

Bumelia Webworm *Urodus parvula* (Edwards 1881) (Insecta: Lepidoptera: Urodidae)¹

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Introduction

The bumelia webworm moth, *Urodus parvula* (Edwards) is a small, smoky colored moth that is sometimes encountered in light trap collections. The caterpillars (Figure 1) occasionally occur in isolated outbreaks (Watson 1914, Johnson and Lyon 1988) during which they defoliate red bays, *Persea borbonia* (L.) Spreng.



Figure 1. Bumelia webworm, *Urodus parvula* (Edwards).
Credits: Lyle J. Buss, UF/IFAS

Nomenclature and Classification

Edwards (1881) created the genus *Penthetria* in the family Zygaenidae and described two new species in the genus, *Penthetria parvula* and *Penthetria majuscula* (now *Cydosia majuscula* [Edwards]: Noctuidae). These species are similar in appearance and were often confused after Holland (1903, Pl. 29, Fig. 66) mistakenly illustrated *parvula* as *majuscula* (Kimball 1965). Bonniwell (1918) reported collecting many larvae and pupae of *Cydosia majuscula* in Florida, but

the cocoons he described were likely those of *parvula*, not *majuscula*. In fact, it is unlikely that *Cydosia majuscula* is resident in Florida (Kimball 1965, Heppner 2007).

Dyar (1898) synonymized the genus *Penthetria* Edwards with the genus *Cydosia* Westwood (family Noctuidae). He then stated that the species *parvula* was not assigned to any genus at that time. Busck (1910) placed *Penthetria parvula* in the genus *Trichostibas*, and Dyar (1913) classified it in the family Yponomeutidae. Finally, Forbes (1923) moved *Trichostibas parvula* to the genus *Urodus* Herrich-Schäffer 1854 (Herrich-Schäffer 1850–1858).

For many years *Urodus parvula* continued to be included in the family Yponomeutidae (e.g., Covell 1984, Heppner 1987) until Kyrki (1988) made *Urodus* the type genus of the new family Urodidae.

The common name for urodids is false burnet moths (Heppner 1998, Beadle and Leckie 2012) because of the resemblance of some urodids to burnet moths in the family Zygaenidae.

Distribution

The bumelia webworm occurs primarily in the coastal plain of the southeastern US from the District of Columbia westward to eastern Texas and north to western Tennessee (Figure 2). There is also an isolated record from western

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Virginia (Moth Photographers Group [<http://mothphotographersgroup.msstate.edu/species.php?hodges=2415>]).

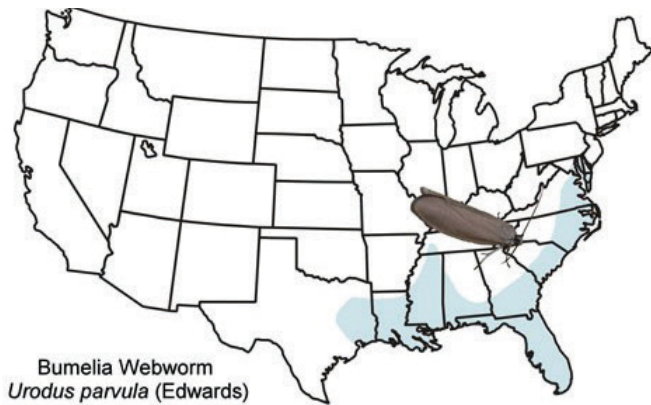


Figure 2. Distribution map of bumelia webworm, *Urodus parvula* (Edwards).

Credits: Donald W. Hall, UF/IFAS, (based primarily on records from the Moth Photographers Group map)

Description

Adults

The wingspread is 2 to 2.9 cm (approx. 0.8 to 1.14 in.) (Covell 1984). The forewings and body are smoky black, and the hindwings are lighter in color and somewhat translucent (Figure 3). Each forewing has an accessory cell (=chorda) (Heppner 1998) (Figure 4) that is difficult to see unless the scales are removed or the wing is cleared. The antennae are filiform, and ocelli (simple eyes) and chaetosema (sensory setae on head near eyes) are lacking. These characteristics distinguish *Urodus parvula* adults from the similar adults of the laurelcherry smoky moth, *Neoprocris floridana* Tarmann (Zygaenidae), which have bi-pectinate antennae and both ocelli and chaetosemata (Figure 5). The labial palpi of *Urodus parvula* are up-curved (Heppner 1998) while those of *Neoprocris floridana* are straight. Zygaenidae lack forewing accessory cells.



