

# Hickory Horned Devil (Larva), Regal Moth or Royal Walnut Moth (Adult), *Citheronia regalis* (Fabricius) (Insecta: Lepidoptera: Saturniidae: Ceratocampinae)<sup>1</sup>

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## Introduction

The regal or royal walnut moth, *Citheronia regalis* (Fabricius), is one of our largest and most spectacular moths. Like most other moths, it is nocturnal but is sometimes observed at lights. The imposing larva, known as the hickory horned devil, is most often observed when it is full grown and comes down from the trees to wander in search of a site for pupation.

The regal moth is a beautiful and fascinating member of our native fauna, and its larvae should not be killed. If a larva is found crawling on pavement or in an area of thick turf grass where it would have difficulty burrowing, it should be moved to an area of soft soil or a mulched area where it can burrow for pupation.

## Distribution

The regal moth is found throughout the deciduous forest areas of the eastern United States from New Jersey to Missouri and southward to eastern Texas and central

Florida (Wagner 2005). It is more common in the southern part of its distribution. Historically, it was found north to Massachusetts and seems to be declining in numbers in other parts of its range (Wagner 2005).



Figure 1. Hickory horned devil caterpillar, of the regal moth, *Citheronia regalis* (Fabricius), showing size in relation to an adult human's hand. Credits: Lyle J. Buss, UF/IFAS

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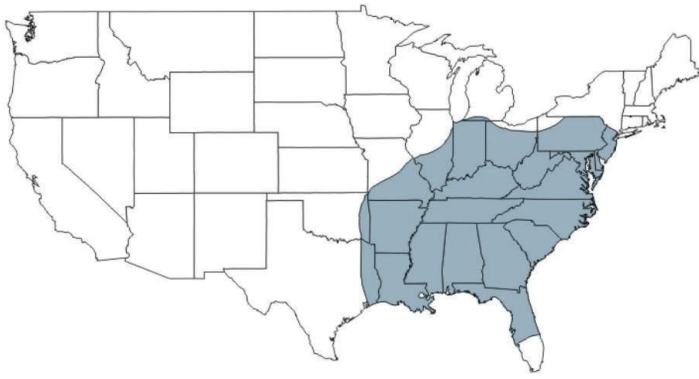


Figure 2. Regal moth, *Citheronia regalis* (Fabricius), distribution map.

## Description

### Adult

The regal moth has a wingspan of 9.5 to 15.5 cm (3 ¾–6 ½ in) (Covell 2005). Females are larger than males. The forewings are gray to gray-green with orange veins and a row of seven to nine yellow spots near the distal margin. There also are single yellow discal and basal spots. The hind wing is mostly orange with a basal yellow spot and yellow patches (or spots) on the costal and anal margins. The hind wing may also have one to two rows of gray-green spots. The body is orange with narrow yellow banding.



Figure 3. Adult regal moth, *Citheronia regalis* (Fabricius).

Credits: Donald W. Hall, UF/IFAS

### Larva

The hickory horned devil is among the largest of our native saturniid caterpillars. It is 12.5 to 14 cm (5–5 ½ in) in length—about the size of a large hot dog. The caterpillars vary slightly in color but are commonly blue-green. The second and third thoracic segments each bear two long and two shorter orange, black-tipped scoli (tubercles in the form of spinose projections of the body wall). The abdominal segments each have four short, black scoli, and segments 2 through 8 have a pale, oblique lateral stripe. Although the larva has a fierce appearance, it is harmless.

For additional photographs of the regal moth and its life stages, see the [North American Moth Photographers website](#).



Figure 4. Fully grown hickory horned devil caterpillar, of the regal moth, *Citheronia regalis* (Fabricius).

Credits: Lyle J. Buss, UF/IFAS



Figure 5. Close-up of the head of a fully grown hickory horned devil caterpillar of the regal moth, *Citheronia regalis* (Fabricius).

