

Caterpillar Outbreaks: Defoliation by the Royal Poinciana Caterpillar (*Melipotis acontioides*) and the Snowbush Caterpillar (*Melanchroia chephise*) in Naples, Florida

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Recent outbreaks of the royal poinciana caterpillar [*Melipotis acontioides* (Guenée)] and the snowbush caterpillar [*Melanchroia chephise* (Cramer)] provided opportunities to gather more information on these two Lepidoptera. The royal poinciana caterpillar (host is *Delonix regia*), in particular, appears to have long periods—10 years or more—between outbreaks. The Naples area experienced localized defoliation of very large trees in 2006. The snowbush caterpillar (host is *Breynia disticha*) occurred in outbreak numbers in 2005. Information and photos are provided on various aspects of their biology and host damage and responses.

Insect populations ebb and wane in cyclical fashion to the point that in some years certain species are difficult to find, while in other years overabundance may cause significant damage. This report covers two caterpillar species that were new landscape plant pests to this author since my move to southern Florida in 2001. Very little information was available in the literature about the biology of these species.

ROYAL POINCIANA CATERPILLAR (NOCTUIDAE: *MELIPOTIS ACONTIOIDES*). THIS CATERPILLAR IS UNUSUAL IN THAT IT IS ONE OF THE FEW CLIMBING CUTWORMS THAT CLIMBS AND DEFOLIATES TALL TREES. MOST CUTWORM SPECIES ATTACK VEGETABLE CROPS OR HERBACEOUS PLANT SPECIES. THIS CATERPILLAR HAS BEEN REPORTED FROM ARIZONA, CALIFORNIA, FLORIDA, TEXAS, AS WELL AS MEXICO, THE CARIBBEAN, AND CENTRAL AMERICA SOUTH TO BRAZIL (HEPPNER, 2003).

DAMAGE AND BIOLOGY. Moths have been collected most months in Florida, except February and April (Heppner, 2003). Rather than a discrete time frame, there are reports of this caterpillar defoliating royal poinciana trees at various times of the year. In Naples, FL in 2006 there were four, 30- to 40-ft tall royal poincianas that were 50% or completely defoliated by 10 Oct. (Fig. 1). D. Huff and H. Glenn, in the 1995 Tri-ology newsletter, reported a severe infestation on two trees in Homestead (Dade County) in early October. Watson (1943) reported larvae and pupae were found on 14 Jan. 1942 in St. Petersburg and that it was active all year in Key West. Later, Watson (1944) reported outbreaks in Ft. Myers in 1943 or 1944 (no month given) and royal poincianas were defoliated in Key West in July 1943. Some of the defoliated trees died the next year. In 1945, the caterpillars were active in Key West on 3 Apr. and 16 Oct., and scarce in-between those months (Watson 1945). In that same report, an outbreak in Homestead was active on 22 Aug. 1945.

This caterpillar is a night-feeder, racing up the tree trunk shortly after sunset in great numbers. In 2006, one Naples resident described this nocturnal caterpillar trek to the top of the canopy as a “river of caterpillars swarming up the tree trunk” (Fig. 2).

During the day, larvae hide in debris at the soil surface near the base of trees or sometimes in broken seed pods in the trees (Watson, 1944a). Larvae pupate in plant debris or piled up frass near the soil surface. No cocoon nor silken wrapping was found protecting the pupae. One predator observed by this author and mentioned by others was the paper wasp (*Polistes* sp.). Wasps were seen searching the tree trunk and feeding on caterpillars that weren't well hidden in their daytime resting place.

DESCRIPTION. The full-grown caterpillar is 1-5/8 inches long with highly variable markings, mottled, lateral black-brown longitudinal stripes with a brownish pink, mid-dorsal stripe that bears four to five diamond-shaped spots (Fig. 3). The moth's front wings are typical for a cutworm—dingy brown-gray with scattered dark brown shadings and dark brown zigzag markings at the wing tips. The most unique characteristic is the color pattern



Fig. 1. *Melipotis acontioides* caterpillars defoliated this 35- to 40-ft royal poinciana tree in Naples, FL. Picture was taken on 28 Sept. 2006. In 2006 there were at least four 30- to 40-ft royal poincianas that were 50% to 100% defoliated by 10 Oct.

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Fig. 2. The “river of caterpillars” streams up a royal poinciana trunk. *Melipotis acontioides* is a night-feeder and races up the tree trunk shortly after sunset in great numbers as if a dinner bell had sounded.



Fig. 4. Snowbush caterpillars start feeding at the top of the shrubs and work their way down—even stripping the bark off when the foliage is gone.



