

## Insect Defoliators of Missouri Trees Web Producers

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Many important species of caterpillars feed on the foliage of shade, ornamental and forest trees. In addition to their feeding damage, some of these defoliators also produce silken webbing, often covering the leaves and branches. The presence of numerous, unsightly web nests found throughout infested trees can be esthetically detracting within a landscaped area. Some of the common web-producing pests found in Missouri are the fall webworm, eastern tent caterpillar and the poplar tentmaker.

### Fall webworm [*Hyphantria cunea* (Drury)]

**Hosts.** The fall webworm is often a serious pest of many species of forest, shade, fruit, and ornamental trees (except conifers) found throughout the United States and southern Canada. Trees may be heavily or completely defoliated. Persistent infestations on individual trees may kill branches and top growth.

**Biology.** The adult moth is about 0.5 to 0.75 inch in length. The body is white and the wings are either pure white or white with small dark spots. The hair around the bases of the front pair of legs is bright orange-red in color. The wingspan is about 1.5 inches.

Beginning in the spring and throughout the early summer, adults emerge from the ground litter or just below the soil surface where they overwintered as pupae in silken cocoons. Eggs are laid in hair-covered masses, each consisting of several hundred eggs, on the undersides of leaves.

Newly hatched larvae immediately begin to spin webbing over the foliage they are feeding upon. As the larvae grow, they enlarge the web nest to enclose more foliage (see Figure 1). Larvae from the same egg mass generally stay together in the nest until the last larval instar (stage). They then leave the nest and feed individually prior to pupating. At the end of each generation the webbed nests can be quite large and contain excrement, dried leaf fragments and shed skins of the larvae. During high population densities, small to moderate-sized trees may be completely covered with webbing. It also has been reported that the caterpillars may migrate from one tree to another.

Mature larvae are about 1 inch long. There is



Figure 1. Branch of a walnut tree infested with fall webworm.

quite a bit of color variation, but generally the mature larva is pale yellow or green and has a broad semi-solid dark stripe running down the back. On each side of this stripe is a row of black tubercles (wartlike structures). Farther down the sides of the body are rows of red-orange tubercles. The body is covered with long, gray hairs that arise from both the black and red-colored tubercles. The color of the head can be either black or red.

Before pupation, the larvae will leave the tree and seek a secluded site to spin a cocoon, such as in the litter on the ground or just below the surface of the soil in cracks and crevices. Depending on geographic location, there can be one to four generations each year.

### Eastern tent caterpillar [*Malacosoma americanum* (Fabricius)]

**Hosts.** The eastern tent caterpillar is a native defoliator that occurs as far west as the Rocky Mountains. Its preferred hosts are wild cherry, apple and crabapple, but it will occasionally feed on forest and ornamental trees such as ash, birch, maple, oak, poplar, cherry and plum.

**Biology.** The adult moth is stout-bodied in appearance, reddish-brown in color, 0.5 to 0.75 inch long, and has a wingspan of about 1 to 2 inches. The body, especially the thoracic region (where the wings are connected to the body), is covered with hairs.

Each wing is crossed by two white or yellowish white lines.

During late summer, the adult female will lay 200 to 300 eggs in bands around small twigs on the host tree. The eggs are held in place and covered by a substance that appears varnishlike. The eggs do not hatch until the following spring, about the time the buds of the host tree begin to break open.

Upon emerging, the young caterpillars migrate to a nearby fork on the tree and spin a thick web nest or "tent" where they live together. As the larvae grow, the webbed nest is enlarged. During the day, the larvae leave the nest to feed on the foliage. As it leaves the nest, each larva will spin a strand of silk as it travels, perhaps to help find its way back to the nest. The larvae remain in the nest during the night and on cloudy days.

The mature larva is about 2 inches long and generally dark in color. It has a dark-colored head and a white stripe running down the center of the back. On each side of the white stripe, down both sides of the body, are longitudinal yellow lines. Between the yellow lines is a series of blue markings, with a black spot in front of each blue spot. Fine hairs are also found all over the body.

When mature, a larva will leave the nest and search for a protected place where it spins a rather large, thick, white cocoon around itself to pupate. These cocoons can be found on the sides of trees, among the debris on the ground, on brush and weeds, fences, and even on sides of buildings. There is a single generation each year.

## Poplar tentmaker [*Ichthyura inclusa* (Hubner)]

**Host.** The poplar tentmaker occurs from the New England states to the southern states and west to Colorado. It feeds on the foliage of various species of poplar and willow and may seriously defoliate young nursery trees, especially trees growing in the open.

**Biology.** The adult moth is about 0.5 to 0.75 inch long. It is brownish gray in color with three oblique white lines crossing each forewing, and it has a crest of brown hairs on the thorax. The wingspan is about 1.25 inches.

Adults first appear in the spring. They emerge from cocoons found in the soil or ground debris where they overwintered as pupae. Eggs are laid in masses on the undersides of leaves. The young caterpillars tie together one to several leaves and form a

"tent" lined with silk. Groups of larvae live within each leaf tent. Initially, the young larvae will feed on the surface of the tent's leaves and later add other leaves to it. As the larvae grow, they leave the tent at night and feed on other leaves.

Mature larvae are about 1.5 inches long. They are dark brown and have four yellow lines running down the center of the back. On the back of the larva are two black tubercles found on the first and eighth abdominal segments. The sides of the caterpillar have one prominent and several indistinct yellow lines.

When the larvae mature, they leave the tent and crawl to the ground to pupate within a loosely constructed silken cocoon. Abandoned leaf tents usually remain affixed to the tree throughout the winter. Depending on geographic location, there can be one to five generations each year.

## Control

Under normal conditions, populations of these web-producing caterpillars are kept in check by invertebrate and vertebrate natural enemies. But occasionally their populations reach a point where artificial control must be employed.

The best nonchemical control for the fall webworm and poplar tentmaker on small to moderate-sized trees is to search the foliage and branches for newly developing web nests or tents, and prune off and destroy the infested leaves or twigs. Removal of the silken tent of the eastern tent caterpillar cannot be done by pruning because the tents are often found on the fork of a major scaffold limb where pruning would not be desired. However, during the night or on cloudy, overcast days when the caterpillars are in their tents, the tents can be scraped off the trees and destroyed.

For larger shade and ornamental trees, where it is impractical to search and prune out newly developing nests, chemical control is often necessary. Chemical applications should be made as soon as the web nests first appear. Some insecticides that can provide control are certain formulations of acephate, *Bacillus thuringiensis* (Bt), carbaryl, cyfluthrin, diazinon and tebufenozide.

**Before using any chemical please read the label carefully for directions on application procedures, appropriate application rate, first aid, and storage and disposal. Make sure that the chemical is properly registered for the intended use.**



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