

Tent Caterpillars



Wizzie Brown and John A. Jackman*

Tent caterpillars attack several kinds of broad-leaf trees and shrubs and produce unsightly webs, or tents, which can detract from the home landscape. These caterpillars can defoliate trees, stunting their growth and making them less vigorous. They also can be very common and thus a nuisance as they move around the exterior of a home.

The keys to eliminating tent caterpillar problems are **early detection, proper identification, an understanding of the life cycle and the use of appropriate cultural or chemical control measures.**

Four species of tent caterpillars are troublesome in Texas: the eastern tent caterpillar, *Malacosoma americanum*; the western tent caterpillar, *Malacosoma californicum*; the Sonoran tent caterpillar, *Malacosoma tigris*; and the forest tent caterpillar, *Malacosoma disstria*. These species are closely related and have very similar life histories.

Life Cycle

In late spring or early summer, female moths deposit egg masses on tree trunks or encircling small twigs (Fig. 1). These egg masses remain on the trees during most of the summer, fall and winter.

The adult moth uses a sticky, frothy substance called spumaline to glue its eggs to bark or twigs. Spumaline also is used as a hard protective covering around the egg mass in all Texas species except the Sonoran tent caterpillar.

Caterpillars, or larvae (Fig. 2), hatch from the eggs in the early spring about the time that the leaves on their host plants emerge. Eastern and western tent caterpillars feed on new leaves. They



Figure 1. Eggs of the tent caterpillar.



Figure 2. Tent caterpillar larvae.

*Extension Program Specialist—IPM; Professor and Extension Entomologist, The Texas A&M University System



Figure 3. A tent caterpillar web in a tree.

form small webs within a few days after hatching, and they enlarge the webs as they grow. The web or tent is most often in a crotch of small limbs and serves as a refuge for the larvae at night and during rainy spells.

Because the larvae move from their tents to feed on leaves, damage can be found for some distance around the web. Tent caterpillars feed in groups, and thus concentrate their defoliation.

Both eastern and western tent caterpillars form conspicuous, large webs (Fig. 3) that are easily recognized. This is not true of the other two species. The Sonoran tent caterpillar spins a small web when it molts. Molting, or skin shedding, occurs several times as the larvae grow. The larvae do not live in these small webs at other times.

One of the most common of the tent caterpillars is the forest tent caterpillar. It does not build a tent but instead spins a loosely woven resting mat on trunks and larger branches. Dozens of caterpillars may congregate on these mats between feedings.

As forest tent caterpillars complete their development in late spring, the larvae wander for several meters and may feed on a variety of trees, shrubs and even herbs before finding a site on which to spin a cocoon for pupation. Cocoons are formed in the web, under bark, in dead plant material on the ground, inside a rolled leaf, under the eaves of houses or other protected places. Forest tent caterpillars often draw leaves together to form a cocoon site.

Cocoons are loosely constructed of silk and have a white or yellowish crystalline substance scattered throughout the mass. Do not handle the cocoons because the crystalline substance may irritate your skin.



Figure 4. A tent caterpillar adult.

Adult tent caterpillars are brown and yellowish moths (Fig. 4) with two diagonal markings on the front wings. Wingspreads are about 1 inch.

These moths are attracted to lights and are sometimes very abundant. Tent caterpillars moths live for only a few days, during which they mate and lay eggs. Adults do not feed. Each species of tent caterpillar has only one generation per year.

Identification

Tent caterpillar larvae are colorful and more than 1½ inches long when full grown. They have a few long hairs in their bodies, mostly along the sides. The individual species can be identified easily by larval coloration and markings:

- The eastern tent caterpillar has a solid white line down the center of its back.
- The forest tent caterpillar has a row of “key-hole” or “boot print” white marks along the center of its back, one on each body part or segment.
- Western tent caterpillars may sport a variety of markings and colors, but there is always a series of white dashes down the middle of the back.
- The Sonoran tent caterpillar lacks white marks down the middle of the back, but it has a series of yellow dashes and blue spots on each segment. Also, the third from the last abdominal segment is mostly black on the top surface.

If you find tents with larvae that do not match these descriptions, they are probably fall webworms. The fall webworm can have several generations per year and produces tents during late summer and fall.

Host Plants

Tent caterpillars attack a variety of plants, both ornamental and fruit:

- The eastern tent caterpillar prefers cherry, plum, peach, apple, hawthorn and related plants. If food is scarce, it may attack other trees, such as oaks.
- The western tent caterpillar is found on a variety of trees and shrubs, including oaks and wild plums.
- The Sonoran tent caterpillar is usually seen on oaks, but occasionally will attack other trees.
- The forest tent caterpillar is found on a variety of hosts, but prefers oaks in Texas. It also likes blackgum, sweetgum and other deciduous trees.

See Table 1 for a comparison of the coloration, web-forming habits and host plants of the different species.

Species	Color of upper surface of larvae	Tent characteristic	Hosts
Eastern tent caterpillar	Solid white	Large	Cherry, apple, hawthorn and related plants; sometimes oak
Western tent caterpillar	White dashes	Large	Oak, wild plum
Forest tent caterpillar	Keyhole-shaped markings	Mat of silk at molting	Oak, blackgum, sweetgum and others
Sonoran tent caterpillar	No white marks, black on third from last segment	Several smaller webs	Oak and other deciduous trees

Control

Control programs should be based on the need to eliminate defoliation, unsightly webs and/or nuisance from caterpillars. You may need to use a combination of cultural and chemical techniques to control tent caterpillars.

