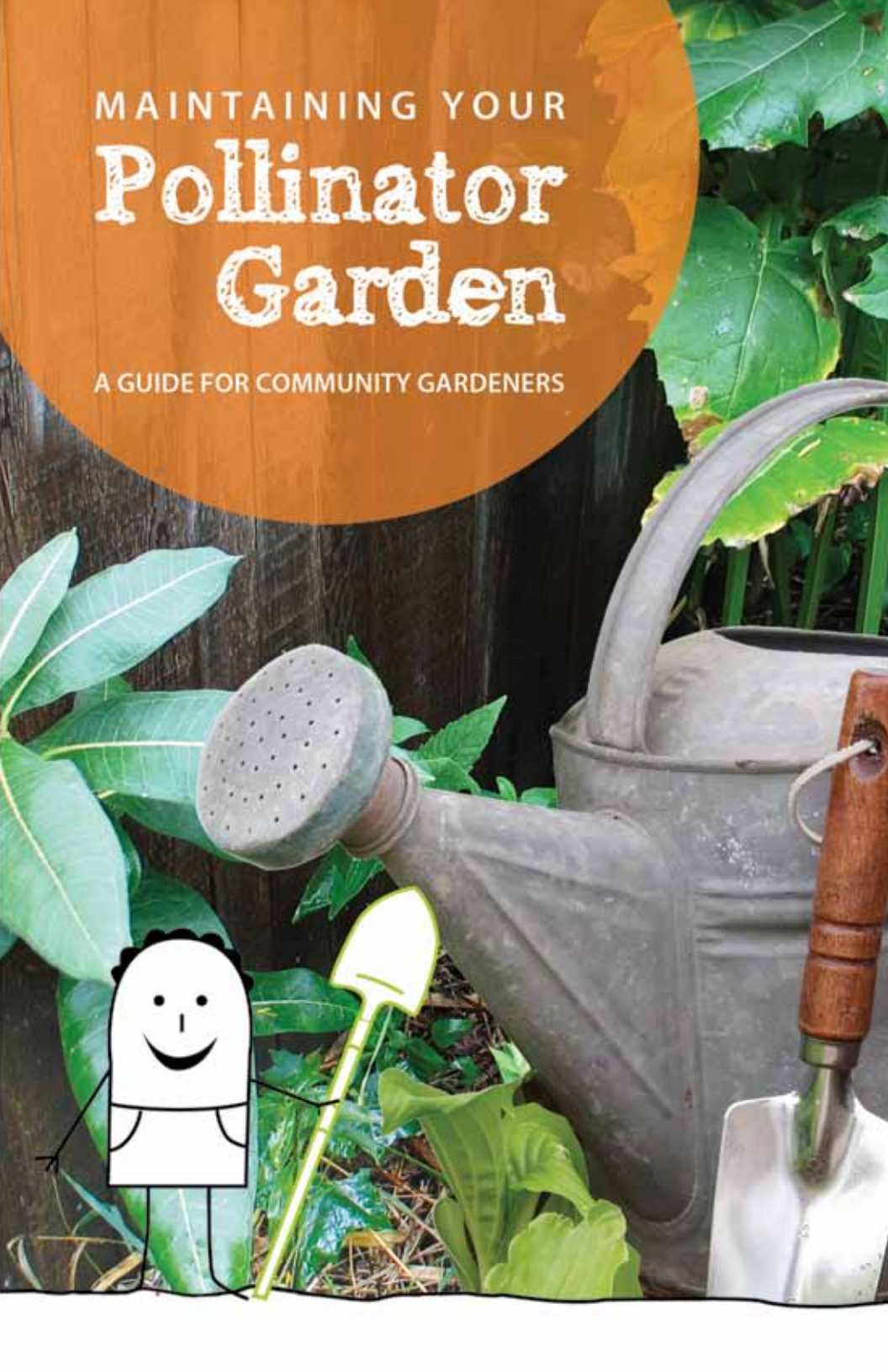


MAINTAINING YOUR  
**Pollinator  
Garden**

A GUIDE FOR COMMUNITY GARDENERS





# Table of Contents

<b>Why a Pollinator Garden?</b> .....	3
<b>How do I use this guide?</b> .....	3
<b>Getting Started</b> .....	4
• Step 1 – <i>Complete the Garden Team Table</i>	
• Step 2 – <i>Record the Garden Details</i>	
• Step 3 – <i>Complete the Pollinator Garden Log</i>	
• Step 4 – <i>Record your Garden Plant List</i>	
• Step 5 – <i>Review the Garden Maintenance Calendar</i>	
<b>Right Plant, Right Place</b> .....	8
• Choosing Your Pollinator Garden Plants	
• Sunlight	
• Water	
• Soil	
<b>Naturally ... There Are Pests!</b> .....	13
• Controlling Weeds	
• Controlling Insects	
• Controlling Diseases	
<b>Fall and Winter Activities</b> .....	17
<b>Enhancing your Garden</b> .....	18
• Add Signs to Your Garden	
• Create More Habitat	
• Protecting Pollinators	
<b>Resources Section</b> .....	20
• <b>Appendix 1.</b> Garden Team Table	
• <b>Appendix 2.</b> Garden Sketch Template	
• <b>Appendix 3.</b> Common Soil Problems and Organic Remedies	



## Why a Pollinator Garden?

Did you know that about 75% of flowering plants depend on pollinators, including most of your favourite fruits and vegetables? Without pollinators we would lose foods such as apples, blueberries, strawberries, melons, peaches, chocolate, almonds and pumpkins, along with many others.

Give yourself a pat on the back! You now have an established pollinator garden or are well on your way to creating one. This is an important step in making sure we have fresh, healthy food for generations to come.

Your garden is home to a wide variety of pollinators like hummingbirds, butterflies, moths, bees, flies and beetles. The native plants in your garden provide the nectar, pollen, larval food and habitat that these pollinators need to survive.

## How do I use this Guide?

This guide is designed for any group with an established pollinator garden, or a garden project in progress. Its purpose is to outline the maintenance responsibilities for the garden.

From weeding to watering, this guide will provide your group with the know-how and advice to help you maintain a healthy and beautiful community garden.

