

Entomology and Plant Pathology, Oklahoma State  
University 127 Noble Research Center, Stillwater, OK  
74078 405.744.5527

Vol. 19, No. 30

<http://entopl.okstate.edu/pddl/pdid/>

August 24, 2020

## Late-Season Management of Bagworms

Eric J. Rebek, Extension Entomologist

Bagworms are among many landscape pests that are abundant some seasons but not others. The summer of 2020 has proven to be a “boom year” for bagworms in Oklahoma. In this pest alert, I present information on the biology and life history of these caterpillar pests and focus on management in late summer when fully grown larvae cause heavy feeding injury to host trees.

**Description:** The common bagworm, *Thyridopteryx ephemeraeformis*, is found most frequently in its larval form, feeding on trees from within a silken bag it constructs from foliage and other plant tissues (hence, the common name of bagworm) (Fig. 1A). Adult males are small moths with a black, hairy body and clear wings with a wingspan of about 1 inch (25 mm) (Fig. 1B). Adult females are wingless, have no functional legs, eyes, or antennae, and are almost maggot-like in appearance. The female’s body is soft, yellowish white, and practically naked except for a circle of woolly hairs at the posterior end of the abdomen. Females remain in their silken bags, where mating occurs and eggs are laid. Mature larvae are about 1 inch (25 mm) long and have a dark brown abdomen, while the head and thorax are white with black spots (Fig. 1C).



Figure 1. The bagworm, *Thyridopteryx ephemeraeformis*: (A) Bagworm casing on juniper; (B) adult male moth; and (C) larva removed from bag. Photo credits: (A) Eric Rebek, Oklahoma State University, Bugwood.org; (B) Pennsylvania Dept. of Conservation and Natural Resources – Forestry, Bugwood.org; and (C) Eric Rebek, Oklahoma State University.

**Distribution:** Bagworms are found in most states east of the Rocky Mountains. This pest is most common from Pennsylvania to Nebraska and south to Florida and Texas. It is commonly encountered throughout Oklahoma.

**Life Cycle:** Overwintered eggs are contained within the bags made by females from the previous generation. Eggs begin to hatch in late April or early May and young larvae feed on foliage and construct bags immediately. The first evidence of an infestation is normally a small bag, about 1/4 inch (6.5 mm) long, standing almost on end. As larvae grow, silk and fragments of the host plant foliage are added to the bag until it reaches 1.5 to 2 inches (38 to 51 mm) long. Mature larvae use silk produced from modified salivary glands to fasten the bag to a plant stem. Pupation occurs in the bag in late summer and males emerge late summer to early fall. They engage in a mating flight in search of the wingless females, who remain inside their bags. Each newly mated female lays several hundred white eggs inside of old pupal cases, drops from the bag, and dies. There is one generation per year.

**Hosts:** In Oklahoma, the most common hosts are eastern red cedar, other junipers, and arborvitae. Bagworms will also feed on true cedars, pine, spruce, bald cypress, maple, boxelder, sycamore, willow, black locust, oaks, and roses. Their host range includes about 130 different plant species in various parts of the United States.

**Damage:** Bagworm larvae damage their hosts by feeding on the foliage (Fig. 2). Dense infestations can completely defoliate small plants and heavy defoliation can kill hosts such as red cedar and other junipers. Broadleaf hosts are not easily killed by bagworms, but they may be weakened and become more susceptible to woodboring insects and pathogens.

**Management:** Regardless of which season bagworms are encountered, infestations can be reduced by removing bags by hand. The removed bags should be destroyed immediately, even in the winter because eggs overwintering within each bag remain viable. When larvae become active in spring, bagworms can still be removed by hand if the numbers are small and the infested tree isn't too tall.



Figure 2. Damage to juniper by bagworms. Photo credit: Eric Rebek, Oklahoma State University, Bugwood.org.

There are several naturally occurring parasitic and predatory wasps that attack bagworms. Certain fungal pathogens may play an important role in natural control of bagworms as well. The activity of these natural enemies apparently explains the fluctuation in bagworm populations observed from year to year.

Chemical controls are most effective if applied early when larvae are small. In Oklahoma, it is normally a good practice to make insecticide applications by early June. Products containing *Bacillus thuringiensis* subsp. *kurstaki* (Bt), a bacterium that produces a toxin specific to caterpillars, are reported to provide good control of bagworms. Other effective reduced-risk products include those that contain the active ingredient spinosad (spinosyns A & D). Both of these active ingredients are most effective against small, young larvae.

Late in the season, large, older larvae are not as susceptible to Bt and spinosad. Thus, bagworms must be sprayed with broad-spectrum, contact insecticides. Homeowners can look for products containing the active ingredients carbaryl (Sevin) or malathion that are labeled for caterpillar control on ornamental plants. An arborist certified with the International Society of Arboriculture (ISA) should be hired to combat bagworm infestations on large trees with tall canopies. Contact your county extension office for assistance with locating an ISA-certified arborist in your area.

### References:

Arnold, D., E. Rebeck, T. Royer, P. Mulder, B. Kard. Major Horticultural and Household Insects of Oklahoma, Circular E-918. Oklahoma Cooperative Extension Service, Division of Agricultural Sciences and Natural Resources, Oklahoma State University.

Hale, F., B. Klingeman, and K. Vail. The Bagworm and Its Control. University of Tennessee Extension Fact Sheet, [SP341-U](#).

Johnson, W. T. and H. H. Lyon. Insects That Feed on Trees and Shrubs, Second Edition. Cornell University Press.

---

The pesticide information presented in this publication was current with federal and state regulations at the time of printing. The user is responsible for determining that the intended use is consistent with the label of the product being used. Use pesticides safely. Read and follow label directions. The information given herein is for educational purposes only. Reference to commercial products or trade names is made with the understanding that no discrimination is intended and no endorsement by the Cooperative Extension Service is implied.

Oklahoma State University, in compliance with Title VI and VII of the Civil Rights Act of 1964, Executive Order 11246 as amended, and Title IX of the Education Amendments of 1972 (Higher Education Act), the Americans with Disabilities Act of 1990, and other federal and state laws and regulations, does not discriminate on the basis of race, color, national origin, genetic information, sex, age, sexual orientation, gender identity, religion, disability, or status as a veteran, in any of its policies, practices or procedures. This provision includes, but is not limited to admissions, employment, financial aid, and educational services. The Director of Equal Opportunity, 408 Whitehurst, OSU, Stillwater, OK 74078-1035; Phone 405-744-5371; email: [eeo@okstate.edu](mailto:eeo@okstate.edu) has been designated to handle inquiries regarding non-discrimination policies: Director of Equal Opportunity. Any person (student, faculty, or staff) who believes that discriminatory practices have been engaged in based on gender may discuss his or her concerns and file informal or formal complaints of possible violations of Title IX with OSU's Title IX Coordinator 405-744-9154.

Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Director of Oklahoma Cooperative Extension Service, Oklahoma State University, Stillwater, Oklahoma. This publication is issued by Oklahoma State University as authorized by the Vice President, Dean, and Director of the Division of Agricultural Sciences and Natural Resources.