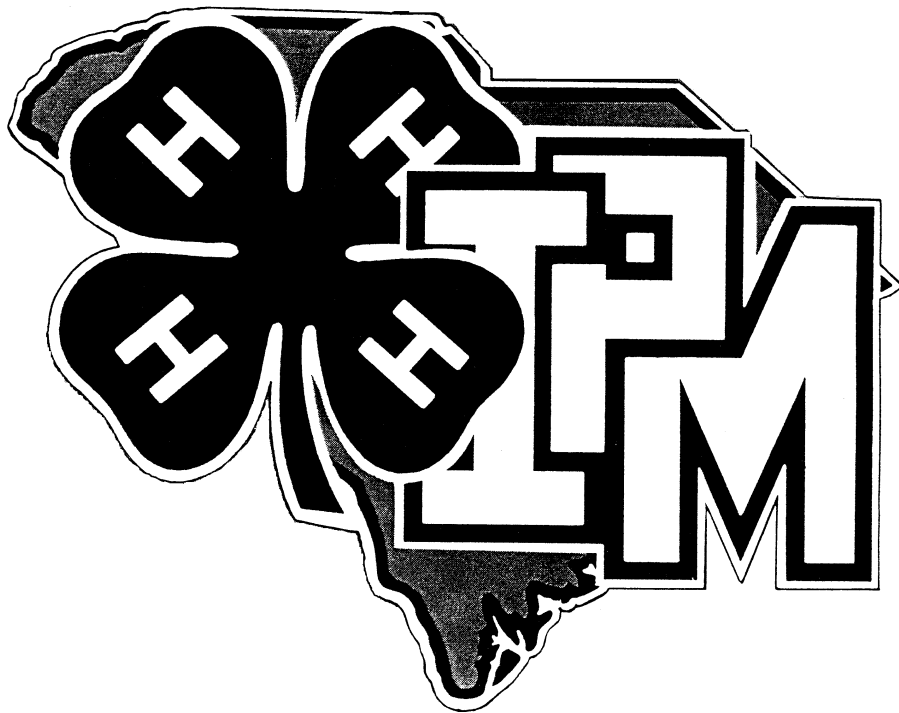


# 4-H Entomology, Unit 4

## Insect Identification

4-H Manual 108  
For Grade Levels 7-12  
IPM Level E  
February 2001



**CLEMSON**  
E X T E N S I O N

## CONTENTS

Welcome to 4-H Insect Identification .....	i
Information on Economic Insects .....	1
Table I (Economic Insects) .....	11

Prepared by Donald G. Manley, Extension Entomologist

### WELCOME TO 4-H INSECT IDENTIFICATION

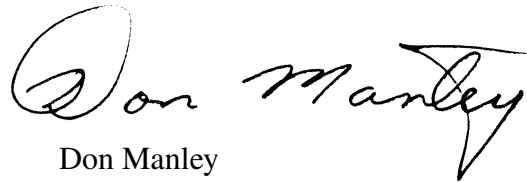
Dear 4-H'er:

Welcome to the 4-H Insect Identification project. This project can be used in the 4-H IPM project or as a separate project in itself. It is to be used with a set of 100 color slides of economic insects that should be available for your use through your local county Extension agent.

This manual tells you a little about each of the insects that you will be expected to identify. Your test for this project will require you to know some of the information included in the booklet. The insects are listed in alphabetical order. Also included is a table summarizing the information that you should know.

Again, welcome to 4-H Entomology and to the Insect Identification project. I hope that this information will help you to be able to identify the economic insects that live around you.

Sincerely,



Don Manley  
Extension Entomologist

# ECONOMIC INSECTS

## AMERICAN COCKROACH

In general, cockroaches are oval, flattened insects with a prominent shield, or pronotum, extending forward over the head. Most species are active at night and hide in dark areas, often in cracks, during the day. They have lived in or near human dwellings for thousands of years and are among the most familiar and objectionable of household pests.

The American cockroach is the largest and one of the most common of the pest species. It is reddish-brown,  $1\frac{1}{2}$  - 2" long, with darker blotches on a yellowish pronotum. It is commonly found in moist places such as bathtubs, clothes hampers, and sewers. It feeds on any number of substances, but seems to prefer decaying organic matter.

## AMERICAN DOG TICK

Ticks are not insects but are arthropods belonging to the Class Arachnida and the Order Acarina. Many are pests of medical importance. The American dog tick is a common pest of dogs, but it will freely attack many other animals, including people. It is the principal vector of Rocky Mountain spotted fever in the central and eastern United States.

The adult tick has eight legs, is reddish-brown, and is about  $\frac{1}{8}$ " long. Positive identification is difficult without the aid of magnification.

## ANGOUMOIS GRAIN MOTH

The Angoumois grain moth can be a serious pest of corn and stored grains. The adult is a buff-colored moth about  $\frac{1}{4}$ " in length. The damaging stage is the small white larva. When full grown, it is only about  $\frac{1}{5}$ " long. The larva has chewing mouthparts on the yellowish head, though the adult has siphoning mouthparts.

## ANT LION

The ant lions are the larva of a fragile-looking creature belonging to the lacewing family. They dig funnel-shaped holes in soft sand, placing

themselves just below the surface at the bottom of the funnel. As insects wander into the pit, the ant lion digs, causing the sand to move to the bottom with the prey. The larvae are  $\frac{1}{4}$  -  $\frac{1}{2}$ " in length, with large, sickle-shaped mandibles, giving the appearance of being all mouth.

## APANTELES WASPS

*Apanteles* wasps are more frequently seen (or at least recognized) as cocoons than as adults. Many times a caterpillar will be found with the white cocoons, about  $\frac{3}{16}$  -  $\frac{1}{4}$ " long, attached to the body. The wasps are black, and about  $\frac{1}{4}$ " long. These are extremely beneficial insects, living at the expense of many caterpillars as internal parasites.