Learn about:

- Team tasks for a healthy garden
- Choosing the right plants to add to your garden
- Maintaining healthy soil
- Natural pest control
- Winter maintenance
- Enhancing your garden

# Getting Started

## Step One – Complete the Garden Team Task Table

Taking care of a Community Garden requires ongoing teamwork!

To help your team get organized use the job sheet in *Appendix 1* to share the tasks and time commitments and work together to align your volunteers with the things they like to do!

As your volunteers change over time, just reassign the tasks and “Keep on Growing”.

## Step 2 – Record the Garden Details

The first step in creating a maintenance plan for your garden is to record the details. Use the following section to record as many details as possible about your garden. This information will give you a reference point for future planning.

Group Name: \_\_\_\_\_

Garden Name: \_\_\_\_\_

Location: \_\_\_\_\_

Year Installed: \_\_\_\_\_

## Step 3 - Complete the Pollinator Garden Log

For pollinator gardens in shared spaces, such as a school yard, church or community centre, it’s important to keep records of the original garden design and any maintenance activities that have occurred within the garden. Good record keeping will ensure that the overall vision for the garden is not lost as responsibility for the garden is passed from one person to another.



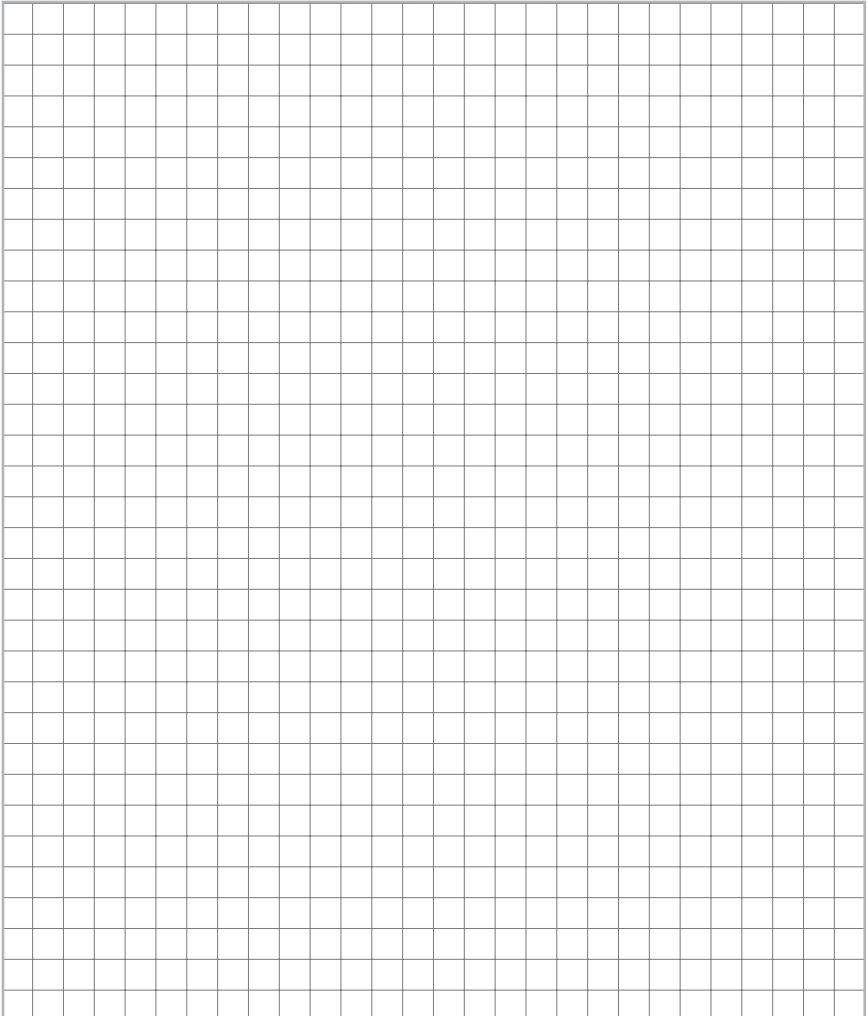
### **Soil and Native Plant Gardens**

One great benefit of using native plants in your garden is that they are adapted to local conditions including the soils. Native plants don’t require applications of common soil enhancers like triple mix, manure or commercial fertilizers. If your plants are struggling, a little bit of mulch may be all you need. If your garden is thriving in the existing soil don’t try to fix a problem you don’t have.

## Pollinator Garden Log

Using the space below, sketch out your pollinator garden. Record the location of key features, hardscaping (rocks, pavement, picnic tables, etc) and plant beds. It's a good idea to re-sketch your garden space every couple of years to record any changes to the layout.

See *Appendix 2* for an additional log that you can photocopy and update as your garden evolves.

A large grid of graph paper, consisting of 20 columns and 30 rows of small squares, intended for sketching a pollinator garden layout.

Date: \_\_\_\_\_

Completed By: \_\_\_\_\_

Email/Contact Info: \_\_\_\_\_

#### Step 4 – Record your Pollinator Garden Plant List

It's important to keep track of the plant species in your pollinator garden, and their location. This will help you identify weeds, and allow you to document which plants are spreading. You can record the location of plants on your garden sketch above, or use weather-proof plant tags to mark locations within the garden.

COMMON NAME	LATIN NAME	DATE PLANTED

#### Garden Notes:

Use this space to record any observations about your garden. These can include what has worked well, what hasn't worked and new plants or techniques you'd like to try in future years.

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## Step 5 – Review the Garden Maintenance Calendar

Use this calendar as a general guide for seasonal maintenance. For more detailed instructions refer to the relevant sections of this guide or the sources cited in the Resources section.

