UNIVERSITY OF GEORGIA
EXTENSION

Tent Caterpillars: Pests That Defoliate Trees

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Tent caterpillars are distributed widely in tropical and temperate regions. These caterpillars, *Malacosoma* spp. (Lepidoptera; Lasiocampidae), get their Latin name from "malakos," meaning "soft," and "soma," meaning body. The common name of the tent caterpillar is derived from the tent-like silk structure built by larvae on tree branches.

Tent caterpillars are distributed in Eastern and Western Europe, India, China, Japan, and Russia. In North America, six species of tent caterpillars are found (see Table 1). The forest and Eastern tent caterpillars occur in Georgia.

Tent caterpillars are defoliators of a wide range of host plants, including hardwood and fruit trees. The presence of these caterpillars, their ***frass*** (droppings), and damage is a nuisance and reduces the aesthetic appearance of trees and shrubs. Although this pest does not directly kill trees, defoliation during outbreaks causes branch dieback and reduces growth, ultimately leading to tree death.

Table 1. Tent Caterpillar Species Found in North America.

Common name	Scientific name
Forest tent caterpillar	*Malacosoma disstria*
Eastern tent caterpillar	*Malacosoma americanum*
Western tent caterpillar	*Malacosoma californicum*
Southwestern tent caterpillar	*Malacosoma incurvum*
Pacific tent caterpillar	*Malacosoma constrictum*
Sonoran tent caterpillar	*Malacosoma tigris*

Description

Figure 1. A Forest Tent Caterpillar Egg Mass.
Photo: Steven Katovich, Bugwood.org.☐

Tent caterpillars lay eggs in masses, and these shiny, dark brown or black egg masses encircle the stem or twig of a tree (Figure 1). Newly hatched caterpillars (Figure 2) are 3 mm long, black, and have fur-like setae on their bodies.

Figure 2. Newly Hatched Forest Tent Caterpillar Larvae.
Photo: E. Bradford Walker, Vermont Department of Forests, Parks and Recreation, Bugwood.org.☐

The coloration, markings, and patterns on the late stages of caterpillars vary by species. The late-stage Eastern tent caterpillars (ETCs) are black with blue and white markings and a continuous white line on a black background (Figure 3).

Figure 3. Eastern Tent Caterpillar Larva.
Photo: David Cappaert, Bugwood.org.☐

Forest tent caterpillars (FTCs) are similar in appearance to ETCs, except they have white dots instead of a continuous white line on their backs (Figure 4).

Figure 4. Forest Tent Caterpillar Larva.
Photo: Gerald J. Lenhard, Louisiana State University, Bugwood.org.☐

Western tent caterpillars (WTCs) have a blue-white stripe with black bands along the body (Figure 5).

Figure 5. Western Tent Caterpillar Larva.
Photo: William M. Ciesla, Forest Health Management International, Bugwood.org.☐

In the spring and early summer, most tent caterpillars build a tent-like structure with silken webbing among the branches of trees (Figure 6).

Figure 6. A Tent Structure Made by Eastern Tent Caterpillars.
Photo: William M. Ciesla, Forest Health Management International, Bugwood.org.☐

In contrast, forest tent caterpillars construct a silken mat on leaves. The tent covers the larvae, protecting them from predators, such as birds. It also helps shield them from harsh weather conditions—allowing them to adapt to extreme heat (providing thermoregulation)—and assists with larval molting.

Life Cycle

All tent caterpillars have a similar life cycle and complete one generation in a year. Tent caterpillar adult females lay only one egg mass each annually. An egg mass of 100–350 eggs can be seen encircling twigs in mid-summer. Egg masses overwinter and hatch in April and July in the southern and northern U.S., respectively, which coincides with local trees' leaf expansion.

Colonies of first-instar caterpillars stay together and spin a silken web around a branch junction or on trunks. Instead of tents, forest tent caterpillars produce a silken mat on branches or trunks where the caterpillars rest. The caterpillars from the first to fourth or fifth stages are gregarious and feed on foliage. The size of the tent increases as the caterpillars grow. The tent serves as a rest area for the caterpillars. They leave the tent during the day for food and return at night.

