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Michigan State University

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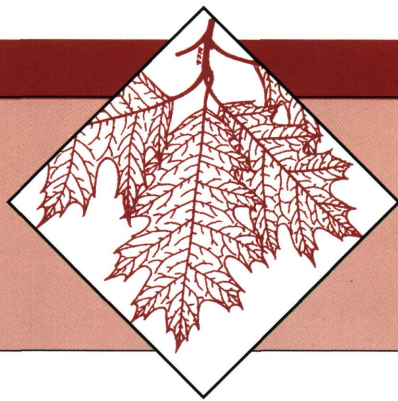
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Common Oak Defoliators in Michigan (It's not always Gypsy Moth!)

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Many Michigan residents have heard of the gypsy moth, though they may not know what the insect looks like. Gypsy moth is a notorious pest that feeds on the leaves of oaks, aspen and many other species of shade and forest trees. It was accidentally introduced into Massachusetts in 1869 and has since been spreading across the northeastern United States and into the north central states. The first gypsy moth outbreaks in Michigan occurred in the mid-1980s in the central Lower Peninsula. Since then, most areas of lower Michigan have experienced an outbreak.



Gypsy moth caterpillar

Gypsy moth, however, sometimes gets too much blame. Because gypsy moth is still new to the state, an outbreak tends to generate lots of publicity. Many other insects also feed on the leaves of oak trees, and their defoliation is often mistaken for evidence of gypsy moth infestation. It is essential to know what insect is causing tree defoliation so that you can select an appropriate management strategy. The goal of this bulletin is to describe some common insects other than gypsy moth that feed on oak leaves.

Forest Tent Caterpillar (*Malacosoma disstria*)



Note white keyhole-shaped markings on caterpillars.

Caterpillars are dark-colored, covered with hair, and they have a row of distinctive white or pale yellow keyhole-

shaped markings running down their backs. They may reach a length of 1 to 2 inches. Forest tent caterpillars feed on aspen, oaks, sugar maple and other species. Outbreaks occur at roughly 10-year intervals, last 2 to 3 years and often cover large geographic areas. Eggs hatch early in the spring and feeding occurs in May and early June. Groups of young caterpillars may feed on expanding buds and the earliest leaves. Older caterpillars feed alone or in small groups and consume entire leaves. Although caterpillars often spin small silk mats on leaves or tree trunks, they do not construct tents.

Eastern Tent Caterpillar (*Malacosoma americanum*)



(L) Caterpillars; (R) silk tent in a cherry tree

The caterpillar is dark brown or black with a pale yellow stripe running the length of its body, and it may grow to be nearly 2 inches long. Eastern tent caterpillars feed on wild cherry, apple and crabapple trees but do not feed on oak trees. These caterpillars construct the silken tents that are often seen in cherry trees along the roadside in spring. Tents are constructed in twig and branch crotches and do not enclose leaves. Defoliation usually ends by mid- to late June. Trees seldom suffer serious damage, though the tents are unattractive. Cuckoos often feed on these caterpillars.



Fall Cankerworm (*Alsophila pometaria*) and Spring Cankerworm (*Paleacrita vernata*)



A spring cankerworm "inches" along.



Cankerworm caterpillars are in the group of insects known as "loopers" or "inchworms" because of the way they move. They range in color from green to yellowish to dark brown. Green larvae often have white stripes running the length of the body. Caterpillars may grow to be 1 inch long. When disturbed, cankerworms often

drop from tree canopies on silken threads. Fall cankerworms overwinter as eggs. They have three pairs of fleshy legs near the rear end of the body. Spring cankerworms overwinter as pupae and have only two pairs of fleshy legs at the end of the abdomen. Both species feed in May and June on oaks, apple and crabapple, maples and other tree species. Adult female moths are wingless and quite distinctive. Cankerworms occasionally cause serious defoliation, but outbreaks are usually controlled by natural enemies.

Linden Looper (*Erannis tiliaria*)



Caterpillar

Caterpillars are pale to bright yellow with dark wavy stripes on the body and reddish brown heads. They may grow up to 1 1/2 inches long. Linden loopers prefer to feed on basswood, oak, apple and maples. They are sometimes found with cankerworms. Individual trees may sometimes be severely defoliated, but extensive damage is rare. Parasitic flies usually control this pest.

Oak Skeletonizer (*Bucculatrix ainliella*)



(L) Pupal case and feeding damage; (R) close-up view of pupal case



Skeletonized oak leaf

Caterpillars are small (1/4 inch long) and yellowish green. There are two generations a year; caterpillars are usually present in June and again in August. Young caterpillars feed in tiny leaf mines. Older caterpillars feed on the soft tissue on the undersides of oak leaves but leave the upper surfaces intact. This kind of feeding gives the leaves a "skeletonized" appearance.

Pupae are white, about the size of a grain of rice. Ridges run down the length of the pupal case. Pupae may be found on the ground or attached to leaves, tree trunks or even the walls, screens and doors of houses. Natural enemies usually control this pest within a few years.