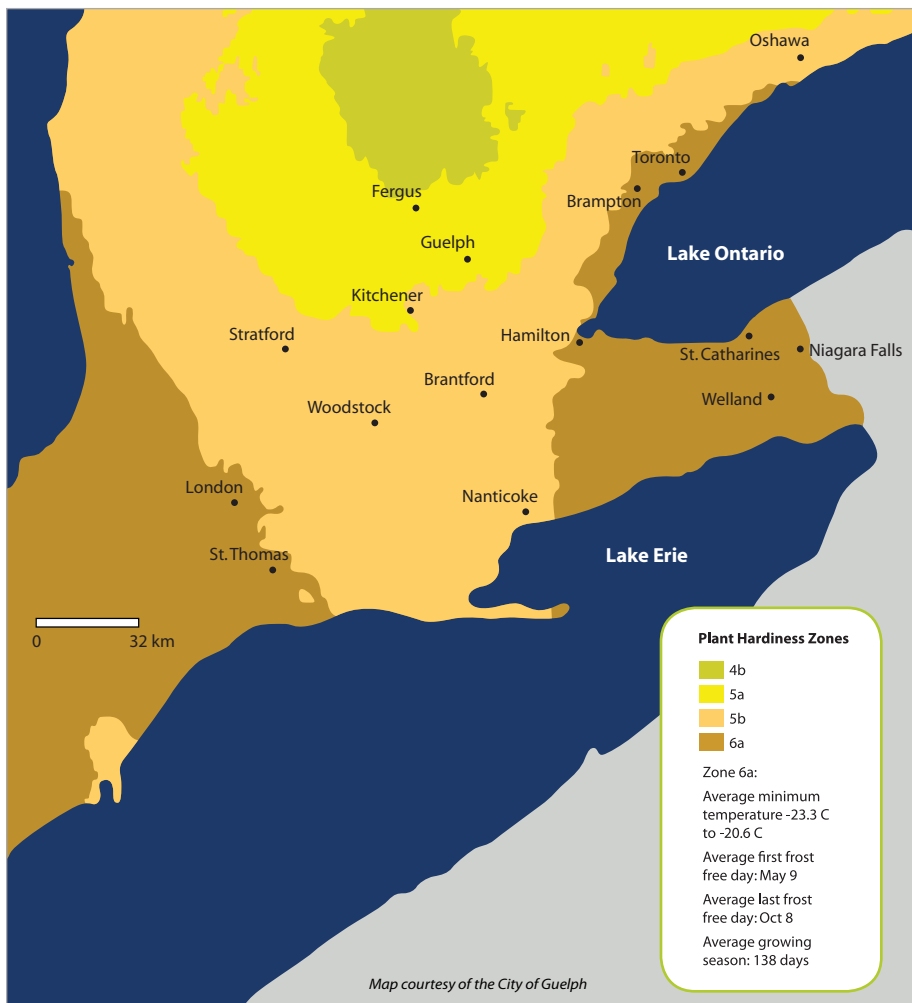
SPRING	SUMMER	FALL	WINTER
<ul style="list-style-type: none"> <li>• Remove any large, wet clumps of leaves and add them to the composter</li> <li>• Add a fresh layer of mulch or compost to garden beds</li> <li>• Plant new materials</li> <li>• Water new plants during dry periods (pg. 11)</li> <li>• Cut back dead plant material to the ground or leave it as it is (<i>Make sure not to disturb birds' nests, caterpillars or chrysalis!</i>)</li> </ul>	<ul style="list-style-type: none"> <li>• Remove weeds from the garden, replenish mulch</li> <li>• Monitor the weather and water the garden regularly during dry periods</li> <li>• Monitor and treat for garden pests and diseases (pg. 13)</li> <li>• Prune or thin any plants which are growing fast to promote good air circulation</li> </ul>	<ul style="list-style-type: none"> <li>• Divide perennials which have outgrown their space on your Garden Plan</li> <li>• Add 5 - 8 cm of mulch</li> <li>• Leave dead plant material and leaf matter where possible</li> <li>• Remove plants that performed poorly and note them down in the Garden Notes section</li> <li>• Prepare new beds for spring planting by covering grassy or weedy areas with landscape fabric or newspaper</li> <li>• Plant trees and shrubs if they are part of your garden plan</li> </ul>	<ul style="list-style-type: none"> <li>• Prune shrubs and small trees</li> <li>• Make notes about spring planting plans</li> </ul>

# Right Plant, Right Place

## Simple Steps to a Beautiful Garden

The key to maintaining a healthy pollinator garden is to know how to put the right plant in the right place. This means ensuring that the plants you select are adapted to the climate, light and soil conditions of your garden.

Native plants have evolved over thousands of years in response to the local climate, and in association with other native species. Native plants are best adapted to the local area, but non-native, non-invasive plants can be used to enhance garden features. Use the hardiness map below to help you determine which plants are adapted to your region.





## Choosing Your Pollinator Garden Plants

Not sure which plants you have in your garden? Looking to add to your garden? Here are some suggestions for plants that are well adapted to local conditions, are attractive additions to any garden and attract pollinators. The best pollinator plants grow in full sun, but options are also available for part-sun and shady sites.



PEARLY EVERLASTING



WILD BERGAMOT



ASTER SPP.



PALE PURPLE CONEFLOWER



SWAMP MILKWEED



DOGWOOD SPP.



SPOTTED JOE-PYE WEED



BUTTERFLY MILKWEED



NEW JERSEY TEA



TURTLEHEAD



BLUE VERVAIN



BLACK-EYED SUSAN

*Photos of Spotted Joe-Pye Weed, New Jersey Tea, Turtlehead and Blue Vervain courtesy of [www.wildflowerfarm.com](http://www.wildflowerfarm.com)*

## Sunlight

Light conditions are an important consideration when planning or adding to a garden. If there are sections of your garden where the plants haven't done well, it may be because the species of plants chosen were not adapted to the light conditions. Use the figure below to establish an idea of the light conditions present and select appropriate plants species to fill in your garden.





