

THE EDIBLE GARDEN

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Pollinator Gardens

Julianne Labreche
Master gardener of Ottawa-Carleton

For plants to reproduce, they need pollinators. These include insect species such as bees, butterflies, beetles, flies and thousands of other insects, as well as hummingbirds. Unwittingly while searching for nectar, pollinators move pollen from the male anther of one flower to the female stigma of another.

Plant scientists in Ontario are concerned about a decline in pollinator populations, including the honeybee. No matter if you have a large country garden or a small urban garden, you can help Mother Nature by planting a pollinator garden. Even if your growing space is limited to a deck or balcony, containers can be used to grow pollinator plants.

Pollinators have the same basic needs essential to all life, namely: food, water and shelter. A pollinator garden strives to achieve all three elements to attract these welcome visitors. Flowers with bright colors, such as red, yellow, blue and violet will attract them. Native and old-fashioned varieties are best. While newer-bred plants may be attractive to humans, they may lack easily accessible pollen and nectar for pollinators.

Pollinator-friendly flowers come in a range of shapes, sizes, colors and blooming periods and include: bee balm, cardinal flower, phlox, sage, cosmos, English lavender, lupine, cone-flower, geranium, black-eyed susan, sunflower, Shasta daisy, verbena, zinnia, milkweed, aster, lupine, thistle, violets, butterfly weed, and marigolds.

Here are a few tips to create a pollinator friendly garden:

Provide water. Shallow pools, rocks in a bird bath and mud puddles will help to provide water, home building material and important minerals for some pollinators.

Avoid the use of pesticides and herbicides that can be harmful to pollinators. (A pesticide ban is in effect in Ontario for home gardeners.) Pesticides are designed to kill insects. Herbicides can kill plants that support insect life.

Leave patches of undisturbed bare soil. By not applying mulch to parts of the garden, you will encourage many native bees that are ground nesting.

Encourage diversity of plant life by having different species of flowers blooming at once.

Consider nesting boxes for mason bees that nest in holes in wood or in hollow canes of plants. You can buy commercial nesting boxes, or make your own.

Grow native grasses to provide shelter and food for a variety of wildlife.

Provide overwintering places for eggs and larvae. Leave cut plant stems, twigs and brush in small piles for insects in the fall. Don't rush to clean up your garden. Did you know that one out of every three bites of food we eat is made possible by pollinators? Eighty percent of all flowering plants rely on pollinators for survival.

Syrphid or Hover or Flower Flies

Fran Dennett
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Hover or flower flies belong to the **Diptera family** and are true flies having one pair of wings. In contrast, house flies, wasps and bees are not true flies as they have 2 pairs of wings. In general, this family of beneficial flies range in size from tiny aphid midge (mosquito size 0.5-1-mm) to the large Syrphid (1-2cm) and Tachinid (about 1cm).

In Ontario there are 25 different species of hover flies.

Eggs of hover flies are white and usually deposited near a colony of aphids.

Larvae have mottled brown or green color patterns, are slug-like, wrinkled and pointed at one end. They lack legs and have a semi-transparent body through which the internal organs can be seen. They are 5-12 mm. This stage is the predator stage and preys on soft-bodied insects including aphids, scales, thrips and caterpillars.

Pupae is inactive brownish, oblong or oval in shape and can be up to 12mm long.

Adults vary by species but usually dark brown with yellow bands emulating bees and wasps. They range in size from 5-18 mm. The adult can have spots, bands or stripes of yellow-brown against a dark-colored yellow body, or black and white. They are seen hovering over flowers as they are both pollen eaters and pollinators. They do not sting. When hovering, the head remains still and does not move.

Syrphids overwinter as mature larvae or adults. They are active in apple orchards from late June to late July. Some

References

1. Best Management Practices for Pollination in Ontario Crops. An online resource for growers, conservationists, students, pollination biologists and anyone else interested in pollinators and crop productions. <http://www.Pollinator.ca>

Attracting a Beneficial Army to my Garden

Nancy MacDonald
Master Gardener of Ottawa-Carleton

The gardening season of 2014 was a season of discovery for me. Most often, my excitement in the garden revolves around what is blooming now, what is ready to eat and what combination of plants is really striking. I was always excited by the presence of bees and butterflies and less excited examining the effects of slugs and Japanese beetles. When I say season of discovery, in 2014, I became fascinated with the bugs populating my garden. I wanted to identify them and learn more about them. Gardeners' angst is often due to bad bugs or pests we find in our gardens. What about good bugs or Beneficial's? In this article, a Beneficial is one that either feeds on garden pests (predator) or deposits eggs (parasitoid) in the bodies of garden pests where larvae, as it matures, will consume its host.

