Field Key to Larvae in Pecans

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This key is designed to serve as a guide to identification of the more typical larvae of the common insect species found in pecans and on pecan trees in Oklahoma. The identifying characters used are based upon those found on full-grown or nearly full-grown larvae and may not necessarily occur on newly hatched larvae. If the larva in question does not fit the proper description furnished, recheck the specimen with the key. If it continues to key out improperly or is not one of the species listed, and proper identification is desired, place the larva in a small bottle containing 70% alcohol and mail to: Department of Entomology and Plant Pathology, Oklahoma State University, Stillwater, Oklahoma 74078. Please do not send specimens for identification unless they are causing or suspected of causing damage to the crop. Please include information as to the type and amount of damage noted as well as the date and community where the larva was collected. This information will assist in getting a more accurate and rapid reply to your questions.

Some insects found on pecans cannot be identified with this key. This would include adult insects, closely related organisms, and such insects as aphids and phylloxera, which do not have a larval stage. Be sure you have insect larvae before attempting to use this key.

All insect larvae normally found on pecans are included in this key. This key should be used primarily for larvae on pecans, but should be moderately accurate for larvae on walnut trees, also. Keys for other crops are available and can be obtained from the local county Extension office.

Survey Methods

Most pecan insects should be reported as the number per nut cluster or per tree. In the early season, the pecan nut casebearer should be reported as the number of eggs or larvae per 100 clusters. The color of the eggs should also be reported. After the nuts set, the number of damaged nuts per 100 clusters should be reported. Depending on the size of the grove, at least 50 clusters should be inspected. The hickory shuckworm should be reported as the number of damaged nuts per 100 nuts to give the percentage infestation.

Pecan weevil surveys are made by jarring the tree and counting the weevils that fall. This is much easier if a light colored cloth or plastic sheet is placed under the tree. This should be reported as the number per tree or limb. Also, the size of the tree should be reported. Larvae in the nuts should be reported as the percentage of nuts infested. Adult emergence can be checked with screen wire cages placed under infested trees about mid-summer.

Leaf-feeding larvae should be reported as light if very small numbers are present and little damage has occurred. If noticeable damage has occurred, it should be reported as the percentage of defoliation. The fall webworm can be reported as the number and size of webs per tree and the percentage of trees infested in the immediate area.

Descriptions of Larvae

Pecan Weevil Larvae (*Curculio caryae*)

These robust, dirty white, somewhat C-shaped larvae are up to 5/8 inch in length when fully grown. The head is yellow to brown. They are found in the nuts during late summer and early fall and can be found in the soil beneath infested trees during the rest of the year.

Pecan Nut Casebearer (*Acrobasis nuxovrella*)

The body color is pale brownish-yellow to light gray brown. The head is reddish-brown with deeper brown spots. They are up to 5/8 inch in length when mature. Over-wintering larvae feed on the buds and bore into young shoots in spring. The first generation larvae attack the young nuts in late spring, often webbing them together. Second generation larvae attack larger nuts in early summer. A third generation occurs later, but does little damage.

Walnut Caterpillar (*Datana integerrima*)

Young larvae are reddish with narrow yellowish or grayish lines, which extend the entire length of the body. Mature larvae are black with only two grayish lines on the back and two on the sides. Many soft, fine, long, grayish hairs cover the entire body. They may be up to 1 1/2 inches in length. They feed on leaves, in groups, and do not form webs on the leaves. There are two generations per year.

Fall Webworm (*Hyphantria cunea*)

These larvae vary from light buff to near black. They are covered with long light-colored hairs. They may be up to 1 1/4 inches long when mature. They make large webs on the

A Field Key to Some Common Larvae Found in Pecans in Oklahoma

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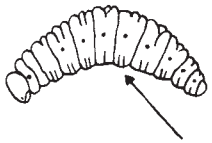
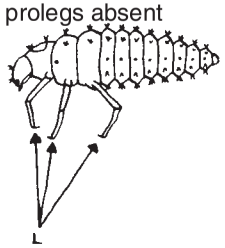
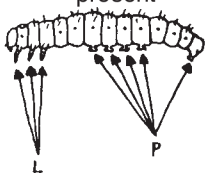
Legs and pro-legs absent



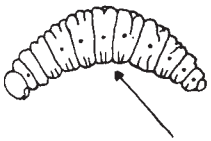
Legs present, prolegs absent



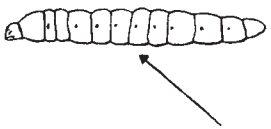
Legs and prolegs present



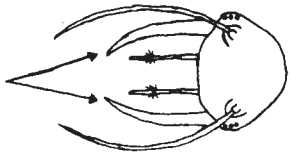
Body "C" shaped



Body long and straight

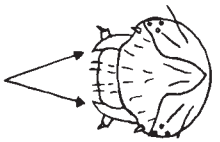


Mandibles exposed, longer than head



Aphid-Lions
(Family Chrysopidae)

Mandibles hidden, shorter than head



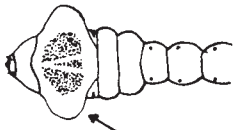
Found in nuts

Pecan Weevil Larva
(*Curculio caryae*)

Found in unfolding buds and shoots

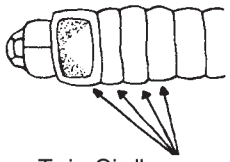
Hickory Shoot Curculio
(*Conotrachelus* spp.)