FULL SUN	PARTIAL SUN/ PARTIAL SHADE	DAPPLED SUN	FULL SHADE
			
<p><b>At least six full hours of direct sunlight.</b></p>	<p><b>Require three to six hours of sun each day, preferably in the morning or early afternoon.</b></p>	<p><b>Dappled sun is the sun that makes it through the branches of a deciduous tree.</b></p>	<p><b>Less than three hours of direct sunlight with filtered sunlight during the rest of the day.</b></p>
<p>Saskatoon berry <i>Amalanchier alnifolia</i></p> <p>big bluestem <i>Andropogon gerardii</i></p> <p>butterfly milkweed <i>Asclepias tuberosa</i></p> <p>new England aster <i>Aster novae-angliae</i></p> <p>harebells <i>Campanula rotundifolia</i></p> <p>wild bergamot <i>Monarda fistulosa</i></p>	<p>smooth aster <i>Aster laevis</i></p> <p>turtlehead <i>Chelone glabra</i></p> <p>cardinal flower <i>Lobelia cardinalis</i></p> <p>wild geranium <i>Geranium maculatum</i></p> <p>wild lupine <i>Lupinus perennis</i></p>	<p>Canada anemone <i>Anemone canadensis</i></p> <p>wild ginger <i>Asarum canadense</i></p> <p>foxglove beard-tongue <i>Penstemon digitalis</i></p> <p>zig zag goldenrod <i>Solidago flexicaulis</i></p> <p>nannyberry <i>Viburnum lentago</i></p>	<p>wild columbine <i>Aquilegia canadensis</i></p> <p>downy serviceberry <i>Amelanchier arborea</i></p> <p>common elderberry <i>Sambucus canadensis</i></p> <p>foamflower <i>Tiarella cordifolia</i></p> <p>early flowering sedge <i>Carex pedunculata</i></p>

Chart courtesy of the City of Guelph

## Water

In the summer months when school is out and community groups are often on summer break, it is important to make sure that a plan is in place for watering the garden. Here are some tips for optimizing water use in your garden.

- Water early in the morning. In the morning, less water evaporates and more water is taken up by the plants, making it available to them during the hottest part of the day. Alternatively, water in the late afternoon/evening.
- Get a rain barrel. Collect rainwater from your roof in a rain barrel by directing the down spout of your eavestroughs into the rain barrel. This is a great, free source of water for your garden.
- Use a soaker hose. Soaker hoses can be attached to rain barrels or to the garden hose. Drip irrigation is a more efficient method of watering gardens than a sprinkler. If you don't have a soaker hose make sure your sprinkler is not watering your driveway or other hard surfaces.
- Watch the weather. Plants will need more water in the first growing season when they are establishing a root system. Your garden needs about 2.5 cm (1 inch) of water per week, including rainfall. Measure the rainfall using a rain gauge (available through your local municipality or any garden store) to ensure you are not overwatering your garden. One good soak per week is better than frequent light sprinklings because it encourages deep roots which are more drought resistant.
- Group plants with similar water needs. This will make watering more efficient and help to reduce moisture loss and competition.
- Mulch! Mulch is material placed around plants to help retain moisture and control weeds. Commonly used materials for mulch include shredded bark, wood chips or straw. Avoid dyed mulch, as the dye will leach into the ground. Keep mulch light (about 3-5cm) and leave small areas mulch free to maintain habitat for ground nesting bees.

Rain Barrel



Garden Mulch



Soaker Hose



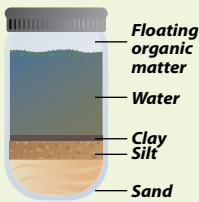
Photo courtesy of Deborah Chute

## Soil

The easiest and most effective way to improve a struggling garden is to improve the soil. Healthy soil is the first step to prevent pests and diseases from invading your garden. Plants growing in fertile soil will also flower more profusely, creating a richer food source for pollinators, and produce more fruit. Before you begin to amend the soil in your garden you need to assess the existing soil type. There are three things to take into consideration when assessing the soil; the texture, pH and fertility.

### Texture

The soil texture is a factor of the mineral content of the soil. Soil minerals, from smallest to largest are clay, silt and sand. Sandy soils drain quickly because the larger particles create larger air spaces which allow water to move quickly. Clay soils do the opposite; they retain water because the finer particles and smaller air spaces impede the movement of water. To analyze the soil texture in your garden use the jar test (*Figure 1*).



**Figure 1 - Soil Jar Test**

1. Collect your soil sample
2. Spread soil out on an old cookie tray to dry. Once dry, sift it through a collander or remove small stones and roots and break up any lumps
3. Fill a jar halfway with the sifted soil and then fill it completely with water. Put the lid on the jar and shake well.
4. Place the jar in an undisturbed area and compare the results to this diagram.

### pH

The acidity (pH) of your soil also affects plant health. To measure soil pH you can use a soil pH meter (purchased from a local garden centre), pH paper to test a solution of 1 part garden soil and 3 parts distilled water, or send a sample into a local lab. To find out more about soil testing see the Resources section on page 20.

### Fertility

Soil fertility is the third factor that can affect plant health. Plants require a mix of nutrients to remain vigorous and healthy. Nutrients are taken up into the plant through water absorbed by the plants' roots. Macronutrients, those needed in a large quantity and that are essential to healthy plants include calcium, magnesium, nitrogen, phosphorus, potassium and sulphur. Plants also require boron, copper, iron, manganese, molybdenum and zinc in smaller quantities. Common causes of nutrient deficiency in plants include overwatering, soil pH (too high or too low), excess use of fertilizers and drought. There is no cost effective way to test soil fertility; use Appendix 3 to diagnose problems with soil fertility and find organic solutions.

The ideal soil is two parts each of sand and silt to one part clay with a neutral pH (6 or 7). Don't worry if your soil is not the perfect mix, all soil types can be improved by adding organic matter or other soil amendments.



## Naturally...There Are Pests!

What is natural pest control?

Natural pest control encompasses any practice used for controlling weeds, pests and diseases in your garden without using chemical products. Use this section as a troubleshooting guide to deal with problems as they arise in your garden. Key principles of natural pest control include:

- Maintaining healthy soil
- Mulching
- Planting a variety of species (*keep in clusters but use 10+ species*)
- Avoiding overwatering
- Companion planting (*pairing species for natural pest resistance*)
- Planting native species
- Avoiding overcrowding in the garden
- Practicing good hygiene with garden tools and equipment

### Controlling Weeds

An Ounce of Prevention:

- Mulch, Mulch, Mulch! Mulch not only controls weeds but improves soil quality and moisture and protects plant roots, helping to create a healthy, resilient garden.
- Remove seed sources of undesirable plants. Hand-pull or clip back the seed heads of weed plants before they go to seed. This will slowly remove the seedbed of weeds from the garden, inhibiting weeds from coming back in future years. Make sure not to put any weeds that are about to go to seed in the compost.

