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Beneficial insects and other arthropods in the yard and garden

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Quick Facts

Beneficial arthropods can completely prevent or greatly limit pest problems in the yard and garden.

These "friends" can be categorized broadly as either insect predators or parasites.

Predators include lady beetles, lacewings and spiders.

Common insect parasites are tachinid flies and the braconid and ichneumonid wasps.

Several of these beneficial arthropods can be purchased through garden catalogs and other outlets.

When insecticides applications are necessary, choose those that are more selective in activity and less harmful to insect predators and parasites.

lacewings and spiders. Insect parasites develop in or on a single host from eggs or larvae deposited by the adult parasite. Common insect parasites are tachinid flies and the braconid and ichneumonid wasps.

Insect Predators

Lady beetles. Often called "ladybugs," lady beetles are the most familiar insect predator. Most adult lady beetles are round-oval in shape, brightly colored and often spotted (Figure 1). The immature

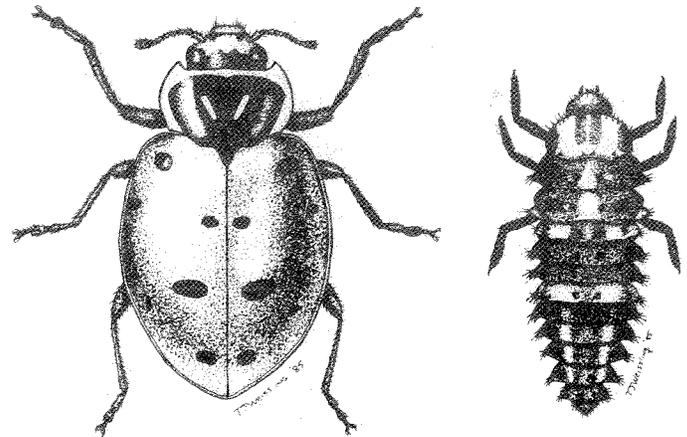


Figure 1: Convergent lady beetle, left (*Hippodamia convergens*) and Lady beetle larva.

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Introduction

Most insects and other arthropods found in the yard and garden do not feed on or harm plants. Many of these are just "passing through" or have very innocuous habits. Others feed on and destroy pest species. In many cases, the activities of these beneficial species can completely prevent or greatly limit pest problems. It is important to recognize these beneficial arthropods so that they may be appreciated and conserved.

Beneficial arthropods are categorized broadly as either insect **predators** or **parasites**. During development, in both adults and immature stages, insect predators actively search out and consume several prey insects. Predators include lady beetles,

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or larvae stages, however, appear very different and often are overlooked or misidentified. Lady beetle larvae are elongated, usually dark colored and flecked with orange or yellow (Figure 1).

Adult and larval lady beetles feed on large numbers of small soft-bodied insects such as aphids. One group of very small black lady beetles (*Stethorus*) is also very important in controlling spider mites. Lady beetles can rapidly control many developing insect problems, particularly if temperatures are warm.

One species of lady beetle, the Mexican bean beetle, is a plant pest. This common Colorado insect is found feeding on bean leaves and is differentiated from the lady beetles by spotting and color in the adult stage. Larvae of the Mexican bean beetle are yellow and spiny.

Green lacewings. Several green lacewing species commonly are found in gardens. The adult stage is familiar to most gardeners – a pale green insect with large, clear, highly-veined wings that are held over the body when at rest (Figure 2). Adult green lacewings primarily feed on nectar and other fluids, but some species also consume a few small insects.

Green lacewings lay a distinctive stalked egg, and lacewing larvae emerge in four to 10 days. These larvae, sometimes called aphid lions, are voracious predators capable of feeding on small caterpillars and beetles as well as aphids and other insects. In general shape and size, lacewing larvae are superficially similar to ladybird beetle larvae. However, immature lacewings usually are light brown and have a large pair of hooked jaws sticking out from the front of the head (Figure 2).

