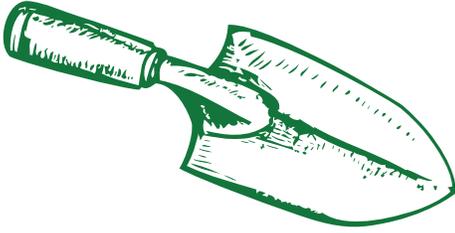




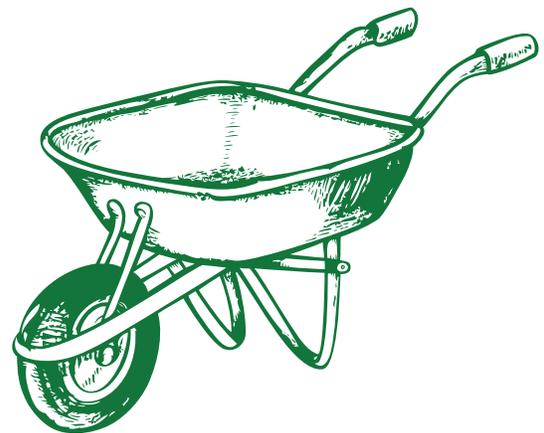
Faith & the
Common Good

Greening Sacred Spaces



10 OUTDOOR GREENING FACT SHEETS

Spring 2017

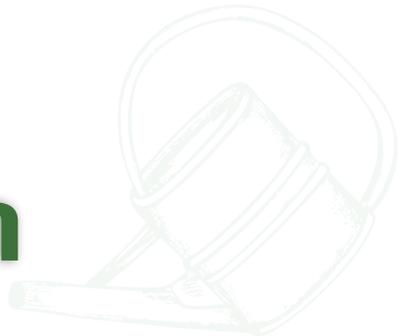


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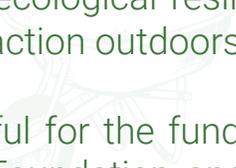
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Introduction



The following compilation of sustainable and ecological gardening fact sheets along with the Outdoor Greening Primer (found in the Appendix) provide tips, ideas and how-to's for starting and/or expanding your *Care for Creation* outdoors on your faith property. Clean and healthy water, soil, air and the local environment, not only supports ourselves and our neighbours but also the native plant species and local wildlife. Biodiversity and local ecological resilience is strengthened when we take sustainable and ecological action outdoors.



Faith & The Common Good is very grateful for the funding support for these resources from the Ottawa Community Foundation and the City of Ottawa's Community Environment Projects Grant Program. We also want to thank Sustainable Eastern Ontario for their support in reviewing and helping with editing the document.



**Faith & the
Common Good**



Greening Sacred Spaces



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Sustainable Lawns, Ground covers and Alternatives



Lawns are the ubiquitous suburban (and even urban) landscape. Lawns offer a place to play, a serene landscape and a soft ground cover to walk upon. It's a calming setting for a building, taming the wild and unruly wilderness and managing the relentless growth and inundation of unwanted plants. Many institutions including faith communities, choose lawns as they are a familiar landscaping option with well-understood maintenance requirements.

Benefits to lawn:

- A variety of grasses for different conditions (such as sun and shade).
- The ability of a turf grass to stand up to high-traffic.
- Grasses can go dormant in dry conditions and bounce back.
- Providing an area for outdoor events and activities.

If your lawn has been chosen for these purposes and it is worth the regular maintenance routine to keep your grass healthy and green, then consider the following five key things to keep it as sustainable as possible and ensure that there is minimal wasted fertilizer, water and effort.

If your lawn has been chosen for these purposes and it is worth the regular maintenance routine to keep your grass healthy and green, then consider the following five key things to keep it as sustainable as possible and ensure that there is minimal wasted fertilizer, water and effort.

Over seeding is good. Over watering or over fertilizing is not. When in doubt of what to do for your lawn, adding some seed is a good choice. This is best done in the fall but can also be done in the spring. Take advantage of wet weather and add the seed just before it rains. Include a light top dressing of compost or manure to add nutrients. Rake the seeds to spread them around and wet them down so that they don't blow away. Top dressing also encourages healthy microorganisms in your soil.

When watering, water once a week deeply, rather than every day. Lawn needs about 2.5 cms each week which can be easily measured by putting out

a tuna can and letting it fill up. This deep watering also helps prevent thatch build up. Water early in the morning (from 6:00 to 8:00 am) before it gets too hot. And water any problem areas by hand so that other areas are not over watered.

Leave grass clippings in lawn. This "grasscycling" does not create thatch – just ensure that the grass blades are less than 7.5 cms long. The clippings break down quickly and help feed the lawn so that it requires less fertilizer. This also helps put less demand on municipal yard waste collection.

When you do spread fertilizer ensure that it doesn't get washed into storm drains. Check both the forecast and also any programmed watering schedule so that fertilizer is not spread on the lawn just before a deluge of water washes it away. This will not only save you money but also will safeguard local water systems from receiving high levels of phosphorus and nitrate.

Let your lawn go dormant during droughts and heat waves. Grass has its own way to survive periods where there is a lack of water by going dormant. It can easily revive once it receives water again. Do not try and revive with water in the middle of a heat wave.

Another option to make your lawn more sustainable is to consider adding other grass seeds. Even if you have an established lawn these seeds can be mixed in to make your lawn more resilient. You can even find a good pre-mixed lawn seed for specific conditions. For example, a tougher shade grass mix will include Kentucky Blue, Rye and fine fescues. Use this in higher traffic areas or where you want to have a nice dense lawn. Or choose to mix in a specific seed alternative for difficult areas: extremely high traffic areas, shady areas or acidic soil found under conifers. Some options include:



- **Perennial Ryegrass** is a great addition to a lawn as it is disease-resistant, germinates quickly (in less than a week) and is drought tolerant. It works best mixed with other seeds as it has a tendency to clump.
- **Clover**, while considered unwanted in lawns these days, was an essential part of a lawn seed mix in the past. While not native, consider adding Clover to your grass mix as it is drought tolerant and cuts down on the need for fertilizers and extra compost.
- **Buffalo Grass** is a native species to Canada and is a great addition to sunny lawns. It is a warm season grass, which means it will green up in the spring later than other grasses and go dormant after the first frost but it can tolerate extreme heat and drought.
- **Fine Fescues** are great for the shade. The ones used for lawns do not clump. They also reseed well. If it's part of a mix in your lawn, cut the lawn a bit higher than for a typical lawn (10 – 14 cms high) so as not to injure the fescues as they grow from the meristem approximately 10 cms from the ground, and not the base.

Keep in mind that a healthy lawn requires regular weeding, reseeding, watering, mowing, thatching and aerating. If grass is being used for its aesthetic quality rather than for a specific activity, it might be worth consideration to reduce or replace grass with something that is more sustainable and requires less maintenance and water. Most ornamental (non-native) turf grass has short roots and needs a large quantity of water to stay green. If your lawn is showing some neglect with unwelcome plant species appearing, new grubbing activity by wildlife, or unhealthy bare spots this may also indicate the need to choose a different ground cover.

Replacing, Reducing Lawn

One option when considering an alternative to lawns are various groundcovers. If a native drought-tolerant ground cover is chosen, this can also help with water conservation as a xeriscaped landscape can require up to 70% less water (Bennett, 2006). Lawns have become a monoculture in our cities, providing little diversity

or alternate habitat for wildlife, and have adversely changed the local historic ecosystem. Native plants can bring back some of that diversity and help recreate some of these historic flora communities. They also require less maintenance than their ornamental counterparts.

Ground covers are not necessarily short, quickly spreading plants like Ivy. Small to medium sized plants can be chosen and while they are growing in, mulch can help reduce unwanted invading plants. Or use leaf litter, which is a natural ground cover underneath treed areas. While a “no maintenance” option is rather difficult with most softscaping with plants, native low maintenance options are available that require less watering, less weeding and less other maintenance. However, be aware that the first few years, while plants are becoming established, they will require some extra maintenance.

Some suggestions for replacing lawn:

- **Create a low maintenance lawn under groups of trees.** By using just native fine fescues, which are slow growing, drought tolerant and do not need mowing, this will create a more relaxed look under trees. The grass will provide a uniform cover and lay down almost flat by mid-summer. Create a border from rocks or mulch to make the design look more intentional. Use these in low traffic areas and rake leaves off of the grass in the fall. Have some fun and add some spring ephemerals like Mayapple, Troutlily and Trillium.
- **Replace the lawn in any difficult areas such as edges and back corners.** If you find yourself constantly fertilizing or reseeding or overwatering an area to encourage the grass to grow, consider a different option. Allow edges to grow wilder by seeding with meadow flowers and mix with certain naturalized plants. (*Watch out for invasive ones!*) Or plants some shrubs instead. (*See both the Urban Meadow and Native Trees and Shrubs Fact Sheets.*)
- **Add a low maintenance native xeriscape garden bed in a large sunny spot on your front lawn.** Make the most of the sun by designing a garden with plants that are drought and heat tolerant. Try for a less “designed” look by encouraging drifts, patches and waves. Add some rocks



in a variety of sizes, including one or two well placed sitting stones. (See both the Urban Meadow and Drought Tolerant Landscaping)

- **Create a more natural garden in a small shaded yard.** Remove unwanted grass and add shade-loving native plants including Ferns, Wild Ginger and Solomon's seal. Ferns that tolerate dry shade will allow for a lower maintenance options. To add variety, choose some Goldenrods and native grasses that can be added to a shade garden. Ferns and Goldenrod may need some work to ensure that they do not spread too much once established. A border can be created to help discourage these plants from advancing into other areas. Watch if you are planting under trees such as maples and beeches as they have shallow roots and the plants will end up competing for water. Oaks and other deep rooted trees are better for a fern garden.

There are many great native options which should make it easy to avoid ornamental – non-native species. Besides requiring more maintenance or possibly overwhelming your garden, some are very invasive if they escape into natural areas. Some key ones to avoid include: Periwinkle, Goutweed, English ivy, and Moneywort. If you do have these specific ground covers currently, consider removing and replacing with a native species and be very careful where you dispose of them. Solarizing the full area where the invasive species is, might be the best option if eradication proves difficult. See OIPC's "Grow Me Instead" (listed below) for more information on invasive species.

Native Plants to Consider as Ground Cover:

Blue Eyed Grass (10 – 40 cms high) is a lovely morning flowering iris that can tolerate dry conditions. It likes a bit of shade and looks lovely combined with Tickseed or Prairie Smoke.

Field Pussytoes (up to 30 cms high) is a member of the aster family that likes dry sun. It can form a dense mat of its small spring blooming flowers. Provides habitat for bees, moths and butterflies.

Canada Anemone (30 – 60 cms high) offers both white spring flowers and interesting seed heads and is a great ground cover with its lobed leaves.

This plant is great for both shade and full-sun.

Sweet Cicely (45 – 90 cms high) is a woodland plant that can also be planted in sunny spots. It spreads quickly so creates great ground cover but will need to be thinned annually.

Fireweed (50 cms – 200 cms high) is a plant that likes partial shade to sunny spots and tolerates dry conditions. It quickly spreads by seeds and roots and is an early colonizer in natural areas.

Some Native Shrubs that can be used as Ground Cover:

Shrubby Cinquefoil is a sun loving, drought tolerant shrub that grows up to 90 cms high. Blooms last throughout much of the summer (from June until September) and provide nectar and pollen to bees.

Creeping Juniper is a pleasantly-scented evergreen that is both salt and drought tolerant. It is a low-lying plant with a height of up to 30 cms and is great for sloped areas or areas where grass just won't grow. It may need a bit of weeding however as it spreads above growth with long branches.

Common Bearberry is a native Eastern Ontario evergreen that offers both attractive white-pink flowers and red berries, which many birds enjoy. It is also salt and drought resistant, can grow up to 30 cms high, and be situated in both full sun and part shade.

If your faith community has the space, you can also consider larger shrubs as they take up space and cover the ground. See the Native Trees & Shrubs fact sheet for more information.



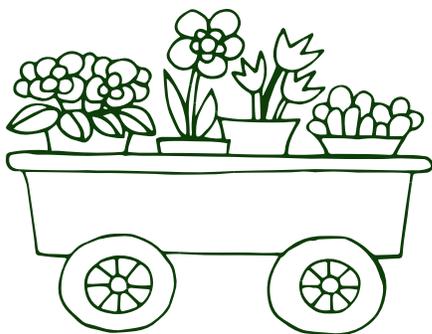


While not native some other drought tolerant and low maintenance plants to consider are:

White Clover – this offers a great alternative to lawn as it can still be mowed but requires less water and no fertilizer. It sprouts in less than two weeks and is also resistant to the chemicals in dog urine that creates brown spots in typical grasses.

Creeping Sedum – while not native to eastern Canada, Sedums can be found out west and in high alpine areas. These plants are drought resistant and can grow in poor soil. They will add texture and colour (from reds to blues to greys) to a yard and provide habitat, pollen and nectar for insects.

Thyme is another favourite drought tolerant ground cover option. There are many varieties of Thyme to choose from, for your garden. Slower growing Thymes are better for small places and to encourage around flagstones. These plants love the sun and the fragrance is an added bonus for both congregants and pollinators.



Permeable Pavement

Permeable pavement is another option to reduce grass. Choose this option for high traffic areas and/or gathering spots. It's a better option than asphalt or cement for areas that do not require winter snow removal, as it allows storm water to sink in at the source rather than runoff and burden stormwater sewers. This type of hardscaping is a low maintenance and low-energy demand option, as it doesn't require watering or mowing or much work at all, but it does not offer the cooling or dust absorbing properties of greenery. A pergola could be added to the space to provide this function or some south facing shrubs could be added if shade is needed.

This type of hardscaping does benefit from a regular sweeping so that no extra soil accumulates which may encourage unwanted plants to take over. Sand should be used to fill cracks if there is no desire to have a filler plant like thyme or moss to weave through the gaps. When watering nearby try not to spray or splash water onto the hardscaping if possible as you do not want to be encouraging any type of growth on patios, walkways and gathering spaces. If there are undesirable plants that do grow on the permeable pavement or in between pavers, it's best to get them as early as possible in the spring so that roots don't develop or seeds spread.

Links / Further Info:

Bennett, Doug - *An in-depth investigation of xeriscape as a water conservation measure*, American Water Works Association Journal, pg 82-93, 2006 publication via The Nature Conservancy

CMHC – *Water-Saving Tips for Your Lawn and Garden*:

www.cmhc-schl.gc.ca/en/co/grho/grho_008.cfm

Ontario Invasive Plant Council – *Grow Me Instead*:

www.ontarioinvasiveplants.ca/resources/grow-me-instead

Energy-efficient Landscaping



Sustainable energy-efficient landscaping takes into consideration the ways that landscaping can save energy on heating and cooling and also the ways to save energy by choosing lower emission gardening practices. Certain types of landscapes consume larger amounts of energy than are necessary, especially when we are trying to create a different type of habitat than would be there naturally. Faith communities can choose alternative landscapes or retrofit their garden beds to lower the consumption of energy and water on their properties. This has a positive effect not only for their own community, but also the neighbourhood area and even the city.