## ASSASSIN BUGS

Assassin bugs are a group of extremely beneficial insects that are predators on other insects. They range from  $\frac{1}{4}$  -  $\frac{1}{2}$ " in length up to as much as 1". Many are brown; many are brightly colored with red or yellow. Most feed on caterpillars or other insect larvae. They can give a painful bite if handled.

## BAGWORM

Bagworms are most easily recognized by the conspicuous, spindle-shaped cases that they produce. The caterpillars devour the foliage of a great number of fruit and shade trees and ornamental shrubs. They are especially fond of junipers and arborvitae. Only the caterpillar stage is damaging.

## BED BUG

Bed bugs, like lice and cockroaches, have been constant companions of people for thousands of years. The adult is reddish brown in color, measures about  $\frac{3}{16}$ " in length and about  $\frac{1}{8}$ " in width. They are nocturnal in their feeding habits. Reaction to their bites varies. Although they have been suspected of disease transmission, all evi-

dence so far has been negative. Nevertheless, they are certainly unwelcome visitors.

### **BEET ARMYWORM**

The beet armyworm is a common pest throughout most of the southern states. It feeds upon many crops, including cotton, soybeans, and vegetable crops. A mature caterpillar is about 1" in length. Color is quite variable. It can be distinguished by a small black dot on each side of the thorax, above the second pair of true legs.

### **BIG-EYED BUGS**

In spite of their small size, these bugs are extremely beneficial predators. Adults measure only about  $\frac{1}{8}$ " in length. They are characterized by their large, protruding eyes. They are often mistaken for *Lygus* bugs but can be distinguished by the broad head and large eyes. They feed on various stages of other insects. They are especially beneficial in cotton.

### **BLACK CARPET BEETLE**

The black carpet beetle is a very small, black, oval-shaped beetle. It measures only about  $\frac{1}{16}$ " in length. The small, reddish or golden brown larvae are characterized by a long tuft of hairs at the tip of the abdomen. The larvae feed upon carpets, woolens, other fabrics, stored products, and even preserved insect specimens. They can be extremely destructive.

### **BLACK DEER FLY**

The black deer fly attacks wild and domestic animals, including people. It is black, with yellow markings. It is an annoying and painful pest. It has been known to transmit certain diseases, making it an even more serious pest. The adult fly may be up to about  $\frac{1}{2}$ " long.

### **BLACK WIDOW SPIDER**

The black widow spider is not an insect but is an arthropod belonging to the Class Arachnida and the Order Araneida. It is one (and the most common) of two poisonous spiders in the United States. The adult female has eight legs, is usually coal-black except for a red hourglass-shaped marking on the underside of the bulbous abdomen. The body may be  $\frac{1}{4}$  -  $\frac{1}{2}$ " in length. Though

it is beneficial in that it preys on insects, its poisonous bite causes it to be considered here as harmful.

### **BOLL WEEVIL**

The boll weevil is one of the most destructive insects known to people. It feeds exclusively on cotton, causing millions of dollars in damage annually. The adult weevil is about  $\frac{3}{16}$  -  $\frac{1}{4}$ " in length, is brown, and has a distinctive snout. It is characterized by the presence of a spur (or tooth) on the front tibia (part of the front leg). Both the adult and larva damage the plant, with the larva living within the cotton squares.

### **BOXELDER BUG**

The boxelder bug is found throughout North America. It has a bright red body with a black head. It is about  $\frac{1}{2}$ " in length. It feeds on the foliage of many different deciduous trees and shrubs.

### **BROWN STINK BUG**

Stink bugs are shield-shaped bugs, most being from about  $\frac{1}{4}$  -  $\frac{1}{2}$ " in length. The brown stink bug is brown and feeds upon many crops, including cotton and soybeans.

### **CABBAGE LOOPER**

The cabbage looper is the larva of a nondescript brown-colored moth. The caterpillar is usually pale to dark green and is characterized by the presence of two pairs of abdominal prolegs. It moves in a looping fashion. The cabbage looper readily attacks cotton and soybeans as well as most cole crops (spinach, lettuce, etc.).

### **CAMPOLETIS WASPS**

These wasps are very similar to *Apanteles* wasps. The cocoons are usually seen singly, often attached to the skin of its hosts. These are important parasites of caterpillars. The adult wasp is dark colored and about  $\frac{1}{4}$ " in length.

### **CASEMAKING CLOTHES MOTH**

The casemaking clothes moth is another worldwide pest of people. The larva is of economic importance because it feeds upon natural fabrics. It is white, with a dark head, and is about

$\frac{1}{2}$ " long when full grown. It makes a silken case which it drags around with it, and into which it retreats when disturbed.

### **CATTLE GRUB**

The cattle grub is one of the most serious pest problems of cattle. The adult is a hairy, yellow and black fly, about the size of a honey bee. The eggs are laid on the hair of the host. The grub burrows through the skin and develops within the host. The full-grown larva may reach  $\frac{2}{3}$ " in length before burrowing out through the skin on the back.

### **CHICKEN LICE**

Chicken lice belong to the group of chewing lice. They infest only birds, including poultry. They are small, barely  $\frac{1}{16}$ " in length, pale, flattened from top to bottom, wingless, and with well-developed claws. Chewing lice have a broad head, as opposed to sucking lice. They spend their entire life on, or near, their host.

### **COLORADO POTATO BEETLE**

The Colorado potato beetle is a serious pest of potatoes in both the adult and larval stages. The adult beetle is yellowish brown with variable number of black spots on the pronotum and five black stripes on each wing cover. The larva is cherry red, with black head and legs. Full grown, the larva and beetle are both about  $\frac{1}{2}$ " in length. It will also feed on other related plants.

### **COTTON BOLLWORM**

The cotton bollworm is also known as the tomato fruitworm, corn earworm, and soybean podworm. It feeds on all of these, and many other plants as well. The full-grown larva may be 1 -  $1\frac{1}{2}$ " in length. Color is quite variable, but black spots on the body are usually apparent.

