

Elm Spanworm, A Frequent Visitor to Eastern Forests ³

By Douglas C. Allen

Forest pests often are difficult for landowners to identify, but the task may become even more arduous when a common name seems misleading. The situation is espe-

experienced extensive defoliation by spanworm annually. As a matter of fact, the English sparrow was introduced to check the outbreaks in one of our first attempts at biological control. Because the moths

most recent elm spanworm invasion of New York's southern tier region are well aware that this insect readily defoliates tree species other than basswood and elm; most especially apple, walnut, beech, oaks, hickory, maple, and ash.

More than 20 major outbreaks have occurred in the last century. The most recent episode during the early 1990s (e.g., Pennsylvania reported 30–100% defoliation over more than 1.3 million acres in 1994!) was preceded by an outbreak in the early 1970s when extensive defoliation occurred to mixed hardwood forests in southeastern New York and central Connecticut.



Fig. 1. Elm spanworm moth.

cially challenging for culprits known by more than one name! Dutch elm disease and elm phloem necrosis have reduced the occurrence of American elm, once a common eastern shade tree, to a fraction of its former abundance. How, then, can we have large scale outbreaks today of an insect that feeds on elm? Is the common name of this



Fig. 3. Elm spanworm.

Life History

Elm spanworm overwinters as an egg, and the caterpillars emerge in late April, to early June depending on geographic location. Young caterpillars chew holes in leaves and create a shot-hole effect, older individuals eat the whole leaf except for the midrib and petiole.

Caterpillars complete feeding in a month or so and then each pupates (pew-pates) in a net-like silk cocoon, usually attached to a partially eaten leaf. When moths are active during late July to early August, they are apt to disperse in large numbers from infested forests into urban areas. Moths were so abundant during an outbreak in the Catskills in the early 1900s that flights into nearby villages and as far away as New York City were reminiscent of a "summer snowstorm!" Soon after mating, females deposit a clutch of 20 to 200 or more eggs on the underside of

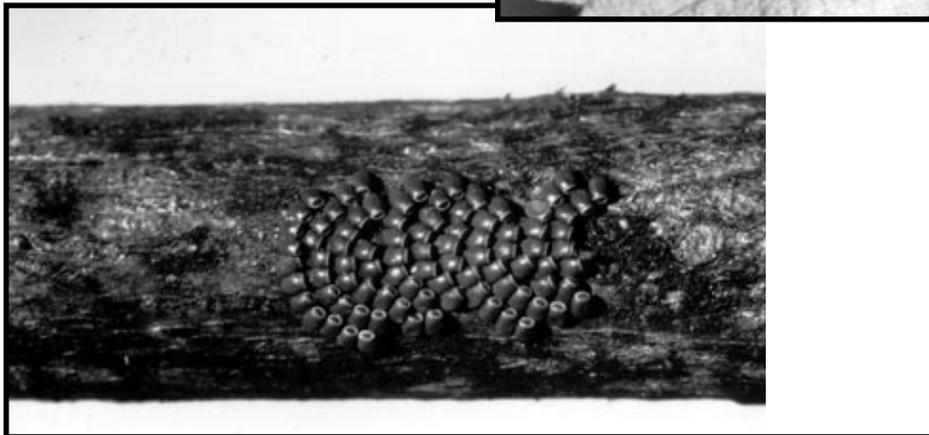


Fig. 2. Cluster of elm spanworm eggs.

defoliator a misnomer? Common names can be deceiving; hence, the value of approved scientific (Latin) names, in this case *Ennomos subsignarius*. Even though a common name may vary in time or with geographic location, scientific designations generally should remain unchanged.

Records of defoliation by this native looper first appeared during the mid-1800s. At the time shade trees in many eastern cities, notably Brooklyn and Philadelphia,

are bright white and because J. A. Lintner, New York's well known State Entomologist in the 1880s, believed basswood to be the principal host, initially it was labeled the "snow-white linden moth." Later, when it became a major shade tree problem at a time when elm was prevalent in the east, it took on its current designation.

Hosts and Outbreaks

Landowners who have experienced the NYFOA-1-800-836-3566-INFO

(Cont'd)

MAY/JUN 1996



Fig. 4. Spanworm pupae, note color variation.

branches. Each egg is deposited at an oblique angle and leans against an adjacent egg, and the egg cluster looks like a pile of leaning bricks attached to the bark.

Description

The powdery white moths (Fig. 1) have slender bodies and a wing span of 1 1/4 to 1 1/2 inches. The barrel-shaped eggs (Fig. 2) are slightly less than 1/16" long, light olive when first laid and turn dark with age. Each egg has an amber colored ring on the exposed end. When full-grown, the hairless, twig-like caterpillar is 1 3/4 to 2 inches

long. Its body is usually slate black (a small proportion of a population may be light colored) and the head is reddish orange or rusty (Fig. 3). In dense populations pupae usually are dark, but a significant number may be light to white when numbers are sparse. Each pupa is approximately 5/8" long (Fig. 4).

Damage

As is the case with most defoliators, the consequences of one or more years of defoliation varies depending on whether other stresses occur during that growing season, the level of defoliation, site conditions, and stand disturbance history. A combination of heavy defoliation early in the growing season and drought (events that occurred in many regions of NY during 1995), for example, greatly increases the probability of tree mortality. Two or more years of heavy defoliation (i.e., greater than 70%) by itself may result in mortality, trees that survive exhibit growth loss and, often, crown dieback.

Natural Control

Typically outbreaks eventually succumb to mortality from a complex of natural agents, most especially an egg parasite and, in the most recent infestations in NY and PA, larval disease.

Management Options

A number of chemical insecticides are registered for use against elm spanworm, but during the most recent outbreak good control was achieved with the bacterium *Bacillus thuringiensis* ("Bt"), a more acceptable option environmentally. Whether or not and in what manner a stand should be treated depends on the owner's objectives, environmental concerns and occurrence of multiple stresses, such as defoliation in conjunction with other recent natural "disturbances" or forest management activities. When heavy spanworm defoliation threatens a woodlot, it especially may be prudent to protect foliage if trees have been previously stressed (i.e., within the last three years experienced heavy defoliation, drought, extensive silvicultural treatment, and/or exist on marginal site conditions) and the owner's objective is to produce syrup or sawlogs. ▲

Douglas C. Allen is Professor of Forest Entomology in the Faculty of Forestry at the State University of New York, College of Environmental Science and Forestry (SUNY/ESF); 146 Illick Hall, One Forestry Drive, Syracuse, NY 13210. All photos are by Professor Allen unless acknowledged otherwise.