

## Oklahoma Pest Profile: Bagworms

April showers bring May flowers...but as Oklahoma gardeners well know, May brings other things too, like wicked weather and insect pests. And as a gardener who loves to landscape with juniper and arborvitae, I keep my eyes peeled for the telltale signs of bagworms.

### What is a Bagworm?

Bagworms are caterpillar pests; the larval stage of *Thyridopteryx ephemeraeformis*, a clear-winged moth. These caterpillars are masters of construction and disguise - so to control a bagworm, the gardener must KNOW the bagworm.

### The Life Cycle

Really, the cycle of the bagworm is similar to most insects...hatch, eat, grow, pupate, mate, reproduce, die...repeat.

From fall to spring, the brilliantly and tightly-constructed bags made of silken fiber and foliage debris can be seen suspended from host trees. These bags may be either empty (previously occupied by a male), or may contain overwintered viable eggs laid the previous fall, due to hatch in May (previously occupied by a female).

When the eggs hatch, the tiny caterpillars set to work eating, growing, and constructing their own bags, remaining active through September. The first sign of activity is often a  $\frac{1}{4}$ " long bag found on the host, standing on end...with the objective to create a protective bag approximately 1.5 - 2" long. This bag serves multiple purposes; it shields the growing, munching caterpillar, it houses the pupa, and supplies the overwintering eggs with protection from predators and the elements.

Within the fully constructed bag, the grown caterpillar suspends it from the host with silk. Inside, a male will pupate and emerge as 1" clear-winged moth. At that time, he seeks to mate with a female. But unlike the males, the females are wingless and never leave their bag.

After mating in the fall, females lay hundreds of fertilized eggs inside their bag, drop out, and die. The eggs overwinter and hatch in late May in Oklahoma. Thankfully, there is only one generation per year, although in some years, the eggs may hatch at varying times, so a vigilant eye on host plants and trees is critical.

## A Bagworm's Favorite Food

While they can feed on over 125 different species of plants, they really prefer junipers, red cedars and arborvitae. Other hosts include bald cypress, pines, spruce, and even deciduous trees like maple, sycamore, willow, and oaks. If left uncontrolled, extensive infestations of bagworms may defoliate and ultimately kill juniper, cedar and arborvitae specimens, while other deciduous hosts may become weakened and susceptible to disease or further insect damage.

## Prevention and Control

Anytime after eggs are laid in late summer/early fall and bags are suspended on the host plant, they can be hand picked and destroyed, as the eggs are viable - so don't just cast them on the ground - put them in firepit, squash them or move them offsite. This could be after September, through winter and into spring, prior to hatching in May.

Aside from the winter to spring mechanical control, the second best time to manage the caterpillar population is by spraying host plants in early June with *Bacillus thuringiensis* var. *kurstaki*, or B.t. B.t. is a microbial pesticide, a bacteria that is delivered to the caterpillar's stomach via a food source. B.t. is sprayed on the host (most effective while caterpillars are still small), the caterpillars consume it, develop septicemia (a bacterial infection) and die. As a targeted control, B.t. only affects caterpillars, so remains safe for humans and other non-target insects. Spinosad is another microbial agent that offers the same results. Multiple treatments may be necessary later in the summer due to varying hatch times and migration of unaffected larvae from untreated areas. When applying any pesticide, please read and follow all safety precautions and labels carefully.

Bagworms also have natural enemies. Species of predatory insects and parasitic wasps have been known to offer natural control to the bagworm population. Additionally, a research project by the University of Illinois at Urbana-Champaign found that specimens of the Asteraceae (Asters and Shasta daisies) family planted near a bagworm host attracted ichneumonid (parasitic) wasps, and increased bagworm parasitism.

## Take Control Today!

May in Oklahoma is a critical time to complete mechanical destruction of overwintering eggs in bags from last season. These eggs will begin hatching into small hungry caterpillars at the end of the month. Try incorporating daisies and asters to attract beneficial insects, and consider treating taller specimens or greater infestations with B.t. in early June while the caterpillars are young, feeding, and exposed, and plan for another possible round later in the summer.

Find sound information on bagworms and their control from the Oklahoma Cooperative Extension Service and others through the [links at the end of this article](#).

## Resources

[Oklahoma Gardening: Bagworms](#)

[EPP-7306: Ornamental and Lawn Pest Control](#)

[HLA-6408: Landscape Maintenance Schedule](#)

[HLA-6434: Biological Pest Controls for the Home Landscape](#)

[How to Get Rid of Bagworms](#)

[OSU Entoweb: Bagworms](#)

[OSU Pest E-Alert: Vol. 9, No. 26](#)

[Bagworms: Penn State Department of Entomology](#)

**Source:** J.A. Ellis et al., "Conservation Biological Control in Urban Landscapes: Manipulating Parasitoids of Bagworm (Lepidoptera: Psychidae) with Flowering Forbs," *Biological Control* 34(1), July 2005, 99–107 (Elsevier Science, 6277 Sea Harbor Dr., Orlando, FL 32887).