A Pound of Cure:

- Hand-pull weeds. Make sure to get weeds from the roots by weeding when the soil is moist and pulling from the base of the plant. A trowel can be used to loosen the soil to remove well-rooted weeds.
- Apply soap or acetic acid based herbicides. Make sure to avoid other plants when using these! These products can be found in hardware stores, renovation centres, and agricultural supply stores.
- Smother the problem. For larger areas of weeds, spread thick, dark plastic (heavy duty plastic bags or landscape fabric) over the ground. This works best if the coverings are put down in the early fall and left until you are ready to plant in spring. Leave for at least two months to kill weeds properly.
- Consider leaving certain 'weeds'. So-called weeds like golden rod, Queen Anne's lace, yarrow and common milkweed are highly beneficial to insects, so unless they are taking over your garden, consider leaving them.

## Controlling Insects

To discourage undesirable insects from making themselves at home in your garden you may wish to adopt the following gardening practices:

- Select plants that are hardy in your local area. (see hardiness map on pg. 8)
- Select disease-resistant varieties of plants.
- Avoid overcrowding plants.
- Include as much variety of plant species as possible. Insect infestations tend to get out of control in monoculture environments.
- Examine plants frequently for early signs of insect and disease damage. Examine leaves, looking on both the surfaces and the undersides. Often, all that is needed is to remove the effected leaves from a plant or give them a squirt of insecticidal soap. Act promptly to gain control of insect pests.

### USE CAUTION

Organic pest controls must be applied carefully to avoid killing the beneficial insects that you are trying to attract to your garden.

Insects are a normal part of any garden and some cosmetic damage to plants can be expected. Remember that you are trying to attract pollinators to your garden! In fact, insect damage may be from desirable pollinator species, like the leaf cutter bee that cuts pieces of leaves to use as 'baby blankets' for their young. However, if insects are becoming a serious problem in your garden there are several organic methods to prevent further damage.

#### GROUND NESTING BEES



*Photo courtesy of Victoria McPhail*

Ground nesting bees are solitary and seldom, if ever, sting. Consider skipping the mulch in some areas of your garden and leaving bare patches of ground for ground nesting bees.

### Why Practice Natural Pest Control?

- Butterflies/bees and pesticides don't mix!
- 90% of the bugs in a garden are beneficial.
- It is healthier and safer than pesticide use.
- It is easier and less expensive to maintain.
- To comply with pesticide by-laws.



## Organic Pest Control Products

PRODUCT NAME	PRODUCT TYPE	TARGETS	DESCRIPTION	HOMEADE ALTERNATIVE
<i>Diatomaceous earth</i>	Insecticide	Soft-bodied and some hard-bodied pests such as snails, slugs, aphids, leaf hoppers, earwigs and thrips.	A white abrasive powder made from ground-up, fossilized shells of small sea creatures. It punctures holes in the skins or shells of many insects. Caution, it can kill beneficial insects like caterpillars and bees so use in the early morning, before flowers open.	Crushed egg shells.
<i>Insecticidal soaps</i>	Insecticide	Aphids, spider mites, mealybugs, scale in its early stages and white fly.	Contains salts of fatty acids, mixed with water and alcohol in various proportions. It is sprayed onto the leaves of plants. Test it on a few leaves before spraying entire plant.	Add one or more tsps of pure unscented soap like Ivory Snow or Ivory Liquid to three and a half litres of water. Do not use Sunlight or detergents!
<i>Beneficial nematodes</i>	Biological	Iris borer, cut worms, flea beetles, and other shallow living larvae.	Nematodes predate on shallow living larvae. Should be applied when temperatures are above -10°C.	None
<i>Toadhouses</i>	Physical	Slugs, cutworms, sow bugs, and various beetles.	Attract toads by putting an up-turned clay flowerpot ( <i>with an entry hole on one side</i> ) in a shady, moist place in your garden. Toads eat many common pests and are a boon to your garden space.	

## Controlling Diseases

Prevention is the best measure for plant diseases as they are difficult to control once established. Before treating a disease, you must identify it correctly and ensure that the damage is not from environmental stress, insects or any other cause. Plant diseases are generally caused by environmental factors like pollution or soil compaction, fungal diseases like cankers and rusts, bacterial diseases like wilts or blights or viral diseases spread from plant to plant by humans or insects.

DISEASE	DESCRIPTION	TREATMENT
<i>Bacterial Wilt</i>	Plants wilt, recover and then wilt again, before turning yellow and dying. Affected plants have stems that ooze a slimy liquid.	There is no effective treatment. Affected plants must be destroyed. Avoid contaminating other plants by washing hands and tools thoroughly before handling other plants.
<i>Black spot</i>	Tiny black spots with rims of orange or yellow on leaves (most often roses).	Remove affected leaves and spray remaining leaves with insecticidal soap or a liquid sulphur spray. Repeat regularly throughout growing season. Avoid overwatering. Plant native varieties.
<i>Grey mould (Botrytis blight)</i>	A fuzzy, grey mould, often accompanied by brownish, spongy patches on leaves and flowers. While it looks unsightly, it usually doesn't kill the plants.	Good air circulation.
<i>Fusarium Wilt (damping-off disease)</i>	Mostly a problem with vegetable seedlings. Causes stems to shrink inwards and turn black, the plant then wilts, keels over and collapses.	There is no effective treatment. Effected seedlings must be removed and destroyed immediately. To prevent spread, use sterile potting medium for seedlings, keep tools clean, provide space between seedlings to ensure good air circulation around them. Look for "VF" on seed packets to buy resistant seeds.





## Fall and Winter Activities

Most people tend to tidy their gardens in the fall and winter, but this can be detrimental to the many pollinators and other species of insects that use your garden as their home. Insects need protection for overwintering, and by clearing out your pollinator garden before the snow flies, you may be inadvertently wiping out all the beneficial insects you've been trying to attract.