To learn more, I referenced **Garden Bugs of Ontario** (Lone Pine, 2008), enjoyed reading Jessica Walliser's 2014 **Attracting Beneficial Bugs to Your Garden** from the Ottawa Public Library and reviewed online resources at the Canadian Wildlife Federation. I took my camera frequently to the garden and thus I was able to photograph the Great Golden Digger Wasp (*Sphex ichneumoneus*) on my *Asclepias* (milkweed). This wonderful beneficial is a parasitoid.



Asclepias (milkweed) plant with ichneumon wasp. :Nancy MacDonald

Now that I was looking, I found a mother lode of Beneficial's such as damselflies, dragonflies (darners), black ichneumonid parasitoid wasps, ground beetles, ladybugs, soldier beetles, spiders, syrphid and tachinid flies. I still found pests but being a 'glass half full' optimist, I was captivated by the Beneficial's thriving in my suburban garden. It was important to recognize Beneficial's in their life stages and ensure that my garden activities and plants were complementary. We instantly recognize lady bugs but would we recognize that in their larvae stage they resemble a small alligator with black bristles!

How to attract Beneficial's

- Stop using any chemical control as both organic and inorganic can harm Beneficial's.
- Provide a source of water such as a shallow dish with stones to provide a landing area.
- Provide shelter such as planted ground cover, mulch, leaf litter and a pile of branches.
- Plant a diversity of plants to provide bloom and nourishment from spring to fall.

If I do this, what Beneficial's will come and what will they do in my garden?

Your garden requires plants to provide nourishment for these Beneficial's. You may have noticed that farmers and vegetable growers often plant an insectary border around their crops to attract Beneficial's to help control plant pests. We can do the same in our gardens. It does not have to be formal but rather these plants can become part of our flower and vegetable gardens. If Beneficial's leave your garden to find nutrition, they may not return. Ensuring your garden is in bloom from spring to fall with plants which attract Beneficial's is a manageable pest strategy. Plant different flower shapes for Beneficial's with varying mouthparts to access nectar and pollen. We observe how some bees can open and burrow

are active at night and feed on aphid colonies. It is the larvae which is the predator rivaling the lady beetle larvae for eating aphids—about 400/day. Other hoverfly genus eat mealybugs and scales.

Plants that attract these beneficial flies include:

herbs: dill caraway, coriander fennel, parsley, thyme

annuals: cosmos, buckwheat, sweet alyssum, zinnia, Limonium, Limnanthes

perennials: Achilla, Ajuga, Alyssum, *Anthems tinctoria*, *Aster alpinus*, Astringia, Matricaria (feverfew), Daucus, Lavender, Linaria, mints, Monarda, Penstemon, Potentilla, Rudbeckia, *Sedum spectabilis*, Solidago, Stachys, *Veronica spicata*

In Belgium & Holland there are over 300 species and in England 270. Some even migrate like butterflies.

BOOK REVIEW

Nancy MacDonald
Master gardener of Ottawa–
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**Attracting Beneficial Bugs to Your
Garden:**

Jessica Walliser, Timber Press, Inc. Portland, Oregon 2014, ISBN 978-1-60469-388-1. Trade paperback \$21.08 Indigo, available at Ottawa Public Library

Jessica's new book is wonderful to peruse several times over the winter and spring months. As you prepare for the next gardening season. Ask yourself which garden pests you encountered in your garden last season and what you did about them? Jessica guides us to use beneficial bugs in our landscape to clean up those common garden pests such as aphids, spider mites, cutworms, cucumber beetles and many more. She helps us put it all together based on scientific studies which examine both targeted pests and plants for our garden to support the triumph of attracted predators. Jessica generously provides sample insectary garden designs to guide us for continual bloom, different flower architecture and garden beauty.

We are quite attuned to pollinators in our garden landscape such as butterflies and bees but can you identify beneficial bugs? Once you gain some knowledge, it

deep into a flower. However, not all Beneficial's have this ability and some need easier accessibility.

