Fla. Dept. Agric. & Consumer Services
Division of Plant Industry

Urticating Caterpillars in Florida: 1 Io Moth, *Automeris io* (Lepidoptera: Saturniidae)[1]

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Figs. 1-3. *Automeris io* (Fabricius): 1) Adult female; 2) Early instar larvae; 3) Last instar larva (blue-green form). Photography credits: H. O. Hilton (Figs. 1, 3), M. C. Minno (Fig. 2).

INTRODUCTION: The urticating or "stinging" spines and setae of some caterpillars are a well-known chemical defense found in several families of Lepidoptera, especially Megalopygidae, Limacodidae, Saturniidae, and a few Nymphalidae, Anthelidae, Lasiocampidae, Bombycidae, Eupterotidae, Lymantriidae, Arctiidae, and Noctuidae (Matheson 1950; Riley and Johannsen 1938; Roth and Eisner 1962; Wirtz 1984). Toxicity in Lepidoptera is also found in adults, where scales may be urticating in some families (Notodontidae (Thaumetopoeinae), Lymantriidae, Arctiidae, and Saturniidae) or where integumental glands produce an urticating chemical (Zygaenidae and Arctiidae) (Rothschild *et al.* 1970).

Poison glands in urticating Lepidoptera are mainly of interest for their effect on humans, or lepidopterism as it is called (Wirtz 1984). Persons of average sensitivity experience stinging sensations from touching the spines which contain poison glands. Persons of extreme sensitivity can experience severe pain and allergic reactions. Cases are known of hospitalization being required due to severe dermatitis. Severe allergic reactions could cause death in extreme cases. Skin bleeding results from contact with saturniid caterpillars (*Lonomia achelous* (Cramer)) in Venezuela, which have poison spines containing an anticoagulant (Marsh and Arocha-P. 1971). Murtfeldt (1876) provided one of the early reports with her own reactions to various caterpillars, finding the puss caterpillar capable of producing an extreme stinging sensation, along with extensive swelling that lasted several hours. Similar reactions are noted by Frazier (1969) and Frazier and Brown (1980). Cases of allergic reactions to Lepidopteran adults and larvae have been reported where workers handled larvae or inhaled excessive numbers of dislodged urticating scales from adult moths (e. g., *Hemileuca* and *Hylesia* spp.), resulting in dermatitis or asthma-like reactions (Wirtz 1984). Most persons develop some immunity after repeated incidents with urticating caterpillars or adult urticating setae, but at least two species are known that produce cumulative effects resulting in more severe reactions after each successive occurrence (the New Mexico range caterpillar, *Hemileuca oliviae* Cockerell, and the brown-tail moth, *Euproctis chrysorrhoea* (Linnaeus), from Europe) (Wirtz 1984).

In Florida, the main stinging caterpillars are the io moth (*Automeris io* (Fabricius), Saturniidae), the saddleback caterpillar (*Acharia stimulea* (Clemens) [formerly in *Sibine*], Limacodidae), and the puss caterpillar (*Megalopyge opercularis* (J. E. Smith), Megalopygidae) (Biery 1977; Zak 1986). All species of Limacodidae and Megalopygidae appear to have urticating larvae. Minor irritation is also reported from two North American Arctiidae (*Euchaetes egle* (Drury) and *Lophocampa caryae* Harris)), Noctuidae (*Apatele* spp., *Catocala* spp.), and Lymantriidae (*Orgyia leucostigma* (J. E. Smith)). Other hairy caterpillars are not known to cause reactions to persons of average sensitivity.

The urticating setae of the io larvae are shown greatly enlarged in Fig. 4. Two types of poison spines are found, both having a poison gland (Gilmer 1925). The chemical nature of urticating poisons is not fully known and not reported specifically for io moth larvae, but Jones and Miller (1959) noted the dermatitis that results from it. Some caterpillar glands have been found to contain formic acid (Roth and Eisner 1962). Related groups of saturniids (*Dirphia* spp.) have histamine as the poison (Beard 1963; Picarelli and Valle 1971; Valle *et al.* 1954). Urtication results from touching poison spines or

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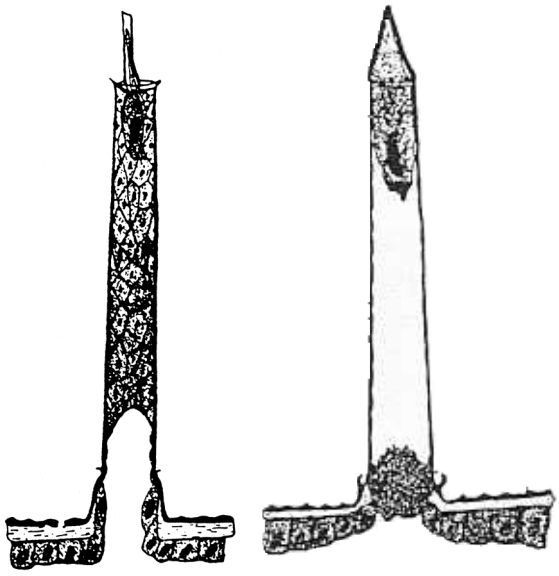

Fig. 4. Poison spines of Io moth caterpillar (after Gilmer 1925).

setae, thereby breaking the tip and releasing the poisonous chemicals, or by injecting into the skin via a puncture when more forcefully contacted. Adult io moths do not have any urticating scales.

IDENTIFICATION: The io moth adult is 2.0-3.5 inches (50-87 mm) in wingspan and easily recognized by the large eye-spots of the hindwings (Fig. 1). Adult males are mostly yellow, while females have brown forewings. Subspecies *A. io lilith* (Strecker) of Florida has male adults with distinctly red-brown forewings, especially in south Florida; the same type of red form is also found in southern Mexico and the Bahamas. The larvae have characteristic long yellow or green spines covering most of the body. Only a few other caterpillars may look similar, but these do not have the well-defined red and white lateral line. The io moth caterpillar has at least three discrete color forms: the usual last instar form is light green, with a distinct lateral body strip of red and white. Earlier instars (Fig. 2) are yellow overall and the lateral line is reduced. There also is a blue-green color form of last instars (Fig. 3) (Collins and Weast 1961).

DISTRIBUTION: Io moths are common throughout eastern NorthAmerica, north to southern Canada. They range west to southern Arizona and south to Central America, at least as far as Costa Rica. Over 200 other species of *Automeris* and related genera in Hemileucinae occur south of the U.S. border (Collins and Weast 1961).

HOST PLANTS: The io moth has one of the longest host plant lists, with over 100 recorded plant genera in North America, including such diverse plants as roses, cotton, hibiscus, azaleas, willows, clover, and palms. In Florida, io moth larvae are commonly found on oaks and other hardwoods.

BIOLOGY: Io moth larvae are leaf feeders, gregarious in early instars, then solitary as they grow. After several weeks of feeding, they make a simple paper-like cocoon away from the host plant. In Florida, there are 3-4 generations per year. There usually is only 1 generation in northern states.

CONTROL: If present in large numbers, caterpillars can be sprayed with a bacterial spray although usually the larvae are not so common as to warrant spraying (Anonymous 1994). Larvae should not be touched. Remedies for relief of urticating pain include initial removal of any remaining inserted spines by the use of adhesive tape, followed by ice compacts, mentholated vaseline, or an antihistamine medicine (Riley and Johannsen 1938; Frazier and Brown 1980).

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