

Encouraging Beneficial Insects in Your Garden

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Most insects are not pests. Only those that feed on desirable plants or transmit disease cause problems for gardeners. Many insects are very useful. Some are pollinators of fruits, flowers, and vegetables, while others help control insect pests.

There are three types of beneficial insects: predators, pollinators, and parasitoids.

Predatory insects eat large numbers of other insects. Some are predaceous as both adults and in their immature form (larvae or nymphs), some are predaceous only in the immature stage, and some only as adults. Many predatory insects feed on only certain types of insects (e.g., lady beetles eat mostly aphids), while others feed on a wide variety of insects. Common predaceous garden insects include lady beetles, praying mantids, green and brown lacewings, ground beetles, minute pirate bugs, damsel bugs, syrphid fly larvae, and snakeflies. See Figure 1 (page 2) for examples. Spiders, predaceous spider mites, and centipedes also are important predators in a garden ecosystem.

Insect *pollinators* include several bee and fly species. In home gardens, honeybees (Figure 2, page 2), bumblebees, orchard mason bees, and syrphid flies are the most important pollinators, but many other minor pollinators also play a part.

Parasitoids are insects that live on or in a host insect, feed on the host, and usually kill it in the process. Most parasitoids are small, stingless wasps or flies that lay their eggs in or on specific host insects. The eggs hatch, and the larvae feed within or on the hosts. These insects are not easily seen, but research shows they have an important impact on pest insect populations. Figure 3 (page 2) illustrates some typical parasitoids of the Northwest.

See Table 1 for a list of beneficial insects and pests they control. It is worth leaning to recognize them. Most good insect references include pictures and descriptions of beneficial insects.

Although beneficial insects can play a role in controlling pests in your garden, don't expect them to keep your garden pest-free. Usually some pests need to be present for natural enemies to survive.



By Gail Gredler, former Extension agent, Yamhill County, Oregon State University. Originally published as part of *Sustainable Gardening: The Oregon-Washington Master Gardener Handbook*, EM 8742. © 1999 Oregon State University.

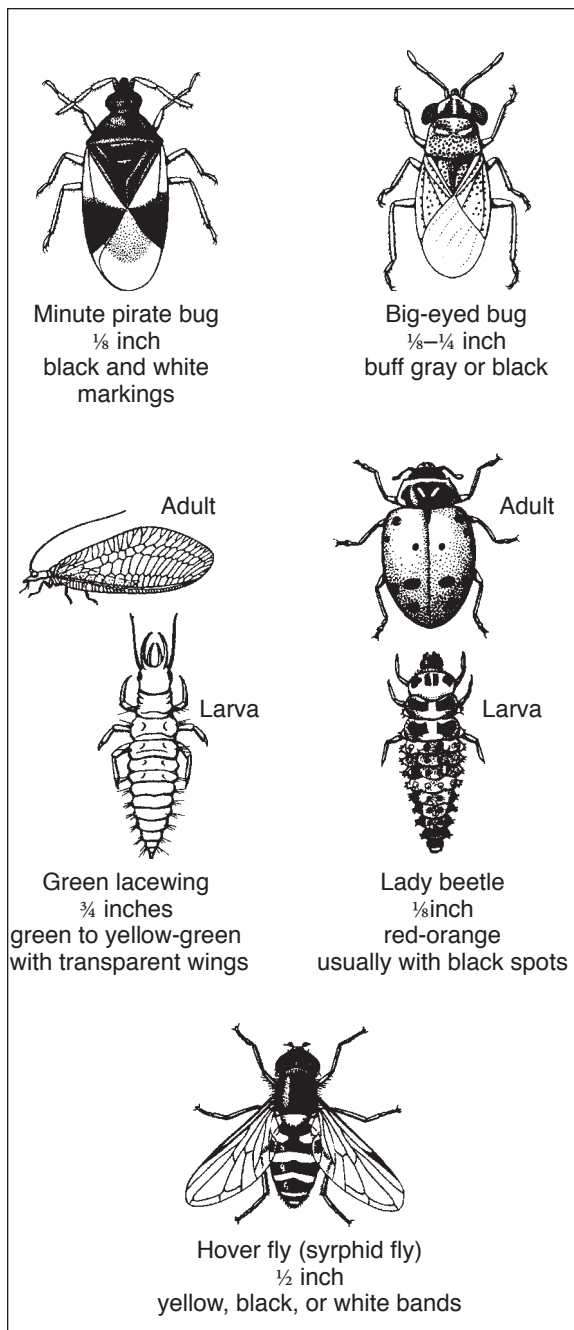


Figure 1.—Common beneficial predatory insects of the Pacific Northwest.



Figure 2.—Honeybee.