Figure 3. Bumelia webworm moth, *Urodus parvula* (Edwards). Credits: Lyle J. Buss, UF/IFAS

Males and females are similar in appearance. Males can be distinguished from females by their large external genitalia and by the short reddish area at the base of each wing near the costal margin (Frost 1972).

The typical resting position of urodids is with the wings folded back and roof-like over the abdomen (Figure 6).



Figure 4. Bumelia webworm moth, *Urodus parvula* (Edwards), ventral aspect of forewing showing accessory cell (delimited by arrows). Credits: Donald W. Hall, UF/IFAS

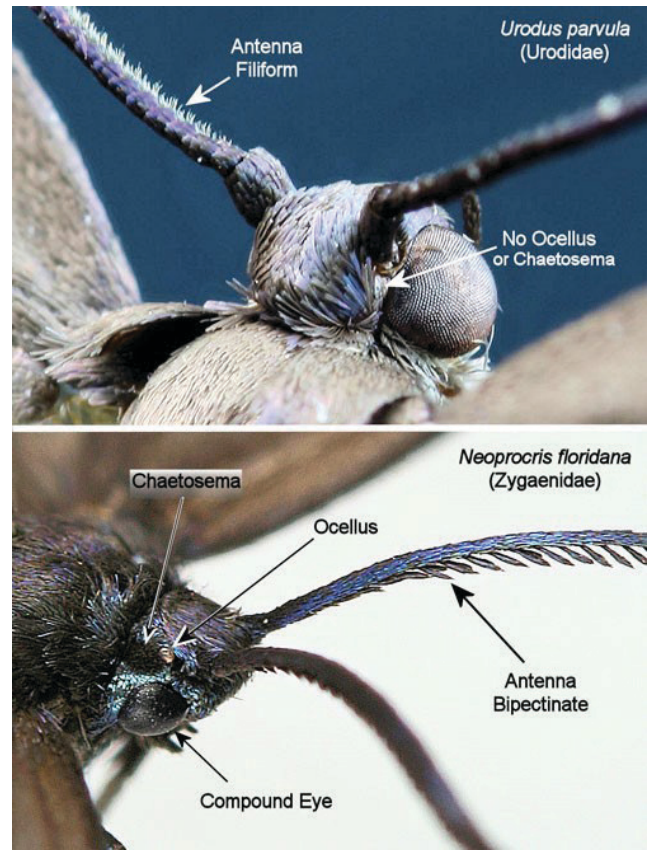


Figure 5. Bumelia webworm, *Urodus parvula* (Edwards) (top), and laurelcherry smoky moth, *Neoprocris floridana* Tarmann (bottom). Credits: Donald W. Hall, UF/IFAS



Figure 6. Bumelia webworm moth, *Urodus parvula* (Edwards). Typical resting position. Credits: Lyle J. Buss, UF/IFAS

Eggs

Eggs are approximately 0.74 mm by 0.37 mm, and the chorion (egg shell) is pale yellow and unsculptured (Frost 1972).

Larvae

Mature larvae are approximately 12 mm long (Frost 1972). The head is yellow. The thorax and abdomen have middorsal and lateral longitudinal rows of irregular white patches with yellowish-orange spots. Transverse rows of elevated black pinacula (areas of sclerotized cuticle) bearing stout black setae arise from the white patches. (Figure 7).



Figure 7. Bumelia webworm, *Urodus parvula* (Edwards).
Credits: Lyle J. Buss, UF/IFAS

Cocoons and Pupae

The mesh cocoon is approximately 13 mm long and is suspended from the substrate by a silk stalk. The larva leaves an opening at the rear (Figure 8) through which the larval exuviae is expelled (Forbes 1923) (Figure 9) and an anterior opening for pupal protrusion prior to adult emergence (Figure 10).