Fig. 3. The full-grown royal poinciana caterpillar is about 1-5/8 inches long. (Photo by Lyle Buss, University of Florida)

of the hind wings. Each hind wing is mostly white with a brown blotch toward the edge. The wingspread is about 1-1/2 inches.

COMMON HOSTS. Common hosts are Leguminosae: Caesalpinioideae, such as royal poinciana (*Delonix regia*), *Poeppegia procera*, and *Parkinsonia* species, including Jerusalem thorn (*P. aculeata*). This caterpillar has been released as a biocontrol agent for management of Jerusalem thorn in northern Australia where the plant has become an invasive weed species. This author attempted a crude feeding selectivity test with five larvae in ZipLoc® bags with the foliage of just one legume species: wild tamarind [*Lysiloma* sp. (probably *latisiliqua*)], sweet acacia (*Acacia farnesiana*), and popcorn cassia (*Senna didymobotrya*). There was very little to no feeding on these plant species in this simple test. Another variable to be considered is that the foliage of some legumes becomes toxic after it is picked (Dr. David Wagner, University of Connecticut, personal communication).

Should one have an outbreak of this caterpillar, there would be no need to spray an insecticide into the upper canopy due to a weak link in the caterpillar’s behavior—the nightly ascending

and descending of the tree. Contact insecticides could be applied just to the base of the tree. A burlap or cloth banding trap could be wrapped around the trunk. The hiding caterpillars could easily be removed by changing the band on a regular basis.

The mystery remains as to why there are such long periods between outbreaks and why the damage has occurred in different months and on select trees. Certain trees seem to be targeted and defoliated while nearby trees have very little or no feeding (Watson, 1944; and personal observation, 2006). Royal poinciana is native to Madagascar and the moth is not known in that country. Why the caterpillar does so well on this foreign tree is also intriguing. More information is needed on alternative hosts, where the caterpillars are spending most of the year, predators and parasites, and the number of eggs each female produces and where they are deposited.

SNOWBUSH CATERPILLAR (GEOMETRIDAE: *MELANCHROIA CHEPHISE*). This moth is reported throughout Florida, Texas, and south to Paraguay. Caterpillars must be active year-round as moths have been collected year-round in Florida (Heppner, 2003).

DAMAGE AND BIOLOGY. This inchworm (sometimes referred to as spanworm) occurred in outbreak numbers in mid-July 2005. Caterpillars had defoliated many 3- to 5-ft-tall hedges of snowbush (*Breynia disticha*) in Collier County. Damage appears on new foliage and the caterpillars work downward (Fig. 4). In some areas, due to repeating generations of caterpillars, the hedges had been denuded and the caterpillars were chewing the bark off the twigs so severely that the damage resembled rabbit feeding. Adrian Hunsberger, University of Florida Miami-Dade Extension, reported that 3-ft-tall snowbush were killed by this type of feeding (personal communication). Due to the suckering type growth of this shrub, there was some basal resprouting of the defoliated shrubs, but plants were not aesthetically appealing for many months. In 2006, populations were abundant, but not as widespread or damaging. There were reports of moths in protected areas of Naples in Jan. 2007 and the populations were moderate with scattered hedges defoliated through July 2007. A pheromone is apparently released by the females. A local

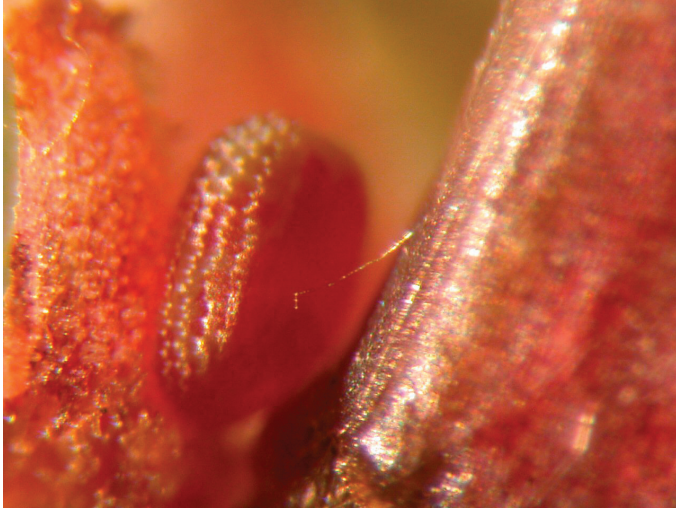


Fig. 5. An egg of the white-tipped black moth, *Melanchroia chephise*, is deposited at the base of a petiole near the main stem. Eggs are about 0.7 mm long, salmon colored, and with a pebbled surface.

