



BUG BIZ

Pest Management and Insect Identification Series



Geocoris spp., Big-eyed bugs

(Hemiptera: Geocoridae)

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Description

Big-eyed bugs (*Geocoris* spp.) are true bugs (Hemiptera) belonging to the family Geocoridae. They are small, averaging 6 mm in body length, grey-brown or shiny black in color, sometimes with orange or red markings on the dorsal surface. The body is somewhat dorsoventrally flattened and oval in shape. The head is broad and pentagonal, wider than long, with characteristically large, prominent eyes that are widely separated and bulging. Eyes may be red in color in some species and brown in others. The big-eyed bug proboscis is needle-like, containing stylets and are tucked under the thorax when not in use. The antennae are short with enlarged terminal segments. Wings of the adults form a pair of triangles near the midpoint and overlap at the rear, forming a hemelytra characteristic of other hemipteran families. When mobile, they walk with a waggle and emit foul smelling defensive chemicals. Immatures are similar in appearance to adults but are smaller, lack wings and are lighter in color. Eggs are white to pale yellow in color, oblong and have a slender projection on one end. Because of superficially similar features, they are sometimes confused with other bugs like chinch bugs (*Blissus* spp.), minute pirate bugs (*Orius* spp.), false chinch bugs (*Nysius* spp.) and pamera seed bugs (*Neopamera bilobata*), but those lack the distinct bulging eyes and differ in many other details.

About 25 species of big-eyed bugs occur in the United States, with four recorded from Louisiana based on specimens in the Louisiana State Arthropod Museum. The two most commonly encountered are *G. punctipes*, with adults which are light brown in color; and *G. uliginosus*, with black adults. Many additional species occur in other parts of the world.



Geocoris nymph (James Villegas, Louisiana State University AgCenter).



Adult *Geocoris punctipes* on Cotton plant (James Villegas, Louisiana State University AgCenter).

Life Cycle

As with other true bugs, big-eyed bugs go through incomplete metamorphosis (i.e., they do not have true larvae or undergo a pupal stage). Adult females lay eggs in the spring on the leaves and stems of herbaceous plants. One adult may lay 10 to 21 eggs in three to five days during the egg-laying period. One female can lay up to 300 eggs during her lifetime. Immatures (nymphs) usually hatch after six to 10 days when temperatures are optimal (around 27 C). They mature after three to four weeks, undergoing five nymphal instars, each lasting four to six days. The optimal temperature for survival of nymphs and adults is from 25 C to 30 C. Nymphs and adults are predacious and may also feed on nectar and, possibly, honeydew. They shelter under plant debris, at the base of plant stems or inside soil cracks. Adults live for about one month. Several generations per year are possible during warm seasons.

Ecological Significance

Big-eyed bugs are found in various habitats, including agricultural fields, urban gardens and natural ecosystems. They are beneficial predatory insects and natural enemies of pests such as chinch bugs, aphids, mites, caterpillars, moths, small nymphs of pest species, and other small arthropods, including other predators. They reduce populations of arthropod pests, enhancing productivity, yield of agricultural plants and health of turf grass. They actively hunt for prey on buds, flowers and leaves and in the thatch layer of grass. Once the prey is located, they stab it with their proboscis, inject salivary enzymes and suck the soft internal tissues of the prey through the straw-like stylets. Big-eyed bugs can also survive by feeding on plant tissue when prey is scarce, but the damage to the plant by their feeding is negligible, so they are never regarded as plant pests.

In Louisiana, *G. punctipes* and *G. uliginosus* are important components of the beneficial insect complex in cotton and soybean crops. They are particularly helpful in controlling bollworm (*Helicoverpa* spp.) and other moth pest populations by feeding on eggs and small larvae. In soybeans, they are predators of damaging stink bugs, including southern green stink bug (*Nezara viridula*) and brown stink bug (*Euschistus*



Adult big-eyed bug, *Geocoris uliginosus* (James Villegas, Louisiana State University AgCenter).

servus). Occasionally, they can also feed on other beneficial insect pests such as the insidious flower bug (*Orius insidiosus*).

Conservation

Since big-eyed bugs are important members of natural insect predator communities, management strategies that support their conservation are important. They are vulnerable to some insecticides, especially broad-spectrum classes that kill both pests and natural enemies. Foliar applications of insecticides like chlorfenapyr are lethal to big-eyed bugs. Avoiding or minimizing the use of broad-spectrum insecticides that can harm big-eyed bugs and other predators is advantageous in conserving populations. Instead, pest-specific insecticides or those that must be consumed for effectiveness, such as spinosad and *Bacillus thuringiensis* (Bt), can be used. Other methods like polycropping with flowering species can increase species diversity and improve environmental stability for big-eyed bug and other beneficial insect populations. Predators and parasitoids benefit from some tolerance for damage since they require prey and hosts to support healthy populations.

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