Figure 8. Bumelia webworm, *Urodus parvula* (Edwards), cocoon. Note posterior opening with protruding terminal segments of pre-pupal larva.

Credits: Lyle J. Buss, UF/IFAS

The pupa has a cremaster composed of hooked setae, eight hooked setae on the head, and transverse rows of backward-directed spines on some abdominal segments (Figure 11). The hooked setae of the cremaster and those on the head probably anchor the pupa in the cocoon. The cremaster also anchors the pupal exoskeleton during adult eclosion. The transverse rows of spines have been observed in other moth species to function in protrusion of the pupa prior to adult eclosion.



Figure 9. Bumelia webworm, *Urodus parvula* (Edwards), cocoon with partially extruded larval exuviae.

Credits: Lyle J. Buss, UF/IFAS

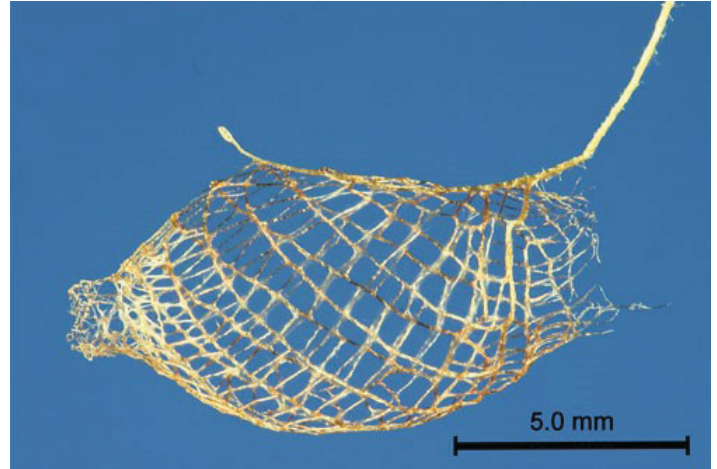


Figure 10. Bumelia webworm, *Urodus parvula* (Edwards), empty cocoon. Note anterior and posterior openings.

Credits: Donald W. Hall, UF/IFAS

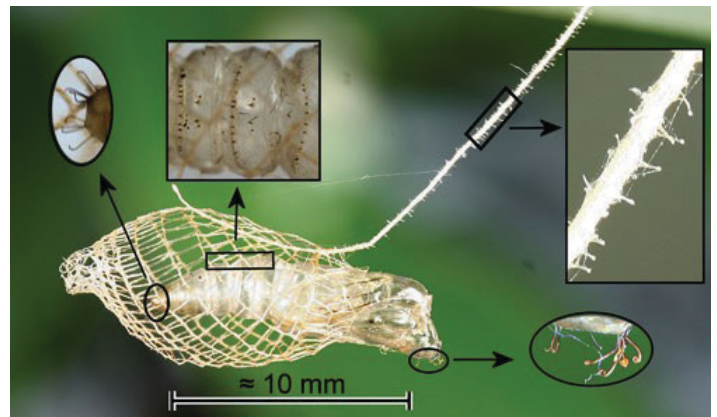


Figure 11. Bumelia webworm, *Urodus parvula* (Edwards), cocoon with protruded pupal exuviae.

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Life Cycle

Urodus parvula adults are attracted to lights and are sometimes taken in light traps. Adults are active throughout much of the year in Florida and are sometimes abundant during the winter and spring at the Archbold Biological Research Station in central Florida (Frost 1972). Nothing is known of their mating behavior.

Watson (1914) stated that although adults are capable of short flights, they commonly crawl up the trunks of red bay hosts to lay their eggs.

As they feed, larvae cut characteristic notches in the edges of leaves (Figure 12). When they have defoliated a host plant or are mature, they drop to the ground on silk threads and wander to find other hosts or to pupate on surrounding objects (often houses, fences, or tree trunks) (Watson 1914). In an outbreak in 1913 in Seabreeze, Florida, larvae were so common in February and again in April on *Persea* sp. that pedestrians carried umbrellas to keep them off (Watson 1914).



