BioOne COMPLETE

NATURAL HISTORY OF ANISOTA PEIGLERI (LEPIDOPTERA: SATURNIIDAE) IN GAINESVILLE, FLORIDA

Authors: Serrano, David, and Foltz, John L.

Source: Florida Entomologist, 86(2) : 217-218

Published By: Florida Entomological Society

URL: https://doi.org/10.1653/0015-4040(2003)086[0217:NHOAPL]2.0.CO;2

BioOne Complete (complete.BioOne.org) is a full-text database of 200 subscribed and open-access titles in the biological, ecological, and environmental sciences published by nonprofit societies, associations, museums, institutions, and presses.

Your use of this PDF, the BioOne Complete website, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at www.bioone.org/terms-of-use.

Usage of BioOne Complete content is strictly limited to personal, educational, and non - commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

BioOne sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

Downloaded From: https://bioone.org/journals/Florida-Entomologist on 28 Mar 2024
Terms of Use: https://bioone.org/terms-of-use

NATURAL HISTORY OF *ANISOTA PEIGLERI* (LEPIDOPTERA: SATURNIIDAE) IN GAINESVILLE, FLORIDA

DAVID SERRANO AND JOHN L. FOLTZ
University of Florida, Dept. of Entomology & Nematology, Gainesville, FL 32611-0620

Populations of a yellowstriped oakworm[1], *Anisota peigleri* Riotte 1975 (Lepidoptera: Saturniidae), occurred at outbreak levels in Gainesville, Florida from 1996 until 2000. The outbreak covered ~1000 hectares centered near Norton Elementary School in the northwest portion of the city. Although not usually an economically important pest, *A. peigleri* invaded homes during mass larval dispersal, defoliated oak trees, and produced large amounts of frass.

This short-lived, localized outbreak in our community gave us the opportunity to document the flight, oviposition, and feeding biology of this little known insect at the southern extreme of its range. We provide this information for those interested in understanding and/or managing this insect.

Anisota peigleri, a recently described species (Riotte 1975), is similar to and was previously identified as *A. senatoria* (J. E. Smith), the orange-striped oakworm. Current knowledge of the natural history, ecology and behavior of *A. peigleri* is summarized in Tuskes et al. (1996). This insect ranges from Kentucky and North Carolina southward to northern Florida; it tends to be common in northeastern Georgia, northwestern South Carolina, and western North Carolina (Riotte & Peigler 1981). During 2002, larvae were collected in Birmingham, Alabama.[2]

Females are reddish-orange in color and have filiform antennae. Their forewings are 24-30 mm long and marked with a small white spot, a dark line, and numerous dark speckles; hindwings are somewhat paler and have an indistinct line. Males are smaller than females and have plumose antennae. The forewings are 18-21 mm long, dark reddish brown with a small white spot and a larger whitish translucent patch. Male hindwings are mostly reddish brown.

During the Gainesville outbreak, adults of *A. peigleri* were found resting on shrubs, tree trunks, and the walls of buildings during the day. Eggs were generally located on the underside of leaves at the ends of the lower branches. Females were occasionally found resting on the base of the leaf after the eggs were laid. Eggs were yellow to orange-yellow, spherical, and about 1 mm in diameter. Following hatch, neonates fed gregariously, skeletonizing small clusters of leaves. Early instars were yellow with a black head capsule and two prominent horns arising from the second thoracic segment. Body coloration changed from yellow to black during the third and fourth instars. Final instars were black with lateral yellow stripes and up to 50 mm long. The two black horns arise prominently from the second thoracic segment and a row of small spines runs the length of the body behind each horn. Mature larvae dispersed from host trees and burrow into the soil to pupate. Pupae reside in the soil about 7-10 cm deep (Felt 1905), remaining there for nearly ten months. An illustrated life cycle can be seen at http://eny3541.ifas.ufl.edu/oakworm/anisota_peigleri.htm.

Adults of this univoltine insect appeared in the late summer. Using field observations and several funnel traps baited with virgin females in each of the three outbreak areas, adults were observed from August 17 to September 22, 1999 & 2000. Peak flight occurred in early September with the greatest count of 20 moths (18 adults field observed and 2 males trapped) being on September 6, 1999.