Landscaping for Energy-efficiency of your building

Larger Scale

Various landscaping greenery can provide great opportunities to lower heating and cooling bills by providing shade in the summer and wind-breaks in the winter.

Large deciduous trees provide shade for your buildings in the summer. If there is space, these can be planted along the south and west sides of the building or one can be added in the southwest corner. With the shade that the leaves provide, temperatures under the tree can lower between 10 – 20°C (ASLA).

Large evergreens can be planted as windbreaks, to help with heating in the winter. These are planted to face prevailing winds (usually from the north/northwest in Canada) and can lower heating costs up to 30 percent. Consider Cedar, Spruce and Juniper as they are fast growing and have dense foliage. But if you have specific conditions (close to roads, height restrictions, poor soils/drainage, shady areas or tight spaces) discuss your best options with your local garden centre (Arbor Day Org).

Green roofs provide cooling and insulation benefits. Installation of this feature can be either on the full roof or part of a roof, especially if there are varying slopes or an extension that provides an optimal location. The cooling and insulation benefits can save up to 15 percent in energy costs and help extend the life of the roof structure (ASLA). Green roofs also provide benefits for the community such as storm water retention, cooler ambient air temperatures, cleaner air, increased habitat and biodiversity and green sight lines for neighbours. (BCIT)

Any consideration of a green roof requires an engineering inspection to determine what weight the roof can support. Different types of planting and soil depth add different weights so a lighter weight (extensive) green roof can be an option if an intensive green roof would be too much. Even buildings with a pitched roof could be a potential site for green roofs.

Note:

When planting larger trees consider the full height to decide on species of tree. Do not plant under overhead wires or where tree would block solar panels. Place at the correct distance from the building considering the full canopy spread so that overhanging branches do not increase the need for maintenance of gutters. Also consider root growth and plant correctly. Many trees will not impact foundations but here are a few that can cause troubles: Willows, Black Alder, Black Locust, American Elm, Norway Maple, Silver Maple or any of the Poplar, Cottonwood, Aspen family.





Landscaping for Energy-efficiency of Your Building (cont.)

Smaller Scale

Vines or climbing perennials on a trellis or arbour are another simpler option to shade buildings and property. Those that shade building walls or patio areas can decrease ambient air temperatures by 5 degrees Celsius (ASLA) and lower cooling costs of shaded building. These vertical plants can also help to clean the air by filtering urban pollutants. They help reduce both nitrogen dioxide (NO₂) and particulate matter. In very dense urban areas, green walls can mitigate urban pollutants at street level better than trees as thick canopy cover can actually prevent these pollutants from dissipating (Pugh et al.,2012).

Decrease summer temperatures in specific rooms with green foliage. Shading west facing windows with smaller trees or a trellis will also help cool the interior of the building. They don't need to block the view but would rather shield rays from above.

Provide a windbreak around the foundation with dense landscaping. Planting small evergreen shrubs around the foundation creates a windbreak which adds an insulating factor to the building making it more efficient to heat. Plant these shrubs approximately half a metre away from building to allow some air circulation.

When choosing small trees and shrubs, consider native plants that will do double duty and also provide habitat and food for wildlife. When the plants are positioned between 9 m and 1 m from windows consider adding some type of bird-safety window deterrent such as decals, films or UV technology that birds can see but is virtually undetectable to humans. See F.L.A.P. website for more information.

Engery-efficient Landscape Maintenance

Maintenance equipment that is gas-powered can have a large impact on the environment if it's a two-stroke engine. For example, a two-stroke lawnmower pollutes as much as driving a new car 550 kilometres (Ontario Government). This doesn't take into account other gas power tools used for lawn and garden maintenance such as leaf blowers, trimmers and such. Choices in regards to

sustainable lawn and garden maintenance extend to the efficiency of the water and fertilizers you use also. The energy used to make water potable in cities is wasted if this water is used for lawn and garden irrigation. This waste of energy is even worse when you take into consideration that up to half of the water used outdoors is not applied in the areas needed or is lost due to evaporation. Similar issues can be found with fertilizer this is used improperly on lawns. First the energy to create it has been wasted if it is washed off and goes into storm sewers. The second impact of excess fertilizer is to our local waterways as this excess fertilizer heightens the nitrogen and phosphorus levels of streams, rivers and lakes.

Find a sustainable landscaping company. New companies are available that use energy-efficient equipment (four-stroke engines or electric or solar-powered) or even use hand-tools. This not only cuts down on air contaminants but also cuts down on noise pollution as well which is good for both the neighborhood and also the landscapers! If your faith community has its own garden equipment, consider investing in new energy-efficient ones.

Opt for more energy-efficient type landscaping. Convert part of your lawn so that it requires less mowing, trimming, fertilizing and watering. Alternative landscapes include xeriscape ground cover, an urban meadow or drought tolerant wooded area. The more you can leave it alone to recycle its own nutrients the better. Also the use of leaf mold, newspapers, branches, hugelkulture can save on water bills. Less water requirements means less water pump use and less use of city-treated water which requires energy to treat. See other fact sheets for further information: Native trees (wooded areas), Urban Meadows, Drought-Tolerant Landscaping, Lawns and ground-cover.

Allow your lawn to go dormant. This not only cuts down on mowing and trimming requirements but also water usage. Grass can survive drought periods and this can be a good choice if converting the lawn is not an option.

Ease up on garden maintenance. Leaving leaves on the ground for the winter or at least leaving leaves on the property either in large compost containers or by raking to the edges of the property



lessens the need for leaf blowers and garden compost collection from the municipality. If this isn't possible for the full property, create a "forest setting" in one part around trees and shrubs or in a large natural garden bed where leaves can be left as ground cover for the winter.

Choose a No-Till option when creating a new garden. Avoid the cost and energy-inefficiency of a garden tiller cultivator. The Lasagna Garden method easily converts lawn into new garden beds with less energy required. It also adds nutrients and mulch so less is required to add afterwards.

Other energy-efficient landscaping options include ordering one large order of soil or other items you may need, rather than a dozen or more bags, buying as locally as possible and choosing recycled material for your garden needs such as green roofs which have many recycled options to choose from.

Other Outdoor Greening Energy Efficient Options

Consider your own energy efficiency and take a page out of permaculture manuals. Identify your Zone "Zero" and keep all your more regular garden activities closer to the building. If possible, locate your altar flower garden bed, composting corner and any other daily or weekly gardening activities in this zone. Also if using a rain barrel, locate flowers that need more watering close to this area. Wilder, more natural areas are located on the outskirts of property as they don't have to be visited often.

Consider solar lighting for your gardens. Solar lights are a great options but they do need to be charged properly at the start and require some care. Charge them for 5 – 10 cycles in full direct sunlight before setting them out, avoid installing them near street lights, keep the solar panels clean and brush off snow in the winter. With cold winters the batteries need to be replaced annually.

Make your own fertilizer from compost and weeds. Scraps from the office kitchen and event hospitality can be collected to make compost. Higher nutrient food waste includes bananas, egg shells, coffee grounds and boiled water from vegetables. Add to a compost heap and include weeds that are high in nitrogen and/or phosphorus such as Chick-

weed, Lamb's Quarters, Curly Dock, Stinging Nettle, Clover, Common Burdock and Field Horsetail. Just make sure they haven't gone to seed.

Extend a community garden's growing season. Locate your gardens against southern facing brick or stone walls. Even better if you can create a teepee or encourage climbing plants to grow on trellises against the wall in this location as the stone soaks up the heat during the day and radiates it back out after the sun sets, creating a micro climate.





Links / Further Info:

Arbour Day – How to Plant a Windbreak to Conserve Energy:

www.arborday.org/trees/climatechange/windbreak.cfm

ASLA – Energy Efficient Landscapes :

www.asla.org/sustainablelandscapes/Vid_Energy.html

BCIT - Centre for Architecture Ecology – Why Green Roofs? :

www.common.s.bcit.ca/greenroof/faq/why-green-roofs-benefits

EPA – Water Sense :

www3.epa.gov/watersense/pubs/outdoor.html

Fatal Light Awareness Program Canada (FLAP) – Protect Birds At Home :

www.flap.org/residential_new.php

Green Roofs for Healthy Cities (North America) :

www.greenroofs.org/

Ontario Government – Ontario Government Mows Down Pollution:

news.ontario.ca/archive/en/2005/04/21/Ontario-Government-Mows-Down-Pollution.html

Solartown – Outdoor Solar Light Tips :

www.solartown.com/learning/solar-lights-and-garden/usage-tips-for-outdoor-solar-lights

Tree Canada – Urban Tree Legends Revealed :

www.treecanada.ca/en/resources/urban-tree-legends-revealed

Pugh et al. - Effectiveness of Green Infrastructure for Improvement of Air Quality in Urban Street Canyons, 2012 Study:

pubs.acs.org/doi/abs/10.1021/es300826w



Storm Water Management



Water seems bountiful: flowing in our streams, rivers, lakes and oceans and cyclically being refreshed and renewed. We rely on it, in its pristine condition, as without it we couldn't survive. But in current times, many urban centres need to manage for both an abundance of rainwater while at the same time finding themselves rationing water during hot dry periods. The quality of water is also a large concern, as the issue of pollution in water is on the rise, whether it is high levels of phosphates and nitrates from fertilizers, discarded medicine chemicals that get into municipal water supplies, leaks of oil and other residues from driveways and streets or toxins and plastics from litter including

Storm water management is critical not only for the efforts to store more water where it falls, rather than inundate urban streams and rivers but also due to the fast washoff of these pollutants into our aquifers, streams and lakes. Managing overflow and storing water for the dry periods will also lessen the demand on potable (treated water) that should be prioritized for drinking and having a stored supply of rain water puts less of an energy demand on municipal treatment plants. Each decision regarding water use that is made on faith properties including memorial gardens and cemeteries makes an impact both upstream and downstream. For these reasons, stormwater management techniques for your faith community and the elimination of pollutants entering the water stream should be a high *Care for Creation* priority. Here is where you can get started:

Observe and address excess water run-off. Watch to see where your water overflow goes - both into municipal stormwater drains and also excess run-off that might be too close to foundations. Determine if any runoff from impermeable surfaces can be slowed down and/or diverted from municipal streets and drains and towards gardens. Alternatively, consider if any hard surfaces can be converted to a more permeable solution and or sloped to lessen the impact on the municipal system. Ensure water from roof is directed at least three metres away from buildings so that it will not impact foundations and basements.

Consider where you can direct and store rain water on your property. Identify the best places to site rain gardens, reroute water with French drains or drystream beds or opportunities to convert hard surfaces to permeable pavement which will allow water to sink into the ground on your property.

These types of measures allow natural cycles of water to filter down into underground aquifers. Excess water can also be stored for future use using rain barrels. More details are provided below.

Ensure that pollutants are not entering the local storm water catchment:

- Do not over fertilize lawns and never add fertilizer when rain is in the forecast.
- Ensure that there are no oil leaks in parking lots that can leach into municipal waters.
- Cut back on excess salt and deicing chemicals on your property. These may remain on pavement and be washed away in spring rains. These chemicals should not be used near flower beds.
- Remind neighbours to help ensure that certain pollutants do not get washed off of local streets and into storm sewers such as: animal waste, plastic and other non-biodegradable litter, cigarette butts (that include both plastic and toxins that pollute waterways) and other chemicals.
- If a smoking area is included on your property, provide a canister for butt disposal.
- Ask for litter receptacles to be placed in highly visible locations of your neighbourhood, such as at bus stops, etc. to help eliminate litter that is tossed on the street.

Storm Water Management

Areas of the faith community property where there is high runoff can be opportunities to consider alternatives to keep stormwater on site. Some municipalities use the saying "slow it, spread

it, sink it” to remind property owners of the actions that can be undertaken.

The first opportunity is to slow the water down by decreasing impermeable hard surfaces wherever possible. Water can also be slowed down by installing green roofs where the rain is soaked into vegetation rather than quickly running off the roof and into rain gutters.

The second is to spread the water around on the property which can be done through the addition of permeable pavement such as pea gravel or flagstone, through effective use of downspouts to direct water to where it is needed or techniques that take advantage of gravity and the flow of water to do the same. Storing rain water is also consider a way of spreading water as stored water can be “spread” later on planters, gardens or lawns via hoses and hand watering. (See more about rain barrels below.)

The third is to let it sink into the ground on site. This again can be done through permeable pavement but can also be done by identifying areas where water can be encouraged to be soaked up through the creation of a rain garden or dry stream bed garden. Rain gardens are created with specific plants that are tolerant of fluctuating water levels. Do not confuse this with bog or wetland gardens as the latter need constant watering for the type of plants required.

For issues related to standing water or highly technical landscaping techniques such as green roofs, splash guards, rock dissipators, vegetated or rock-lined swales that can help with parking lot run off, consult a local engineering expert from a reputable business.

Rain barrels provide you with free water.

Rain barrels store water on site and allow ambient temperature water to nourish garden beds rather than having cooler municipal water shock plants. Rain water doesn’t have added chemicals (like fluoride) that your plants do not need and it has the added bonus of being highly oxygenated. Collecting rain water is easy with the simple installation of a rain barrel that will store water from a downspout for when you need to use

it. Drip irrigation systems can be added to your rain barrels and used with a timer if you have an electric plug nearby. Rain barrels come in various sizes depending on the need and space available. The barrels can even be lined up so that two or three can receive water from one downspout. Municipalities encourage rain barrel use as they help with local storm water management and also in water conservation as the stored water will help alleviate the demand for municipal water during drought periods. The visible rain barrels will also demonstrate your faith communities efforts towards *Care for Creation* and be a great example to others in the community.

Dry Stream bed Landscaping

A dry stream bed is a perfect landscaping option when you are trying to divert water run off and need to channel it in an attractive way. This can be used to direct water to a low area on your property (just ensure that the water table is not high in the designated catchment area) or a dry stream bed can be designed specifically as a landscape feature for overflow drainage towards the municipal stormwater system. This type of overflow drainage helps decrease the amount of water that enters the municipal stormwater system. The rock bed and green landscaping surrounding it, will provide an aesthetically pleasing design to your property.

As with all projects where you are digging in new areas: **Do not forget to call utility companies** as they will ensure that you are aware of any underground utilities that you need to avoid. They will mark your property, showing you **where NOT TO DIG**.

This landscape is intentionally designed to be dry for much of the year but will be able to handle spring run off and other occasional rain downpours that create water runoff on your property. Ensure that you work with a professional who understands water flow and stream engineering but who also has an eye for aesthetic design. Get local references. Some things to consider:

- Weed fabric is not recommended as the weave is usually too tight to allow water to percolate into the soil. Add sand or gravel before the stones for the stream bed are added to help with this percolation.



