

Forest Health Fact Sheet

Bagworm

Lepidoptera: Psychidae: *Thyridopteryx ephemeraeformis* (Haworth)

Bagworm is the larval stage of a moth that is a serious pest of trees and shrubs in the eastern United States. Found throughout Pennsylvania, this moth will feed on over one hundred species of trees and shrubs. It gets its name from the protective case or "bag" constructed by the larva.

Biology: Between 500-1,000 eggs are laid inside the bag of the female in early autumn, where they will remain throughout the winter. The eggs hatch late in May and larvae begin to crawl in search of new sources of food. At this time, they begin to construct a bag, or protective case, around their hind portion, which is composed of silk and interwoven plant material. They will then feed on the foliage of their host plant until August, when they attach themselves to a twig on the host plant and pupate. After about one week, adult males emerge, and fly in search of a suitable mate. Females do not emerge from the bag and are legless and wingless. Females emit sex pheromones to attract males, mate, lay eggs within the bag, and die.



Larva



Pupa



Adult Male



On Cedar



On Spruce



On Pine



On Locust

Identification: Bagworm is most easily recognized by the protective case constructed by the larva. The appearance of the bag will vary depending on the host plant of the larvae. When the larvae are young, the bag will measure about an eighth of an inch in length. A larva will add to the size of its bag as it grows, eventually increasing the length to about two inches. The larvae inside the bag are grayish with dark markings. Pupae are red-brown and segmented. The adult males are black with smoky, transparent wings that measure about one inch across. Adult females are legless, wingless, eyeless, and lack antennae and functional mouthparts.

Preferred Host Plants: Bagworms prefer evergreens including arborvitae, fir, hemlock, juniper, pine, and spruce, but will also attack black locust, honeylocust, sweetgum, sycamore, and over 100 other host plants.

Damage: Serious damage occurs when population levels are high. Because the females are flightless, dispersal relies on the movement of larvae. The limited ability of larvae to disperse great distances can lead to large populations occurring on individual hosts. This can lead to the complete defoliation of a given host.

Control:

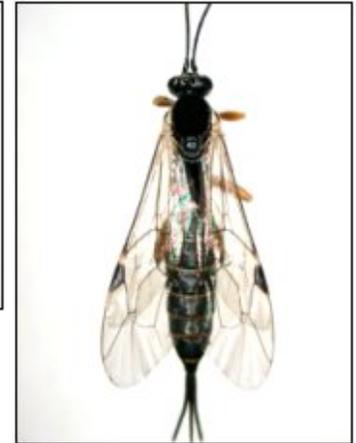
Mechanical- Mechanical control can be effective on a small number of trees. Bags can be removed and destroyed after eggs are laid in the fall until early spring before the eggs hatch.

Biological- There are some native predators and parasites that attack bagworm, such as birds and the ichneumon wasps *Itoplectis conquisitor* and *Chirotica thyridopteryx*. However, they are seldom effective before bagworm populations reach damaging levels. Formulations of the bacteria *Bacillus thuringiensis* (Bt) can be used to control young larvae early in summer.

Chemical- There are a number of registered pesticides available for the control of bagworm larvae. Chemical treatment should be used in the summer, prior to pupation. Always refer to the pesticide label for directions on safe usage and handling.



Chirotica thyridopteryx



Itoplectis conquisitor