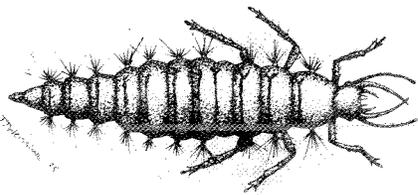
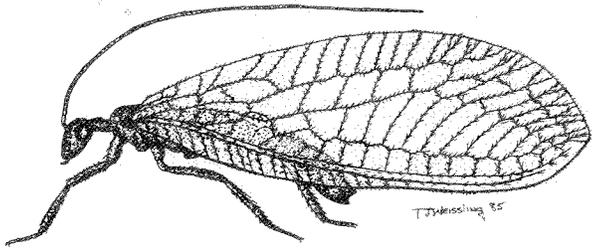


Figure 2: Green lacewing (*Chrysoperia carnea*) top, and Green lacewing larva, bottom.

Syrphid flies. These flies are called by several names such as flower flies or hover flies. Most are brightly colored, yellow or orange and black (Figure 3), and may resemble bees or yellow jacket wasps. However, syrphid flies are harmless to humans. Usually they can be seen feeding on flowers.

It is the larval stage of the syrphid fly that is an insect predator (Figure 3). Various colored, the

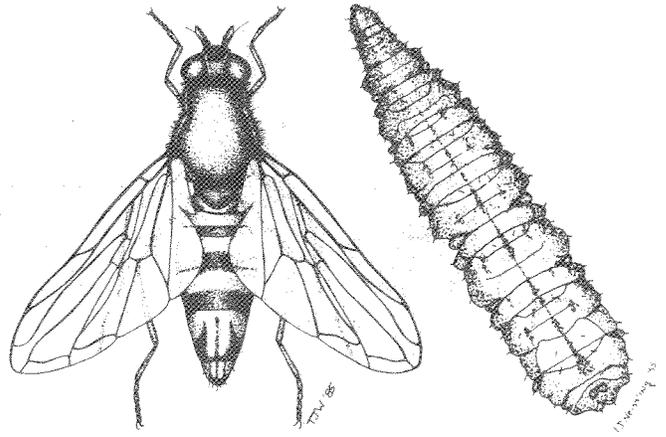


Figure 3: Flower fly, left (*Syrphidae* family) and Flower fly larva.

tapered "maggots" crawl over foliage and daily can feed on dozens of small, soft-bodied insects. Syrphid flies are particularly important in controlling aphid infestations early in the season when cooler temperatures may inhibit other predators.

Similar in appearance to the syrphid fly larvae is a small, bright orange predatory midge (*Aphidoletes*). These insects often can be seen feeding within aphid colonies late in the season.

Predatory bugs. Several bug species (Order: *Hemiptera*) are predators of insects and mites. All feed by piercing the prey with their very narrow mouth parts and sucking out body fluids. A red and black species of predatory stink bug, capable of feeding on fairly large insects such as caterpillars and potato beetle larvae, is most conspicuous. More common, but less frequently observed, are the various light brown damsel bugs (also called nabid bugs) (Figure 4). Damsel bugs are found on foliage of all crops where they seek out aphids, insect eggs and small insect larvae.

Most common of all the predatory bugs are the very small (less than 1/8-inch) minute pirate bugs (Figure 4). Minute pirate bugs are observed most frequently in flowers or in crevices of a green plant where they feed on thrips, spider mites and insect eggs.

Other predatory bugs common in yards and gardens include ambush bugs and assassin bugs.

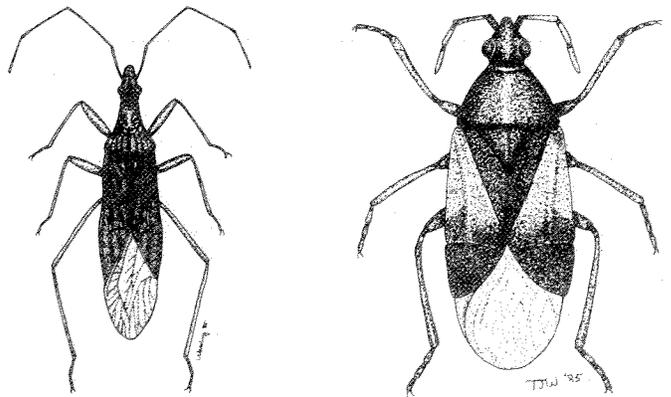


Figure 4: Damsel bug, left (*Nabis* species) Minute pirate bug (*Orius* species).