Solitary Oak Leafminer (*Cameraria hamadryadella*) and Gregarious Oak Leafminer (*Cameraria cincinnatiella*)



Blotch mines

Several species of caterpillars mine oak leaves. Leafminer caterpillars are usually flat, pale yellow and reach a length of 1/4 inch. They prefer white oaks but will feed on other oak species also. Solitary leafminer caterpillars feed singly and mine out blotch-shaped patches just below the upper surface of the leaf. Gregarious leafminers feed in groups and often form large mines.



Leafminers may have two to five generations per year. More than a dozen species of parasitoid wasps help control leafminers. Raking up fallen leaves may also help reduce populations in urban areas.

Oak Leaf Tiers (*Croesia semipurpurana*)



Caterpillar



Pupal case

This group of insects usually prefers to feed on red, black and pin oaks. Caterpillars are dirty white and about 1/2 inch long, and they may have a black bar on the lower side of the head. Caterpillars feed on buds early in spring, and expanding leaves may be riddled with holes. Older caterpillars fold or tie sections of leaves together with silk webbing and feed inside the folds. Outbreaks may occur occasionally, sometimes resulting in extensive defoliation for one to three years.

Oak Leaf Rollers (*Archips semiferanus*)



Caterpillar



Note rolled leaf.

These insects feed on white oak and other oak species. Caterpillars fold or roll individual leaves together, forming shelters where they feed and rest. Caterpillars are greenish with dark heads and may be up to 1 1/4 inches long. Damaged leaves may appear skeletonized or shredded. Egg and pupal parasitoids help control these insects.

Orange-striped Oakworm (*Anisota senatoria*)



Caterpillar

Caterpillars are black with orange-yellow stripes running the length of the body. Two black, hornlike projections arise from behind the head. Caterpillars can be large, up to 2 inches long. Eggs hatch in midsummer and caterpillars may feed

from late July through August or early September. Young caterpillars feed in groups, skeletonizing leaves, while older caterpillars consume all but the main leaf veins. Outbreaks occur periodically and can result in severe defoliation of oak trees. Caterpillars may wander about and crawl along the ground and on tents or sides of houses, annoying residents. Tree health is rarely affected by oakworm defoliation, however. Because these caterpillars feed in late summer, most photosynthesis is complete and foliage loss has little impact on the tree. Native predators and parasitoids usually cause oakworm populations to collapse after a few years.

Red-humped Oakworm (*Symmerista canicosta*)



Caterpillars

The caterpillar is light-colored with a round, red head. The "hump" is orange-red and located near the end of the abdomen. Caterpillars may grow to a length of 1 3/4 inches. This species prefers to feed on oaks but will also feed on a variety of

other hardwood trees. Defoliation can be extensive, but because it occurs late in summer, it seldom affects tree health. Populations are usually controlled by natural enemies.



Variable Oakleaf Caterpillar (*Heterocampa manteo*)



Caterpillar

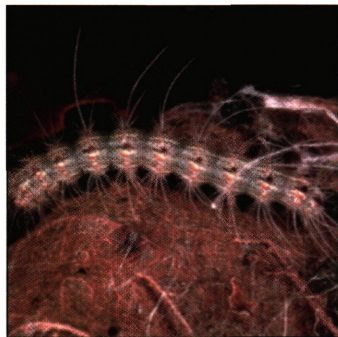
Caterpillars vary in color but usually have a reddish brown back with a thin white-yellow stripe running down the center and yellowish green sides. The head is outlined by a thin band of white and a thinner band of black. The variable oakleaf caterpillar feeds late in summer. Although defoliation can be severe

and extensive, it rarely affects tree health. Feeding behavior is similar to that of orange-striped and red-humped oakworms. Natural enemies and cold winter temperatures control this insect.

Fall Webworm (*Hyphantria cunea*)



Loosely webbed foliage



Caterpillar

Caterpillars are covered with long, gray hairs arising from yellow-orange or black tubercles. Head color may range from red to black, and full-grown caterpillars may be 1 inch long. Fall webworm feeds on more than 100 species of hardwood trees, including oaks. These caterpillars construct large, loosely woven silk tents or webs that wrap around one or more shoots, enclosing leaves and twigs.

Feeding and webbing usually become obvious in mid- to late summer. Although the webbing is unattractive, defoliation is rarely extensive. Fall webworm is host to more than 50 parasitoids and predators, providing a refuge for natural enemies that can help control other defoliating insects.

Ugly Nest Caterpillar (*Archips cerasivoranus*) and Oak Webworm (*Archips fervidanus*)



Ugly nest caterpillar



Oak webworm

Caterpillars are smooth, yellowish to dark green with shiny black heads, and they may be up to 1 inch long. They feed in groups on a variety of hardwood trees but seem to prefer cherry and hawthorn. Ugly nest caterpillars are well named. They construct dense webs of silk around shoots and leaves that become filled with bits of leaves and frass. Although the nests are truly ugly, defoliation is seldom serious. Oak webworms feed on bur and other oak species and are most common on seedlings or sprouts. They are similar to ugly nest caterpillars in feeding behavior and appearance.

Photos by E. Black, L. Buss, A. Christensen, T. Ellis, J. Hanson, M. Higgins, R. Mech, D. McCullough, G. Simmons.