

Insects

The Bagworm and Its Control

*Frank A. Hale, Professor, Entomology and Plant Pathology
Bill Klingeman, Associate Professor, Plant Sciences,
and Karen M. Vail, Associate Professor, Entomology and Plant Pathology
Originally Developed by Harry Williams, Professor Emeritus, and
Jaime Yanes, Jr, former Assistant Professor, Entomology and Plant Pathology*

The bagworm, *Thyridopteryx ephemeraeformis* (Haworth), is one of the more curious and interesting insect pests of trees and shrubs. Its carrot-shaped bag is constructed of bits of material from the plant upon which it is feeding and is enlarged as the bagworm grows. The bag is carried wherever the worm goes. When disturbed, the bagworm merely pulls its head back into the bag for protection.

Food Plants

The bagworm is especially fond of junipers, cedars, arborvitae and white pine, but it also is found feeding on a number of shade tree and shrub species. Some 128 species of plants are susceptible to bagworm feeding injury.

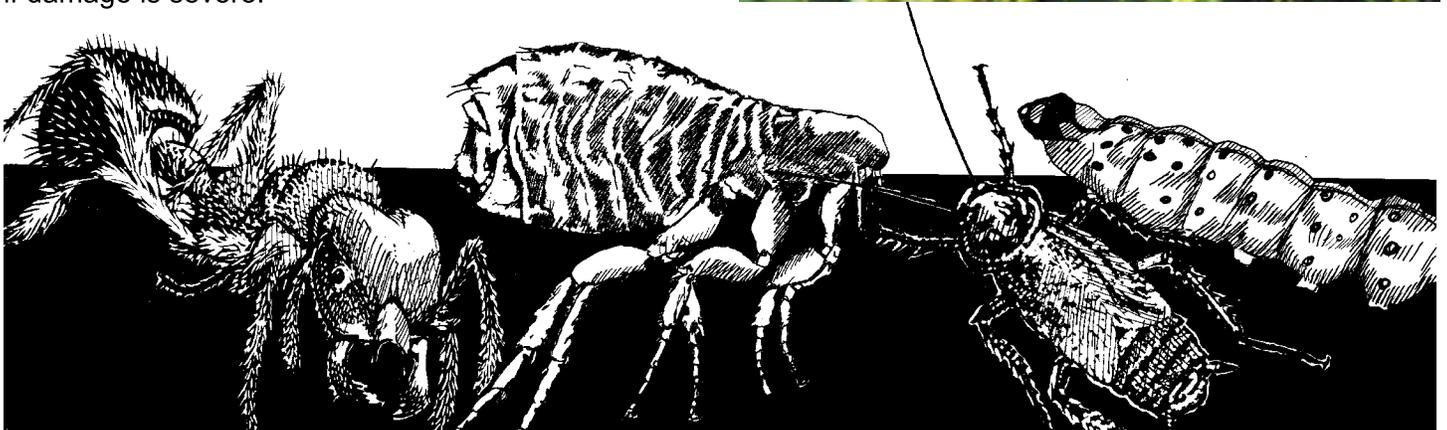
Importance and Nature of Injury

Damage to plants is caused by the larva eating plant foliage. If not controlled while they are small, the maturing larvae can do considerable defoliation during the summer. Studies have shown that as few as four bagworm larvae feeding on the foliage of a 4-foot arborvitae in the summer can cause consumer sales rejections, even when bags are absent. Higher populations of bagworms can easily defoliate plants. This is particularly a problem on evergreens because the defoliation alters the shape and beauty of the plant. The plant will need to be replaced if damage is severe.

Life Cycle and Habits

Bagworms spend the winter as eggs inside the female's bag. Several hundred eggs may be laid and overwinter in a bag. Since some bags contain only males, not all bags examined will contain eggs during the winter.

The eggs begin to hatch in late April to mid May. Upon hatching, the young larvae crawl out of the bottom of the bag and start to feed and construct silken shelters over their bodies. These young bagworm larvae are highly mobile in their search for food plants; walking or



using wind currents to disperse. Their bags, at this time, consist of little more than spun silk and dust particles. As the larvae feed and grow, they continue to enlarge the exterior of their bags with pieces of twigs and foliage, bits of bark, shed skins and excrement. The bags offer camouflage and even repel rainwater. Being hard to wet, the bags are highly impervious to pesticide sprays, which seldom penetrate to reach the larvae.

Feeding and growth usually continue until August, when the larvae are full grown and the bags are about 2½ inches long. At this time, they stop feeding and loop strands of silk around a twig and become firmly attached. After the top of the bag is closed, the larvae reverse their position in the bags so their heads are facing downward. They then change into the pupal (resting) stage. The male moths emerge about four weeks after larval feeding has ceased. The female never leaves the bag to mate. After mating, she deposits a mass of eggs inside the bag. The female, in most cases, then drops to the ground and dies. The eggs remain in the bag throughout the winter and into spring. There is only one generation of bagworms each year.

Control Measures

Non-Chemical Control: One of the best ways to control bagworms is to handpick and destroy them in the fall, winter or before the eggs hatch in the spring. A

thorough job must be done. On large trees, handpicking may be dangerous and impractical. A number of natural enemies feed on the larvae and eggs and apparently this explains why populations of bagworms fluctuate from year to year.

Chemical Control: Chemicals should be applied when the bagworms are small. The larger the worms, the more difficult they are to kill. Do not apply insecticides to plants not listed on the label. Because the rates of insecticides vary with plant species, check the label carefully to ensure the proper amount of insecticide is used. Recommended insecticides include carbaryl (Sevin, Carbaryl), *Bacillus thuringiensis* (Dipel, Javelin), malathion (Malathion), acephate (Orthene), trichlorfon (Dylox), bifenthrin (Talstar), cyfluthrin (Tempo, Decathlon, Bayer Lawn and Garden Multi-Insect Killer), spinosad (Conserve SC, SpinTor), and lambda-cyhalothrin (Scimitar).

References:

Kaufman, T. 1968. Observations on the Biology and Behavior of the Evergreen Bagworm Moth, *Thyridopteryx ephemeraeformis* (Lepidoptera: Psychidae). Ann. Entomol. Soc. Amer. 61 (1): 38-44.

Precautionary Statement

To protect people and the environment, pesticides should be used safely. This is everyone's responsibility, especially the user. Read and follow label directions carefully before you buy, mix, apply, store, or dispose of a pesticide. According to laws regulating pesticides, they must be used only as directed by the label. Persons who do not obey the law will be subject to penalties.

Disclaimer Statement

Pesticides recommended in this publication were registered for the prescribed uses when printed. Pesticides registrations are continuously reviewed. Should registration of a recommended pesticide be canceled, it would no longer be recommended by the University of Tennessee. Use of trade or brand names in this publication is for clarity and information; it does not imply approval of the product to the exclusion of others which may be of similar, suitable composition, nor does it guarantee or warrant the standard of the product.

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