Overwintering pollinators can spend the winter in a variety of life stages – egg, larva, pupa or adult. Most native bees spend the winter in their nest cells as pupae, emerging as adults the following spring. Resident butterflies spend the winter in a variety of dormant life stages, depending on the species, and all require some sort of sheltered area in the garden.

### Winter Wildlife in Your Garden:

- Toads and newts like to spend the cold winter months under pots, stones and logs.
- Frogs are more likely to be found under piles of leaf litter, or hiding at the bottom of a pond.
- Ground beetles remain active throughout the winter, and can be seen foraging around leaf litter and around flower beds.
- Ladybugs overwinter in large clusters on dead plant stems found in sheltered parts of the garden.
- Garden spiders usually overwinter as eggs – either in the ground or on dead plant stems.

### What You SHOULD do in the Garden This Fall/Winter:

- Consider new features or changes to your garden. Look back over your garden log to see what worked well, and what hasn't been as successful as you had hoped.
- If you are thinking of expanding your garden, this is the time to do it. By covering areas of lawn with wet newspaper or landscape fabric, and letting it sit through the winter, it will be easier to dig up come spring.
- If you're looking to add some new elements to your pollinator garden, fall is one of the best times to plant trees and shrubs.

### What NOT to do in the Garden This Fall/Winter:

- Avoid disturbing the soil, or digging in flower beds, as this will disturb overwintering insects.
- Do not remove dead plant material – it provides shelter for overwintering pollinators and food sources for birds. If you feel the urge to tidy up, use burlap twine to create neat bundles of standing plant material.

- Do not remove leaf matter – either let it lie where it falls, or rake it up and scatter it over your garden beds to create an insulating layer of mulch.
- Keep bird feeders and heated bird baths away from your pollinator garden. Birds will prey on butterfly and moth species as they overwinter in the larval and egg stages.
- Avoid pruning trees or shrubs – not only will this remove the new buds that have already formed for spring growth, it will also remove many of the berries and seeds that serve as food sources for birds over the winter.

## Enhancing Your Garden

### Add Signs to Your Garden

An easy step you can take to enhance your garden is labeling perennial plants, making it easier to remember what you've got next spring.



Garden Sign. Photo courtesy of Natalie Swaak



Native bee nest

### Ways to Label Your Garden Plants

- Use an ordinary tongue depressor and write on it with a permanent marker.
- Metal stakes, made with pliable metal that you can write on, can be a great way to create more permanent labels for your garden. You can find these at garden centres or order them from online vendors.
- Use a stake (*or ordinary stick with the bottom sharpened*) and add a label. You may want to write directly on the stake or attach a small piece of plywood for a larger writing surface.
- Painted rocks can make great garden labels.
- If you want something a little fancier, and have money to spend, you might consider using a sign shop to have signs printed on metal or coroplast.

You may also want to add interpretive signs to your garden. Interpretive signs are an excellent way to draw attention to your garden, spread the message about the importance of pollinators and even attract volunteers. These might be handmade, professionally printed or stock signs provided by another organization. You may also consider certifying your garden as a Monarch Waystation or “Pollinator Friendly” Garden and display the accompanying sign in your garden. Check out the links in the Resource section for details.

## Create More Habitat

### Food

A variety of nectar available throughout the growing season is the key to attracting pollinators to your garden. For the best results plant native plants, provide a variety of showy flowers and plant each species in clusters to make foraging easy. Plant a wide variety of wildflowers to attract all types of pollinators, and avoid chemicals that may harm them.

### Water

Water is an essential part of a pollinator garden. Butterflies require drinking water and birds use water for bathing and drinking. Tips for creating pollinator friendly water features include:

- Create small mud puddles in the garden. Butterflies use these for water and nutrients.
- Set out a small saucer or bowl with water and add sand and rocks. This is a great alternative to mud puddles for butterflies.
- Place a birdbath in a sheltered area.
- Avoid standing water. Change the water twice a week to prevent mosquito breeding.

### Shelter and Nesting Sites

No pollinator garden is complete without shelter and nesting sites to raise the next generation of pollinators. Some features that can be added to any pollinator garden to increase the habitat value include:

- A variety of shrubs, tall grasses and low-growing plants.
- Bundles or patches of fallen branches and brush.
- Small patches of bare ground for ground nesting pollinators.
- Nests for native bees (*see the link in the Resources section to learn more*).

## Protecting Pollinators

Congratulations! By creating and maintaining your pollinator garden you are part of a continent-wide movement to protect pollinators. To learn more about pollinators and pollinator conservation in Canada and North America visit the links in the Resources section.

# Resources

## Plants for your Garden

*How to Select and Buy Native Plants* - City of Toronto: Urban Forestry  
[www.toronto.ca/trees/pdfs/Fact\\_2\\_How\\_to\\_Select\\_and\\_Buy\\_Native\\_Plants.pdf](http://www.toronto.ca/trees/pdfs/Fact_2_How_to_Select_and_Buy_Native_Plants.pdf)

## Water

*Wise and Effective Use of Water in Your Organic Garden* - Toronto Master Gardeners  
[www.torontobotanicalgarden.ca/mastergardener/PDFs/WaterUse.pdf](http://www.torontobotanicalgarden.ca/mastergardener/PDFs/WaterUse.pdf)

## Soil

*Improving Soil Organically* - Toronto Master Gardeners  
[www.torontobotanicalgarden.ca/mastergardener/PDFs/ImproveSoilOrganic.pdf](http://www.torontobotanicalgarden.ca/mastergardener/PDFs/ImproveSoilOrganic.pdf)

*The Online Gardener's Handbook 2010, Chapter 3:*

*A Word about Soil Testing* - OMAFRA

[www.omafra.gov.on.ca/english/crops/gardbk/gh-ch3-4testing.htm](http://www.omafra.gov.on.ca/english/crops/gardbk/gh-ch3-4testing.htm)

## Pest and Disease Control

*The Organic Gardener's Handbook of Natural Pest and Disease Control: A Complete Guide to Maintaining a Healthy Garden and Yard the Earth-Friendly Way*  
Bradley, F.M., Ellis, B.W., and Martin, D.L. 2010. Rodale Organic Gardening Books

*Controlling Pesticides without Pesticides: A General Overview*

City of Toronto, Go Natural Fact Sheets.

