

## Beneficial Insects and Biological Control

Fewer than 10% of insects are what gardener's would consider harmful. **More than 90% of insects are either beneficial or do no harm.** Many insects, even scary wasps, have a beneficial function, preying on harmful pest insects. Some insects are pollinators, others are decomposers and many insects are food for creatures higher up on the food chain.

Soft-bodied insects including caterpillars are important to baby birds because they cannot digest seeds. Baby birds grow quickly and need lots of insects to develop into adulthood. Parent birds must work tirelessly to satisfy the voracious appetites of both nestlings and fledglings.

It is important to understand that **pest insects have to be numerous to be a problem in our gardens.** Pesticides, especially insecticides, kill beneficial insects along with pests. Beneficial insects are nature's way of controlling pest insects. Without them, stronger pesticides will be needed to control "super bugs" created as pests become resilient to these chemicals.

Below are some of our most beneficial insects and arachnids for biological control. When left to do their job, they are highly efficient predators of many garden pests.

**Lady Beetle** (ladybug, ladybird) adults and larvae eat aphids, asparagus beetle, lace bugs, mealy bugs, Mexican bean beetle larvae, scale, thrips, spider mites, whiteflies, and many insect eggs.

**Soldier Beetle** (leatherwing) eats many aphids and larvae of other insects. The goldenrod soldier beetle feeds on root maggots and corn earworm. The soldier beetle is also a valuable pollinator.

**Tiger Beetle** – There are more than 2,600 species. They are swift hunters of many pest insects. Unlike ground beetles that are nocturnal hunters, tiger beetles hunt during the day. The six-spotted tiger beetle is a striking metallic green color often found along forest paths.

**Ground Beetle** – Beetles have shiny hard shells. They feed at night and hide under rocks and logs during daytime hours.

**Assassin Bug** – Hundreds of species feed on aphids, cabbage worms, beetles, cutworms, earwigs, four-lined plant bugs, Japanese beetle, lace bugs, Mexican bean beetle, tobacco budworms, tomato hornworms, and many caterpillars.

**Big-eyed Bug** helps rid the garden of aphids, cabbage loopers, caterpillars, chinch bugs, flea beetles, Mexican bean beetles, spider mites, thrips, whiteflies, and many insect eggs.

**Damsel Bug** eats aphids, asparagus beetles, cabbage worms, tobacco budworms, cutworms, Colorado potato beetle larva, four-lined plant bugs, sawfly larvae, spider mites, whiteflies, thrips, leafhoppers, and many insect eggs.

**Minute Pirate Bug** – Adults and nymphs help rid the garden of aphids, small caterpillars, lace bugs, Mexican bean beetle larvae, scale, spider mites, whiteflies, and insect eggs of tobacco budworm, cutworm, and corn earworm.

**Lacewing** larvae can eat up to 100 aphids per day, earning them the nickname “aphid lions”. They also feed on scale insects.

**Dragon Fly (includes Damselfly, Skimmers and Darners)** Larvae feed on mosquitos.

**Firefly** larvae are important predators of snails and slugs.

**Tachinid Fly** - North America’s largest and most important group of parasitic flies. They resemble house flies and may be covered with bristly hairs. They rid the garden of many harmful caterpillars, beetles, and worms of Japanese beetles, sawfly larvae, squash bugs, tobacco hornworms, four-lined plant bugs, and many more.

**Robber Fly** - The adult fly catches prey on the wing. Adults and larvae eat Colorado potato beetles, four-lined plant bugs, Japanese beetles, and Mexican bean beetles.

**Long-legged Fly** – There are about 7,000 species in a variety of metallic colors. They can be seen darting across leaves feeding on mites, aphids and tiny larvae.

**Hover or Syrphid Fly** – These flies look like small wasps with black and yellow stripes but on closer inspection have only one pair of wings and very large eyes as do all flies. They hover like a hummingbird. They are both important pollinators and predators of bad bugs. Larvae can eat as many as 500 pests, including aphids, before becoming adult flies.

**Aphidius Wasp** – The name gives you a hint as to who they eat... aphids. We need not fear these wasps, they do NOT sting. Aphids do fear them and often fall to the ground rather than be eaten.

**Parasitic Wasp** – The female’s ovipositor, (for laying eggs), is not stinger and she cannot sting. This wasp rids the garden of aphids, beetle larvae, bagworms, cabbage worms, gypsy moth caterpillars, beetles including Japanese beetles, leaf miners, mealy bugs, sawfly larvae, scale, tomato hornworm, and more.

**Harvestman (Daddy Long Leg)** - classified as an arachnid like the spider. They are not venomous. They prey on insects, other arthropods, and dead insects.

**Spider** – There are 38,000 species of spider in the world. They have excellent hearing, sense of smell and touch. Many are not discriminating eaters and will readily capture beneficial insects as well as pests.

**Praying Mantid** – A non-discriminating eater will readily capture beneficial insects as well as pests. Chinese praying mantids have been introduced to the U.S. and are more abundant than the European species introduced to this country many years ago. The Chinese species is more aggressive and voracious than its European cousin and is a threat to beneficial insects, especially bees and butterflies. Larger mantids can take down hummingbirds. It is not recommended to purchase praying mantids for biological control in the garden.