### **COTTONY CUSHION SCALE**

This scale once threatened to put the California citrus industry out of business. It will feed on a great variety of trees and shrubs in addition to citrus. The adult female is about  $\frac{1}{2}$ " in length, including the egg sac. She is reddish brown with black legs and antennae. The most distinguishing characteristic is the white, cottony, ribbed egg sac attached to her body.

### **COWPEA CURCULIO**

The cowpea curculio is a small, black, convex beetle. The adult weevil measures only about  $\frac{1}{5}$ " in length. It can be an important pest of many leguminous plants and of seedling cotton as well.

### **CUTWORMS**

There are numerous species of cutworms. They are considered here as a group. The full-grown caterpillars measure about 1 -  $1\frac{1}{4}$ " in length and are quite variable in color. They are usually conspicuous by the absence of hairs on the body. They can be characterized by the damage that they do, cutting plants off at or just above the soil surface. They attack many different crops.

### **DAMSEL BUGS**

This group of beneficial insects includes several different species. The adults are brown, long and slender, measuring about  $\frac{1}{4}$ " in length. They feed upon many different insect pests.

### **EARWIGS**

Earwigs are easily recognized in all stages by the presence of forcepslike structures on the tail end of the body. Adult earwigs are brown or black and are about  $\frac{1}{2}$  - 1" long. They feed on decaying vegetable or animal matter and other insects. They really could be considered beneficial except that they get in homes and sometimes are a nuisance, but they pose no real threat or danger.

### **EUONYMUS SCALE**

The euonymus scale can be a serious pest to a limited number of plants, chiefly euonymus. Females are dark and pear-shaped. Males are white and slender. Both are about  $\frac{1}{16}$ " in length. They can be numerous and will cause serious damage when present.

### **EUROPEAN CORN BORER**

The European corn borer has been a serious pest of corn, and it is becoming a threat to other crops, including cotton, potatoes, peppers, tomatoes, and sunflowers. Larvae bore within the host plant. Full-grown larvae are a dirty white color with a black head. They measure from  $\frac{3}{4}$ " to 1" in length.

## **FACE FLIES**

Face flies look much like house flies. They are serious pests of cattle, where they are most commonly observed around the eyes and nostrils. Face flies are facultative pests. That is, they do not puncture the skin themselves but feed on the oozing secretions from the eyes and nostrils of cattle. The irritating effect of their feeding is often associated with pinkeye in cattle.

## **FALL ARMYWORM**

The fall armyworm is confined to the warmer parts of the United States. It feeds on many different plants, especially grasses. Full-grown larvae are about 1½" in length. Though variable in color, they have a dark head with a prominent, cream-colored, inverted Y on the front of the head.

## **FLOUR BEETLES**

There are several species of flour beetles, all brown or black in color and about 1/10 - 1/8" in length. These can be serious pests of stored products, especially cereal or grain-based products.

## **GERMAN COCKROACH**

Like the American cockroach, the German cockroach is a serious nuisance in warmer climates. It is the most common indoor species and feeds on many different organic products. The German cockroach is smaller than the American, being only about 1/2 - 3/4" in length. It is light brown with longitudinal stripes on the back.

## **GREEN CLOVERWORM**

The green cloverworm is common in soybeans early in the season. Though it is a foliage feeder, it rarely requires treatment. It is green, about 1 - 1¼" in length, and is characterized by the presence of three pairs of abdominal prolegs.

## **GREEN JUNE BEETLE**

The adult green June beetle is a common pest of foliage and fruit of many plants. It is sometimes called a fig beetle. This is a robust, green and yellow beetle, about 3/4" in length. The larvae, known as white grubs, are frequent pests to roots of grasses, vegetables, and ornamental plants.

## **GREEN LACEWING**

The green lacewing, or goldeneye lacewing, is pale green, delicate in appearance, and with golden eyes. It is about 1/2 - 3/4" long. The larvae, similar to ant lions, have sickle-like mouthparts used for capturing prey. These are extremely beneficial insects in many crops, where they feed upon other insects.

## **GREEN LYNX SPIDER**

This beneficial spider belongs to the Class Arachnida, Order Araneida. It is green, has eight legs, and is about 1/2" long. It is a common predator in tobacco, as well as in some other crops.

## **GREEN PEACH APHID**

The green peach aphid is light green or yellow, with indefinite darker stripes on the abdomen. It is about 1/8" long. In addition to peaches, it is a serious pest of tobacco, peppers, potatoes, tomatoes, spinach, lettuce, and other crops. This insect may be responsible for disease transmission as well as direct damage.

## **GROUND BEETLES**

This group of beneficial insects varies in appearance. The adult beetles may be brown, black, or more colorful greens or blues. They vary from very small (1/8" or less) to more than 1". They are beneficial in both the adult and larval stages, feeding upon other insects. They are frequently seen running along the ground.

## **HAG MOTH**

The adult hag moth is of little consequence. The larva, however, is a potentially serious pest because of its stinging hairs and not for its feeding on foliage. The larva is brown, about 3/4" long when fully grown, and has four pairs of long, plume-like processes on the back, projecting outward. Among the disarranged brown hairs are longer, black stinging hairs.

## **HONEY BEE**

The honey bee is very possibly the most beneficial insect in human history. Although it is most noted for its honey production, a great many plants are dependent upon this insect for pollination.

## **HORNWORMS**

The two most common hornworm pests are the tomato and tobacco hornworms. Both are very large, green, white-striped worms, with anal horns. They may reach 3 - 4" in length. The anal horn is red in the tobacco hornworm. Both feed primarily on solanaceous plants, including tobacco, tomatoes, potatoes, and peppers. They are voracious eaters. The large adult moths are of little consequence.

## **HOUSE FLY**

The house fly is another universal pest of people. The adult flies are not only serious nuisances, but they have been implicated in the transmission of many different diseases, including cholera, diarrhea, and dysentery.

## **INDIAN MEAL MOTH**

The Indian meal moth is another serious pest of stored products. The adult moth is of little importance. The dull white larva feeds on a wide variety of stored food products. Fully grown larvae may reach  $\frac{3}{4}$ " in length.

