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Green lacewings

Scientific name: Chrysopidae (Insecta: Neuroptera)

Introduction

Green lacewings belong to the family Chrysopidae and are found widespread throughout North America. Green lacewing adults are flying insects (Figure 1) that feed on both small insects and nectar, pollen, and honeydew (a sugar-rich liquid secreted by insects that feed on plant sap). The larvae are voracious predators that feed on aphids, small caterpillars, mites, whiteflies, scales, mealybugs, thrips, psyllids and other soft-bodied insects. Green lacewings are widely used in augmentation biological control to suppress pests.

Figure 1. Adult green lacewing, Chrysopa sp. (Photo by Whitney Cranshaw, Colorado State University, Bugwood.org)

Augmentation biological control is utilized in systems where natural enemies are absent, or occur too late, or in numbers too small to provide effective pest control. In augmentation biological control, insectary-reared natural enemies are released for the control of the target pest. Green lacewings are commercially available in United States and can be purchased as eggs, larvae, or adults.

Distribution

Green lacewings are found widespread throughout North America. There are 87 species in 14 genera recorded from the U.S. and Canada. Many of the species found in North America are members of the genera *Chrysopa*

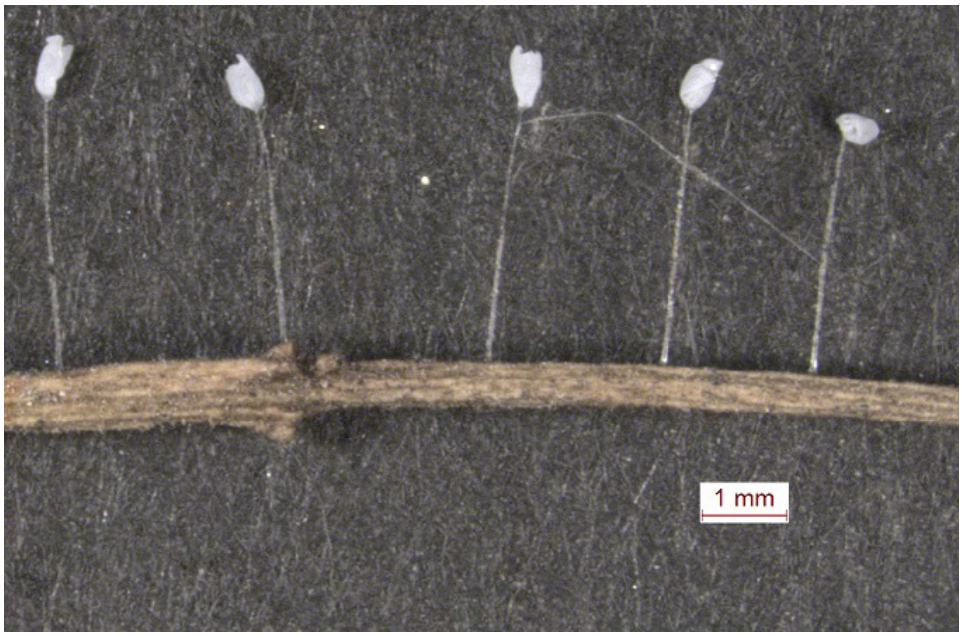

Figure 2. Eggs of an unknown species of green lacewing. (Photo by Alana Russell, LSU AgCenter)

Figure 3. Larva of species C. rufilabris. (Photo by Whitney Cranshaw, Colorado State University, Bugwood.org)

and *Chrysoperla*. There are six species reported in Louisiana: *Abachrysa eureka, Chrysopa quadripunctata, Chrysopa oculata, Chrysoperla rufilabris, Leucochrysa insularis*, and *Nodita pavida*.

Description

Eggs of green lacewings are approximately 0.04 inch (1mm) long and white. Eggs are laid on hair-like filaments (Figure 2).

Green lacewing larvae are flat and elongated (alligator-like). They have tubercles with protruding hairs (Figure 3). Some larvae collect debris on the hairs to deter predators (Figure 4).

Green lacewings pupate in silken cocoons that are generally located on the underside of leaves or stems (Figure 5).

Adult green lacewings are usually green and soft bodied, with copper colored eyes and long thread-like antennae. The wings are translucent and lacy (Figure 6).

Figure 4. Debris carrying green lacewing larva from Lee County, Florida. (Photo source: Bugwood.org)

Figure 5. Green lacewing larva preparing to pupate. Laurens County, Georgia. (Photo source: Bugwood.org)

Life Cycle and Ecology

Green lacewings can live for 20-40 days at 75 F (24 C). Adult females lay eggs at night, singly or in small groups. Eggs are deposited on the underside of leaves and twigs. Larvae emerge after approximately 5 days. After emergence, the larvae must crawl away to search for soft-bodied prey. Larvae are generalist predators that voraciously feed on aphids, small caterpillars, mites, whiteflies, scales, mealybugs, thrips, and psyllids (Figure 7). Because of their proclivity to eat aphids, green lacewings are also known as "aphid lions." There are three larval instars. After two-to-three weeks, the third instar larvae spin a parchment-like, silken cocoon. Pupae can be found located on the underside of leaves or hidden in places on plants. Adults emerge in 10-14 days. Adults are most commonly seen flying during twilight hours or at night. Adults feed on nectar, pollen and honeydew, as well as on small arthropods. Mating occurs early in adult life and oviposition starts a few days after mating.

