



Fall Webworms and Tent Caterpillars

O & T Guide [O-#06]

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Caterpillars of both of these defoliators make somewhat similar looking, large, communal silk tents on the limbs of their tree or shrub hosts. Fall webworms are most prominent in the fall on a variety of broadleaf shade, fruit and nut trees while tent caterpillars are active only in spring on mostly native broadleaf trees and shrubs.

Scientifically: Fall webworm, *Hyphantria cunea*, is a member of the insect order Lepidoptera, family Arctiidae. Tent caterpillars, *Malacosoma* spp., are members of the insect order Lepidoptera, family Lasiocampidae.

Metamorphosis: Complete in both

Mouth Parts: Chewing (larvae)

Pest Stage: Larvae

Typical Life Cycle---Fall Webworm---One to four generations per year depending upon location and elevation; populations are largest in the fall. Eggs laid in dense, flat masses on the undersides of host foliage hatch in about a week. Young larvae immediately begin to spin a communal silken web. Larvae feed and molt for about six weeks, continually enlarging their protective webs, sometimes to a point of covering 2-3 feet at the end of an infested branch. Larvae are gregarious until the last molt, after which they feed singly. Fully grown larvae leave the web and pupate in soil litter, below soil level or in crevices around buildings, fence posts, rock walls, etc. During the growing season, development is continuous; the last generation in the fall overwinters in the pupa stage. The



Adult female fall armyworm. Adults fly and mate and females lay eggs at night. Note the egg mass visible at the rear of this female.

Photo: H C Ellis, University of Georgia, www.forestryimages.org



Female Western tent caterpillar moth with her egg mass. Photo: Jerald E. Dewey, USDA Forest Service, www.forestryimages.org

first adults for next year begin to emerge in late spring or early summer, although emergence from overwintering pupae may continue over the summer.

Description of Life Stages---Fall Webworm:

Egg: Minute, pale green and laid in tight, flat masses of 100+ eggs on undersides of host foliage. Females dust their egg masses with scales from their bodies.

Larvae: Larvae are hairy with distinct but small dark spots on the back of each segment. Both black- and red-headed races occur, sometimes in the same location. Caterpillar color is also variable with the black-headed race tending to be yellowish or pale green with light-colored hairs. The red-headed form is usually darker with reddish brown hairs. Mature caterpillars are 1-1¼ inches long.

Pupa: The brown, lozenge-shaped pupa is about 5/8 inch long and enclosed in a thin, felt-like cocoon concealed in trash, ground litter, cracks and crevices or in the soil.



Fall webworm larvae embedded in a communal web located on the ends of a host tree's branches. Photo: G. Keith Douce, University of Georgia, www.forestryimages.org



The egg mass of the fall webworm. Photo: H.C. Ellis, Univ. Georgia, www.forestryimages.org



(Left) The communal web has been cut open, exposing a group of young fall webworm larvae. Photo: G. Keith Douce, University of Georgia, www.forestryimages.org. (Right) Mature larvae of fall webworm have longer and denser white hairs covering their bodies. Photo: Lacy L. Hyche, Auburn University, www.forestryimages.org



The shed larval skin has been cut open to reveal the pupa of the fall webworm. Photo: Lacy L. Hyche, Auburn University, www.forestryimages.org

Adult: Adults are about 5/8 inch long with white wings and body; some may have scattered, minute black dots. Their bodies are about ½ to ¾ inch long. At rest, they hold their wings swept back at angles to the body, like fighter jets. Adults are nocturnal.

Typical Life Cycle---Tent Caterpillar:

One generation occurs each spring in tent caterpillars; these are among our earliest defoliators of the growing season. Eggs hatch shortly after bud break in the spring with the young larvae from several egg masses working together to create a densely woven, silk tent in the crotches of various trees and shrubs. As caterpillars grow, the tent is enlarged. Most of the caterpillars feed at night, returning to the tent to rest or molt during the day. Larger caterpillars disperse throughout

the host plant to complete feeding. When fully grown (usually mid-June), larvae disperse from the host tree or shrub, find sheltered places to attach themselves and spin white to ivory cocoons on tree trunks, rocks, houses, buildings and the like. After pupating for approximately 7-10 days, adult moths emerge. After mating, females lay 100 to 350 eggs in a froth-covered band around small twigs or branches of host trees. The eggs mature in three weeks but do not hatch until the following spring.