- Stones can be a variety of sizes but substantial enough to withstand the velocity of water flow. Curves in your stream bed help slow the water down and allows more of it to sink in.
- Plants should be added around the meanders (curves) of the stream to increase the visual interest of the dry stream bed. Ask for recommendations of native plants to help support local biodiversity.
- If there is enough room on your property, include some larger ponding areas that will help sink the water on your property rather than have it overflow into municipal storm-water catchment.

Rain Garden

A rain garden allows water to sink into your yard rather than having it directed off of your property. Rain gardens use plants to soak up excess water. Many native plants with fibrous roots are wonderful for filtering this type of water. Rain gardens will look like other garden beds full of perennials but these beds can tolerate large fluctuations in water and survive drought periods.

To install a rain garden, the first thing to do is site it at least three metres away from building foundations. Rain gardens should never be installed over a septic field. As with a dry streambed landscape feature, call before you dig so that you know where all underground utilities are and do not locate your rain garden over a utility. Some things to consider:

- Choose a natural low spot and/or location where water is being directed from your downspouts. Avoid areas on your property where the water table is high. Clay can be a great soil type for rain gardens. Always do a percolation test first before finalizing your location.
- A percolation test will help ensure that your rain garden is situated where water will drain properly. Water should slowly drain and sink completely into soil after 48 hours.
- Rain gardens flourish in full to partial sun. Many wet meadow native plants can handle

conditions of heavy flooding and then dry periods in full sun. These are great plants to include in your rain garden.

Rain gardens need to have a natural depression so that there is a pooling area for water to be contained within the perimeter. When you dig out the soil, the extra dirt can be used to create a berm that will hold in the water.

Rain gardens should be 60 centimeters deep. Dig out the soil and mix with sand and compost in equal parts. This mixture is then added back with consideration for the natural depression (that should be 15 to 20 centimeters high) which will ensure water is contained.

Once this is done, a beautiful flower and perennial garden bed can be planted in the new soil. Consider adding a mixture of flowers, sedges, grasses and shrubs. Foliage like grasses and sedges are great as they have deep root systems. Some grasses and sedges to consider include: Little Blue Stem, Switch Grass, Bebb's Sedge and Wild Rye. Other native plants to consider are: Cardinal Flower, Obedient Plant, Black-eyed Susan, Bee Balm, Echinacea, Cup Plant and swamp plants like Marsh Fern, Swamp Milkweed and Swamp Rose Mallow. Some native shrubs to consider are Chokeberry, Winterberry, Red Osier Dogwood and Elderberry.

Remember that for the first two years while being established, your rain garden plants will need extra care. Add extra mulch to help slow down evaporation and water weekly if there is no rain.

French Drain

French drains and vertical sinks are another helpful features that helps alleviate puddle areas. The French drain is a trench that is like a dry stream bed and a vertical sink works like a hidden pooling areas. These are typically made with gravel that allows water to flow through and sink quickly. The drain can be used in areas that slope down and away from problem areas, so that gravity can be used to move the water. This might help with terraced areas also if sloped properly to discharge areas.

As with the first two projects, call before you dig

so that you know where all underground utilities are before you locate your French drain and vertical sinks. Do not site any collection of water close to septic fields or utilities. Use a French drain to direct downspout water away from your foundation. Both the slope and velocity of the storm water will allow water to flow through the drain.

Ensure that your French drain and any vertical sinks will work by doing a percolation test. Dig a hole one metre deep in the area you want to locate your drain. Fill the hole with water and observe the drainage speed. Time how long it takes for the water level to do down a full decimeter. Ten minutes for ten centimeters is a good percolation rate. If the hole does not drain at this rate or does not drain at all, professional advice for other options is needed.

An open French drain can be easily created by identifying the slope, digging the trench to help lead water away from problem areas and filling the trench with gravel. Some permeable flagstone or other hardscaping that allows water to percolate through can be added as long as it doesn't impact the percolation rate. Ensure that as little dirt as possible gets into the drain when it is installed. The larger and wider the drain is, the longer it will last.

Any drain that is installed must be engineered so that it does not impact any neighbouring properties. Your water overflow should always be directed to municipal stormwater sewers and should not run onto any adjacent private property. Covered French drains need to be installed by a professional.

Links / Further Info:

Green Communities Canada – *Rain Community Solutions*:
www.raincommunitysolutions.ca/en/



Water Conservation and Drought-tolerant Landscaping



Municipalities depend on local aquifers and rivers to supply water for all our local needs and while there may seem to be a never-ending supply, treated, drinkable water is becoming a valued resource that needs to be conserved. Using municipal treated water for our landscaping needs is not the best use for this energy-intensive process and faith communities may want to consider lowering the water demand of their properties. Faith communities can be leaders in their local neighbourhoods and lead by example through their *Care for Creation* outdoor actions such as using rain barrels, switching to xeriscape landscapes and changing some of their maintenance practices.

Native drought tolerant landscapes are a great option to consider for many different types of landscapes. Native plants are adapted for the climatic zone and local conditions and are more resilient to changes. They will stay green and colourful longer than exotic plants that can have high water demands and/or are not adapted to long hot, dry summers. They offer a lower-maintenance option for both small and large properties to help save water, money and or staff/volunteer time.

Xeriscaped landscapes are not just rock garden with some grasses. Succulents, flowers and even some shrubs and trees are drought tolerant. These types of landscape designs can be chosen for garden beds close to a faith building, around the outskirts of a property (to eliminate the need for watering), for landscaped areas of a cemetery or other ceremonial grounds, on higher areas on the property or in large swaths where you'd like to eliminate traditional grass that requires watering and mowing.

Water Conservation 101:

- Create healthy soil that supports healthy plants that can tolerate drought by adding manure or compost. Mix it into your current gardens and top up annually.
- Use mulch in gardens to lessen evaporation (see details tips on mulch below) and switch from overhead sprinklers to drip irrigators or soaker hoses installed under the mulch. This is a healthier way to water plants and can save up to 50% of the water from evaporation and misdirected watering.

search current garden plants and relocate plants that require high soil moisture together so as not to overwater other plants. When creating new garden beds keep in mind the water needs of plants and group similar ones together.

- Newly planted flora will need extra watering but once established, encourage your foliage (perennial flowers, shrubs and trees) to develop deep roots to survive fluctuating water levels by watering slowly, deeply (so water soaks in ground) but less frequently. A general rule is to water once a week to the level of 2.5 cms.
- Many lawns are composed of ornamental turf grass rather than native species which requires much more water than native grasses. If you have turf grass, allow your lawn to go dormant in the summer (which is a natural cycle for grass).
- Water trees during droughts rather than lawns. While trees do not show signs of stress during droughts many do need extra care. Damage due to drought shows up in trees in the next year, so watering (even if they do not seem to need it) ensures their long-term survival.

There are three garden items that are beneficial for all yards but especially for smaller landscapes and gardens close to buildings. They are a water gauge to determine how much rain water has fallen and how much extra watering needs to be done, a drip irrigator on a timer which is an easy investment if you have a small property or if you want to focus on one garden bed that may need extra watering and a rain barrel which keeps water on the property and allows rain water to be used for watering rather than treated potable municipal water.



Different options for drought-tolerant landscaping can be chosen for your specific site and your garden maintenance requirements.

Add some drought-tolerant natives to current garden beds.

Choose a flower bed that you know has a few drought-tolerant plants already or a bed that has space at one end or another for three to four new native plants. Consider transplanting some water-loving plants out of certain garden beds to make some room for your new xeriscape foliage especially those that are found on a higher level where runoff is an issue. See Primer for planting tips.

Create or Replace a Garden Bed.

When locating a new garden bed, identify what soil type it is before choosing native drought-tolerant plants. There are also some hardy plants that will tolerate various soils (clays and sands) if it is difficult to determine. Some drought-tolerant plants like full sun but you will also find flora for shady areas. Get advice from your local nursery on the best plants. See Primer for planting tips.

No-Mow Grasses and Groundcovers.

Low maintenance drought-tolerant options include groundcovers and no-mow grasses. Native groundcovers will stay green longer during times of drought and don't need to be cut like traditional lawns. If choosing a no-mow native fescue grass, they are well suited for low-traffic areas and make a nice ground cover under a grouping of trees or around shrubs. They do well with some shade but can also flourish under sun. See the Sustainable Lawns, Ground covers and Alternatives Fact Sheet for other tips on groundcovers and no-mow grasses.

Urban Meadows.

Some meadow flowers are drought-tolerant and a unique garden bed or back property area could be converted to an urban meadow if there are some resources and volunteers. An oval or lima-bean shaped garden bed could be designated for meadow flowers such as Yarrow, Daisy, Goldenrod, Black-eyed Susan, Coneflowers and Asters. To ensure success, use seeds but also plant some as seedlings and include a few mature plants. Do

not use "meadow flowers in a packet" from large stores as these can have unwanted exotic plants. Know your identification for invasives that may already be in the soil such as ragweed, burdock, dog strangling vine and garlic mustard and eliminate these seedlings as they sprout up before they take a firm hold. Review the Urban Meadow Fact Sheet for more details.

Rock gardens

Rock gardens can be an attractive landscape feature, using large stones and small boulders interspersed with groundcover, flowers and some grasses. Research plants before you introduce them, as they can be hard to eliminate once the roots have taken hold between rocks. Rocks act as heat sinks, taking in the sun's rays and then radiating it back out once the sun sets which creates a micro-climate for the garden. Some plant suggestions include: Pussytoes, Prairie Smoke, Harebell, Lanceleaf Coreopsis, Moss Phlox, Common Bearberry, Ivory Sedge and Creeping Juniper. Some of these may need a soil that is on the acidic side.

Other Sacred Spaces

Memorial spaces, cemeteries and other sacred spaces such as a meditation garden can be an ideal testing ground for drought-tolerant landscaping. Not all areas need to be high-maintenance garden beds or lawns.

- Identify areas of the property that would benefit from water-saving initiatives. Work with natural features such as drier elevated areas and lower areas where water accumulates and plant appropriate native plants.
- Determine how much lawn is really necessary. Is there another more drought tolerant plant or other material that could replace it. Use pea-gravel or other permeable pavement options for gathering places instead of grass (as its water needs are high) that can stand up to high traffic or convert to a ground cover if there is no foot traffic.
- Consider pea-gravel or other inorganic permeable material for current impermeable surfaces that are creating run-off issues – such as when they are close to municipal roads.



- Consider drought-tolerant native (xeriscape) landscape features in far corners and/or higher grounds or along hilly, sloped surfaces or other difficult places to mow. There are drought-tolerant groundcovers, grasses and even shrubs.
- Add some native, perennial plants and shrubs along edges where weeds typically accumulate which will provide a natural but purpose-designed edge. Add signage to educate visitors to the benefits of native plants for sustainable gardening and pollinators.
- Identify areas that could be low maintenance areas where you could shift to native fine fescue grass to provide a more peaceful, natural looking space. These areas would require less weeding, twice a year mowing and no watering once the grasses are established. The best areas for fine fescues are low-traffic, shady areas. Add some colour and early season delight by sprinkling in spring bulbs and some other pollinator-friendly plants throughout the fescues.
- If fine fescues work for your space, consider providing a seating area that overlooks plots or has a great vista that is also situated under a tree for shade. This way visitors can spend more time visiting in a comfortable spot close to grave sites but not have to walk on the grass.
- Determine whether certain areas can renaturalize if a cut lawn is not necessary, such as in more historic areas of a burial ground. Pollinators will be attracted to these areas and there will be no watering requirements. Signage in these areas could also help educate visitors.

Mulch is a great way to save water

Mulches can be either organic or inorganic and are applied in gardens to act as a protective layer above the soil. Mulches can help retain moisture in the soil, suppress plant growth where it is unwanted, shade root zone areas and protect soil from erosion. If they are organic they can also biodegrade and add nutrients to the soil. Inorganic mulches include rock, stone and gravels and other materials. Organic mulches include chipped bark or wood, shredded leaves, coconut coir and others.

Depending on the number of garden beds on your property and your garden resources (volunteers vs landscaping company), consider creating mulches from organic materials readily available on your property including fallen leaves and grass clippings. This saves money and is much more sustainable than using packaged mulches.

Some tips when using mulch:

- Wet mulch right after spreading to encourage good micro-organisms to thrive and to give it some weight to stay in place.
- Add around five centimeters of mulch and top up when needed (yearly or every second year). If you are using mulch that doesn't break down quickly, your garden beds will need some extra compost every year to replenish nutrients.
- When mulching around new trees, do not create "mulch volcanoes" that supposedly help direct water towards the tree. Mulch should not be touching the trunk of trees (leave 13 cms or so) as trees breathe through their root flare and roots and too much moisture could encourage rot.
- If possible, add mulch around trees as far as the drip line or add a ground cover or fine fescue that won't compete for water with your trees.

Other watering tips to help with water conservation:

- Rain barrels provide free water for your landscaping needs. This stored water will help alleviate the demand for municipal water during drought periods and can be used with a timed drip irrigation systems if you have an electric plug nearby.
- Early mornings between 6:00 am – 9:00 am is the best time to water as there will be minimal evaporation from the hot sun during mid-day. Watering in the evenings keeps plants damp and cold and adds unnecessary stress.
- When possible, rethink and convert annuals, container gardens and exotic plants to native garden beds. Native perennial plants require less water, as they can develop a more exten-

sive root system over the years.

- If hand watering patches of lawn or specific garden beds, use shut-off nozzles on your hoses so that you are not wasting water walking back to turn off the water at the source.
- Ensure that hoses and watering equipment are in working order so that no water is lost through faulty equipment or leaks.

Links / Further Info:

Landscape Ontario – *Xeriscaping: Drought Resistant Gardening* :

www.landscapeontario.com/xeriscaping-drought-resistant-gardening

Ontario Invasive Plants Council – *Ontario Grow Me Instead* brochure :

Lists some drought tolerant native plants.

www.ontarioinvasiveplants.ca/wp-content/uploads/2016/07/GMI-Booklet_FINAL-FOR-WEB_May132016.pdf



Hedgerows



Hedgerows are a landscaping option, often overlooked in Canada, other than the familiar cedar hedge. The countryside hedgerow, most well-known as a British feature, could easily be replicated in our suburban or even urban areas. Hedgerows are most often considered as an alternative to a fence but as they can come in many sizes, colours and shapes, they can offer much more than an inanimate enclosure. While they do take time to grow and fill in and can take up more space (and for this reason the cedar fastigate shape is the most popular), if there is room, hedgerows can offer a variety of landscaping effects at varying price points and offer habitat and food for wildlife including birds. They can also be a symbolic *Care for Creation* addition to faith community landscapes. Hedgerows can offer spring and summer blooms, ripe berries and seeds and even winter interest, instilling hope, comfort and a sense of blessing.