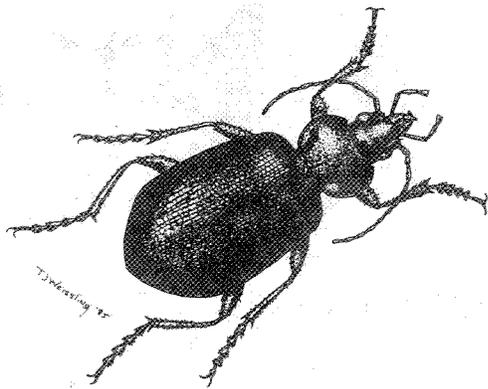


Figure 5: Ground beetle (*Calasoma* species).

Ground beetles. Various species of ground beetles (Figure 5) are found under debris in soil cracks or moving along the ground. Immature stages are distinctly different in form from adults and more often are found active within the top few inches of soil.

Ground beetles are general feeders with powerful jaws. Almost any garden pest that spends part or all of its life on the soil surface may be prey for these insects.

Hunting wasps. A large number of wasps from several insect families prey on insect pests. Many of these wasps take their insect prey, whole or in pieces, back to their mud, soil or paper nests to feed to the immature wasps. These hunting wasps can be very important in controlling garden insect pests. For example, the common *Polistes* paper wasps (Figure 6), when hunting, may thoroughly search plants and feed on caterpillars, often providing substantial control of these insects.

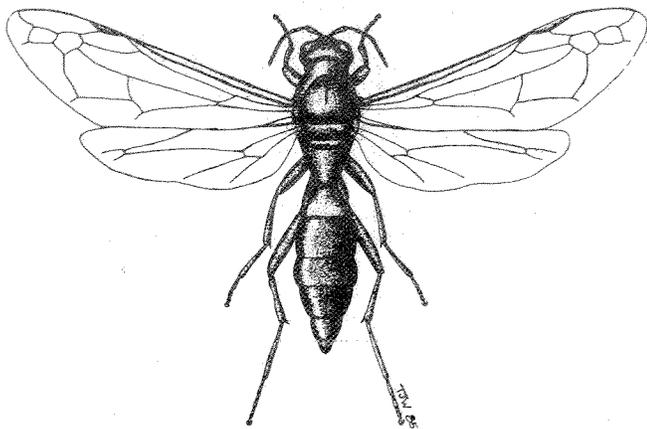


Figure 6: *Polistes* wasp.

Predatory mites. Several mite species are predators of plant-feeding spider mites. Typically, these predatory mites are little larger than spider mites but are more rounded in body shape and faster moving than their prey. Predatory mites often can provide good control of spider mites, but they can be restricted in their activity by low humidity conditions. Predatory mites are also more susceptible to insecticides than are plant-feeding species.

Spiders. All spiders feed on insects or other small arthropods, and most people are very familiar with many common web-making species. However, there are many other spiders, wolf spiders, crab spiders, jumping spiders, which do not build webs but instead move about and hunt their prey on soil or plants. These less conspicuous spiders can be very important in controlling insect pests such as beetles, caterpillars, leafhoppers and aphids.

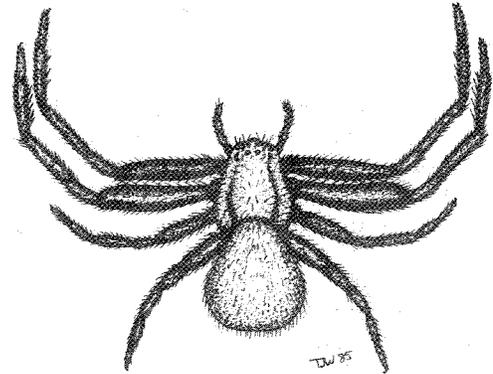


Figure 7: Crab spider (*Thomisidae*).

Insect Parasites

Tachinid flies. These flies are rather undistinguished looking gray or brown flies covered with dark bristles (Figure 8). Most are similar in appearance to other common flies, but they differ markedly in their habits. Adult tachinid flies lay eggs on various caterpillars, beetles and bugs, usually near the head. The eggs hatch almost immediately, and the young fly maggots tunnel into their host. After feeding internally for a week or more, the tachinid fly larvae eventually kill the host insect.