Credits: Clemson University, [www.insectimages.org](http://www.insectimages.org)



Figure 6. Larva of the pine devil, *Citheronia sepulcralis* Grote & Robinson, which is sometimes mistaken for the hickory horned devil caterpillar of the regal moth, *Citheronia regalis* (Fabricius).

Credits: Lyle J. Buss, UF/IFAS





Figure 7. Pupa (bottom) of the regal moth, *Citheronia regalis* (Fabricius), and the exuviae (cast skin) (top) of the last larval instar.  
Credits: Lyle J. Buss, UF/IFAS

## Life Cycle

The regal moth typically has only a single generation per year, although a few late collection records suggest the possibility of a small second brood in the deep south. In Florida, adults have been collected in May, but are more common during the summer. Adults have vestigial mouthparts. Adults mate during the second evening after emergence and begin oviposition at dusk of the third evening. Eggs hatch in six to 10 days, and the duration of the larval stage is about 35 days. In central Florida, larvae are usually found from late July to mid-August while they are wandering on the ground searching for a suitable location to burrow into the soil for pupation. The pupa is the overwintering stage.

Worth (1979) reported that a small number of regal moth pupae diapaused through two winters. Locality (or latitude) where the parent moths were collected was not given, but the author's address was listed as New Jersey.

## Hosts

Larvae have been reported from a variety of host tree species. They are commonly found on species of the family (Juglandaceae) including walnut (*Juglans nigra*), butternut or white walnut (*Juglans cinerea*), and a variety of hickories (*Carya* spp.) including pecan. Other hosts commonly listed are persimmon (*Diospyros virginiana*), sweetgum (*Liquidambar styraciflua*), and sumacs (*Rhus* spp.). Of these latter three host plants, Worth et al. (1979 & 1982) reported that larvae grew faster and larger on persimmon. For detailed host lists, see Heppner (2003) and Robinson et al. (undated).



Figure 8. Pignut hickory, *Carya glabra* (Mill.) Sweet, a host of the regal moth, *Citheronia regalis* (Fabricius).  
Credits: Donald W. Hall, UF/IFAS



Figure 9. Sweetgum, *Liquidambar styraciflua* L., a host of the regal moth, *Citheronia regalis* (Fabricius).  
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Figure 10. Persimmon, *Diospyros virginiana* L., a host of the regal moth, *Citheronia regalis* (Fabricius).  
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Figure 11. Winged sumac, *Rhus copallinum* L., a host of the regal moth, *Citheronia regalis* (Fabricius).  
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### Natural Enemies

At least six species of tachinid flies (Diptera: Tachinidae) (Arnaud 1978; Peigler 1994), one species of sarcophagid fly (Diptera: Sarcophagidae) (Peigler 1994), and one species of braconid wasp (Krombein & Hurd 1979) have been reported from *Citheronia regalis*.

Table 1.

<b>Tachinid parasitoids of <i>Citheronia regalis</i></b>
<i>Belvosia argentifrons</i> Aldrich (Peigler 1994, p. 78)
<i>Belvosia bifasciata</i> (Fabricius) (Arnaud 1978, p. 610)
<i>Belvosia townsendi</i> Aldrich (Arnaud 1978, p. 610)
<i>Lespesia frenchii</i> Williston (Arnaud 1978, p. 610)
<i>Winthemia citheroniae</i> (Sabrosky) (Arnaud 1978, p. 610)
<b>Sarcophagid parasitoid of <i>Citheronia regalis</i></b>
<i>Sarcophaga lambens</i> Wiedemann (Peigler 1994, p. 97)
<b>Braconid parasitoid of <i>Citheronia regalis</i></b>
<i>Cotesia teleae</i> (Muesebeck) (Krombein et al. 1979, p. 255)

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Figure 12. Unidentified sarcophagid fly parasitoids consuming the pupa of a regal moth, *Citheronia regalis* (Fabricius).  
Credits: Lyle J. Buss, UF/IFAS



Figure 13. Adult tachinid fly.  
Credits: Lyle J. Buss, UF/IFAS

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