[www.toronto.ca/health/pesticides/pdf/gardening\\_insect\\_control\\_general.pdf](http://www.toronto.ca/health/pesticides/pdf/gardening_insect_control_general.pdf)

*Controlling Plant Diseases without Pesticides*

City of Toronto, Go Natural Factsheets.

[www.toronto.ca/health/pesticides/pdf/gardening\\_plant\\_diseases.pdf](http://www.toronto.ca/health/pesticides/pdf/gardening_plant_diseases.pdf)

*Organic Gardening Factsheets* - Toronto Master Gardeners

[www.torontobotanicalgarden.ca/mastergardener\\_factsheets.shtml](http://www.torontobotanicalgarden.ca/mastergardener_factsheets.shtml)

*Organic Gardening Toolbox* - Foodshare.

[http://foodshare.net/toolbox\\_roots-rooftops-Organic.htm](http://foodshare.net/toolbox_roots-rooftops-Organic.htm)

## Garden Certification and Signage

*Pollinator "Friendly Garden" Certification*

<http://ento.psu.edu/pollinators/public-outreach/cert>

Monarch Waystation Program

[www.monarchwatch.org/waystations/](http://www.monarchwatch.org/waystations/)

Native Bee Nests

[www.fws.gov/pollinators/pollinatorpages/yourhelp.html#bee](http://www.fws.gov/pollinators/pollinatorpages/yourhelp.html#bee)

## Additional Resources

Pollination Canada, [www.pollinationcanada.ca](http://www.pollinationcanada.ca)

Canadian Pollinator Protection Initiative, [www.pollinator.ca](http://www.pollinator.ca)

Pollinator Partnership, [www.pollinator.org](http://www.pollinator.org)

Monarch Watch, [www.monarchwatch.org](http://www.monarchwatch.org)

The Xerces Society, [www.xerces.org](http://www.xerces.org)

Garden Notes:

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## Appendix 1. Garden Team Table

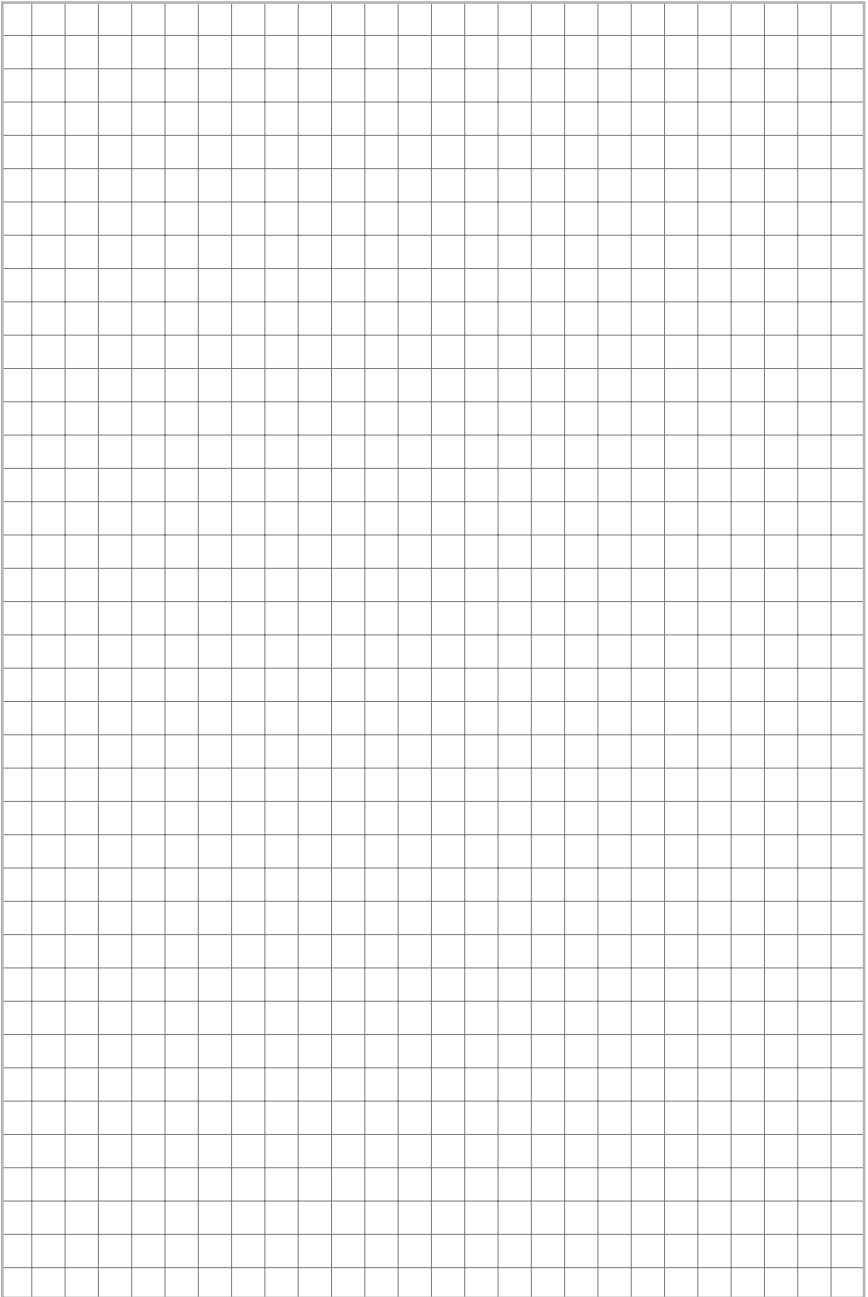
Be sure to make a photocopy before filling this in so you can update it as your group evolves.