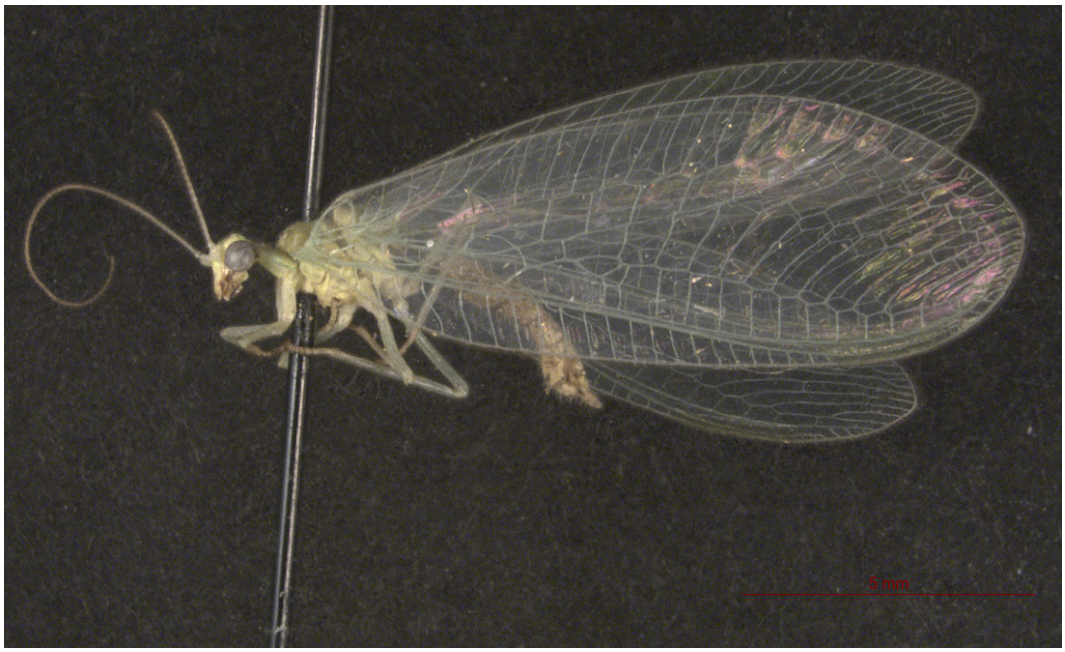

Figure 6. Adult green lacewing from unknown species. (Photo by Alana Russell, LSU AgCenter)

Use in Biological Control

Green lacewings are reared commercially in insectaries for the use in augmentation biological control. The release of green lacewings as eggs, larvae, or adults can be very effective for control of pests in greenhouses or small vegetable gardens. These predators have been utilized for the control of many common pests, such as Colorado potato beetle, flea beetles,

Fig. 7. C. rufilabris larva preying on potato psyllid nymph with Chrysoperla egg in the background. (Photo by Whitney Cranshaw, Colorado State University, Bugwood.org)

armyworms, budworms, borers, corn earworms, cabbage loopers, codling moths, aphids, spider mites, scales, psyllids, mealybugs, whiteflies, thrips, leafhoppers and more. *Chrysoperla rufilabris* is a commercially available green lacewing sold by several insectaries in North America. Green lacewings are shipped as eggs (Figure 8), larvae (Figure 9), or adults.

Economic importance

During the two-week larval stage, a single green lacewing larva can consume approximately 250 leafhopper nymphs in grapes, as well as 300-400 aphids, 11,200 spider mites, 3,780 coccid scale crawlers or 6,500 scale eggs on pine trees .The ability to mass rear and release large quantities of these beneficial insects provides an economical alternative to mechanical, physical, and chemical methods of pest control. The larvae of green lacewings voraciously target pests and can reduce pest populations. These beneficial generalists may feed upon multiple prey species and can help in pest control in indoors or greenhouse conditions.

Selected References

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Fig. 8. Card containing Chrysoperla spp. eggs for biological control of aphid infested shrub. (Photo by Whitney Cranshaw, Colorado State University, Bugwood.org)

Fig. 9. Bottle containing commercially available Chrysoperla rufilabris larvae for biological control. (Photo by Joseph LaForest, University of Georgia, Bugwood.org)

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Pub. 3483 (online only) 12/15