Female moths tended to lay their eggs on the underside of one leaf on branches closest to the ground. On water oak (*Quercus nigra* L.), egg clusters averaged 154.7 eggs (SE ± 16.7, n = 33) with a range of 10-374. Egg clusters on Shumard oak (*Q. shumardii* Buckl.) averaged 142.6 ± 8.4 eggs with a range of 13-179 (n = 53). Dissections of 29 females yielded abdominal egg counts of 265.8 ± 17.3 with a range of 145-402 eggs. Comparing these fecundity values with the number of eggs on leaves suggests that females normally deposit all their eggs in one cluster. Small egg clusters are likely a result of disturbance during oviposition.

Egg development times were monitored in the lab in environmental chambers adjusted daily to mimic outdoor conditions (temperature and photoperiod). Oviposition to hatch ranged from 6 to 10 days and averaged 9.1 days (n = 1757 eggs). Egg viability was high (>95%) but egg masses were regularly parasitized by *Anastatus reduvii* Howard (Hymenoptera: Eupelmidae). On average 30% of eggs in an affected egg mass were parasitized. Egg clusters deposited early in the flight period suffered less parasitism (~30% of eggs) than those deposited later in the flight season (~50% of eggs).

[1]We used the name yellowstriped oakworm to have a descriptive name while working with the general public. Larvae have a distinct yellow lateral stripe that is easily seen and recognizable. This name is also to the liking of Richard S. Peigler (pers. comm.), for whom the insect was named.

[2]Mature larvae collected from *Quercus falcata* Michx. on 9 August 2002 in Birmingham, Shelby Co., Alabama were shipped to us for identification. Larval characters described by Riotti and Peigler (1981) confirmed they were *A. peigleri*. Voucher specimens are in the Florida State Collection of Arthropods, Gainesville, Florida.

Downloaded From: https://bioone.org/journals/Florida-Entomologist on 28 Mar 2024
Terms of Use: https://bioone.org/terms-of-use

The most common hosts of *A. peigleri* in Gainesville were water oak and Shumard oak. Southern red oak (*Q. falcata* Michx.) and laurel oak (*Q. laurifolia* Michx.) were infested less frequently. We observed ultimate instars browsing and occasionally feeding on live oak (*Q. virginiana* Mill.) but, because early instars did not survive on it, we do not consider live oak to be a host.

In laboratory studies of larval survival and development times, we used 3 replicates of 120 larvae on cut foliage from each of 3 hosts. Percent survival from hatch to pupation averaged 14.2% ± 1.5 on Shumard oak and 13.2% ± 1.4 on water oak. No larvae survived into the second instar on live oak, suggesting its unsuitability as a host. For larval development times there was no significant difference (t-test, $p = 0.607$) between larvae reared on water oak and those reared on Shumard oak. Pooling all tests on the two hosts, larval development at 24°C averaged 48 days with instars 1-5 lasting 12, 8, 8, 9 and 11 days respectively.

We thank John Heppner and Lionel Stange, Florida Department of Agriculture and Consumer Services, Division of Plant Industry, for identification of the Lepidoptera and Hymenoptera, respectively. We also thank Mark Coffelt, Peter Schultz, Keith Waddington and Frank Slansky for their manuscript reviews and suggestions. This research was supported by the Florida Agriculture Experiment Station and approved for publication as Journal Series No. R-0945.

Summary

The yellowstriped oakworm, *Anisota peigleri*, occurred at outbreak levels from 1996 until 2000 in Gainesville, Florida. This population was in the southern most extreme of this species' range. We documented various aspects of its natural history and biology including host trees, egg mass characteristics, egg development, larval development and survival.

References Cited

Felt, E. P. 1905. Insects affecting park and woodland trees. N.Y. State Mus. Mem. 8: 306-310.

Riotte, J. C. E. 1975. Ein neue Art der amerikanischen Gattung *Anisota* (Lep., Saturniidae). Entomol Z. 85:105-110.

Riotte J. C. E., and R. S. Peigler. 1981. A revision of the American genus *Anisota* (Saturniidae). Journal of Research on the Lepidoptera 19(3): 101-180.

Tuskes, P. M., J. P. Tuttle, and M. M. Collins. 1996. The Wild Silk Moths of North America: A Natural History of the Saturniidae of the United States and Canada. Cornell University Press.

Downloaded From: https://bioone.org/journals/Florida-Entomologist on 28 Mar 2024
Terms of Use: https://bioone.org/terms-of-use