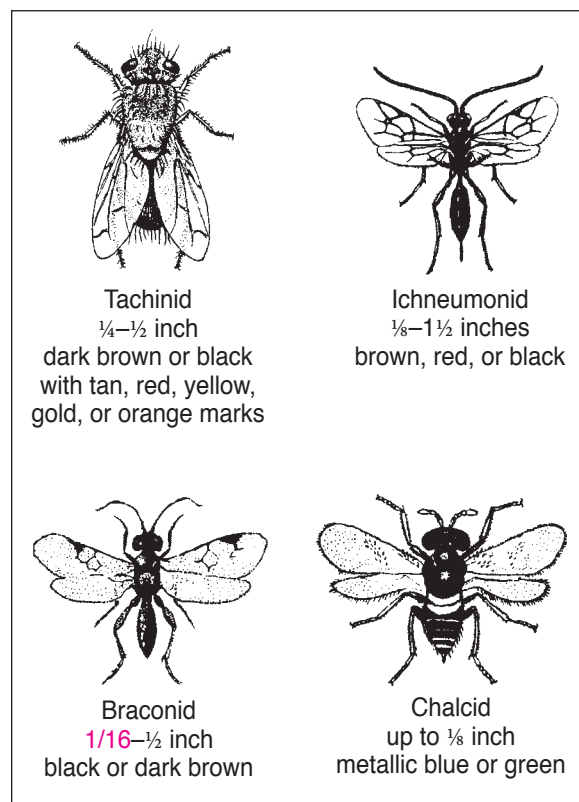


Figure 3.—Common beneficial parasitoids of the Pacific Northwest.

Drawings are not to scale.

Figures reprinted by permission from Ralph E. Berry. *Insects and Mites of Economic Importance in the Northwest*, 2nd edition, 1998. 221 pp.

For more gardening information and publications, visit the following Web sites:

- Oregon State University—extension.oregonstate.edu
- Washington State University—pubs.wsu.edu
- University of Idaho—extension.uidaho.edu

Table 1.—Beneficial insects and pests controlled.

Predators	Pests controlled
Big-eyed bugs	Aphids, leafhoppers, lygus bugs (nymphs), spider mites
Green lacewings	Aphids, leafhoppers, plant bugs (immature), spider mites, thrips
Hover flies (syrphid flies)	Aphids
Lady beetles	Aphids, mealybugs, scales, spider mites
Minute pirate bugs	Aphids, spider mites, thrips, immature stages of many small insects
Parasitoids	Pests controlled
Hymenoptera parasites (e.g., Ichneumonids, braconids, and chalcids)	Aphids (larvae), cutworms, loopers, omnivorous leaftiers, oriental fruit moths, tortrix moths
Tachinids	Codling moths, Colorado potato beetles, corn earworms, cutworms, grasshoppers, hornworms, imported cabbage worms, plant bugs, tussock moths, others

Protecting beneficial insects

All beneficial insects are susceptible to insecticides. Most insecticides available to home gardeners are broad-spectrum, meaning they kill a wide range of insects, including beneficials. If you decide to use an insecticide, take the following measures to protect beneficial insects:

- Choose the least toxic pesticide that will be effective (See OSU publication EC 1532, *Gardening with Fewer Pesticides: Using Integrated Pest Management*, for more information.)
- Spot spray only infested plants.
- Do not spray plants in bloom.
- Spray early in the day when many insects are less active.

Creating habitat for beneficial insects

Invite beneficials to your yard by providing food. Pollinators are attracted by a wide variety of blooming plants. Many adult predators and parasitoids feed on nectar and pollen in addition to pest insects. Most are quite small and can reach the nectar and pollen of only small flowers. The plants that attract them sometimes are referred to as *insectary plants*. Table 2 (page 4) is a list of common insectary plants for the Pacific Northwest.

By scattering insectary plants throughout your garden and landscape, you can attract beneficial insects. Or reserve a garden bed or border for them. Blends of insectary plant seeds are available.

Many nonflying predators such as ground beetles and spiders need a place to hide from their enemies. Groundcovers and coarse mulches such as bark dust and straw provide this habitat.

Beneficial insects also need water. If you do not use overhead irrigation, sprinkle your plants lightly early in the morning to provide water.

Buying and releasing beneficial insects

Some insect predators and parasitoids can be purchased. Common examples include lady beetle adults, praying mantid egg cases, green lacewing eggs, and parasitoid wasp pupae.

In general, releasing large numbers of beneficial insects has not proven to be an effective method of pest control in the home garden, especially in the case of adult lady beetles. These insects tend to move around and often end up migrating out of the garden. This is less of a problem with lacewings and *Trichogramma*, which are released as eggs, or with mites.

