Bagworms

O & T Guide [O-#02]

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True to their common name, bagworms are caterpillars that feed and develop in individual silken bags camouflaged with dried bits of host foliage and frass (body waste).

Scientifically: Bagworms are member of the insect order Lepidoptera, family Psychidae. The bagworm described here is *Thyridopteryx ephemeraeformis*.

Metamorphosis: Complete
Mouth Parts: Chewing (larvae)
Damaging Stage: Larva

Typical Life Cycle: Eggs overwinter in the female's old bag which is firmly attached to the host plan > Larvae hatch in spring and soon disperse by crawling or being blown on wind currents. As they begin to feed on foliage they create individual silken bags that cover their abdomens. These are enlarged as the larvae grow. By late summer or fall, the mature larva attaches its bag to a twig of its host and molts to the pupa stage. > The male pupa matures by late fall and emerges as a winged adult moth. The female pupa also matures by late fall, only the sexually mature adult female that emerges is wingless, legless and still resembles a caterpillar in appearance. Flying at night, the male bagworms find and mate with female bagworms. Afterward the female returns to her old bag, laying her eggs in her old pupa case. The eggs remain in the bag until spring. One generation occurs annually.

Description of Life Stages:

Egg: Eggs are minute, white, and spherical to slightly elongated. When dissected from the old silk bag, they are often interspersed with an off-white, fluffy but fibrous material produced by the female.

Mature bagworm, *Thyridopteryx ephemeraeformis*. Note the dry, dead conifer needles incorporated into the bag of this individual. Compare with the photo of the bagworm collected from a broadleaf host. Photo: Eric R. Day, Virginia Polytechnic Institute and State University, www.forestryimages.org

Larvae: Normally, only the mottled grayish black and brown head, true legs and part of the thorax are exposed during feeding while the rest of the insect's body is covered by the bag. When threatened, the larva draws the camouflaged bag over its body and head.

Using silk glands (modified salivary glands) located near the chewing mouthparts, the larva covers its amber-colored abdomen with a bag of silk to which it attaches bits of dried, chewed host plant and frass; the bag is enlarged as the caterpillar grows and molts.

Bagworms have broad host ranges that include not only broadleaf shrubs and trees but also common ornamental conifers. Bags collected from different host plants may look very different due to the foliage bits involved.

The mature larva secures its bag to a host twig with a band of tough silk. After withdrawing inside the bag, the larva seals the opening and molts into a pupa.

By fall, bags of mature bagworms can be nearly two inches long for females and about 1.75 inches long for males.

Pupa: The pupa is a dark brown to black transitional stage about ¾ inch long. It does not feed and generally is incapable of moving. In the pupa, some larval tissues are lost while others are remodeled; new adult tissues are formed, also. The male pupa is tapered on the end, while the female pupa is rounded. The pupal stage for both sexes is completed by early fall when adults emerge.

Adult: The female adult bagworm is wingless, off-white to yellow, and caterpillar-like, with no or very tiny, useless legs. Most are 1-1.5 inches long but are rarely seen since they remain inside or close to their bags. The male is a "hairy," brownish-black moth with two pairs of yellowish-brown wings sparsely covered in black scales; most males are about an inch long with a wingspan of 1.25-1.5 inches. Males also are rarely seen since they are nocturnal. Males die shortly after mating; females die after ovipositing.

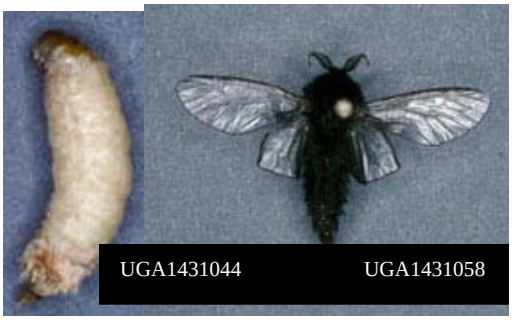
Habitat and Hosts: Bagworms feed on a variety of woody perennials, including evergreen conifers and deciduous broadleaf trees and shrubs. Bagworms are not native to New Mexico but have been introduced here multiple times over the last century on infested nursery stock.

Damage: Young larvae skeletonize host foliage while more mature larvae consume all but the larger veins on broadleaf plants. Since the larvae are so well camouflaged, defoliation during the growing season is easily overlooked. Affected plants may have noticeably fewer leaves by fall. While bagworms on evergreens may remain camouflaged throughout the winter, bags on broadleaf hosts will be easier to see when leaves fall. Even then the bags may be overlooked since they resemble dried foliage adhering to twigs.

IPM Notes: If possible, hand-pick the overwintering bags before foliage reappears in the spring since the bags are filled with eggs. Dispose of these bags in a trash bag that will not allow the larvae to hatch and escape back to host foliage; do not just drop the bags on the ground or throw them somewhere else in the landscape. To control young active bagworms, apply a foliar insecticide. Bacterial insecticides will be more effective on very young larvae. Once the bagworm is stationary and pupation has occurred, chemical control is ineffective.

This bagworm is the same species as that feeding on conifer (above), but this one is feeding on a broadleaf host (sweet gum). Note the bits of foliage incorporated into the bag. Photo: Lacy L. Hyche, Auburn University, www.forestryimages.org

This bagworm caterpillar is exposed after its debris-covered, silk-lined bag was cut open. At most, only the head and thorax would be visible; the abdomen is totally covered by the bag. Photo: Lacy L. Hyche, Auburn University, www.forestryimages.org



Adult bagworms. The female adult (left) bagworm pupated but remains larviform in appearance. After mating and laying eggs inside her old bag, the female dies. The male (right) has bushy antennae and two pairs of wings sparsely covered with black scales that often wear off before the male dies. Both photos: Lacy L. Hyche, Auburn University, www.forestryimages.org

By the fall, the female bagworm lays her white eggs in the pupa case she vacated inside her bag. These eggs resume development the following spring. Photo: Lacy L. Hyche, Auburn University, www.forestryimages.org