Hedgerows Can Be Used for:

- Definition to a property border or corner of lawn.
- A backdrop for a deep yard and/or bare landscaping.
- A windbreak for congregants movement into building.
- A low-maintenance option for a sloped area helping with erosion.
- A linear buffer for buildings to protect from prevailing winds.
- A sound barrier for noise from high traffic areas or busy locations.
- Screening for private areas and along property edges.
- Definition of spaces for infill development.
- Creation of an outdoor “room” or intimate space.
- Design of a visual line or corridor to lead visitors to specific areas.
- A visual transition from tall features such as trees, trellis & vines, buildings to ground level gardens.

Hedgerows Offer:

- A softscape experience rather than a hardscape – the texture and green colours provide a much more soft background rather than a flat, inert hard structure of a fence.
- A transitioning backdrop with a variety of colours and textures from foliage, blooms, berries and seeds or evergreens reflecting the seasons adorned with rain, ice or snow.

- Animation from wild visitors (pollinators, birds, chipmunks) and much needed biodiversity to the stretches of hard pavement, ubiquitous lawn and building structures found in urban environments.
- A low-maintenance option for landscaping larger areas with various options of semi-private to full-privacy depending on the choice of shrub (deciduous vs evergreen).
- A low cost solution depending on the needs of the faith community. Is there a need for a fence or definition of space immediately or can the landscaping feature be allowed to develop and grow-in?

Hedgerows for Cemeteries

- Hedgerow softscaping can mark the borders of the cemetery/memorial grounds.
- A line of shrubs can create a peaceful place within the grounds for those seeking a private spot.
- A native hedgerow can offer a reminder of the circle of life and provide comfort to visitors.
- Shrubs can define a private corner that features a fountain, tribute and/or memorial planting.

Ecological Benefits

Hedgerows provide many ecological benefits for a resilient urban area and diverse ecosystem. Adding a variety of landscaping features could be considered similar to the mixture of natural habitats



found in a more rural wild settings. Hedgerows can provide needed corridors for both flora and fauna, which allow for the genetic health of species by ensuring that isolated groups can connect to each other. These “green genetic bridges” work for not only land creatures and for plant seeds to be transported further afield but also make it easier for birds to move safely in urban areas. They are a mini-ecosystem unto themselves even offering shade and cooler climates to those that can benefit.

Hedgerows can provide many of the basic needs of species including food, shelter, cover and passage from one location to another, such as movement towards a water body or to a different locations if a species is threatened due to land changes or lack of resources in one area. These corridors can also be nesting locations and draw in wildlife at different times of the year depending on what is blooming or fruiting. Flowers attract insects, which then become a draw for avian insectivores. Seeds and fruits offer nutrients to many species. Hedgerows also help protect soil from erosion and reduce loss of moisture from the ground.

If you have larger property and/or if there are green spaces close to your property, consider helping to strengthen the resilience of your local natural areas by creating a corridor.

How to Install a Hedgerow

The Outdoor Greening Primer has a very clear outline of the steps for retrofitting or installing new features to your property. It includes reviewing your goals and resources and then provides details on how to prepare the area and proper planting techniques for perennials, shrubs and trees. In terms of a hedgerow, the main considerations are:

Space/Location

- **Size/Width:** Many native shrubs need a minimum of two to three square meters or wider. Keep this in mind when determining location for planting.
- **Height:** Shrubs typically can be the same width as height or they can be taller. Keep full grown height in mind when you determine the location.

- **Location:** The amount of sun and the type of soil will help determine the best shrubs for the location that has been chosen. There are native varieties for all types of conditions.

Maintenance level

- Available space will determine whether you will have to prune height or width.
- Desired look will determine whether the hedge can look a bit messy and wild.
- Add vines to make the hedge denser but choose carefully if you want little maintenance.
- Include smaller shrubs at the base or wildflowers to help define lower space.
- Mulch can help keep area under low branches tidy to decrease need for weeding.

A hedgerow of mixed shrubs is best as it will offer diversity and provide variety throughout the growing season. If the desire is to have something more symmetrical and balanced choose three to five shrubs and repeat in a pattern. Some shrubs get extra benefit from this type of grouping as there is a need for a male and female plant for fertilization such as Winterberry, Hollies and Sweet Gale. Have a knowledgeable staff at a garden centre confirm the gender if you are purchasing this type of plant. You may also want to consider time of bloom and seed/fruit and colours/shapes to add as much visual interest throughout the year as you can. This resilient mix of plants also builds in redundancy if one shrub doesn't survive and it needs to be replaced.

Planting and Other Considerations:

Density can be created by doing one row of shrubs or two rows side by side and then planting the shrubs closer than the recommended width so that they grow into each other. This denser shrubbery can offer better cover to birds also.

Another option to add more density and diversity is to add some vines so that they grow into the hedge. Virginia Creeper, while native, can be vigorous and would need annual pruning. If less maintenance is desired consider an annual like

Wild Cucumber or other easy-going vines such as the Allegheny Vine or Groundnut if you don't want to be cutting them back all the time.

The easiest way to prepare the location is to do lasagna gardening. Full details are in the Outdoor Greening Primer but to start if there is lawn, cut the grass very short. Water it and then cover with newspaper or cardboard. This is then followed by layers of soil, compost and more newspaper. This type of layering will help discourage undesired plants and keep moisture in the ground which benefits new plantings.

Take care of your new shrubs and provide them with lots of water their first year. Even drought tolerant plants will need some extra care. The best time to water is in the mornings before the hot sun rays start to evaporate the water. The new hedgerow will need extra support until it is well established.

In urban areas, lighting in more public high traffic areas will be key to address concerns of safety and a consideration of the balance between busy corridors and quieter spaces will help create some access for wildlife also.

Detailed planting instructions for shrubs are available in the Outdoor Greening Primer.

Maintenance – Pruning

If you do decide to do pruning of your hedge row, ensure that the hedge is thicker at the base and narrower at the top so that all parts of the plant can receive sunlight. Also prune out old dying stems annually.

Avoid bird nesting season when trimming in the spring. While some shrubs benefit from being pruned right after they bloom, if there is interest in creating bird nesting habitat, choose native perennials that benefit from a later pruning in the summer or fall.



Links / Further Info:

Canadian Wildlife Federation – Hedgerows :

Information on hedge rows and recommendations on native shrubs

www.cwf-fcf.org/en/resources/DIY/outside/hedgerows.html

The Ottawa Field-Naturalists' Club – Fletcher Wildlife Gardens :

Information on hedge rows and recommendations on native shrubs

www.ofnc.ca/fletcher



Native Trees & Shrubs



Trees have strong symbolism and meaning in various sacred scriptures and faith communities. They are an enduring symbol of strength and protection reminding us in our busy lives of all that is good, steadfast and enduring. The “Tree of Life” that is rooted strongly into the nourishing soil and stretches its limbs into the vast sky provides a connection between the heavens and earth. *Care for Creation* can be demonstrated with the planting of new trees, and provides that symbolic connection with nature to the congregation.

Native trees and shrubs support a very biodiverse set of native flora and fauna. The species range from the tiny micro-organisms in the soil such as mycorrhizal fungi all the way to larger birds and mammals roosting and using trees for shelter. And there is so much in between including all those that benefit from the pollen, seeds, nuts, fruit and materials that trees and shrubs produce, and that take shelter in both the small and the large spaces that these woody species provide from cracks in bark to treetop nest locations. Trees and shrubs also provide many ecological benefits to their surroundings including water catchment, reducing soil erosion, cooling the ambient temperature, absorbing carbon dioxide, producing oxygen.

Trees and shrubs can be added to your landscape for specific reasons such as: religious significance, cultural symbolism, and/or community “lead by example” opportunities. Trees can be chosen to represent significant trees in religious scriptures, signs can be added to provide details on the ecological importance and/or a cultural heritage tree can be chosen and a public planting day event can be held with the community.

Trees and shrubs can be a simple addition to a landscape or they can form part of a larger redesign. It can be as easy as just adding one new tree for more shade or using a few shrubs as an effective landscape feature. Shrubs can provide unifying opportunities if you repeat the same shrub in different corners of the property. They can also be used as a visual transition from tall building to flower gardens along with helping to anchor a building into the landscape. Shrubs are a great option if a large tree is not possible. They provide a focal point to simple landscape and can provide a transitioning setting with the varying seasons, providing changing colours and textures throughout the year.

Some different landscaping options include:

Small Ornamental Tree/Shrub: this is a great option when there is limited space. Many native shrubs and smaller trees can provide cover and food for wildlife, and are well adapted to local conditions thus requiring less maintenance than exotic, ornamental shrubs and trees. Coniferous greenery will not require leaf collection either.

Tall Tree: a tall, narrow tree can be an option for smaller landscapes. There are some interesting narrow varieties such as columnar oaks, poplars and aspens. Or, if shade is not an issue, one large tree doesn’t require much ground level space and can reach above the garden and spread out higher up.

Group of Trees/Shrubs (3 – 5 trees): Even a small grouping of trees and shrubs can provide a resting spot for migrating birds especially in urban areas. These trees can provide suitable shelter and fuel for the next leg in their journey, such as protein from insects or native berries. If it’s a mixed group of plants, this provides more opportunities and enjoyment with different blooms, berries and visiting pollinators such as beneficial insects and birds.

Line of Shrubs (Hedgerow): A line of shrubs creates a living fence when planted close together. It can offer privacy, define an outdoor “room”, add colour, texture and variety to a simple yard, and at the same time provide much needed wildlife corridors. Please refer the Hedgerow Fact Sheet for more information.

Line of Trees: If your faith community has a larger property there may be a distribution of mature trees. If they are mature trees of the same generation, it would be beneficial to intersperse with a younger



generation. If it's a row of matching trees, add some diversity with the younger plants. Even though a row of Elm or Maple can look elegant, a mixture of two or three trees (repeated in the same pattern) can provide some of that beauty of order while also offering a diversity to wildlife and protection against disease and pests through the resiliency of a mixture of plants.

Small Orchard Wood: If a larger space is available, a small orchard or grove could be created. This would not only benefit migrating birds but also local wildlife. It also provides a cooling effect. Use shade-tolerant native plants as a ground cover. A fine fescue could also be used (so that mowing under the trees would not be required) but raking leaves in the fall would be necessary for these delicate native grasses.

Commemorative trees

If desired by the faith community, planting a commemorative tree could be an offering to congregant members. To ensure beneficial and low maintenance foliage is planted, the faith community should create a landscape plan to help guide congregants in the tree's location and a suggested list of trees. These trees can be chosen both for their appropriate features but also for their symbolism that will resonate with congregants.

If possible, compile a list of 15 – 20 commemoration trees to recommend to parishioners. Recommend native trees and highlight the characteristics of the chosen trees whether it be spring-time bloom, native maple, all season conifer, wildlife favourite, etc. Explain that the recommended trees were chosen for the specific characteristics of the site and maintenance schedule.

Faith communities may also have a practice of planting commemorative trees as part of a memorial service whether this is on the faith community property or at a burial ground. For those faith communities that also provide a burial location for their congregation, there may be an opportunity to consider a new type of natural burial option with eco-burial initiatives being explored in Ontario and British Columbia.

Veteran Trees

Consider planting new trees inter spaced between trees that are between 30 and 50 or more years old. It is very hard to replace an old veteran tree with a young newly planted one, so it is wise to ensure that there are a few generations of trees in a yard. If possible, do not retire veteran trees too early, as they have features that are highly valuable to wildlife and are ecosystems unto themselves. They support plants such as mosses, lichens and fungi, provide shelter in their hollows and splits and offer unique habitats for invertebrates that in turn support other wildlife up the food chain.

Have a tree professional examine any trees that seem to be declining or seems unbalanced. Brace limbs that need extra support and understand that as the tree ages, the crown will reduce in size. If seedlings or seeds from the veteran tree can be collected and propagated, consider an appropriate place for the next generation of trees to grow.

Choosing a Tree or Shrub

The first decision for a tree or shrub is identifying the space available and selecting the best tree or shrub that will fit into the location. Both the width and height of the full grown vegetation needs to be considered. Will overhanging branches or underground roots impact other maintenance such as parking lots or will the full height impact overhead wires or solar panels? Other considerations include:

- Proximity to buildings (shading windows or roof or providing colour in winter).
- Street and landscaping lighting – choose a location that doesn't receive direct light at night.
- Distance from walk way or parking lot or neighbours (leaves dropping and road salt conditions).
- Landscaping: how will the new shade, roots affect other plants, garden beds, etc.

Also, understanding the main intent for the new landscaping features can that help with the decision: is it for shading an area, providing food/habitat for wildlife, adding beauty and colour,



converting to more drought-tolerant plants for the landscape, helping to define an area or for growing local food (small orchard, nut & berries).

Next you want to consider the environmental conditions: soil, elevation: low spot/high spot (dry/wet), light availability and hardiness zone. The hardiness zones vary in Ontario from Zone 6b in the Windsor area to Zones 4a and 4b up in Ottawa all the way to Zones 3a & 3b further north. There are many great native tree and shrub options and your local garden centre will be able to help advise you.

Planting Tips

Before planting do a final check for the mature size of the tree or shrub and position accordingly for the full size. This is especially crucial for conifers that are wider at the bottom than they are at the top. Shrubs typically need 2 metres squared or more of space so ensure that groupings of shrubs are spaced accordingly, unless the desire is to have them grow into each other as a living fence. The space may look sparse now but filler plants can be added temporarily to fill up empty space. The plants can be transplanted (or donated) once the tree or shrub fills out.

Proper planting is key to a tree or shrubs survival. Plants take in oxygen through many surfaces. This is important to remember especially when planting trees and shrubs as roots should not be buried too deep. When digging a hole for your new plant, keep the soil close by as you will use this to refill the hole. Do not make the hole any deeper than the root ball as you do not want the plant to settle further after being planted. Your tree or shrub should be on solid ground when placed in the hole. Determine where the root flare is and keep the curve of the trunk above the ground. This also ensures that the roots are close to the surface.

Do not add amendments around the tree or below the root ball. Fill in the hole with the displaced soil, adding water, when it's half filled and then watering again when all the soil has been put back. Don't compact the soil around the new plant by using your full weight and stepping around the plant. Level and pat down the soil with your hands allowing the newly aerated soil to provide an oxygenated environment for the new plant.

Watering is also key to the tree or shrub's survival in the first year. Many plants lose a high percentage of their roots when transplanted and cannot take in enough water on their own. For the first two weeks after planting, water daily (unless there is rain) during the cooler part of the day (early morning or early evening). Ensure that the soil around the plant stays moist. Even drought tolerant plants will need extra care until they become established.

Mulch is important to help retain water but "mulch volcanoes" are not helpful to trees. (This is when the mulch is piled up like a cone around the trunk.) First the mulch is too deep for water to soak through and also this "volcano" ends up settling and covering the trunk which can lead to rot and weaken the tree's immunity. Instead of a volcano, just spread the mulch at a depth of 5 cms around the tree. Keep the first 10 – 13 cms just around the trunk, free of mulch. If you can, adding mulch under the full area of the canopy will ensure that the tree or shrub is not competing with grass for moisture.

