



## Bagworm

*Thyridopteryx ephemeraeformis*

Order Lepidoptera, Family Psychidae; bagworm moths  
Native pest

**Host plants:** Arborvitae, northern white cedar, red cedar, juniper, and white pine and other conifers are preferred, but boxelder, black locust, elm, honeylocust, maple, oak, persimmon and poplar are also susceptible.

**Description:** Female moths develop the adult form, but remain larvaform. Male adults are black with clear wings and approximately 18 mm long, but are rarely seen. Larvae and their bags are 25–50 mm in length when mature.

**Life history:** Larvae enclose themselves in silken bags covered with plant parts. They begin bag construction immediately upon hatching, and continue to add to them throughout their life. Mating takes place inside the bag. The female stays in the bag and the male flies to the bag to mate with the female. There is one generation a year. The female retains eggs inside her larvaform body inside the entire pupal case.

**Overwintering:** Eggs in bags.

**Damage symptoms:** Branches and plants can be defoliated when bagworm larvae attack foundation conifers such as arborvitae or juniper. Defoliation is less severe on large deciduous trees and shrubs.

**Monitoring:** Look for young larvae in June. Also look for new bags, especially where old bags have been found. Check for and destroy bags throughout the year. A sex pheromone exists that can be used to interfere with the male's mating behavior.

**Physical control:** Manually remove and destroy bags when light infestations are encountered.

**Chemical control:** Most pesticides are effective when bags are small. For heavier infestations, spray with *Bacillus thuringiensis* before mid July to conserve natural enemies, or use other pesticides, all of which are most effective against young larvae. Two weeks after the first spray it is advisable to check whether another treatment is necessary.

**Biological control:** The most common parasitoid is the ichneumonid wasp *Itoplectis conquisitor*. Other wasps include ichneumonids *Epiurus indagator*, and *Hemiteles thyridoptergis*; the eupelmid *Eupelmus cyaniceps amicus*; and the chalcids *Spilochalcis mariae* and *Brachymeria ovata* (Van Driesche et al. 1996). Vespid wasps and hornets also consume the bagworm. Fungal pathogens include *Aspergillus parasiticus*, *Beauveria bassiana*, and *Paecilomyces lanosum* (Barisford and Tsao 1975). In wet years, 13%–51% mortality from fungi was documented.

**Plant mortality risk:** Moderate

**Biorational pesticides:** *Bacillus thuringiensis* var. *kurstaki*,



Bagworm late instar larvae inside bags. (19)

Photo: John Davidson



Bagworm first instar larva on baldcypress clipping leaves and pasting them on a silken bag. (20)

Photo: Cliff Sadof



Bagworm adult male. (21)

Photo: John Davidson

diflubenzuron, insecticidal soap, pyrethrin, spinosad, tenbufenozide, pyrethrin

**Conventional pesticides:** acephate, bifenthrin, carbaryl, chlorpyrifos (nursery only), cyfluthrin, deltamethrin, diazinon, lambda-cyhalothrin, malathion, permethrin



Bagworm (continued)



Bagworm adult female pupa inside bag. (22)  
Photo: John Davidson



Left: Bagworm female pupal case. Right: Membranous adult female bagworm extracted from pupal case. Eggs can be seen through her thin cuticle. (24)  
Photo: John Davidson



Bagworm larvaform adult female with bag and pupal case opened to show eggs. (23)  
Photo: John Davidson



Snailcase bagworm. This is another species, *Apterona (=crenuella) helix*. They feed on a variety of plants such as willow and various fruit trees. Serious plant injury is very rare. (25)  
Photo: Whitney Cranshaw