



Did you know that 97% of insects most commonly seen in our gardens or homes are considered either beneficial or innocuous? That fact may be a little hard to believe when aphids sometimes turn crispy green lettuce into something resembling dry sheets of brown paper. Nonetheless, it is true that nature has provided us with all kinds of assistance for our horticultural ambitions.

Beneficials come in a remarkable variety of shapes, sizes and functions. Using function as the determining criterion, they can be divided into four basic types: predators, parasitoids, decomposers / recyclers and pollinators.



I. Predators:

Predators are insects and other beneficials that hunt for a living. They catch, kill and eat other insects. In general, predators are free-living and as large as or larger than their prey. Predators are typically general feeders: they consume several or numerous prey over the course of their lives and they may feed on a wide variety of prey.

Some types of predators, such as hover or syrphid flies, are predatory only as immatures or larvae. Hover fly larvae tend to prey primarily on aphids, mealybugs, scale insects and other soft-bodied

insects. In contrast, adult hover flies feed on the nectar and pollen from flowers and may serve as pollinators.

Other types of predators start hunting as soon as they hatch into larvae and continue their predatory role throughout adulthood. Common examples of this group are lady beetles, some species of lacewings and ground beetles. Many predators are generalists; they eat a wide variety of prey, such as assassin bugs and the praying mantis. A few are specialists and will dine on only one species or on a few closely related species.

Spiders can also serve a vital role as predators. Spiders are abundant and widespread and, best of all, a natural controller of insect populations. Spiders are beneficial predators that reduce pest populations. They oftentimes play a primary role in biological control of pests in and around homes, yards, gardens and crops.

Lizards make up one of the most diverse and successful groups of modern reptiles. Several types of lizards occur and none are harmful to humans or pets. In fact, these lizards are beneficial, as they prey on a wide variety of small insects such as crickets, cockroaches, moths, grubs, beetles, flies and grasshoppers. They do not chew their food but swallow it whole.

II. Parasitoids:

Parasitoids are another kind of desirable natural pest control. Parasitoids are different from



parasites in several important ways. Most importantly for our purposes, a parasitoid always kills its host, while a parasite usually weakens its host but rarely kills it. Rather than changing hosts as some parasites do in order to complete the life cycle, parasitoids develop on or within a single host.

In some parasitoid-host systems, the parasitoid is close to the same size (as a full-grown larva) as its host whereas a parasite is much smaller than its host. In contrast, other parasitoids are very small in size compared to their host's size. The adult stage of most parasitoids are small to tiny, such as

members of the braconid wasp family. Braconid wasps do not pose any threat to humans as they do not sting.

The life cycle of a parasitoid is unusual. Most of the time, it begins when the adult female lays her eggs in or on the host. When the eggs hatch, the larvae consume the host gradually, ensuring that their unsuspecting prey stays alive until the larval parasitoid pupates and is able to survive without the host. Parasitoids tend to be highly host-specific. They choose one species as a host or, in some cases, a group of closely related species on which to raise their young.



III. Pollinators:

In contrast to the aforementioned groups, this group of beneficials is more widely known and appreciated. Pollinators have long been recognized for their contributions to mankind's welfare and comfort.

Without pollinators, there would not be any apples, pears, cherries, citrus fruit, coffee, melon, cucumbers, melons, squash or many other common feeds. Just think how difficult morning would become for many of us without coffee! It is estimated that pollinators are worth at least 20 billion dollars annually just in the United States.

The best known flower duster is, of course, the honey bee. Some less well-known pollinators, such as hover flies, do double duty as beneficial insects. As adults, they pollinate flowers and, as larvae, they prey on aphids and other soft-bodied insects.

Many other insects also accomplish pollination. Wasps are important pollinators of some plants. Some beetle, midge, and even thrips or ant species play a vital role in pollination of certain flowers. Some butterfly species also pollinate to a small degree. Various moths are important pollinators for some wildflowers and various commercial crops such as tobacco.

In today's world, many pollinators' existence is threatened. Crops are decreasing production because of the shortage of pollinators. We have ignored their value and indiscriminately annihilated them with habitat destruction, chemicals, and other carelessness. So please take the time to understand their benefits. Work to keep them healthy.

IV. Decomposers /Recyclers:

Without the lowly held and underappreciated members of decomposer/recycler group, we would be quite literally over our heads in dead bodies and organic wastes. A decomposer's job



begins when some other organism's life ends. Within that dead organism's body, essential nutrients are tightly locked into various chemical compounds.

Decomposers break down the more complicated compounds into a simpler form usable to themselves and to other life forms. Carbon, nitrogen and other raw elements that are absolutely essential to all life are released back into the air, water and soil through the waste products of this group.

The humble earthworm is a decomposer deluxe. Five hundred thousand earthworms in one acre of soil can produce as much as 50 tons of fertilizer and create drainage equivalent to 2,000 feet of 6 inch drainage pipe. And these are just the side effects of processing enormous amounts of plant litter! Other decomposers are the larval stages of love bugs and crane flies as well as springtails, certain nematodes, bacteria, protozoa and fungi.

Summary:

Mother Nature has been generous indeed. She seems to have provided us with antidotes for most of the gardening dilemmas we have.

Now all we have to do is to learn to use them wisely! We hope that the information provided within this Beneficials in the Garden web page will help toward that end. We also hope to provide assistance with recognizing and identifying the array of beneficials likely to be found in your home garden and landscape!

This web site is maintained by Master Gardener Laura Bellmore, under the direction of William M. Johnson, Ph.D., County Extension Agent-Horticulture & Master Gardener Program Coordinator.

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