## **IO CATERPILLAR**

The io caterpillar is another stinging pest. The caterpillar may attain a length of nearly  $2\frac{1}{2}$ " It is pale green, with a pink and white lateral stripe. It has numerous, conspicuous clusters of urticating hairs.

## **JAPANESE BEETLE**

The Japanese beetle is a pest in both the adult and larval stages. It has hundreds of different host plants, including corn, beans, and tobacco. The adult beetle is about  $\frac{1}{4}$  -  $\frac{1}{2}$ " long, metallic green, with brown wing covers. It is characterized by tufts of white hairs, appearing as white dots, around the perimeter of the abdomen. The grayish-white larvae, known as white grubs, are serious pests of grasses, lawns, vegetables, and nursery stock.

## **LACE BUGS**

Lace bugs may be serious pests on certain ornamental plants, especially azaleas in South Carolina. They suck plant juices in all stages of their life cycle, leaving the leaves blotched and

spotted with specks of excrement. They are found primarily on the undersides of leaves. They are small, usually about  $\frac{1}{8}$ " in length. Adults are flattened, broad, and either rectangular or oval in shape. They are characterized by expansions of the pronotum and wings into ornate, lacy-looking projections. Nymphs are darker in color and covered with spines, not resembling the adults.

## **LADYBIRD BEETLES**

Ladybird beetles are beneficial in both the larval and adult stages. They feed on many small, soft-bodied insects such as aphids, scales, mealybugs, and mites. Most are about  $\frac{1}{4}$ " long, and quite colorful (especially reds or oranges and black). Adults are oval and hemispherical in shape. Larvae may be spined and, to some people, resemble miniature alligators.

## **LEAF-FOOTED BUGS**

Leaf-footed bugs are common pests of vegetables and fruits in the Southeast. Most are about  $\frac{3}{4}$  - 1" in length and are easily recognized by the flattened expansion of the tibiae of the hind legs into a leaflike structure. Nymphs resemble adults. They have piercing-sucking mouthparts during all feeding stages of the life cycle.

## **LESSER CORNSTALK BORER**

The lesser cornstalk borer may be a serious pest of many crops, especially under dry conditions and in light, sandy soils. It is especially serious on peanuts but also attacks soybeans and other leguminous crops, corn, and other grass crops. The important stage, the larva, is bluish-green with brown stripes. It is  $\frac{1}{2}$  -  $\frac{3}{4}$ " in length, and may be found in a silken tunnel near the base of the host plant. It tunnels and feeds on roots and stems.

## **LIMA BEAN POD BORER**

The lima bean pod borer may be a serious pest of lima beans. As the name implies, it feeds within the pods of lima beans. Like the preceding insect, it is the larva that does the damage. The larva is reddish pink or tan, and about  $\frac{1}{2}$ " in length when fully grown.

## **LUBBER GRASSHOPPER**

The eastern lubber grasshopper, though not a serious pest, may attack and damage many different crops. It is a very recognizable species. It is large (about 2½" long), stout-bodied, black with some yellow markings, and characterized by very short wings which render it nearly flightless. The hind wings are red, with black borders.

## **LYGUS PLANT BUGS**

*Lygus* bugs may be serious pests of cotton and alfalfa. Adults are brown, about ¾ - 1" long, with long antennae and legs. Though superficially similar to the beneficial big-eyed bugs, *Lygus* may be distinguished by their narrow head. Nymphs are similar to adults in appearance, though smaller and without wings. Both stages are damaging.

## **MAIZE BILLBUG**

The maize billbug, at one time, was one of the most serious pests of corn in South Carolina. This is one of the larger billbugs, frequently reaching ½" in length. It can be distinguished from the Southern corn billbug by its larger size and generally darker color. The maize billbug is most often black. The white, legless grubs feed in the root system of corn. The grub is often C-shaped and about ½" in length when fully grown.

## **MARGINED BLISTER BEETLE**

The margined blister beetle is not a serious pest, though it may be found feeding on soybeans and even tobacco in South Carolina. Adults are generally a little more than ½" in length. Wing covers are black, margined with ash gray pubescence or hairs.

## **MEXICAN BEAN BEETLE**

The Mexican bean beetle can be a serious pest of most bean crops, including soybeans. The adult beetle is about ¼" long, similar in appearance to a ladybird beetle, oval and hemispherical in shape. It is a yellowish brown to coppery color and is easily distinguished by the presence of 16 small black spots on its back (8 on each wing cover). Larvae are yellow to orange in color, about ¼" long when full-grown, and covered with long, branched spines.

## **MICROPOLITUS WASPS**

Like *Apanteles* and *Campoletis*, *Micropolitus* wasps are parasites of caterpillars. The adult wasp is very similar in appearance to *Campoletis*, is dark in color, and is about ¼" in length.

## **OLD HOUSE BORER**

The old house borer often is a very serious structural pest. The larva, which is the damaging stage, is about 1¼" in length when fully grown. It is white, with a broad thorax and generally club-shaped in appearance. The entire life cycle may take 3 to 5 years or longer. They prefer seasoned wood, especially pine and spruce.

## **PEACH TREE BORER**

The peach tree borer is one of the most serious insect pests of peaches. Damage may be so severe that the tree dies. Damage is done by the larva, which is yellowish white or cream-colored, with a dark brown head, and is about 1" long when fully grown.

## **PECAN WEEVIL**

The pecan weevil is a serious pest of pecans and hickories. At times it may cause loss of up to 80% of a pecan crop. The adult is a dark brown weevil about ¾" long, characterized by an extremely long beak. The larva, which feeds within the developing nut, does the damage. A single life cycle may take 2 to 3 years.