Cultural control. During winter pruning, inspect the trees for tent caterpillar egg masses. These masses appear as swellings on small, bare twigs. Through normal pruning, you can often remove tent caterpillar eggs before they hatch.

Prune twigs containing webs when you first notice them in the spring. If they are in areas where pruning is undesirable or impossible, you may destroy the tents by hand. To destroy the web, use a

long pole or a high-pressure water hose, especially in hard-to-reach areas. Burning the web and caterpillars is hazardous and no more effective than the above techniques.

Kill caterpillars knocked from the tree or crawling on a patio or around the home by crushing them or placing them in a bucket of warm, soapy water. Use a broom to collect the dead caterpillars and dispose of them.

Biological control. Beneficial insects can help reduce populations of tent caterpillars. Parasitic wasps in the genera *Hyposoter*, *Cotesia* and *Bracon* attack the larval stage of tent caterpillars. *Trichogramma sp.* also attack tent caterpillars, but in the egg stage. Birds, lizards and other insects, such as assassin bugs, also feed on tent caterpillars and help reduce their numbers. Take these beneficial animals into consideration when choosing a chemical control method.

Bacillus thuringiensis variety *kurstaki*, or *Bt*, is a biological insecticide that works best on younger (smaller) caterpillars. *Bt* is selective in that it targets only caterpillars and is relatively harmless to fish, birds and warm-blooded mammals. Because *Bt* kills all kinds of caterpillars, use it carefully around butterfly gardens. When using *Bt*, you must cover the leaves thoroughly to ensure that the caterpillars will ingest enough of the toxin for control.

Chemical control. Before deciding to spray for tent caterpillars, consider that although individual leaves that have been fed upon will remain damaged, trees that have been defoliated early in the season will usually put on new leaves. It is useless to spray if tent caterpillars have been allowed to feed and have completed their development.

Even so, removing the tent will eliminate the unsightliness of the tent itself. Tents are quite resistant to weather and will remain in the tree for long periods.

During the winter, smother the eggs by spraying them with horticultural oil. Read the label to see which species may be sprayed with these oils. When using horticultural oils, cover the foliage well, as the level of control depends on the amount of leaf coverage.

If you detect caterpillars early, you may apply spray on webs as a spot treatment. Do not use broadcast treatments; they are unnecessary and wasteful except during widespread outbreaks of forest tent or Sonoran tent caterpillars. If timed properly and applied carefully, one treatment is sufficient for control.

Any of several insecticides can control tent caterpillars. Because insecticides are labeled for use on specific host plants, be sure to follow the direc-

tions on the product label. Apply insecticides in the early morning so that the spray is concentrated on the tents where the caterpillars congregate.

Plant-derived or naturally occurring insecticides include pyrethrins and insecticides made from plant oils. Like horticultural (petroleum-based) oils, plant oil products are contact insecticides and must be applied directly to the caterpillar tents or resting masses for control.

Spinosad is a low-toxicity, naturally derived product that provides excellent control of caterpillars while preserving most beneficial insects. Spinosad is a naturally derived fermentation product from a soil microorganism. It is one of the few natural insecticides that continues to provide control for 7 to 14 days after treatment.

Many longer lasting, synthetic pesticide products also can control tent caterpillars. These products provide faster, longer-lasting control than do most plant-derived insecticides. However, most of these products are toxic to beneficial insects as well as the pest caterpillars.

In small yards, the spray may drift into neighboring yards. When using residual insecticides,

be sure to spray on days when winds are less than about 8 mph, and protect fish ponds or streams containing valuable fish or other aquatic organisms.

Pesticides that provide good tent caterpillar control include those containing permethrin, lambda-cyhalothrin, cyfluthrin, bifenthrin, fluvalinate, esfenvalerate, carbaryl, acephate or malathion.

The regulations on insecticides are subject to change, and changes may have occurred since this publication was printed. The pesticide users are always responsible for the effects of pesticides on their own plants or household goods as well as problems caused by drift from their properties to neighbors' properties or plants. Always read and follow carefully the instructions on the container label.

Acknowledgments

The authors wish to thank Michael E. Merchant and Joe Pase for review of this manuscript. All images courtesy of Bart. M. Drees.

The information given herein is for educational purposes only. Reference to commercial products or trade names is made with the understanding that no discrimination is intended and no endorsement by the Texas AgriLife Extension Service is implied.

Produced by AgriLife Communications and Marketing, The Texas A&M University System

Extension publications can be found on the Web at: <http://AgriLifeBookstore.org>.

Visit Texas AgriLife Extension Service at <http://AgriLifeExtension.tamu.edu>.

Educational programs of the Texas AgriLife Extension Service are open to all people without regard to race, color, sex, disability, religion, age, or national origin.

Issued in furtherance of Cooperative Extension Work in Agriculture and Home Economics, Acts of Congress of May 8, 1914, as amended, and June 30, 1914, in cooperation with the United States Department of Agriculture. Edward G. Smith, Director, Texas AgriLife Extension Service, The Texas A&M University System.

Revised