Beneficial	Benefit for my garden
Ladybeetles/Ladybugs	Eat aphids & other soft bodied pests.
Syrphid flies, hoverflies	Eat aphids, thrips, leafhoppers, scales.
Damsel bugs	Eat aphids, mites, leaf hoppers, scale.
Dragonflies	Eat mosquito larvae and adults.
Spiders	Eat insect eggs, beetles, aphids, cutworms, spider mites, caterpillars, budworms and other insects caught in webs.
Parasitic wasps	Use other insects as hosts for their eggs. The developing larvae consume the host. They lay their eggs in caterpillars such as tomato hornworm, cabbage worms, cutworms, aphids and beetle larvae.
Minute pirate bugs	Eat thrips, spider mites, insect eggs, scale, whiteflies.
Tachinid flies	Active pollinators and parasitize various insects as hosts for their larvae, eg cutworm, leaf rollers , sawflies, stink bugs, squash bugs.
Lacewings	Eat aphids, mealybugs, soft scale and other small insects.
Ground Beetles	Eat slugs, gypsy moth larvae, cutworms.



Often the pollinators and parasitoids share the same nectar source as noted in this photo of a Monarch Butterfly (*Danaus plexippus*) on the same *Asclepias* (milkweed) plant as the Ichneumon wasp. Nancy MacDonald

In summary, attracting predatory and parasitic Beneficial's to your garden is an excellent pest management strategy. Will you occasionally need a sharp spray of water to knock down a pest population or hand pick pests to decrease their population? Yes, but give your beneficial army a chance to assist in pest control. Get out the magnifying instruments and examine visitors to identify and cheer on the presence of Beneficial's. Understand that it really is a bug eat bug world! Your garden will become joyfully alive with the activity of Beneficial's and you will be supporting a unique eco-system.

Watch for **Trowel Talk** the Master Gardeners of Ottawa Carleton electronic monthly gardening newsletter available on the 15th at <http://mgottawa.mgoi.ca/>
Visit the Almonte online community newspaper 'The Millstone' - <http://millstonenews.com/> -for a column by David Hinks of the Ottawa Carleton Master Gardeners; under the Gardening tab

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Lanark E-mail help Line: lanarkmg@gmail.com.

is easier to refrain from disrupting the natural predator-prey cycle. Indeed, you can get these beneficial bugs to help you do some of your gardening dirty work. So take some time now when planning your garden to select plants to invite beneficial bugs to your garden space and observe their helpful activities.

Plants to attract Beneficials

Annuals:

Sweet Alyssum, *Lobularia maritima*
Cosmos, *Cosmos bipinnatus*
Sunflower, *Helianthus* spp.
Marigolds, *Tagetes* spp.
Zinnias, *Zinnia* spp.

Herbs:

Tansy, *Tanacetum vulgare*
Dill, *Anethum graveolens*
Lovage, *Levisticum officinale* *
Angelica, *Angelica* spp.*
Mint, *Mentha* spp.*
Cilantro, *Coriandrum sativum*
Anise Hyssop, *Agastache foeniculum* *
Oregano, *Origanum vulgare* *
Feverfew, *Tanacetum parthenium* *
Lavender, *Lavandula* spp.*
Thyme, *Thymus* spp.*
Fennel, *Foeniculum vulgare*
Parsley, *Petroselinum crispum* *

Perennials:

Boneset, *Eupatorium perfoliatum*
False Sunflower, *Heliopsis helianthoides* *
Shasta Daisy, *Leucanthemum x superbum*
Black-eyed Susan, *Rudbeckia* spp.*
Cup Plant, *Silphium perfoliatum*
Aster, *Aster* spp.
Yarrow, *Achillea* spp.*
Butterfly Weed, *Asclepias tuberosa* *
Cinquefoil, *Potentilla* spp.*
Stoncrop, *Sedum* spp.*
Tickseed, *Coreopsis* spp.
Golden Marguerite, *Anthemis tinctoria*
Culver's root, *Veronicastrum virginicum* *
Goldenrod, *Solidago* spp.
Coneflower, *Echinacea* spp.*

Note: Let some of your herbs bolt (flower) as the tiny flowers are just right for the small mouthparts of some beneficials.