## **PLUM CURCULIO**

The plum curculio is a pest of many fruits in the rose family, including plums, pears, apples, peaches, and cherries. Both adults and larvae feed upon the fruit. In addition to this direct damage, feeding and egg punctures also permit entry of disease organisms. The adult is a dark brown and black weevil generally less than ¼" long. It is marked with yellowish and whitish pubescence and has wing covers that are conspicuously covered by crests or humps.

## **PRAYING MANTIS**

The European mantid, also known as the praying mantis, is an extremely beneficial insect that preys upon many other insect species (many of which are pests). It may grow quite large,

sometimes as much as 2½" in length. It is brown or green and is easily recognized by its front legs, which are adapted for grasping prey and are normally held in a "praying" attitude.

### **PUSS CATERPILLAR**

The puss caterpillar feeds upon a number of different hardwood trees. However, it is not for its diet but for its stinging hairs that the puss caterpillar is important. The caterpillar, or larva, is about 1" long, broad and flat, and covered with long, silky, reddish brown hairs. Beneath the long hairs are poisonous spines. The sting is quite severe.

### **RED-HEADED PINE SAWFLY**

The larva of the red-headed pine sawfly feeds upon many different species of pine trees. The larva is yellowish, has six longitudinal rows of black dots, a pale reddish brown head, and grows to about 1" in length when fully grown.

### **RED-TAIL WASP**

The red-tail wasp is an important parasite of caterpillars, especially the tobacco budworm and cotton bollworm. The adult wasp is about ¼ - ½" in length, is black with a bright red abdomen, hence its name. It lays its eggs upon the host caterpillar. Development takes place within the host.

### **RICE WEEVIL**

The rice weevil is a pest of corn and of stored products. It may be found wherever corn is grown in South Carolina. Both adult weevils and larvae feed upon corn. The adult weevil is dark brown or black, has ridged wing covers, and a prolonged snout extending downward from the front of the head about ¼ the length of the body. It is about ⅛" in length.

### **ROBBER FLIES**

Robber flies are large, powerful flies, usually with robust, hairy body and long, slender abdomen. Most are gray, though some are bright black and yellow. All are beneficial, preying upon a great many other insects.

### **SADDLEBACK CATERPILLAR**

The saddleback caterpillar feeds on many different ornamental plants. But, as with the puss caterpillar, it is not its feeding but its poisonous spines that make it worthy of mention. It is reasonably common in South Carolina and quite a large number of "stings" are reported each year. Most are the result of handling by children or accidentally brushing against them while doing yard work. The caterpillar is brown at both ends, including the spine-covered horns, green around the middle, with a purple or brown "saddle" edged with white. It is about 1" long when fully grown.

### **SAW-TOOTHED GRAIN BEETLE**

The saw-toothed grain beetle is an extremely common household pest. It feeds upon an extremely large number of different stored food products. The adult is a slender, much-flattened, dark red or brown beetle only about ⅒" in length. It is its flattened shape that enables it to work its way into apparently tightly sealed packages of food. Its name comes from the toothlike projections on each side of the thorax. Both adults and larvae are pests.

### **SILVERFISH**

Silverfish are another cosmopolitan pest. They are soft-bodied insects, silver in color, about ½" in length. They are easily identified by the presence of three long, tail-like appendages at the end of the abdomen. They may be found throughout homes, feeding upon materials high in starch or sugar content, such as wallpaper, books, paper, etc. They are active in the dark and are quite active when disturbed.

### **SOUTHERN CORN BILLBUG**

The southern corn billbug is presently one of the most serious pests of corn in South Carolina. It is lighter in color and a little smaller than the maize billbug. It is generally grayish brown and a little less than ½" in length. It is usually found at the base of seedling corn plants in a head down position.

### **SOUTHERN CORN ROOTWORM**

The southern corn rootworm is the larva of the 12-spotted cucumber beetle. Both are serious

pests. The larva is a serious pest of peanuts as well as seedling corn in South Carolina. On peanuts, damage is to the pods. On corn, the larva feeds on roots and stems. The larva is a slender, white worm about  $\frac{1}{3}$ " long when fully grown.

### **SOUTHERN GREEN STINK BUG**

Like the brown stink bug, the southern green stink bug is a shield-shaped bug, generally about  $\frac{1}{4}$ " in length. Not surprisingly, it is green in color. It uses its piercing-sucking mouthparts to feed upon many crops, including cotton, soybeans, and most vegetable bean crops. Nymphs, like adults, feed and do damage.

### **SOYBEAN LOOPER**

The soybean looper is a pest of soybeans and also of several vegetable and ornamental plants. Color is variable, either green or brown. The looper is characterized by the presence of only two pairs of abdominal prolegs.

### **SQUASH BEETLE**

The squash beetle is closely related to the Mexican bean beetle. It can be distinguished by its more yellow color and by the presence of 14 black spots on its back (seven on each wing cover) and four black spots on the pronotum. It feeds on squash, pumpkins, and other related plants.

### **STILT BUG**

Stilt bugs are beneficial insects, feeding upon small worms and other small, soft-bodied insects, especially on tobacco. They are slender, brown insects about  $\frac{1}{2}$ " in length. They have extremely long legs, from which they get their name, and piercing-sucking mouthparts.

### **SUBTERRANEAN TERMITE**

Termites are one of the most well-known and feared of all insects. Termites are generally white, about  $\frac{1}{4}$ " in length, soft-bodied, and about the same width throughout their length. The subterranean termite forms its colony deep in the ground, where it is able to find needed moisture. It feeds on all types of dead plant material, paper, and wood. In terms of home damage, this is probably the most damaging termite.

### **SUGARCANE BEETLE**

The sugarcane beetle is a black, robust beetle about  $\frac{1}{2}$ " long. It is a serious pest of corn, rice, and also sugarcane. It eats large holes in the sides of seedling corn, just above the roots. It may kill the plant and do considerable stand damage.

### **SWEET POTATO WEEVIL**

The sweet potato weevil is the subject of quarantine in South Carolina. Where it occurs, it can do serious damage to sweet potatoes. It is a small insect, generally less than  $\frac{1}{4}$ " in length, and ant-like in appearance. The head, snout, and elytra are bluish black; the pronotum and legs are bright orange. It does damage in both adult and larval stages to both field and stored sweet potatoes.