Maintenance Tips

Watering for the first year should continue weekly. This should be a heavy soaking once a week, rather than more frequent shallow waterings. The recommendation is that for each 1 cms in diameter, a tree should receive 7.5 litres of water a week. So a tree 5 cms in diameter (15.7 cms in circumference) should receive 37.5 litres of water a week. For the first two months after planting, the tree's roots are still within the original root ball so concentrate watering close to the tree without making the trunk unnecessarily wet. After the initial two months, water under the full canopy of the tree which is called the drip line. In the second year, concentrate more of the water further out to the dripline as this will encourage the roots to grow. One thing to remember, is that watering trees during droughts is even more important than watering your lawn. Allow your lawn to go dormant and use the water for trees. Remember you will not see damage to trees until the following year.

Pruning can either be a low maintenance effort or become an annual task. Simple pruning can include clearing dead branches and some light

“training” of the tree when it is still small. Some pruning to help establish a strong leader (the main branch growing straight up from trunk) can help with the tree’s establishment but is not essential. Shrubs can be left to grow as they would in a natural setting or they can be pruned annually. With shrubs, remember that any pruning will encourage new growth where the cut was made. Once you start with pruning, you will likely need to go back annually to keep the growth in control. Don’t do any pruning during drought periods when plants are under stress.

See Outdoor Greening Primer for other gardening tips for trees and shrubs.

Links / Further Info:

Natural Burial Association (Toronto):
www.naturalburialassoc.ca/



Wildlife-friendly Gardens



The soaring flight of butterflies, the friendly hop of a toad, the lovely songs of colourful birds and the amazing aerial feats of bats, all this and more can be enjoyed in a wildlife-friendly garden. Biodiverse gardens and landscaped areas offer much needed habitat and resources to wildlife both big and small and provide the positive enjoyment from observations and encounters for visitors and congregants alike. Wildlife animates the outdoors, like nothing else can. *Care for Creation* that expands into the care for all god's creatures benefits both wildlife and humans – from healthier soil, resilient local ecosystems, diverse flora and fauna populations and cleaner water and bountiful local food systems.

An urban habitat offers many types of environments to local wildlife – ones that are not supportive and others that are richly biodiverse. Your current property could be attracting wildlife for all the wrong reasons – offering opportunities for scavenging or providing shelter where you don't want wildlife. So the first step for any property owner (whether they want to increase the biodiversity for urban wildlife or not) is to ensure that neighbourly relations with wildlife is always a positive one. This can be done by wildproofing structures and landscapes. If this is done first, any enhancements you make on your property to create a wildlife-friendly yard, will ensure that new encounters will be positive ones.

Five easy things to do:

- Do a quick survey of your property to identify what you already have in terms of natives plants, shrubs, trees and determine the proximity to neighbouring green spaces (wetland, woodlot, scrub area).
- Check the full property to ensure that animals can't get into attics, create damage, etc. and consider safety for wildlife by making changes wherever possible (see below for specific ideas).
- Review maintenance practices to lessen your impact on wildlife and to also help increase the survival rate of local pollinators and other small creatures (see below for specific ideas).
- Purchase plants (including annuals) from a neonicotinoid-free nursery and/or replace annuals with native flowers as annuals require more maintenance and water.

- Consider creating a messy area for wildlife such as a brush pile in a quiet, sheltered, low traffic area and let parishioners know about the benefits of such a project through bulletins or with a sign.

Five bigger steps to help wildlife:

After the survey of your property, consider changing some plants or adding some perennials to provide food and/or habitat for insects, birds, mammals and more into existing garden beds.

- Make changes to maintenance practices to lessen the use of chemicals such as pesticides and fertilizers. See "General Enhancements".
- Add a new garden bed and/or transform a part of your property if you have a large lawn to provide for the needs of wildlife on a larger scale.
- Provide built habitat for wildlife such as a bee condo, bat house, toad house, etc. This type of habitat may require regular maintenance so consider resources before you take this step.
- Celebrate and share the work that you are doing to help inspire others. Add a "Wildlife-friendly" sign in your garden and organize a worship or other event outdoors.

General Wildproofing

Buildings/Property

- Ensure buildings are secure and sealed and that there are no small entrances for insects, small mammals or other creatures to attics, basements, walls. If there are no experts from the congregation or other volunteers, consider hiring a specialist.



- If animals are discovered using your building, while doing your property survey, use a humane wildlife removal service. Have them advise you in terms of next steps with consideration towards the season/time of year.
- If you find wildlife on your property that is not creating too much damage (such as under a shed or a step) and that is not in a high-traffic area, consider leaving the wildlife undisturbed until they move on. Many only seek shelter for temporary stays. Call a Local Wildlife Expert such as Ottawa Carleton Wildlife Centre to get the best advice.
- Basement window wells can be dangerous traps for amphibians and reptiles. If this is a problem, consider creating escape routes by offering wildlife something to use to climb out of wells.
- Windows can be dangerous for birds, especially if foliage is found close by – either indoor plants or outdoor shrubs. If bird strikes are happening, consider different options to help birds see the glass. (<http://www.flap.org>)
- If your faith building is located in a dense urban area, review your policies in terms of interior lighting and/or flood lights used at night especially during spring and fall migrations and/or on foggy and rainy nights. Cities in migration zones can be dangerous obstacles for disoriented birds. (<http://www.flap.org/lights.php>)

Property/Lawns

- To help discourage wildlife from using buildings, consider offering habitat (such as a batbox or brushpile) on the property away from all buildings.
- If smaller mammals are spotted in your gardens, get the best advice before moving. For example, baby rabbits are left on their own during the day – they do not need rescuing. Similarly, one-year old raccoons can be spotted during the day, as they are avoiding larger, territorial, nocturnal raccoons. If animals are not aggressive, it may be best to leave them

be, as they will most likely move on. Call a local wildlife expert such as Ottawa-Carleton Wildlife Centre to get the best advice.

- Frogs, snakes, baby rabbits and even some nests could end up being in the path of your lawnmower. To avoid injuries to wildlife, take a general sweep of yard first before you start mowing, to see if any wildlife is found hidden in the grass.

Waste Disposal

- Ensure that garbage is very secure, including both large square metal bins and smaller trash containers. These are huge attractants to wildlife and they can make a mess and/or get trapped inside. If you use only smaller containers for garbage and recycling, consider putting these out on the morning of collection.
- Wash food containers carefully before disposing and/or recycling. These items can be a strong attractant and can prove to be dangerous to mammals if they get their heads stuck inside containers. Cut up all plastic six pack rings so that these items are not dangerous to animals either. Ban plastic straws from being used by your congregation as these can be dangerous to wildlife also.

General Enhancements:

Wildlife needs diversity of plants and terrain which includes smaller logs, branches, stones, etc. to provide habitat. This is especially crucial for smaller wild things: small birds and bats, butterflies, moths, toads and others. Native plants can be added to current landscaping in targeted areas and introduced more gradually throughout the property by using a long term plan. Consider going as organic as possible and relax some garden maintenance in areas that are not highly visible to the public. Here are some specific steps you can take:

- Allow leaf litter to remain in garden beds through the fall/winter, so as to provide a thermal barrier on the ground and allow insects (or their eggs) to overwinter on and under leaves.
- Consider creating more natural areas under trees (out to the dripline) to provide some



undisturbed habitat for insects and eliminate excess mowing.

- Keep perennials, including grasses, up all winter and cut down in the spring so as to provide seeds for birds and allow insect larvae including those in galls to survive the winter.
- Create a messy pile with twigs/sticks, places for puddles and some patches of exposed dirt to provide a variety of places for different wildlife including solitary bees.
- Mix it up as much as possible, as a diverse garden of native plants will attract many beneficial insects and therefore lessen the need for pesticides.
- Start shifting to more organic practices for pest control and for adding amendments to soil which will benefit the health of the local environment and local wildlife. The Canadian Organic Growers have many resources to help with this transition
- If you are short on space, consider native vines such as Wild Cucumber, Groundnut or Allegheny Vine. Vines provide habitat and nutrients for insects, birds and other native wildlife.

Memorial (Burial) Grounds And Cemeteries

Larger green properties, such as cemeteries and memorial grounds, appeal to wildlife due to their quieter setting and natural design. For the people who visit these spaces, the added animation of wildlife can be a symbol of renewal and the circle of life, which may provide some extra comfort, connection, and respite for visitors. If wildlife is not doing damage, this animation can be considered a benefit for property owners and visitors. Various wildlife, including smaller mammals such as rabbits, skunks, bats, various herptiles and many birds and insects find habitat, shelter and resources within these types of sacred spaces. These locations are peaceful green islands in an otherwise busy urban environment for these creatures.

For this reason, many churchyards and larger religious grounds have become valued by conservationists. Some cemeteries in the United Kingdom are partnering with naturalists to provide urban nature programming. Some in the United States are exploring opportunities to renaturalize parts of their grounds to lessen maintenance needs. The National Cemetery of Canada has a small conservation area with a marsh that is highly valued by visitors, residents and even schoolchildren. Both Canadian and American cemeteries are being used as locations for bat studies. Some special and

Become Certified And Inspire Others

If you are creating habitat for wildlife with new native perennials and other wildlife needs, consider leading by example and demonstrating how easy it is to *care for Creation*. Contact one of the nature organizations below to have your wildlife garden registered and/or certified. By registering your gardens, you can help inspire and encourage others to do the same. The national programs offer signage that can be displayed outdoors, to let others know about your efforts and the need for local wildlife habitat.

- **Canadian Wildlife Federation** - "*Backyard Habitat*" (Canada)
<http://cwf-fcf.org/en/explore-our-work/connecting-with-nature/in-the-garden/get-certified>
- **Monarch Waystation Program** (North America)
<http://www.monarchwatch.org/waystations/certify.html>
- **North American Butterfly Association** – *Certified Butterfly Garden* (North America)
<http://www.nababutterfly.com/butterfly-garden-certification-program/>
- **Pollinator Protection Pledge** (North America)
<http://www.xerces.org/pollinatorprotectionpledge/>



unique flora (such as certain types of lichens) have also been found to be more abundant in some of these spaces. If your faith community owns these types of grounds, consider some of the gardening practices suggested in this fact sheet to allow for a richer and more biodiverse space.

Insects

Colourful winged pollinators and bright, busy bees and lady bugs may be among the more popular insects to attract to gardens but there are a multitude of insects of varying sizes, shapes and even mobility that all provide diversity and make up a healthy ecosystem and foodchain. Beyond creating a messy area and/or letting up on fall maintenance, other practices that support insects, which also then support insectavores (birds and small mammals, including bats), include:

- Choosing a large assortment of native plants with different size blooms to attract diverse insects including both larvae and adult insects.
- Supporting the growth and health of lichens, mosses and other small plants that are crucial to the smaller minuscule ecosystem and thus smaller insects.
- If you do have to remove plant mass in the fall, consider leaving at least a third and rotating that section yearly to provide some winter habitat for insects.

Herptiles

Along with messy spaces, brush piles and logs, there are other things that can be done to provide habitat for amphibians and reptiles. Consider providing habitat for herptiles if your property is within two kilometers of potential breeding sites (ponds, wetlands and wet forests with vernal pools) especially if there are safe corridors for spring movement. There are diverse needs among herptiles – some like dryer areas, some seek out damp spots so consider this as you make changes.

A rock garden of varying sizes of rocks can provide some of those dry, warm areas for various creatures and insects and the stone acts as a heat sink, soaking up heat during the day and releasing it at night, which creates a special micro-climate for plants and animals. Compost is another type

of “habitat” that can attract herptiles including snakes, who may lay eggs in compost. To ensure the safety of any eggs, turn your compost carefully and/or avoid turning in late spring (May-June).

For other creatures, such as toads that seek shelter in cooler, damp spaces, a location that is shady or only receives morning sun is ideal. Large, leafy foliage close to the ground that provides cover and offers more than one escape route is the best. Check under Strawberries, Rhubarb or Mullein to see if there are any favourite patches.

Birds

Cities harbour one fifth of the world’s bird species, so when considering wildlife, birds should be included (Aronson et al, 2014). Please refer to the other fact sheet on Bird-Friendly Gardening for detailed advice on how to provide birds with natural urban habitat. Below are a couple of general things to keep in mind:

- Choose a few early blooming flowers and shrubs to attract insects into your property to help fuel returning migrant insectavore birds.
- Do an inventory of your windows and ensure that there is nothing that would attract birds towards windows (such as indoor plants located by windows).
- If you have an older building, identify whether it has an active chimney swift roost and if it is contact Bird Study Canada to learn more about protecting this endangered species.

Also, consider letting a garden area in the back or edge along a border, to grow a bit more wild. Some unwanted plants, even if not indigenous, are beneficial to native insects and in turn help out our feathered friends. (See Primer for a list of beneficial non-native plants.) Do eliminate rag weed (which can be found with goldenrod) however.

Small mammals – including bats

Small mammals need no introduction: chipmunks, squirrels, etc. and they can be quite a frustration if they are digging up intentional plantings (bulbs, etc). Consider offering them other food resources from a native shrub or tree. Choose trees and shrubs that offer acorns (oaks), nuts (butternut, hickory), cones (pine), seeds and

berries. If these are newly planted, they will need extra care and some protection for the first couple of years. Please refer to the Native Trees and Shrubs fact sheet.

If there is interest in providing bat habitat and there is room for a tree placed away from high-traffic areas, consider a Shagbark Hickory as these trees provide a natural roost site for a variety of Ontario bats. These flying mammals can be a benefit to your landscape as they eat a large amount of flying

insects nightly. Or if there is interest, add a bat house to your property.



Links / Further Info:

Canadian Wildlife Federation – *How to Garden with Wildlife in Mind*

www.cwf-fcf.org/en/explore-our-work/connecting-with-nature/in-the-garden/how-to-garden-for-wildlife

The Ottawa Field-Naturalists' Club – *Fletcher Wildlife Gardens* :

Tips for wildlife friendly gardens and native plant suggestions.

www.ofnc.ca/fletcher

F.L.A.P. – Fatal Light Awareness Program Canada

Tips on how to make your place of worship bird-friendly.

www.flap.org

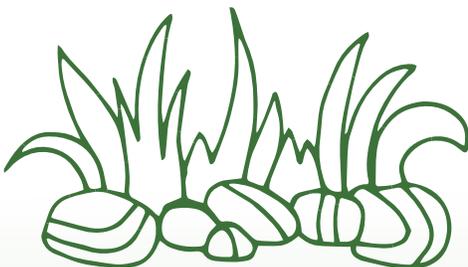
Ottawa-Carleton Wildlife Centre

Information about how to live with wildlife

www.wildlifeinfo.ca

Aronson et al., *A global analysis of the impacts of urbanization on bird and plant diversity reveals key anthropogenic drivers*, 2014.

<http://rspb.royalsocietypublishing.org/content/281/1780/20133330>



Bird-friendly Gardens



Having a bird-friendly garden will give great pleasure to both faith community members and visitors alike. It can also benefit the larger neighbourhood. Birds provide colour and animation to a garden, introduce melody and beauty and also help keep insect populations in check. They support healthy flora ecology by helping move seeds around and aid in pollinating flowers. There are many social and ecological benefits to birds, and they help bridge the connection to nature that enriches so many lives.