It can be complicated to meet the needs of released insects well enough to keep them in your garden. All beneficials require a reliable food source, and some require a very specific food. Some beneficials also require specific temperature and humidity conditions.

Greenhouses, which provide a controlled, closed environment, often provide the best conditions for release of beneficials. A number of insects and mites are available for use against greenhouse pests such as whiteflies, thrips, and spider mites. If you try this method of control, make sure to order insects from a reliable source that can provide instructions for maximum success.

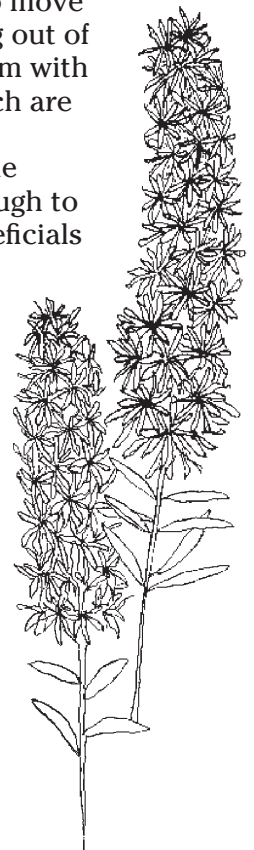


Table 3.—Garden flowers that attract beneficial insects.

Common name/Botanical name*	Predators attracted	Parasitoids attracted
Apiaceae (carrot family)		
Angelica (<i>Angelica archangelica</i>)	Lacewings, lady beetles	—
Anise (<i>Pimpinella anisum</i>)	—	Wasps
Blue lace (<i>Trachymene coerulea</i>)	—	Wasps
Caraway (<i>Carum carvi</i>)	Bugs, hover flies (syrphid flies), lacewings	Wasps
Coriander (<i>Coriandrum sativum</i>)	Hover flies	Tachinids, wasps
Dill (<i>Anethum graveolens</i>)	Hover flies, lady beetles	Wasps
Lovage (<i>Levisticum officinale</i>)	—	Wasps
White lace flower, bishop's weed (<i>Ammi majus</i>)	Bugs, hover flies, lady beetles	Tachinids, wasps
Yarrow (<i>Achillea</i> spp.)	Bugs, lady beetles	Wasps
Asteraceae (daisy family)		
Blazing star, gayfeather (<i>Liatris</i> spp.)	Bugs	Wasps
Chamomile (<i>Anthemis nobilis</i>)	Lady beetles	—
Coreopsis (<i>Coreopsis</i> spp.)	Lacewings, lady beetles	Wasps
Cosmos (<i>Cosmos bipinnatus</i>)	Hover flies, lacewings, minute pirate bugs	—
Golden marguerite (<i>Anthemis tinctoria</i>)	Lady beetles	Tachinids, wasps
Goldenrod (<i>Solidago altissima</i>)	Bugs, lady beetles, soldier beetles	Wasps
Marigold, signet (<i>Tagetes tenuifolia</i>)	Minute pirate bugs	Wasps
Mexican sunflower (<i>Tithonia rotundifolia</i>)	Hover flies, minute pirate bugs	—
Sunflower (<i>Helianthus annuus</i> and <i>H. debilis</i>)	Hover flies, lady beetles	Wasps
Tansy (<i>Tanacetum vulgare</i>)	Hover flies, lady beetle larvae	Wasps
Brassicaceae (cabbage family)		
Broccoli (<i>Brassica oleracea</i>)	Hover flies	Wasps
Candytuft (<i>Iberis umbellata</i>)	Hover flies	—
Mustards (<i>Brassica hirta</i> and <i>B. juncea</i>)	Big-eyed bugs, hover flies, minute pirate bugs	—
Sweet alyssum (<i>Lobularia maritima</i>)	Hover flies	Tachinids, wasps
Dipsaceae (scabiosa family)		
Cephalaria (<i>Cephalaria gigantea</i>)	Hover flies	Wasps
Pincushion flower (<i>Scabiosa caucasica</i>)	Hover flies	Wasps
Scabiosa (<i>Scabiosa atropurpurea</i>)	Hover flies	—
Fabaceae (legume family)		
Alfalfa (<i>Medicago sativa</i>)	Bees, bugs, lacewings, lady beetles	—
Clover (<i>Trifolium</i> spp.)	Bees, bugs, lacewings, lady beetles	—
Hydrophyllaceae (waterleaf family)		
Fiddleneck (<i>Phacelia tanacetifolia</i>)	Bees, bugs, hover flies	—
Polygonaceae (buckwheat family)		
Buckwheat (<i>Eriogonum</i> spp. and <i>Fagopyrum</i> spp.)	Hover flies	—

*This list includes only some of the many plants whose pollen and nectar attract beneficial insects.