The many kinds of tachinid flies are very important natural controls of many insect pests, particularly caterpillars. However, tachinid flies rarely are observed by the average gardener, and their beneficial activities often are overlooked.

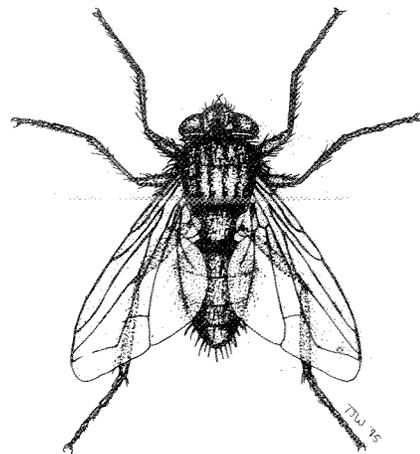


Figure 8: Tachinid fly (*Winthemia quadripustulata*).

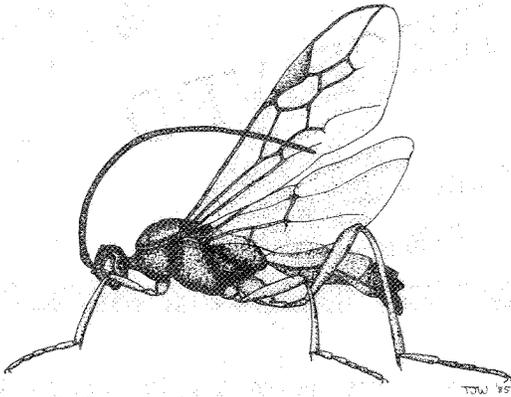


Figure 9: Braconid wasp.

Braconid and ichneumonid wasps. These are a very large and diverse group of insect parasites. Some are very small and attack small insects such as aphids (Figure 9). Others live in the eggs of various pest insects. Larger parasite wasps attack caterpillars or wood boring beetles.

External evidence of these parasites' activity is often more obvious than with the tachinid flies. For example, aphids that are parasitized by these wasps are typically small and discolored, and called "aphid mummies" (Figure 10). Other common braconid wasp species spin conspicuous pupal cocoons after emerging from a host.

Purchasing Insect Predators and Parasites

Several insect predators and parasites are available through garden catalogs and other outlets. These include lady beetles, praying mantids, Trichogramma wasps, green lacewing eggs and others.

At present, Colorado State University entomologists cannot recommend any of these beneficial organisms for insect pest control in the yard and garden. These artificial releases have not clearly been demonstrated to affect pest insect populations. However, some of these organisms (whitefly parasite, mealybug destroyer, predatory mites) are recommended for greenhouse insect management.

In the yard and garden, it is most important to recognize naturally occurring insect predators and parasites. Before making insecticide applications always check plants to see if the existing beneficial organisms are abundant enough to provide control. Whenever possible, use insecticides that are more selective in their activity and are less harmful to the insect predators and parasites.

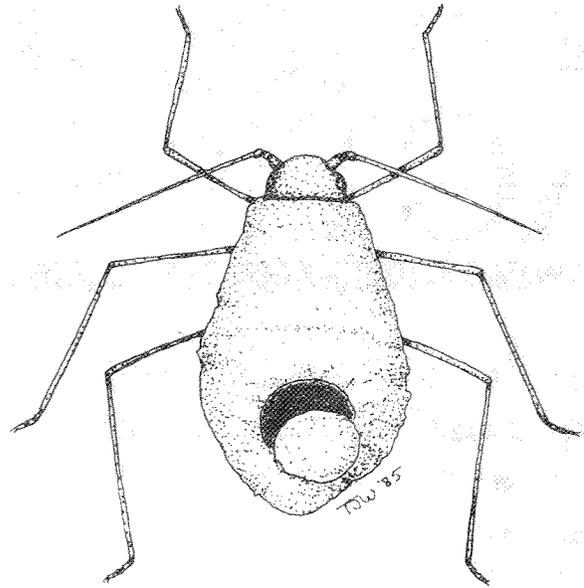


Figure 10: Aphid mummy.