Wildlife including birds is supported in three ways: food, shelter, and water. The level that these needs are provided for will determine the appeal of your landscape to birds, and therefore how many birds you will attract. Cities harbour approximately twenty percent of the world's birds and support even more during migrating periods (Aronson et al., 2014). Birds on their northerly and southerly routes seek out rest stops and locations to "refuel" and while any green vegetation can suffice, those that offer protective cover, taller trees or native shrubs with berries are the most desirable. Even if these rest stops are only used for a few hours twice a year, they are vital to these migrants and are worth considering for your landscape.

How to Start

First determine what the congregation can manage depending on funding, resources and volunteers. The Outdoor Greening primer provides a detailed guide of what to consider when starting a new gardening project. Identify specific goals for your bird-friendly garden such as transforming one garden bed to grow flowers that provide seeds for birds or adding a small grouping of shrubs and trees to help migrating birds, or simply start by reviewing maintenance and operating tasks to see if they can be changed to better support our feathered friends. Some of these goals may help other wildlife also and/or enable your garden to become more sustainable.

When the desire is to support wildlife, consider quieter areas of the property so as not to unnecessarily disturb the wildlife that visits your property. Choose a garden bed that isn't too close to regular foot traffic or busy roads and/or locate new habitat in a quieter area that is in full view from the inside of the faith building. This allows congregants the opportunity to view and enjoy

without disturbing the birds. If the interest is to create a prayer/meditation spot within the wildlife area, provide seating that offers a lovely view in a spot that won't disturb the birds too much.

What follows are three levels of gardens that will support birds depending on the size of your property and the resources and volunteers that will support the project.

Light Level

Easy up on maintenance:

Keep leaves on the ground in at least one area of your landscape. This can be done for a garden bed at the back or at the edges of lawn especially if you have trees on the perimeter of your property. Leaves provide shelter for insects and places to overwinter therefore providing food for ground-foraging birds such as thrushes. The leaves should be left for the autumn and winter season and cleaned up in the spring.

Don't cut flower blooms or grasses in the fall.

Seed flowers (such as Coneflower, Beebalm, Black-eyed Susan, Wild senna, Coreopsis) offer much needed nourishment for birds in the winter. If it's not possible to keep garden beds unmaintained in your front beds, consider having a flower bed in the back that will provide seeds in the winter.

Take an Inventory of Your Gardens and Property:

Determine what native perennials you have that attract birds. They can be flowers that have desirable seedheads like Sunflowers (or others listed above) or they can be red and orange flowers that attract hummingbirds (Beebalm, Cardinal flower.)



Trees and shrubs are also a food source for birds. Determine what native shrubs and trees you have currently that provide seeds and/or berries. When these plants flower they can also provide nutrients for certain birds by attracting insects that are desirable to insectivores.

Places to nest, take shelter or hide are also beneficial to birds. Certain trees and shrubs can also provide shelter, nesting locations and quick cover. Evergreens such as Cedars, Pines and Spruces can offer shelter and native shrubs with thorns offer a safe place for small birds to get away from predators.

Support what you already have on your property:

Trees and shrubs do benefit from a bit of extra nutrients from time to time. Consider providing a light layer of compost once a year in the early spring or late fall. Use caution when you fertilize grass within the crown of the tree – some flowering shrubs and small trees don't do well with lawn fertilizer.

Protect the root area from compaction and damage. Do not allow heavy equipment to be stored within the crown area and watch when excavating near trees so as not to damage roots.

Trees may need watering during droughts. Although they don't show it, trees can be heavily affected during long period droughts. Their stress will only be seen in the next growing season. To avoid this, consider watering them during droughts - especially evergreens. Do some research on what is on the property to determine which trees need the extra water. Refer to Native Trees and Shrubs Fact Sheet for more information.

Plant Perennials or one Natives Shrub:

Add a few perennials to your current garden beds. All of the flowering perennials listed above like full sun. Mix them in with your current flowers and allow seedheads to remain for the birds to find and enjoy.

Find room for a native shrub. If you have room (approximately 1.5 m or 2 m squared) consider a native shrub that offers berries (Dogwood,

Nannyberry) or seeds (Witch Hazel, Ninebark). It can also do double duty and provide safe shelter if it has thorns also (wild rose, wild raspberry, hawthorns). There are suitable native shrubs for both sun and shade and some that are more compact if desired.

Keep it low-maintenance and don't prune. If you are planting one for the wildlife, plant it in a less visible area where regular maintenance would not be required. This will also ensure that the location is quieter and more appealing to birds.

Consider offering nest building material:

This is a fun and simple *Care for Creation* activity for children. Cut out two sides of a small cream carton and stuff in material for birds including: straw, animal fur, cotton balls and scrap wool yarn (ensure strands are short, up to 5 cms at most). Do not offer any plastic, nylon or synthetic materials including dryer lint. Dryer lint is NOT a good nesting material as it has synthetic chemicals and absorbs moisture which can easily chill baby birds without feathers.

Medium Level

If you have a larger property, memorial garden or burial ground and/or more resources and time to create a bird-friendly garden consider these steps:

Avoid chemicals when buying your annuals and perennials. Some garden centres have been found to sell flowering plants that contain neonicotinoids. Consider buying organic flowers to guarantee pesticide-free vegetation. This harms not only bees but birds also. In Ottawa you can go to Fletcher Wildlife Gardens Annual plant sale, Greta's Organic Gardens and Make It Green Garden Centre.

Think about adding vines if the only space available is vertical. Native vines can easily be added to the back of a garden bed (just add some wire or a make-shift string trellis) or at the base of a shrub (which they can climb). Choose an annual like Wild Cucumber or Allegheny Vine or other non-aggressive vine such as the Groundnut if you don't want to be cutting it back all the time.

Add a new garden bed or a grouping of shrubs if you do have space. Many flowers that offer birds



seeds and nectar are sunshine loving plants so pick a sunny location and dig a new bed. See the Outdoor Greening Primer for details. Add a small grouping of shrubs (3, 5 or more) that offer a variety of food and shelter for birds and that bloom at various times.

Add a tree or two depending on your available space. Remember to consider the size of the full grown tree when choosing a sapling. Newly planted trees need extra support for the first few years including extra nutrients and water. More details in the Trees and Shrubs Fact Sheet.

Offer fabricated bird boxes for nesting and shelter. These can be built by volunteers using online how-to-guides or can be bought from local organizations (such as Innis Point Bird Observatory, Ottawa Stewardship Council) or stores. Consider your local habitat and what birds would be attracted and where placement would be. Nest boxes need to be cleaned out annually.

Consider offering the endangered Ontario Chimney Swift a nesting site. Many older institutional buildings built before 1950, may have a suitable chimney for this bird to nest in. These birds provide a benefit to cities by eating many airborne insects. Swifts and building owners can coexist as there is no damage to chimneys, little noise, no mess and the nests are not a fire hazard. Do not cap, wire over or line your chimney and do all chimney maintenance between October 15th and April 15th. And check for swifts before you use chimney/furnace – due to any cold spells after April 15th!

Deep Level

Consider these actions if you have actively engaged volunteers who want to support birds weekly and/or a large area that could be transformed which could be bequeathed land or a quieter spot in a cemetery.

Offer water and/or bird seed to attract birds. Offering organic (non-pesticide) seed is the best (but does cost more). Bird feeders and bird baths need to be cleaned regularly. These should be placed very close to windows (less than 1 metre) or at least 9 metres away from any windows to prevent birds from striking windows at a high

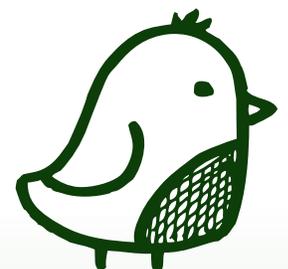
speed.

Create a pond or water feature that birds can visit. A pond with a recirculating pump is the best as this will keep water fresh and the sound of moving water attracts birds. Other water features to consider are decorative fountains that can be added to a garden or a small container water garden which is easy-to-make with a small pump. Keep in mind that maintenance and cleaning are required.

Take advantage of a flat or low sloped roof. Flat or low-sloped roofs can be transformed into green roofs either as an extensive or intensive design and increase habitat for insects and birds. Extensive ones are less weight (including consideration of saturated weight) and are typically designed not be walked on, whereas intensive green roofs support more complex garden systems. The first step is to have an engineer come to determine what load-bearing capacity your roof has before anything is added.

Transform a part of the property into a meadow. Native prairie habitat is an uncommon habitat in urban settings and also becoming scarce in natural settings also. If your property is large enough consider converting part of it to an urban meadow. It can be started by allowing an area to renaturalize with some native additions or a more deliberate effort can be done with a multi-year plan and lots of weeding. See the Urban Meadow fact sheet for more details.

Make your building and windows bird friendly. If you do have windows that have been a danger to birds, consider keeping drapes closed, moving any indoor plants away from window and/or adding bird some type of bird deterrent such as decals, films or UV technology that birds can see but is virtually undetectable to humans.



Links / Further Info:

BCIT – Centre for Architecture Ecology :
commons.bcit.ca/greenroof/faq/why-green-roofs-benefits

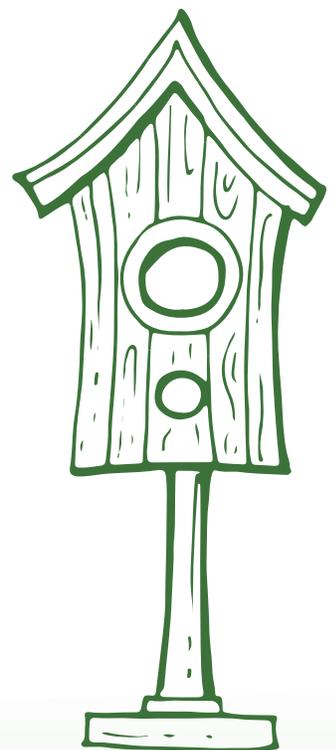
Fatal Light Awareness Program Canada (FLAP) :
www.flap.org/residential_new.php

Native Plant Crossroads – Garden for Birds :
dev.nature.ca/plnt/res/lft_sgb_e.cfm

Ontario Nature – Chimney Swifts :
www.onnaturemagazine.com/chimney-swift.html

Wild Ones – Stopover Ecology :
www.wildones.org/download/stopover/stopover.html

A global analysis of the impacts of urbanization on bird and plant diversity reveals key anthropogenic drivers. Co-author Dr Nick Williams, from Melbourne University
rspb.royalsocietypublishing.org/content/281/1780/20133330



Urban Meadow Gardens



Native meadows and fields (glade, prairies) are one of the lesser-valued type of habitat within a cityscape. Native meadows and prairies have been replaced by agriculture, farmland and abandoned fields that fill up with non-native species. These types of “grassland” do not provide the rich habitat that supports a healthy, resilient, biodiverse ecosystem. Woodlots and wetlands tend to be prioritized when park and conservation lands are identified, but a mixture of habitats is valuable as it supports a more diverse set of flora and fauna species.

A biodiverse ecosystem supports an abundance of wildlife, so it would be beneficial to increase this type of landscape option in urban areas. Large properties that are predominantly lawn can be transformed into urban meadows. Smaller plots of land can also be transformed. If these small plots can be part of a linked “pollinator corridor” or close to a greenspace, the benefit will be compounded. Faith community memorial gardens and cemeteries are also a potential location for some of these swaths of meadows. For smaller properties an urban meadow garden bed could be a consideration. This transformation of a portion of a landscape back to a more natural ecosystem that supports a variety of species is a wonderful way to demonstrate *Care for Creation*.

If you are starting an urban meadow garden, purchase as locally as possible to ensure that the seeds and plants are native and hardy for the local conditions and zone. Some options for purchase can be local conservation groups, local gardening clubs and local nurseries. There are three options to consider if you want to introduce an urban meadow to your property:

Urban Meadow Garden Bed

This is a more landscaped, deliberate option that would require weeding and nutrient cycling similar to other garden beds. It is an option for a smaller urban property and/or if the unique maintenance of a full urban meadow is not desired. A meadow flower bed would be easy to add to a garden landscape and include in the normal garden maintenance routine.

Choose a sunny area or a current garden bed that receives at least six to eight hours of sunlight a day during most of the growing season. You can retrofit a current bed by adding native meadow

flowers and grasses, just ensure to choose a garden bed that doesn’t require a lot of watering. There are some wetland meadow flowers but they will require more effort and care. While all new plants require some extra maintenance during the first year, once they are established, drought tolerant native plants need little to be sustained. If you are establishing a new garden bed – follow the information in the primer on how to create a new garden bed.

With a small garden bed (whether a new one or an existing one), choose plants and plugs (small seedlings) over the option of scattering seeds. This will ensure that the new native plants can become well established and other non-desirable plants are fewer. The plants can also be positioned in specific locations in the bed to help create the best design rather than a random scattering of seeds. Add grasses to the garden bed to help mimic the typical environment of a meadow where the mixture is approximately seventy percent wildflowers and thirty percent grasses.

There are a variety of grasses and flowers that can handle different conditions including soil type, moisture levels and amount of light. Some are more adaptable and these varieties would be a good choice when starting a new garden bed. Below are some examples of native Ontario wild flowers that can handle dry spells that are a great choice for a new or transformed sunny meadow bed:

- **Lower front row:** Prairie Smoke (dry, all soils), Wild Strawberry (dry, all soils), Wild Bergamot (dry, all soils).
- **Middle row:** Asters (dry, not sandy), Black-eyed Susan (dry, all soils), Yarrow (dry, not



clay), Milkweed (dry, all soils), Beard-tongue (dry, all soils), Pearly Everlasting (dry, all soils).

- **Tall back row:** Showy-Tick Trefoil (mesic, all soils), Sneezeweed (dry, all soils) Common Evening Primrose (dry, all soils) Blue Vervain (mesic, all soils)

Add grasses in the middle and back such as Canada Wild Rye, Switch Grass, Little Bluestem or Indian Grass.

Wildflower Garden Tips:

- Consider allowing the garden to ebb and flow naturally, where some years certain plants will do better than others.
- Leave wildflower seed heads up in the garden over the winter for birds, and only cut back in spring.
- Do not add nitrogen fertilizers as meadow plants can compete against undesirable plants better when soil is low in nitrogen.

Small Urban Meadow

This is a less landscaped option that would require less weeding and nutrient cycling, especially after the meadow is well established. Establishment of a meadow takes two to three years, and will require some commitment during this time. After this, however, maintenance is simple mowing once a year. This type of urban meadow could be added to the edges of a property, behind the main building and/or in an area that has minimal visits from the public. If the desire is to have an urban meadow as a visible demonstration of Caring for Creation, public support should be gathered and local municipal by-laws need to be considered. Providing signs that share the intention of the project and educate the public can also increase appreciation for this natural landscaping initiative.