The last larval stage becomes solitary in habit, wanders off, and feeds individually. Tent caterpillars develop through five to eight larval stages. Additional larval stages are added if they feed on poor-quality tree materials, allowing them to reach the optimal size for pupation. Larval development is completed within 4 to 7 weeks.

Late-stage caterpillars pupate inside silken cocoons located in bark crevices, on leaves, in the ground, and under any structure (Figure 7).

Figure 7. Wood Siding With Forest Tent Caterpillar Cocoons in the Crevices.
Photo: James B. Hanson, USDA Forest Service, Bugwood.org. ☐

Moths emerge from those cocoons in May or June to July in the southern and northern U.S., respectively.

Figure 8. Forest Tent Caterpillar Adult.
Photo: Mark Dreiling, Bugwood.org. ☐

The adult moths of various tent caterpillars have different colors: yellowish in FTC (Figure 8), brown in ETC (Figure 9), and black to greyish in WTC (Figure 10).

Figure 9. Eastern Tent Caterpillar Adult.

Photo: Mark Dreiling, Bugwood.org.☐

Figure 10. Western Tent Caterpillar Adult.
Photo: William M. Ciesla, Forest Health Management International, Bugwood.org.☐

Damage

Tent caterpillars feed and defoliate their plant hosts from early April to late June. During pest outbreaks, defoliation (Figure 11) causes branch dieback, growth reduction, and occasionally kills the tree.

Figure 11. Defoliation of Water Tupelo Caused by Forest Tent Caterpillars.
Photo: William M. Ciesla, Forest Health Management International, Bugwood.org. ☐

If the population is abundant, tent caterpillars may strip the trees and migrate to new tree hosts. The tent, colonies of caterpillars (Figure 12), and silken cocoons on trees and shrubs reduce the aesthetic appearance of landscapes.

Figure 12. Eastern Tent Caterpillar Colony.
Photo: David L. Clement, University of Maryland, Bugwood.org.☐

Host Range

Tent caterpillars have a wide host range. Forest tent caterpillars feed on trees such as trembling aspen (*Populus* spp.), alder (*Alnus* spp.), birch (*Betula* spp.), cherry (*Prunus* spp.), sugar maple, oak (*Quercus* spp.), elm (*Ulmus* spp.), basswood (*Tilia americana* L.), water tupelo (*Nyssa aquatica* L.), blackgum (*Nyssa sylvatica* Marshall), and sweetgum (*Liquidambar styraciflua* L.), and feed on shrubs such as willow (*Salix* spp.).

Eastern and Western tent caterpillars feed on black cherry, apple, crabapple, pear, and some other fruit trees. WTC also feeds on shrubs, including bitterbrush (*Purshia tridentata*), California lilac (*Ceanothus* spp.), mountain mahogany (*Cercocarpus* spp.), and some other ornamental shrubs.

Management

In ornamental landscapes, such as in residential or commercial settings, tent caterpillars can be managed by destroying egg masses in the winter, as these are visible on defoliated trees when the eggs are laid on lower branches. Developing tents can be physically destroyed as new tents appear on trees. The tent caterpillars also can be trapped using a sticky collar wrapped around the tree trunk to capture migrating caterpillars. In residential areas, caterpillar colonies and cocoons can be dislodged by using high-pressure water sprays.

Several insecticides are effective on tent caterpillars. Microbial insecticides, such as Bt products (*Bacillus thuringiensis* var. *kurstaki*), spinosad, and baculoviruses, are effective against the younger stages of tent caterpillars. Insect growth regulators, such as diflubenzuron, can be used. However, diflubenzuron is not recommended for use near water, as it can harm aquatic arthropods.

Biorational insecticides such as azadirachtin and insecticidal soap effectively reduce tent caterpillar populations. Synthetic insecticides, such as organophosphates (malathion and acephate), pyrethroids (permethrin and bifenthrin), and carbamates (carbaryl), are also effective on larvae, and they can be spot-applied. Younger larvae are more susceptible to insecticides than caterpillars in the later stages.

All insecticides should be used according to the label.

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