### **SYRPHID FLY (LARVAE)**

The larvae of syrphid flies are another group of extremely beneficial insects. These larvae are a pale green color, almost transparent. The internal digestive organs can actually be seen in some. They are about  $\frac{1}{4}$  -  $\frac{1}{2}$ " in length when full-grown. They are extremely beneficial in the control of small, soft-bodied insects, especially aphids.

### **TEA SCALE**

The tea scale is a serious pest of ornamental plants in the South, especially camellias and Chinese holly. The adult female is hard, brown, elongate-oval or boat-shaped, and only about  $\frac{1}{16}$ " long. It will often cover the entire undersurface of camellia leaves.

### **THREE-CORNERED ALFALFA HOPPER**

This small insect can cause serious damage to alfalfa, soybeans, beans, tomatoes, cotton, and many other plants as well. Damage results when insects puncture stems to suck sap and to oviposit. The result may be girdling of the stem, ultimately causing the plant or plant part to fall over or lodge. The three-cornered alfalfa hopper is green, about  $\frac{3}{16}$  -  $\frac{1}{4}$ " in length, and is a distinguishable triangular shape, from which it gets its name.

### **TIGER BEETLES**

Tiger beetles are a group of sun-loving, colorful, extremely beneficial insects. Although

there is considerable variation in size and color, many common species are metallic-colored and around  $\frac{1}{2}$  - 1" in length. Both adults and larvae are predaceous. The adults have long legs, run quickly, take to flight quickly, and are good fliers. They feed upon many other insects.

### **TOBACCO BUDWORM**

The tobacco budworm is one of the most serious insect pests of field crops. It is particularly damaging to tobacco and cotton but has hundreds of other hosts. In the field, the larva is indistinguishable in appearance from the cotton bollworm. The adult moths are easily distinguished.

### **TOBACCO FLEA BEETLE**

Flea beetles are pests of numerous garden and crop plants. The tobacco flea beetle is of particular importance to tobacco. The adult beetle is quite small, approximately  $\frac{1}{16}$ " in length. It is brown or black in color. The beetles feed upon the foliage of the host, causing small, round holes. Severe damage may look as though the plant had been shot with a shotgun. Larvae feed upon the roots.

### **TOBACCO WIREWORMS**

Wireworms are the larvae of click beetles. While adults are harmless, the larvae may cause damage to numerous crops. The tobacco wireworm is a pest of tobacco, potatoes, and several other crops. The full-grown larva is hard, thick, and about  $\frac{1}{2}$ " in length. It is usually brown.

### **TUSSOCK MOTHS**

Tussock moths are pests of many different trees. Damage is done by the larval stage. These insects get their name from the tufts of hairs, or tussocks, that are usually present in both the adult and larval stages. Most are about 1" in length when full-grown. Color is variable.

### **TWELVE-SPOTTED CUCUMBER BEETLE**

As previously mentioned, this beetle is the adult stage of the Southern corn rootworm. Both stages are serious pests. The adult beetle is pale green or yellow, with 12 black spots on its back

(six on each wing cover) and about  $\frac{1}{5}$ " long. It feeds on numerous different plants, including most cucurbits and corn.

### **TWO-SPOTTED SPIDER MITE**

The two-spotted spider mite can be a pest of cotton, tomatoes, cucurbit plants, most any ornamental plant, as well as some others. Mites are not insects but belong, instead, to the Class Arachnida, Order Acarina. Like most mites, this one is extremely small, about  $\frac{1}{60}$ " in length. It may be pale yellow to green to brown or orange. It is characterized by the presence of two dark spots that are food spots showing through the transparent body wall. Colonies build up rapidly, especially in dry weather.

### **VEGETABLE WEEVIL**

The vegetable weevil is another insect that is a pest in both the adult and larval stages. It is a pest of many different vegetables and of tobacco. The adult beetle is about  $\frac{1}{4}$ " long, brown, and is characterized by a V-shaped marking on the back. The larva is C-shaped, pale green, and also about  $\frac{1}{4}$ " in length when fully grown.

### **VELVET ANTS**

Although little is known about the biology of velvet ants, we do know that they are in reality wasps capable of issuing a severe sting. They range from about  $\frac{1}{4}$ " to nearly  $1\frac{1}{2}$ " in length. Most are brightly colored, as a warning signal, with many being bright red and black. They are covered by a dense pubescence giving them a velvety appearance.

### **VELVETBEAN CATERPILLAR**

The velvetbean caterpillar is a serious pest of soybeans, especially in the southern areas of South Carolina. It will also feed on peanuts. The larva may be black or green, with narrow lighter stripes along the back and sides. It may reach a length of about  $1\frac{1}{2}$ " "when fully grown. The larva is very active and thrashes violently when disturbed.

### **WAX SCALES**

This group of scale insects is characterized by the thick, heavy covering of white wax over their

bodies. They are found primarily in warmer climates, including South Carolina. Though size varies, they are generally about 1/4" in diameter. They feed on a wide variety of ornamental plants.

### **WEBBING CLOTHES MOTH**

Like the casemaking clothes moth, the webbing clothes moth is a worldwide pest of people. And, it is the larva that does the damage by feeding upon natural fabrics. The adult is a buff-colored moth with a wingspread of only about 1/2". It will run over the surface of infested goods when disturbed.

### **WHITEFLIES**

Whiteflies are primarily pests of trees and shrubs, though at times they may also damage such crops as cotton. Whiteflies are not flies but are bugs. They have the characteristic piercing-sucking mouthparts of that group. They are small insects, rarely more than 3/8" in length. Body and wings are covered by a white powder or dust, giving the white appearance. All adults are winged.

