Beneficial Insects

Pecan IPM Toolbox
Nymphs (immature stages) of the wheel bug *Arilus cristatus* found on pecan trees.

Immatures have red abdomens and black heads, legs and thorax.

Early immature stages can be found clustered together near egg cases.

As immatures develop they disperse throughout the tree.

Feed on a wide range of soft-bodied insects

Wheel bugs bite. Handle with care, if at all.
Slender, cigar-shaped insects,

Tan to brown in color

About one-half inch (25 mm) long

Light smoky-colored wings

Thick front legs made for grasping and holding prey

Nymphs resemble adults except they have no wings and appear very fragile.

Both adults and nymphs feed on small, soft-bodied insects, worms and eggs.

All photos courtesy of Whitney Cranshaw, Colorado State University, Bugwood.org
Bigeyed bug adults are black with clear, silvery-appearing wings. They have large conspicuous eyes on the sides of their head. Adults are less than one-fourth inch (6mm) in length. Nymphs also have enlarged eyes, are silvery or gray in color with small, black specks on their body. Both adults and nymphs feed on small, soft-bodied insects, worms, and eggs.

Left: Bigeyed bug, nymph
Right: Bigeyed bug, adult
Photos courtesy of Russ Ottens, University of Georgia, Bugwood.org
Minute pirate bug adults are about 1/16” (1.5 - 2 mm) long

- Mostly black with white markings on their wings.
- Adults have an “X” pattern on their backs.
- Nymphs are small, orange-colored insects with the same general body shape as the adult, but are wingless.
- Both adults and nymphs are important predators of small, soft-bodied insects, eggs and worms.

Photo top: Minute pirate bug nymph feeding on green peach aphid
Photo bottom: Adult minute pirate bug
Photos courtesy of Bradley Higbee, Paramount Farming, Bugwood.org
Lady Beetle

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- Lady beetle adults are oval-shaped insects that vary in color but usually have black or orange-red spots on their wing covers.
- Larvae are elongate, spindle-shaped, with spiny backs. They are black, blue and orange in color with thick stubby legs.
- Both adults and larvae are very active and feed on small, soft-bodied insects and insect eggs. They are very effective aphid predators.
- Lady beetle eggs are yellow to orange-colored and are laid in clusters of five to twenty eggs.
- Lady beetles are the most important insect predators on pecan.

Photo: Adult convergent lady beetle
Courtesy Russ Ottens, University of Georgia, bugwood.org
Wings of lacewing adults have many veins, giving them a net-like appearance.
Wings are held roof-like over the back
Adults are green or brown and some have characteristic golden eyes.
Adults are not predaceous.
Larvae are about ½” (12 mm) long, spindle-shaped, and have long, sharply pointed, mandibles protruding from the front of their head.
Larvae are tan and white in color with a warty or spiny appearance.
Lacewing larvae eat small, soft-bodied insects, eggs and worms.
The eggs of lacewings are small, green to whitish in color and are laid on a slender, thread-like stalk.
Lacewings are very important predators on pecan in late season.

Top left: Lacewing egg. Photo courtesy of Whitney Cranshaw, Colorado State University, Bugwood.org
Bottom left: Lacewing larvae. Photo courtesy of Bradley Higbee, Paramount Farming, Bugwood.org
Top right: Adult lacewing. Photo courtesy of Frank Peairs, Colorado State University, Bugwood.org
Syrphid Fly

- Syrphid fly adults are generally banded or spotted with bright yellow markings on a black body.
- Often confused with wasps or bees and have a characteristic hovering flight.
- Adults are not predaceous.
- Syrphid fly larvae are tan to green, elongate, legless, slug-like maggots about 3/8” (10 mm) long.
- Larvae are important predators of aphids and other small, soft-bodied insects.

*Photo top:* Syrphid fly larva, courtesy of Frank Peairs, Colorado State University, [Bugwood.org](http://Bugwood.org)

*Photo bottom:* Adult syrphid fly, courtesy of Whitney Cranshaw, Colorado State University, [Bugwood.org](http://Bugwood.org)
Assassin bug adults are flattened, oval bugs with narrow heads and a slender neck.

Brown or black with some species having red-colored markings.

They range in length from one-half to one and one-half inches (12-36 mm).

Nymphs are similar in shape, form, color and habits

Nymphs are wingless.

Both adults and nymphs feed on small soft-bodied insects, worms and eggs.
Spiders and mites are not insects, but these arthropods are very important predators in the orchard.

Many types of spiders are found in pecans. They vary greatly in size and color. Spiders prey on almost any insect that comes within their range.

One group of mites, *Phytoseilus* spp., are particularly helpful in controlling plant feeding mites in pecans.
Beneficial Insects for Pecan - Predators, BugwoodWiki, Editors H. C. Ellis and Randy Hudson, UGA Extension Entomologists. The University of Georgia, College of Agricultural and Environmental Sciences, Cooperative Extension Service, March 2000.