TASK NAME	JOB DESCRIPTION	SEASONS & TIME COMMITMENTS	TEAM MEMBERS <i>(Insert Names)</i>	# OF VOLUNTEERS NEEDED
<i>Team Leader</i>	<p>Keep files and records in order</p> <p>Maintain team task table and the garden and maintenance logs</p> <p>Communicate with the team</p>	<p>Annual or bi-annual updates of paper work</p> <p>Commitment of 1-2 days per month</p>		1-2 team leaders and an alternate member who also has a copy of and access to files and records
<i>Bookkeeper</i>	In charge of garden funds and donations	1-2 days per month		1
<i>Equipment Keepers</i>	<p>Check that tools are put away and working properly</p> <p>Tool inventory</p> <p>Check with the other teams to find out what tools are needed</p> <p>Repair or replace garden signs</p>	<p>Check tools once a week from May-October</p> <p>Inventory tools once per year</p>		2-3
<i>Early Bird Watering Team</i>	<p>Someone (or a small group) who is already up early and waters the gardens</p> <p>Checks rain gauge and watches the weather</p>	Once a week to every other day from June to August		1-10 people depending on your watering method and the size of your garden (more people if hauling water)

TASK NAME	JOB DESCRIPTION	SEASONS & TIME COMMITMENTS	TEAM MEMBERS (Insert Names)	# OF VOLUNTEERS NEEDED
<i>Water Keepers</i>	Maintains rain barrels and other watering equipment	1-2 days per month		2
<i>Weed Warriors</i>	Pull weeds In charge of composting Aren't afraid to get dirty!!	Once a week from May to October		From 2-20 depending on the size of your garden and age of the volunteers
<i>Soil Doctors</i>	Mulch plants Fix soil problems Visits the garden centre for advice and supplies	Once in spring and fall After any new plantings		2-5 depending on the size of your garden
<i>Plant Detectives</i>	Check for insect damage and plant diseases Use the tables and advice from a garden centre to diagnose and treat problems Divide or thin plants that are overcrowded or have outgrown their space	Once a week from May to October		2-5 depending on the size of your garden
<i>Habitat Helpers</i>	Create mud puddles or baths for butterflies Make bunches of branches and brush, and place them in the garden Install and monitor bee nests	3-4 times per month from May to October		1-5
<i>Winter Workers</i>	Make a plan for next spring Get new beds ready Plant trees/ shrubs (if applicable)	2-3 days per month from October to April		2-10 depending on your spring plans and the size of your garden

## Appendix 2. Garden Sketch Template

Be sure to make a photocopy before filling this in so you can update it as your garden evolves.







### Appendix 3. Common Soil Problems and Organic Remedies

PROBLEM	SYMPTOM	ORGANIC SOLUTIONS*
Sandy Soil	Poor water retention	Add 5-8 cm of organic material like compost, manure or wood chips.  Water lightly and frequently.
Clay Soil	Poor drainage	Water slowly, deeply and infrequently. Water just as the plants are beginning to wilt.  Add organic matter.  Add inorganic processed minerals, such as vermiculite or gypsum ( <i>in additional to organic matter</i> ).
Acidic Soil (low pH)	Results of soil test	Dried, crushed egg shells, wood ash, lime, bone meal or crushed oyster shells can be added to increase soil pH.
Alkaline Soil (high pH)	Results of soil test	Sulphur ( <i>check your local garden store</i> ), pine needles, sawdust or wood chips can be added to alkaline soil.
Nitrogen (N) Deficiency	Yellowish leaves and reduced growth.	<b>Quick fix:</b> Apply fish emulsion or manure tea to leaves weekly.  <b>Long term:</b> Apply 2.5-5 cm of aged compost, or manure to the soil once in the spring.  Add seaweed extract to improve the soil environment for nitrogen fixing bacteria.
Phosphorus (P) Deficiency	Premature leaf fall and small leaves with a reddish-purple tint. Leaf tips may look burnt at the tips or almost black. Fruit or seed production may be reduced.	<b>Quick fixes:</b> Spray plant weekly with fish emulsion until symptoms improve.  Apply wood ash.  Add 2.5 – 5 cm of compost into the soil to boost micro-organisms.  <b>Long term:</b> Mix rock phosphate or aged manure into the soil in fall.

PROBLEM	SYMPTOM	ORGANIC SOLUTIONS*
Potassium (K) Deficiency	Symptoms similar to P deficiency including older leaves looking burnt at the edges, and turning dark green or reddish-purple. Yellowing between the leaf veins.	<b>Quick fix:</b> Spray plant weekly with fish emulsion until symptoms improve.  <b>Long term:</b> Apply seaweed, manure, granite dust or greensand to the soil in fall.  Add hardwood ash to soil anytime.
Calcium (Ca) Deficiency	Damage and die off of new growth. Curled, yellowed leaf edges. Slow growth.	Add gypsum, lime or crushed egg shells to soil.
Magnesium (Mg) Deficiency	Old leaves mottled with yellow spots. Small, woody fruit.	Sprinkle Epsom salts on the soil.
Iron (Fe) Deficiency	Yellowing between the veins of new leaves.	Add bone meal or blood meal organic amendments to soil.  Improve the soil by adding 3-4 cm of compost in the spring every year.
Manganese (Mn) Deficiency	Slow growth. Younger leaves turn pale starting between veins. Dark or dead spots on leaves.	Correct pH to 6.5 or lower.  Add millorganite or houorganite treated organic amendments.
Zinc (Zn) Deficiency	New leaves are small, yellow, or sometimes grayish. Narrow and older leaves may drop. Rosettes may form on small shoots followed by dieback.	Apply aged organic manure.  Zinc chelates are the most effective fertilizers.
Boron (B) Deficiency	Shoot tips and side shoots die back. Poor growth. Witches' broom may form. Terminal buds may die.	Apply household borax to soil. Add 1 tablespoon to 12 litres of water to treat 10 m <sup>2</sup> of soil. Apply twice 2-3 weeks apart.
Molybdenum (Mo) Deficiency	Small flowers. Older leaves turn yellow and younger leaves turn pale green. Leaves may become narrow and older leaves may drop.	Add lime to soil before sowing or planting.

*\*These products can be purchased at your local garden store. Applications depend on the size and condition of your garden; ask your garden centre associate for advice.*

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