Second body segment broad and flat



Flatheaded Apple Tree Borer
(*Chrysobothris femorata*)

Body segments all the same width



Twig Girdler
(*Oncideres cingulata*)

Body white

Twig Pruner
(*Elaphidionoides villosus*)

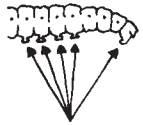
Body dark with red and yellow marks

Lady Beelte Larvae
(Family Coccinellidae)

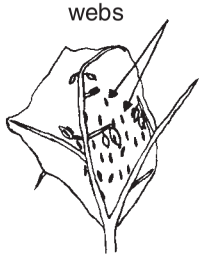
7 pairs prolegs

Sawfly Larvae
(several species)

5 pairs prolegs



Larvae found in large webs



Fall Webworm
(*Hyphantria cunea*)

Not found in webs

Found in buds, nuts, shoots, or shucks

Found on leaves or bark

Color olive green

Pecan Nut Case bearer
(*Acrobosis nuxvorella*)

Color white

Hickory Shuckworm
(*Cydia caryana*)

Color black, with long gray hairs; young larvae reddish with black stripes

Walnut caterpillar
(*Datana integerrima*)

Color mottled gray-brown, not hairy

Catocala Larvae
(*Catocala* spp.)

EPP-7163-3

Prepared by Don C. Arnold, Department of Entomology and Plant Pathology, Oklahoma State University

trees and live and feed in them. There are two generations per year. Some authorities recognize two species; *H. cunea* and *H. textor*. Both species seem to occur in Oklahoma. In 1964, A.D. Oliver described one species as a "black-headed race" and the other as the "orange-headed race." The "orange-headed race" is likely the species most often found on pecan; however, individuals of both species can be found on this host. The "black-headed race" emerges about 4 weeks earlier than the "orange-headed race" and exhibits four generations per year. The "orange-headed race" exhibits three generations per year. Since their developmental times are similar (50± 4 days from egg to adult), the presence of both species in the field do not occur simultaneously. This lack of synchrony accounts for the common appearance from time to time of having constant pressure from webworms throughout the growing season.

Hickory Shuckworm (*Cydia caryana*)

These larvae are white with a light brown head. They may be up to 3/8 inch long. They tunnel in young nuts destroying the interior. Later in the season, as the nuts harden, they tunnel in the shucks, preventing the kernels from developing properly. They pass the winter as full-grown larvae in the shucks on the ground.

Hickory Shoot Curculio (*Conotrachelus* spp.)

These small, fat, wrinkled, legless grubs are up to 1/2 inch in length when fully grown. They are found burrowing in young shoots and unfolding buds in spring. They are common in Oklahoma.

Catocala Larva (*Catocala* spp.)

These large grayish-brown mottled larvae may be up to 3 inches long when fully grown. They appear in the spring and may strip the leaves, leaving only the midribs.

Sawfly Larvae (Several species)

These larvae are most easily recognized by the seven pairs of prolegs. They occur in the spring and feed on leaves. Our most common species (*Megaxyela langstroni*) is yellow with black spots across most segments and reaches 1 inch in length. Others may be green or brown and white.

Twig Pruner Larva (*Elaphidioniodes villosus*)

These larvae are whitish with very small legs. They may be up to 1 inch long. They burrow in the smaller branches until fully grown. They then cut off the branch except for a thin shell of bark which the wind easily breaks.

Twig Girdler Larva (*Oncideres cingulata*)

These larvae are whitish and about 1 inch long, but do not have legs. They develop in small branches, usually on the ground. The branches are cut by the adult beetles.

Flatheaded Apple Tree Borer Larvae
(*Chrysobothris femorata*)

These larvae are near white, flat, and have no legs. The second body segment is about twice as broad as the rest of the body. They measure up to 1 inch in length. They will be found tunneling under the bark on the trunk. They are most destructive to trees in the nursery, newly set trees, or old weakened trees, especially on the sunny side.

Lady Beetle Larvae (Family Coccinellidae)

The body color is generally dark with bright yellow, orange, or red markings. The body is covered with numerous spines. In a few species, the body is covered with a waxy secretion and resembles mealybugs, but a check of the mouthparts will clear up the confusion. (Mealybugs have piercing-sucking or tube-like mouthparts, while lady beetle larvae have biting mouthparts.) The group is highly beneficial, with both the larvae and adults feeding on aphids, spider mites, eggs, and young of many pests.

Aphid-Lions (Family Chrysopidae)

These small, active, light brown larvae measure up to 1/2 inch in length when fully grown. Both the larvae (aphid-lions) and adults (lacewing flies) are beneficial, since they feed upon aphids, insect eggs, and small larvae. (Be sure that the specimen suspected of being in this group has biting mouthparts. There are several other groups, such as true bugs, Order Hemiptera, which are similar in body shape, but different from them by having piercing-sucking mouthparts.)

Be Careful with Insecticides

Use insecticides exactly as recommended—do not increase the dosage as this may cause plant damage and residue problems.

Insecticides should be kept in their original container, tightly closed, correctly labeled, and in a dry place.

Always store insecticides where they can not contaminate food, feed, or water.

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