### **WHITE-FRINGED BEETLE**

The white-fringed beetle is a general feeder that will damage hundreds of different plants, including many vegetables. Both the adult and larva do damage. The adult is a dark gray beetle usually less than 1/2" in length. The wing covers are banded with white, and there are two pale lines along the sides of the head and prothorax, one above the eye and one below it. The body is covered by short, pale hairs. Full-grown larvae are yellowish-white, legless, and about 1/2" in length.

### **YELLOW-STRIPED ARMYWORM**

The yellow-striped armyworm may damage cotton, soybeans, and many other plants. The larva is black to brownish with conspicuous yellow stripes along the sides. There is a dark spot on the sides of the first abdominal segment. Larvae may reach 1 1/2" in length. Under certain conditions, crop damage may be serious.

**Table 1 Economic Insects**

<b>Insect</b>	<b>Order</b>	<b>Economic Effects</b>	<b>Host (*or Economic Importance)</b>	<b>Mouth Parts (of Damaging Stage)</b>	<b>Metamorphosis</b>
American Cockroach	Orthoptera	Harmful	Household Products	Chewing	Incomplete
American Dog Tick	Acarina**	Harmful	Dogs, Other Mammals	Piercing-Sucking	Incomplete
Angoumois Grain Moth	Lepidoptera	Harmful	Corn-Stored Grains	Chewing	Complete
Ant Lion	Neuroptera	Beneficial	Insects	Piercing-Sucking	Complete
<i>Apanteles</i> Wasps	Hymenoptera	Beneficial	Insects	Chewing	Complete
Assassin Bugs	Hemiptera	Beneficial	Insects	Piercing-Sucking	Incomplete
Bagworm	Lepidoptera	Harmful	Trees	Chewing	Complete
Bedbug	Hemiptera	Harmful	People	Piercing-Sucking	Incomplete
Beet Armyworm	Lepidoptera	Harmful	Many Crops	Chewing	Complete
Big-Eyed Bug	Hemiptera	Beneficial	Insects	Piercing-Sucking	Incomplete
Black Carpet Beetle	Coleoptera	Harmful	Fabrics	Chewing	Complete
Black Deer Fly	Diptera	Harmful	People, Other Mammals*	Piercing-Sucking	Complete
Black Widow Spider	Araneida**	Harmful	Poisonous Bite*	Piercing-Sucking	Incomplete
Boll Weevil	Coleoptera	Harmful	Cotton	Chewing	Complete
Boxelder Bug	Hemiptera	Harmful	Trees, Shrubs	Piercing-Sucking	Incomplete
Brown Stink Bug	Hemiptera	Harmful	Soybeans, Cotton	Piercing-Sucking	Incomplete
Cabbage Looper	Lepidoptera	Harmful	Cole Crops	Chewing	Complete
<i>Campolepis</i> Wasp	Hymenoptera	Beneficial	Insects	Chewing	Complete
Casemaking Clothes Moth (Larva)	Lepidoptera	Harmful	Fabrics	Chewing	Complete
Cattle Grub	Diptera	Harmful	Cattle	Chewing	Complete
Chicken Lice	Mallophaga	Harmful	Poultry	Chewing	Incomplete
Colorado Potato Beetle (Adult)	Coleoptera	Harmful	Potatoes	Chewing	Complete
Colorado Potato Beetle (Larva)	Coleoptera	Harmful	Potatoes	Chewing	Complete
Cotton Bollworm	Lepidoptera	Harmful	Cotton, Many Crops	Chewing	Complete
Cottony Cushion Scale	Homoptera	Harmful	Citrus, Many Plants	Piercing-Sucking	Incomplete
Cowpea Curculio	Coleoptera	Harmful	Beans, Peas	Chewing	Complete
Cutworms	Lepidoptera	Harmful	Many Crops	Chewing	Complete
Damsel Bug	Hemiptera	Beneficial	Insects	Piercing-Sucking	Incomplete

\*\*Class Arachnida

**Table 1 Economic Insects (continued)**

<b>Insect</b>	<b>Order</b>	<b>Economic Effects</b>	<b>Host (*or Economic Importance)</b>	<b>Mouth Parts (of Damaging Stage)</b>	<b>Metamorphosis</b>
Earwigs	Dermaptera	Harmful	Household Nuisance	Chewing	Incomplete
Euonymus Scale	Homoptera	Harmful	Euonymus	Piercing-Sucking	Incomplete
European Corn Borer	Lepidoptera	Harmful	Corn, Many Crops	Chewing	Complete
Face Fly	Diptera	Harmful	Cattle	Sponging	Complete
Fall Armyworm	Lepidoptera	Harmful	Corn, Grasses	Chewing	Complete
Flour Beetle	Coleoptera	Harmful	Stored Products	Chewing	Complete
German Cockroach	Orthoptera	Harmful	Household Products	Chewing	Incomplete
Green Cloverworm	Lepidoptera	Harmful	Soybeans	Chewing	Complete
Green June Beetle	Coleoptera	Harmful	Fruit	Chewing	Complete
Green Lacewing	Neuroptera	Beneficial	Insects	Chewing	Complete
Green Lynx Spider	Araneida**	Beneficial	Insects	Piercing-Sucking	Incomplete
Green Peach Aphid	Homoptera	Harmful	Tobacco, Fruit Trees	Piercing-Sucking	Incomplete
Ground Beetle	Coleoptera	Beneficial	Insects	Chewing	Complete
Hagmoth	Lepidoptera	Harmful	Stinging Pest*	Chewing	Complete
Honeybee	Hymenoptera	Beneficial	Honey Production*	Chewing-Lapping	Complete
Hornworms	Lepidoptera	Harmful	Tobacco, Tomatoes	Chewing	Complete
House Fly	Diptera	Harmful	Household Pest	Sponging	Complete
Indian Meal Moth (Larva)	Lepidoptera	Harmful	Stored Products	Chewing	Complete
Io Caterpillar	Lepidoptera	Harmful	Stinging Pest*	Chewing	Complete
Japanese Beetle	Coleoptera	Harmful	Many Crops	Chewing	Complete
Lace Bugs	Hemiptera	Harmful	Shrubs	Piercing-Sucking	Incomplete
Ladybird Beetle Adult	Coleoptera	Beneficial	Insects	Chewing	Complete
Ladybird Beetle (Larva)	Coleoptera	Beneficial	Insects	Chewing	Complete
Leaf-Footed Bug	Hemiptera	Harmful	Vegetable Crops	Piercing-Sucking	Incomplete
Lesser Cornstalk Borer	Lepidoptera	Harmful	Corn, Peanuts, Soybeans	Chewing	Complete
Lima Bean Vine Borer	Lepidoptera	Harmful	Beans	Chewing	Complete
Lubber Grasshopper	Orthoptera	Harmful	Many Crops	Chewing	Complete