Figure 12. Bumelia webworm, *Urodus parvula* (Edwards), larvae on red bay, *Persea borbonia* (L.) Sprengel, showing characteristic feeding damage.

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Hosts

Urodus parvula is most common on red bay, *Persea borbonia* (L.) Sprengel (Figures 13 and 14).



Figure 13. Red bay, *Persea borbonia* var. *borbonia* (L.). (Note characteristic galls of the red bay psyllid, *Triozia magnolia* (Ashmead) which are commonly found on red bay). Inset: *Persea borbonia* flower. Credits: Donald W. Hall, UF/IFAS

Urodus parvula is known by the common name bumelia webworm because it has been recorded feeding on Florida bully, *Sideroxylon reclinatum* Michaux (synonym: *Bumelia reclinata* Vent.) (Frost 1972). Leaves of *Sideroxylon reclinatum* are variable in size and shape (elliptic to obovate) from plant to plant (Figures 15 and 16) or sometimes even on the same plant (Godfrey 1988). *Urodus parvula* is also recorded from a variety of other plants including: oak, hibiscus, and

orange (Frost 1972), avocado (*Persea americana* Mill.) and *Camellia japonica* L. (Heppner 2007). However, as larvae wander from a defoliated host plant or when they are ready to spin their cocoons, they may wander onto nearby non-host plants. Consequently, some of these host listings may not be valid.



Figure 14. Red bay, *Persea borbonia* var. *borbonia* (L.), with mature fruit. Credits: Donald W. Hall, UF/IFAS



Figure 15. Florida bully, *Sideroxylon reclinatum* Michaux, with elliptic leaves and mature and immature fruit. (Inset: flowers). Credits: Paul Corogin, Florida Museum of Natural History, University of Florida



Figure 16. Florida bully, *Sideroxylon reclinatum* Michaux, with obovate leaves. Credits: Donald W. Hall, UF/IFAS

Natural Enemies

The only parasitoids reported from *Urodus parvula* are two tachinid flies:

- *Hyphantrophaga boarmiae* Coquillet (O'Hara 2013), formerly *Zenillia boarmiae* (Coquillet) (Patton 1958).
- *Euceromasia floridensis* Reinhard (Reinhard 1957)

Urodus parvula is not known to be chemically defended and is likely eaten by many invertebrate and vertebrate (e.g., birds and lizards) predators.

Defenses

Larva

Larvae thrash around vigorously when handled (Watson 1914) and may also do so when threatened by predators. Larvae of at least six other families of Lepidoptera, when disturbed, drop toward the ground on “lifelines” of silk thread (Sugiura and Yamazaki 2006) presumably to escape predators. *Urodus parvula* may also use this behavior to escape predation.

Urodus parvula larvae may gain protection from predators by their resemblance to *Neoprocris floridana* larvae which can be quite common and which are chemically defended by cyanogenic glycosides.

Cocoon and Pupa

Eisner (2003, p.400) stated, “The cocoon, although loosely spun, doubtless protects the pupa against predation.” but offered no hypothesis to explain the possible mechanism. Bates (1892) described a stalked, mesh cocoon from the area of Ega (now Tefé), Amazonas, Brazil. He stated that the threads of the cocoon were so stout that they were unlikely to be torn by the beaks of insectivorous birds, and that the pendulous stalk would cause the cocoon to give way when birds peck at it—making it doubly secure.

The loose mesh of the cocoon may provide ventilation to prevent mold in humid environments.

When the stalk of *Trichostibas isthmiella* (Busck) was disturbed, the pupa jerked violently which would likely shake off ants (Busck 1910) which are the most likely predators. The stalk of *Urodus parvula* (and probably those of other urodids) is covered with stalked knobs (Figure 11). These may serve to entangle small parasitoids or predators.

Pushing out the larval exuviae during pupation may minimize attraction of enemies to the cocoon by volatile chemicals emitted by the exuviae. Volatiles from exuviae can serve as attractants to parasitoids (Afsheen et al. 2008). Busck (1910) suggested that odors from the exuviae might attract predacious ants.

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