When locating the urban meadow consider a spot that can be easily seen from within the faith community building and from key locations outdoors so that the landscape can be enjoyed year round. Allow as many people as possible to benefit from this serene, uplifting landscape by offering a shaded seating area that provides a great vista

of the urban meadow, and add some focal points whether they are a path through the meadow, a tree by the side of the meadow or a monument located in the middle. This type of landscaping could also be considered for parking lot strips.

Meadows have compact, dense vegetation, and should be viewed as one large entity rather than putting emphasis on the individual plants. Instead of mulch let the grasses be the base layer. The urban meadow will display a variety of colours throughout the season as different wildflowers come into bloom. Provide the opportunity for the plants to layer throughout the landscape and/or show up as drifts that create patterns and interest. With little maintenance, the plants will ebb and flow and regenerate on their own.

There are a variety of options to start a new garden bed including the lasagna garden method, double spading, and rototilling that can be chosen depending on time and resources. Here are two simple options to start a small urban meadow in an area that was once lawn:

- **Remove turf and the first ten centimeters of soil.** Allow current (undesirable) seeds that are in the ground to germinate and grow for two weeks and then remove the new seedlings. At this point your plot is ready for new plants.
- **Cover area with clear plastic sheets.** This solarizing method works best in the warmer months. Cut the grass as short as possible, anchor down the sheets and leave them on until you can see that the grass is dead. This usually takes about 3 – 5 weeks depending on the time of year. Once you take off the plastic, disturb the soil as little as possible before planting. This can also be done in the fall for a spring planting. Reintroduce healthy beneficial microbes by adding a thin layer of compost or an “organic tea” compost before you plant (but do not use any soils or manure that may have seed).

Planting Your Meadow:

Seed in the meadow grasses such as Little Blue Stem and Sideoats Gramma, and add flower plugs in groupings or sweeping lines. Follow directions



from garden nurseries for spacing of individual plants. Leave edges to naturalize.

Consider some shrubs around the side, especially the north and east so as to provide some cover, shelter, and windbreak for wildlife. Choose native shrubs that do not spread aggressively through runners or roots to keep maintenance at a minimum.

Adding simple fencing around the area (whether it's a simple wire edge border low to the ground or basic posts with a rope marking off the boundaries) can help demonstrate that the area is an intentional landscape.

Large Urban/Suburban Meadow

A large urban meadow is an option for the more suburban faith community that is located on a large property or for memorial gardens and burial grounds. After being established, a meadow requires very little maintenance other than one or two mowings per year. Compliance with by-laws need to be researched. Since enforcement of by-laws happens more regularly when there is a concern raised by neighbours, sharing the intentions and purpose of a native meadow garden with neighbours and getting community support will allow the meadow to flourish and be appreciated.

The more intentional the meadow looks, the more it will be valued. Create a meandering pathway around one corner or down a side. Limit the paths to just a few, so as not to breakup the ecosystem unnecessarily. Add stepping stones, or a lookout/seating area that provides a great vista of the meadow so that parishioners and visitors can enjoy the serene picturesque setting. Ensure that there are some opportunities to enjoy the meadow from inside the building also so that the congregation has a front row seat for the seasonal colours and active wildlife including butterflies, birds, fireflies, etc. These types of meadows are highly valued landscapes for grassland birds such as Bobolinks, Goldfinches and some Sparrows. Meadows should be cut in the late fall so as not to interfere with possible nesting birds.

To establish this type of landscape, options include rototilling, solarizing or using a soluble

chemical to remove existing vegetation. The effort to convert a larger space must be weighed against the resources of time and funding. Two less invasive methods that require minimal prep time but more maintenance for the first few years follow. This could be an option when resources are not available for a quick conversion.

Plug and seed conversion. Start in spring or fall with cutting grass very short and remove grass cuttings. Break up ground randomly to create gaps. Fill these areas immediately with plugs or donated transplants. With this method seeding heavily with grasses and meadow flowers in both spring and fall are recommended for the first few years while natives are being established. Always cut and rake before a new seeding and keep seeds wet to germinate. Weeding would be needed to control unwanted plants. Do not let them reestablish and get above 30 centimeters.

Native grass conversion. Slowly transform grass by reseeded with fine fescues and other native grasses. To prepare the site, cut and rake lawn to eliminate thatch, and add fescue seed. This again can be done in the spring or fall. As the native grass conversion takes over, allow portion of the lawn to renaturalize with some wildflowers, but remove unwanted and aggressive plants before they are firmly established. Add new native wildflower plugs in the third year to continue the conversion to a full perennial wildflower meadow.

Maintenance for Larger Urban Meadows:

- Keep in mind that a meadow conversion is a multi-year project. For the first two or three years, there will be weeding needed. Discourage Goldenrod, Queen Anne's lace and Thistle to grow in these years, as they can be aggressive and take over. Once native perennial grasses and flowers have been well established a few of these plants can be welcomed.
- If some specific design is desired for the meadow, thin plants that may be crowding out other plants. See if waves and patches can be encouraged. If less maintenance is desired, allow plants to reseed themselves and determine their own best location.
- Once well established, after three or so years,

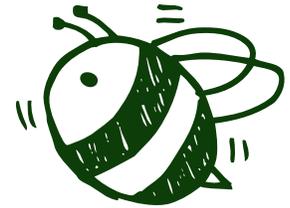


there is no need to water, or fertilize and the area can be cut just once a year in the fall or early spring (before nesting occurs). Cut only 1/3 each year so as to allow for overwintering insects to survive and seed heads to be enjoyed by wildlife. This schedule ensures that all of the meadow is cut every three years before any woody plants get well established.

- Cutting can be done with a mower or a scythe. Using a mower may require patience as the mower has to be tilted back and lowered down onto the meadow plants so as not to stall the engine or choke the blade. A scythe will make short work of this job, it just takes choosing the right blade, keeping the scythe

blade sharp and practicing the right swinging technique to let the blade do all the work.

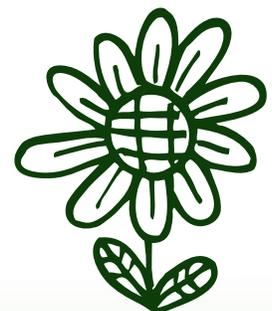
- Reseed for any favourite native wildflowers if they haven't appeared in three or more years (and/or use some plugs). Or consider adding new seeds, if you want to introduce a few more varieties. Choose high quality with no filler and select a few specific plants rather than a "meadow seed mix", in order to guarantee that no new undesired plants will be introduced.



Links / Further Info:

Tallgrass Ontario - *A Landowner's Guide to Tallgrass Prairie and Savanna Management in Ontario* :
www.tallgrassontario.org/Publications/LandownersGuide2005.pdf

Credit Valley Conservation - *Native Prairie and Meadow Gardens and Landscapes for homes, businesses and institutions* :
www.creditvalleyca.ca/wp-content/uploads/2013/05/12-205-prairiemedow-booklet-web.pdf



Special Purpose Gardens



Special purpose gardens are created by faith communities to provide an outdoor environment that can be used for spiritual, cultural or other specific purposes. Green spaces and gardens are well known for their healing and therapeutic values and can also provide spiritual comfort and connection by using outdoor spaces for faith practices such as prayer and meditation. Gardens are perfect for these types of practices as they offer a quiet, serene space that can be used in three (or even four) seasons! Outdoor spaces can be created intentionally for this type of purpose or a current garden can be retrofit and revitalized. Gardens can also be used to symbolically reflect to the spiritual community and local neighbours the value of beauty, allyship and peace. Consider incorporating these types of outdoor spaces in cemeteries and memorial grounds to offer specific landscaping that provides comfort, calmness and a sense of hope for those visiting.

Smaller special purpose gardens can offer:

- A welcoming and colourful environment at a main entrance
- A place to locate welcoming “open door” signage or symbolic art pieces
- A place for familiar and symbolic plants (such as Bleeding Heart)

Larger special purpose gardens can offer:

- The experience of physically entering into a sacred space, signified with stepping stones and/or path
- The opportunity to retreat into a green space and peaceful scenery away from busy city distractions
- An occasion to benefit from the softer, colourful landscaping with seating areas and green vistas.

Types Of Gardens

Healing/Therapeutic Gardens

Healing gardens offer visitors a place to reconnect and heal whether emotionally or spiritually. These gardens have been installed in health care facilities to help patients heal faster through both being able to see green spaces and from visiting the gardens. Both a view of green landscapes and also immersion in a garden have positive effects for both mental and physical healing. Scientific studies have shown that

immersion in green spaces can have many positive effects including: decreasing stress-levels, boost of positive outlook, lessening of depression and anxiety and increasing generosity. Due to these benefits, healing gardens have much to offer to all communities including faith and spiritual ones.

Therapeutic gardens on the other hand involve the garden visitor in a more active deliberate way, whether it is by engaging the visitor with different senses (sight (colour/texture), smell, touch, etc) or by offering an opportunity to regular visitors to actually participate in the care of the garden. Gardening activities offer even more opportunities to engage the senses, such as the physical touch and scents of the soil, the handling of colourful plants and the watering and nourishment of the garden.

Meditation/Prayer/Quiet Gardens

Meditation, prayer and quiet gardens offer a peaceful space for solitude and reflection. This type of contemplative activity can be heightened by being outside in a garden setting. Being surrounded by the flourishing plants and active wildlife can provide a direct sense of the miracles of creation. For those faith communities that want to offer a prayer/meditation garden, visitors will require a comfortable and sheltered place to sit – such as a bench or a grassy hill overlooking an uplifting vista. These types of gardens need to be buffered from busier areas such as building paths and parking lots or streets. Having a transitional space as visitors move from busier spaces to the solitude of the garden can help visitors mentally unplug. Signs



can also help enrich the users experience with reminders to turn off electronics, to walk slowly and to speak in whispers if necessary. If the garden is for a specific faith community, religious and spiritual symbols and visual reminders provides visitors with familiar clues and a more direct way to connect with their faith. These gardens should provide a place of solace and peace and help uplift and provide a sense of renewal.

Medicine Wheel/Heart Gardens

A medicine wheel garden or other traditional First Nation's plant garden can be designed and installed as a symbol of allyship. It can be as simple as a small sculpture or sign along with the planting of the four traditional medicine wheel plants: Cedar, Tobacco, Sage and Sweetgrass. Or it can be an intricate circle garden that is divided to indicate the four directions and the symbology that each quadrant represents. For many First Nation communities, the circle represents many things including the cosmos, natural cycles of growth, death and rebirth and is woven into many activities such as gatherings and dancing. Ceremonial medicine wheels marked out by stones are used for spiritual purposes such as healing and prayer and visually represent the equality of all things connected in the web of life. The four plants are connected to the four directions: Tobacco to the east, Cedar to the south, Sage for the west and Sweetgrass for the north direction.

Faith communities are encouraged to establish an allyship with their local First Nation's communities by supporting local indigenous programs or through initiatives such as the Kairos Blanket Exercise. Through this new allyship, a faith community can work with a First Nation's community to install a medicine wheel garden or organize a community blessing ceremony when it has been planted by the faith community.

Planting a "Heart Garden" is an activity that was introduced by the Truth and Reconciliation Commission (TRC) report. The first Heart Garden for the TRC was planted in Ottawa at Rideau Hall in 2015 with both school children and Residential School survivors planting hearts with messages of reconciliation from across Canada. This art & garden activity can be part of a learning activity for children as they are taught about First Nation, Metis

and Inuit culture and history. The hearts represent the children lost to the residential school system and the act of planting represents the commitment to aiding with reconciliation.

Labyrinth Maze And Garden

A labyrinth maze is a special type of prayer/meditation space. It can be very simple and designed either into a grass path or laid out with paver stones. The labyrinth walk mimics a religious pilgrimage, where one can embark on a journey into the centre of the labyrinth, (which symbolizes the Universe or Creator), rest once they are in the centre and then journey back outwards (back "home") while reflecting on any inspiration or messages received during the walk. It is suggested that the labyrinth walk starts with a question or prayer before one starts the walk and then the path of the labyrinth twists and turns towards the middle, such as many journeys do. The centre of the labyrinth offers mediators a time for reflection and opening to receive any messages or wisdom about the question, prayer or journey so far and then the path back out of the labyrinth provides time to assimilate the messages and full journey experience before returning to 'everyday life' outside the labyrinth. There are both guided labyrinth activities with a trained facilitator or this type of meditation space can be used on one's own. There are many ways to incorporate the labyrinth walk into a congregation's activities.

Starting Your Garden

These gardens will be led by the needs and interests of your faith community. The Outdoor Greening Primer has some great questions to help guide your community towards the most appropriate garden project. It is best to start by identifying the purpose and specific need of your faith community along with the size of the available space. Even a small outdoor green urban space can be a sanctuary and retreat from busy streets and hard concrete.

Identifying needed resources and opportunities is the next step and then there are very practical steps to start a special garden including the calling utility companies to locate any underground utilities before any digging starts. All of these steps are outlined in the Primer. Having a special planting day, where your faith community can enjoy

fellowship and community, along with a celebration once it is complete, helps to elevate the project and truly integrated it into your faith communities purpose and mission.

For these types of special gardens here are some things to consider:

- Green spaces and gardens are naturally very healing. The invitation to be outdoors, to take in with your eyes the energizing green and other vibrant colours, to appreciate repeating patterns and calming textures and to engage all senses, provides many physical, mental and spiritual benefits.
- Gardening itself offers therapeutic benefits also. Involving youth or partnering with organizations that offer council or social services can provide them the opportunity to be out, working with the earth and connecting with others who enjoy being outdoors.
- For gardens that will be designed to offer a quiet place for contemplation and prayer, consider using repetition to instill a sense of calm, whether this is in the re-occurrence of the same plant in various spots or it is in the echoing of the same shape or lines in both hardscaping and softscaping.
- Colours can also be a design consideration that offers comfort, from the calm of a single hue such as yellows and oranges to the serenity of a single white palette. Keep in mind the natural outdoor canvas: the backdrop of green in warmer months and reds and golds warming up the space in autumn.
- A water feature brings in a familiar natural soundscape for visitors and can offer a soothing backdrop of sound. Consider offer seating close to the water feature. This type of feature can also buffer the space from outside noises that might intrude on the serenity of the garden retreat.
- Design the garden to engage all five senses if possible. Along with colour and pattern, consider the angle of light and dappled shade as another texture. Choose soft ground cover

or smooth plants that offer an invitation to touch. Along with water features, consider other soundscapes such as Poplar leaves shaking in the wind or the rustling of grass and don't forget the other two senses by adding comforting and calming scents of evergreens and other favorite flowers and/or the familiar sight (and taste) of edible berries or herbs.