\*\*Class Arachnida

**Table 1 Economic Insects (continued)**

<b>Insect</b>	<b>Order</b>	<b>Economic Effects</b>	<b>Host (*or Economic Importance)</b>	<b>Mouth Parts (of Damaging Stage)</b>	<b>Metamorphosis</b>
Lygus Plant Bug	Hemiptera	Harmful	Cotton, Alfalfa	Piercing-Sucking	Incomplete
Maize Billbug (Larva)	Coleoptera	Harmful	Corn	Chewing	Complete
Margined Blister Beetle	Coleoptera	Harmful	Soybeans	Chewing	Complete
Mexican Bean Beetle	Coleoptera	Harmful	Beans	Chewing	Complete
<i>Microplitis</i> Wasp	Hymenoptera	Beneficial	Insects	Chewing	Complete
Old House Borer	Coleoptera	Harmful	Wood	Chewing	Complete
Peach Tree Borer	Lepidoptera	Harmful	Peach Trees	Chewing	Complete
Pecan Weevil	Coleoptera	Harmful	Pecans	Chewing	Complete
Plum Curculio	Coleoptera	Harmful	Plums, Apples	Chewing	Complete
Praying Mantis	Orthoptera	Beneficial	Insects	Chewing	Incomplete
Puss Caterpillar	Lepidoptera	Harmful	Stinging Pest*	Chewing	Complete
Red Headed Pine Sawfly	Hymenoptera	Harmful	Pine Trees	Chewing	Complete
Red-Tail Wasp	Hymenoptera	Beneficial	Insects	Chewing	Complete
Rice Weevil	Coleoptera	Harmful	Corn, Stored Grains	Chewing	Complete
Robber Fly	Diptera	Beneficial	Insects	Piercing-Sucking	Complete
Saddleback Caterpillar	Lepidoptera	Harmful	Stinging Pest*	Chewing	Complete
Saw-Toothed Grain Beetle	Coleoptera	Harmful	Stored Products	Chewing	Complete
Silverfish	Thysanura	Harmful	Household Products	Chewing	Ametamorphosis
Southern Corn Billbug	Coleoptera	Harmful	Corn	Chewing	Complete
Southern Corn Rootworm	Coleoptera	Harmful	Corn, Peanuts	Chewing	Complete
Southern Green Stink Bug	Hemiptera	Harmful	Soybeans, Cotton	Piercing-Sucking	Incomplete
Soybean Looper	Lepidoptera	Harmful	Soybeans	Chewing	Complete
Squash Beetle	Coleoptera	Harmful	Cucurbits	Chewing	Complete
Stilt Bug	Hemiptera	Beneficial	Insects	Piercing-Sucking	Incomplete
Subterranean Termite	Isoptera	Harmful	Wood	Chewing	Incomplete
Sugarcane Beetle	Coleoptera	Harmful	Corn, Rice	Chewing	Complete

\*\*Class Arachnida

**Table 1 Economic Insects (continued)**

<b>Insect</b>	<b>Order</b>	<b>Economic Effects</b>	<b>Host (*or Economic Importance)</b>	<b>Mouth Parts (of Damaging Stage)</b>	<b>Metamorphosis</b>
Sweet Potato Weevil	Coleoptera	Harmful	Sweet Potatoes	Chewing	Complete
Syrphid Fly Larvae	Diptera	Beneficial	Insects	Piercing-Sucking	Complete
Tea Scale	Homoptera	Harmful	Shrubs	Piercing-Sucking	Incomplete
Three-Cornered Alfalfa Hopper	Homoptera	Harmful	Soybeans, Alfalfa	Piercing-Sucking	Incomplete
Tiger Beetle	Coleoptera	Beneficial	Insects	Chewing	Complete
Tobacco Budworm	Lepidoptera	Harmful	Tobacco, Cotton	Chewing	Complete
Tobacco Flea Beetle	Coleoptera	Harmful	Tobacco	Chewing	Complete
Tobacco Wireworm	Coleoptera	Harmful	Tobacco	Chewing	Complete
Tussock Moth	Lepidoptera	Harmful	Trees	Chewing	Complete
Twelve-Spotted Cucumber Beetle	Coleoptera	Harmful	Cucumbers, Corn	Chewing	Complete
Two-Spotted Spider Mite	Acarina**	Harmful	Cotton, Other Plants	Piercing-Sucking	Incomplete
Vegetable Weevil	Coleoptera	Harmful	Tobacco, Vegetables	Chewing	Complete
Velvet Ant	Hymenoptera	Harmful	Stinging Pest*	Chewing	Complete
Velvetbean Caterpillar	Lepidoptera	Harmful	Soybeans	Chewing	Complete
Wax Scale	Homoptera	Harmful	Trees, Shrubs	Piercing-Sucking	Incomplete
Webbing Clothes Moth (Adult)	Lepidoptera	Harmful	Fabrics	Chewing	Complete
Whitefly	Homoptera	Harmful	Trees, Shrubs	Piercing-Sucking	Incomplete
White-fringed Beetle	Coleoptera	Harmful	Vegetable Crops	Chewing	Complete
Yellow-Striped Armyworm	Lepidoptera	Harmful	Cotton, Soybeans	Chewing	Complete

\*\*Class Arachnida

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