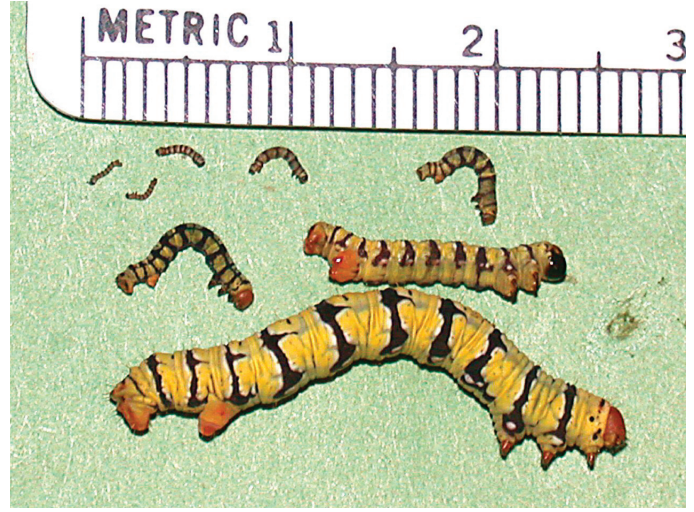


Fig. 6. The snowbush inchworm is a distinct yellow with black bands. From the size of these different instars or stages, it appears to have about six molts before it becomes a full-grown caterpillar.

lepidopterist found male moths swarming his outdoor rearing cages when females had emerged inside the cages (Mike Malloy, personal communication). Swarms of moths have been observed in the heat of the day, by the author, on trees near defoliated snowbush.

DESCRIPTION. The oval eggs are salmon colored with a pebbled surface (Fig. 5). They are deposited individually between the base of petioles and the main stem. The caterpillar is about 2 mm long when it hatches. This inchworm is a distinct yellow with black bands and goes through about six molts (Fig. 6). When it is 1 inch long, it is full-grown and ready to change into a pupa. The caterpillar enters the ground near the host or webs some leaves together and pupates on the plant in a loose cocoon. The pupa is about 3/8 inch long. This is a day-flying moth, which is unusual, as the typical *modus operandi* for moths is that of a covert, night-time navigator. All wings are a velvety, navy-blue-black with white margined tips, and the thorax is orange (Fig. 7). The wingspread is a little over 1 inch. It is sometimes referred to as the white-tipped black moth.

HOSTS. Most reported hosts (Heppner, 2003) are in the Euphorbiaceae: snowbush (*Breynia disticha*), Otaheite gooseberry (*Phyllanthus acidus*), and snow-on-the-mountain (*Euphorbia marginata*). Two other plants are listed that may be questionable: Joseph's coat (Amaranthaceae: *Amaranthus tricolor*) and white sapote (Rutaceae: *Casimiroa edulis*). In southern Florida, our office has only had reports of damage to the first two hosts and primarily on snowbush.

Management suggestions include pruning the new growth when the chewing has started, as the larvae do not seem to climb back readily. A pesticide containing *Bacillus thuringiensis* (*B.t.*) or a horticultural soap or a pyrethroid may be needed if repeated attacks occur. Considering that the plants are not too expensive, they may be easily replaced. More information is needed on predators and parasites and egg production of the females.



Fig. 7. The wings of the snowbush moth are a velvety, navy-blue-black with white margined tips plus an orange thorax. The wingspread is a little over 1 inch. It is sometimes referred to as the white-tipped black moth.

Literature Cited

- Coile, N.C. (managing editor). 1995. Tri-ology. Fla. Dept. Agr. Consumer Serv. Div. Plant Ind. 34(5): Entomol. Section, p. 6.
- Heppner, J.B. 2003. Arthropods of Florida and neighboring land areas. Vol. 17. Lepidoptera of Florida. Part 1: Introduction and catalog. Entomology Contr. No. 880. Fla. Dept. Agr. Consumer Serv. Div. Plant Ind., Gainesville, FL. p. 341–342; 432–433.
- Watson, J.R. 1943. *Melipotis acantoides* (sic) (Guen) in Florida. Fla. Entomol. 26(4):71.
- Watson, J.R. 1944. The damage of *Melipotis acantioides* to the royal poinciana. Fla. Entomol. 27(3):58–59.
- Watson, J.R. 1944a. The damage of *Melipotis acantioides* to the royal poinciana. Fla. Entomol. 27(4):103.
- Watson, J.R. 1945. The damage of *Melipotis acantioides* to the royal poinciana. Fla. Entomol. 28(1):18–19.