainland of the American Tropics from Mexico to Brazil. The fact that in Florida the mahogany webworm does not attack these plants suggests that it may be different genetically from the species currently recognized as *M. thyrsisalis* elsewhere in Tropical America.

Figure 11. West Indies mahoganies, *Swietenia mahagoni* Jacquin, on the University of Florida Fort Lauderdale Research and Education Center. Credits: F.W. Howard, University of Florida

Damage and Economic Importance

Mahogany webworm consumes the leaf tissue of its host plants. During much of the 1980s and early 1990s, outbreaks of this insect occurred each spring in southern Florida, and the insects stripped the foliage of many West Indies mahogany trees. However, most defoliated trees quickly flushed new foliage which remained free of webworms for the rest of the duration of the growing season. It is doubtful that the spring defoliation, even when extensive, has an effect on health and growth of West Indies mahoganies of significance for shade trees. The most objectionable aspect of this pest is the aesthetic damage. Trees stripped barren by insects and shrouded in webbing incorporated with frass and dead leaves are an unpleasant sight. Additionally, large populations of the caterpillars become annoying when they mature and drop from the trees and search for pupation sites. They cover sidewalks and driveways and sometimes enter houses.

From the latter 1990s until the present, mahogany webworms have been present on West Indies mahogany trees each spring, but in light populations that are scarcely noticed by the general public.

Mahogany webworms sometimes attack young mahogany trees in nurseries, but they are usually not thought of as important nursery pests, probably

because their presence on the trees is very transitory and they are easy to control under nursery conditions. They have not been reported as pests of mahoganies in natural forests or in plantations where mahoganies are grown as timber.

Management

In southern Florida and presumably throughout its native range, the mahogany webworm is under natural control. One parasitic fly species, *Lespesia* n. sp. (Diptera: Tachinidae) and two species of parasitic wasps, *Habrobracon* sp. and *Apanteles* sp. (Hymenoptera: Braconidae) are natural enemies of mahogany webworm in Florida. The outbreaks of mahogany webworm in southern Florida mentioned above may be in part associated with cyclic declines in populations of natural enemies.

Figure 12. The cocoon of a hymenopterous parasitoid of the mahogany webworm, *Macalla thyrsisalis* Walker. Credits: F.W. Howard, University of Florida

Various insecticides were found to be lethal to mahogany webworms under laboratory conditions, but spraying large trees with insecticides, whether in urban or rural areas, may involve unacceptable health and environmental hazards. Spraying mahogany foliage with a neem product, which is a safer option, was found to be effective in preventing mahogany webworms from consuming foliage when applied just before the appearance of larvae in the spring, or when they were in early instars.

Selected References

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