Tent caterpillar-Egg: Black or dark brown eggs are laid on host twigs in distinct blobs or bands, depending on species. The eggs are covered with a somewhat shiny, varnish-like material produced by the female.

Larvae: Mature caterpillars can be nearly two inches long and are “slightly hairy,” with bluish-brown heads, various tints of brown all over the body and powder blue marks along the sides of the caterpillar. Several races of caterpillars are recognized with slight variations in appearance for each.

Pupa: Their brown, lozenge-shaped pupae are encased in a white silk cocoon that is securely attached to the substrate in a protected location usually away from the host tree.

Adult: Adult tent caterpillar moths are relatively thick-bodied, brown to reddish-brown insects about $\frac{3}{4}$ to one inch long; their brown wings are marked with slightly paler wavy lines. At rest, these moths also hold their wings swept back at angles to the body like fighter jets. Adults are active at night.

Habitat and Hosts:

Fall Webworm can attack over 100 species of deciduous trees and shrubs including cottonwood, mountain-ash, pecan, elm, willow, chokecherry, and assorted fruit and nut trees. These caterpillars build their communal silken webs over the ends of branches rather than the crotches of branches.

This web is usually filled with caterpillars seeking refuge, partially eaten foliage and frass. Remains of these nests may persist harmlessly into the winter.

Tent Caterpillars are cyclic pests with usually moderate host ranges that favor native species of deciduous trees and shrubs such as aspen, mountain mahogany and currants. They are more common pests in the higher elevations and northern parts of New Mexico.

Damage: Adults of both species are night-flying and harmless. Caterpillars of both species are defoliators; the youngest may skeletonize leaves while larger caterpillars consume entire leaves. Severe defoliation in the spring by tent caterpillars may severely deplete stored food reserves for affected host plants since the plants must expend at least equal resources to re-leaf before they can again store energy. Defoliation in the fall by fall webworm occurs mostly after energy reserves have been restocked for the season and loss of foliage to frost is imminent. Since the same hosts may not be attacked the following year, healthy trees and shrubs generally can recover quickly. Host damage can be more serious if the same tree or shrub is heavily defoliated several years in a row.

For both defoliators, people often consider the large silk tents unsightly and the caterpillars as life threatening to the host trees and shrubs. As noted above, the cost to host energy reserves is probably greater for tent caterpillar infestations than fall webworms given hosts of approximately equal size and health levels. Mature caterpillars of both species can be annoying and unsightly as they disperse to find pupation sites; at times, crawling larvae can be so numerous as to make busy roadways slick and smelly with their run-over carcasses.

IPM Notes: Both species have numerous natural enemies that keep their populations in check. Birds, small mammals, insect predators, spiders and tiny parasitoid wasps attack the eggs and immature stages of both species. A naturally occurring virus may

decimate caterpillar populations in some years; if humidity is unusually high, the fungus *Entomophthora* may also kill many caterpillars of both species. If the communal silk webs can be safely reached from the ground, pruning individual infested branches may be one possible means of control if the plant's appearance is not destroyed by this method. Insecticidal control may be warranted if the infestation of either pest is heavy or the webs are high in the trees and difficult or impossible to reach. *Bacillus thuringiensis* ("Bt") sprays can be used for either pest. Best results are usually obtained with Bt or with conventional topical insecticides when the tents are first noticed and the larvae of either species are still small. While the entire tree need not be sprayed, the webs and surrounding foliage should be thoroughly covered. Tearing open webs can help spray droplets contact the caterpillars.



Western tent caterpillar colony defoliating a host plant in the spring. Photo: William M. Ciesla, Forest Health Management International, www.forestryimages.org



A mature western tent caterpillar. Photo: Jerald E. Dewey, USDA Forest Service, www.forestryimages.org



Pupae of the Western tent caterpillar. Photo: USDA Forest Service - Rocky Mountain Region Archives, USDA Forest Service, www.forestryimages.org

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