- Smaller enclosed outdoor rooms in a memorial space or burial ground can provide comfort to those visiting. A defined area that offers a quiet and shaded spot can provide shelter and respite from the wider more busy public space.
- Consider the seasons and how plants can offer symbolism with the cycles of nature. Early spring blooms signify renewal and hope, while fruits and nuts demonstrate the abundant harvest and the retreat of both plants and wildlife in winter can remind congregants of the need for rest and simplicity in colder winter months.
- Choose features with intention such as a tall tree that provides an anchor and some overhead shelter to a space. Large rocks provide a variation to a landscape of foliage and also soak up heat on sunny days. Native shrubs provide colour and texture at eye level and also draw in wildlife including local and migrating birds.
- Include spiritual statues and sculptures and significant plants from scriptures that provide touchstones for congregants. Provide places where members of your faith community can sit, pray and meditate. Outdoor spaces offer the added benefit of being soothed by green and comforted by natural cycles, allowing people to relax as they disconnect from the hustle and bustle of their daily life.

Other fact sheets can provide ideas on ground covers, native trees and shrubs, designing a bird-friendly garden that can help with the design of a special purpose garden. The Outdoor Greening Primer provides the basic how-to steps for installing and maintaining a garden.



Links / Further Info:

Quiet Gardens :

www.quietgarden.org

First Nations Child & Family Caring Society of Canada – Honouring Memories, Planting Dreams :
More information on Heart Gardens

www.fncaringsociety.com/honouring-memories-planting-dreams

The Labyrinth Society :

www.labyrinthsociety.org

Veriditas :

More information on Labyrinths

www.veriditas.org



OUTDOOR GREENING PRIMER



The outdoor landscape of both your place of worship and for memorial and burial spaces are a wonderful opportunity to expand your *Care for Creation* and mission goals such as reconciliation, neighbourhood outreach and providing a place of peace and spiritual retreat. Your gardens and landscape can help reflect your spiritual values and be a welcoming space for your community. Depending on the interests and support from the congregation, an outdoor space can provide cut flowers for the sanctuary, food through community gardens and orchards, manage water through rain gardens and other techniques, provide habitat for wildlife including pollinators and birds and conserve water through drought-tolerant landscaping. Outdoor spaces can also provide spiritual respite, sanctuary and inspiration through labyrinth gardens, medicine wheel gardens, prayer gardens and other types of gardens. Your landscape can be much more than just an expanse of lawn with some ornamental blooms. No matter what the size, there are opportunities.

Determine Your Congregational Goals And Resources:

Taking on a new project, you will want to consider the costs, resources needed and the interest of your congregation. Ask your congregation what they want and/or what they would like to provide for the community:

- A green space to enjoy quiet and solitude
- The opportunity to grow local food
- Reconciliation and allyship building with First Nations
- A location for reflection and inspiration
- Connection with nature and wildlife
- A welcoming space to gather outdoors

It's best to find something that volunteers and/or a group can rally behind and support so that the interest is there to move the project forward. It helps to have at least two key members, so that they can play "tag team" depending on availability.

Also when considering a garden space determine what resources you currently have:

- How much space is available and where (consider slope, soil type, sun availability)? If there is no space at the place of worship is there another property such as a memorial space?
- Who is willing to do the work even if it's managing a landscaping company?
- How much time (weekly) does the person or group have to volunteer?
- What resources are available such as funding, volunteers with gardening knowledge and/or interest and energy, donation of plants, local garden organizations and resources, etc.? (Use the asset-based community development model to determine the resources you have.)
- Can a garden be incorporated into current programming including youth programs?



Determining Location For New Garden Bed

The best location for your garden can be determined by many things:

- The space available (is there only one available location or are there various options?)
- The location of underground utilities (do not dig in areas where there are underground utilities), overhead utilities and street lights (which will restrict the type of trees that can be planted)
- The desire to be visible to the community (locate at front?) to demonstrate allyship or mission or open door policy or to be seen as a neighbourhood resource
- The need for a quiet tranquil spot away from road and noise (side or at the rear for the building or protected by shrubs or fence)
- Visibility from inside the place of worship so that those inside can enjoy a beautiful view
- The need to avoid locations near pathways where winter chemicals are used (de-icing salt, sand)

If the interest is in creating a garden for wildlife, the consideration regarding location can be two-fold. It's best to avoid very busy areas (with high traffic and activity) as wildlife may avoid these areas. If you have a large enough piece of land, consider having one sheltered, quiet area that can be viewed from the inside of the building so that it can be enjoyed year round without the need to disturb the wildlife and another location that is accessible, where someone can visit and possibly sit and pray or meditate but is still separated from busy, traffic areas.

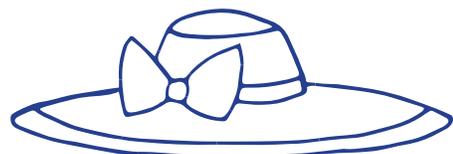
Inspiring Spiritual Symbols For Your Garden

Creating a garden outdoors provides an opportunity to include sculptures, statues, plaques or other symbolic pieces that can resonate with the congregation. Consider what could be added to a garden that could signify specific pieces of inspiring religious or spiritual scripture. It could be a statue of an angel, a dreamcatcher sculpture, a dove image for the symbol of peace or the image of hands in prayer.

Choosing plants that are referenced in scriptures or are culturally significant can be an opportunity for congregants to connect in real life to these plants. Just ensure that if the plant is not native to the area, that it can survive the local plant hardiness zone and that it is not an invasive species in the local area.

Some trees that are referenced in various scriptures include Palm, Fig, Olive, Pomegranate, Almond, Cypress, Oak, Pine and Birch. Other symbolic plants include: Crocus, Lily of the Valley, Bleeding Heart, Roses, Medicine Wheel plants (Cedar, Sage, Tobacco, Sweetgrass) and the Lotus plant.

Another opportunity for signage in your new garden is by providing information about native plants and pollinator habitat. Certain organizations are collecting data on all new pollinator habitat and will provide signs to showcase your project. These signs are for habitats that support butterflies, bees and wildlife. See the Wildlife Garden Fact Sheet for more information.



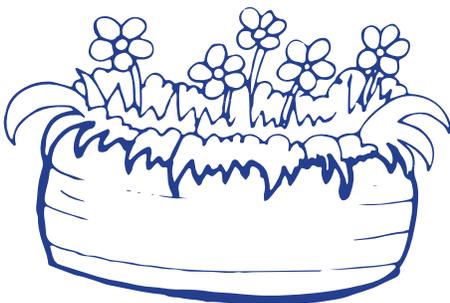


Prepare A Great Proposal:

Preparing a great proposal may be essential for your garden project to go forward. Whether it is to a congregation council or faith community board or it is a proposal for funding, the proposal provides the goals for the project and also the steps forward including a well-thought out budget.

You want to be able to share your vision for this project, including the social, environmental and community benefits and demonstrate the value for this endeavor. If you are applying for grant funding understand the goals and desired outcomes for the grant program and ensure that you explain how your project benefits those same goals.

Include the size and cost for implementation and cost out all the donated volunteer hours that will go into the project. Emphasize the resources you have in-house and how you can benefit from donated time and other needed items. Add an estimate of utility costs to waylay any concerns for increases to water or other utility bills. (If you are decreasing the lawn significantly, you could consider determining cost savings due to less mowing, maintenance and watering.) Also include a plan for maintenance (with weekly hours for volunteers during gardening season) to show that there has been consideration for the maintenance of the garden beyond Year One.



Emphasize who will benefit from this new garden including tenants, visitors and the congregation. Is there a school nearby, a retirement residence or a community health program that might benefit from an outdoor space? If the garden is an outreach tool, determine if you can create a couple of annual garden events to increase visitors to the space. Finally in terms of budget consider any one-off costs including plaques, sculptures or even educational signage and add this to the budget.

CONSIDERATIONS AS YOU PLAN

Here are some things to consider as you prepare to plant your garden. Be sure you know the local by-laws and consider what type of maintenance you want for this new landscaping.

1. CALL BEFORE YOU DIG! — This is very important and it is a free service that utility companies provide. Even if you think you know where utility lines are, it's best to get them located and flagged so that all people involved in the project know where utilities are located. Also consider overhead utilities when you are determining a location for new trees.

2. PRIVATE TREE BY-LAW — Be aware of the by-laws for trees in case you want to eliminate a tree or do any hardscaping in close proximity to a tree. In certain cities, trees of a certain size cannot be taken down without permission from local authorities and some municipalities may have by-laws to protect trees during construction.

3. MUNICIPAL BY-LAW — There are some by-laws that restrict the look of the front yard garden such as "heavy undergrowth, "trimmed and not overgrown" but this is a subjective view. Pollinator and meadow gardens have been successfully defended using the argument that they are expressing



their environmental beliefs under the Charter of Rights and Freedoms. To help garner support for these types of changes, meet with the community first, explain the benefits and discuss any concerns.

4. PESTICIDE BAN – Gardening without pesticides for your lawn and garden is now a law in seven provinces. There are many new non-toxic aids that can be purchased. Better yet, learn from the Canadian Organic Growers who have online resources. Or if you are in Ottawa, sign up for one of their in-person classes they offer each year on organic gardening.

5. NATIVE PLANT SOURCES – Always consider native plants first for gardens as they are adapted to local conditions and will require less maintenance (including watering) once established. They also provide much needed habitat for local wildlife including butterflies and birds.

If purchasing plants ensure that you are purchasing from a source that does NOT have neonicotinoids on plants. Look for a local organization like Peterborough's Ecology Park or Ottawa's Fletcher Wildlife Gardens that has an annual plant sale or purchase from a community plant sale or an organic plant nursery. The Canadian Wildlife Federation has a list of Native Plants Suppliers: <http://cwf-fcf.org/en/resources/gardening/native-plant-suppliers-new/>

6. LOW-MAINTENANCE – Even with great volunteers and staff, a low-maintenance garden is always a good idea. Whether using native plants, mulch, drought-tolerant plants, drip-irrigation systems, etc. the time and energy saved will be a blessing. Identify all the opportunities to lessen maintenance options as you are planning your garden.

PLANTING DAY:

Get organized before the day of the event and ensure that there are enough tools, safety equipment (as needed) and refreshments including water. Have a rain day in case the weather ends up being really poor but do consider going ahead if the day is just overcast with some possible light rain.

Keep in mind all of your community's assets including the talents of your members and help identify those who want to help out and what they can offer in terms of planning, event organizing, gathering equipment and garden materials and helping to spread the word. Share with people the delight of spending part of the day outdoors and divide tasks so that there is something for everyone including easier jobs like organizing and serving refreshments, counting and laying out plants and the heavy lifting tasks such as digging, moving dirt, compost, mulch, etc.

The planting day is a great opportunity to have a celebratory community day. This will give a boost to all the hard working volunteers and allow for an official blessing of the grounds where the garden will be. Take the time to officially "break ground" and offer a thanksgiving for the bounty of the earth.

Where beauty is cultivated through community, appreciation grows. The garden becomes a place of celebrating creation and joy and delight can grow along with the plants. End the day with a prayer to bless the new garden and thank creation for the abundance of what is to come.

HOW TO PLANT:

How to plant depends a bit on what you are planting. Seedlings, larger perennials, shrubs and trees all need care when being planted and some of the information for planting has changed (see below). Gardening is a bit of



trial and error. There will be lessons learned as you garden depending on your own location, climate and conditions. Keep in mind that plants are resilient and adaptable. If you are doing a small bed, preparations will be different than for an urban meadow. Details on preparing a new small garden bed can be found below. If you are converting a larger space for an urban meadow please refer to the Urban Meadow Fact Sheet.

Some municipalities donate trees to be planted along streets to increase their street tree program so check with local government to see if you can receive a suitable tree this way.

Keep all plant pots and recycle. Many garden stores will take them back now or consider donating to organizations that have annual plant sales so that they can reuse the pots.

And do remember that all new plants will need extra water for the first two years, even drought-resistant plants.

Preparing a New Garden Bed:

Once you have sited the location for the new garden bed, consider using the lasagna gardening technique to prepare the bed. Remember to avoid putting in garden beds under Maples and Beeches as they have shallow roots.

Lasagna gardening is a simple way to prepare a new garden bed especially over a weedy area or a part of a lawn. It is best done in the autumn so it has time to break down over a few seasons before you start planting and there will be abundant dried leaves and materials available to add to the bed. First mow or cut the plants that are in this location as short as possible. Next lay down newspaper (at least 10 sheets thick) or corrugated cardboard and wet thoroughly for them to stay in place. The first layer can be thicker woody materials such

as twigs and branches from hedges and trees chopped up. This will ensure good drainage for your garden bed. Add a layer of dried leaves after this. Layers of carbon (leaves, twigs, straw) can be up to 20 cms and layers of nitrogen (grass clippings, compost, manure) can be up to 15 cms. Keep adding layers until you reach approximately 60 cms. This can be covered for two weeks with plastic to provide an extra kickstart to the decomposition process. Have this sit for the winter and early spring so as to decompose and break down. By planting time, the level of your lasagna garden should have dropped significantly. Top up with a layer of soil and some organic fertilizer just before planting.

Planting Seedlings and Larger Perennials:

Seedlings can be planted after they have established enough “true leaves” to survive outdoors. The general rule of thumb is that plants need around four true leaves (not counting the first two cotyledons). Then the plants need to be hardened (exposed to the climate outdoors) before they are planted. Once the new plants have been hardened for a week or so then they are ready to be planted outdoors.

Both larger perennials and seedlings need to be hardened before they are planted.

To harden these new plants, bring them outdoors to a shaded area for 3-4 hours for the first day and then bring them indoors. Each day increase the amount of time they spend outdoors. Once they have spent a full day in a shaded area, repeat the process in a sunny areas – first day for 3-4 hours and then bringing them inside over night. Increase their exposure to the sun over a few days. This hardening of the plant will increase the rate of survival rate once the plants are transplanted.

When transplanting new plants, it is best to do in early morning or on an overcast day. If you



are putting in larger new perennials cut off the container and inspect the roots. Gently loosen and/or cut off any potbound roots that were encircling the bottom of the pot.

Transplant the new plants into loose soil mixed with compost, digging a hole for each plant which is just a bit bigger than the roots and use the same soil to backfill. Press down on the soil around the plant gently to provide some stability but do not compact the soil too much. Water after planting, ensuring to deliver the water to the roots. Remember these new plants will need extra watering as they establish themselves in the new ground.

Add mulch to help keep roots warm and water from evaporating. Straw is a great mulch for seedlings and veggie plants. Choose a more substantial mulch for perennials. Adding a thinner layer in the spring (3 cms) or a thicker layer (5 to 6 cms) if it is autumn.

For perennials, it is best to take off any flowers so that the plant can use all extra energy establishing healthy roots in its new location, rather than putting the energy into the blooms.

If it is autumn and you are transplanting perennials do not add any fertilizer as you do not want to stimulate growth just before the plant goes into dormancy. Add organic fertilizers in the spring once the plant has survived its first winter.

Planting Shrubs and Trees:

The best time to plant trees and shrubs is early spring and fall. This will help them establish well before the extreme temperatures of the summer or winter.

Dig a hole as deep as rootball. It is important to have the roots on a solid base when planting it in its new location. Keep the soil close by as you will be using the same soil to refill the hole with the new tree.

The hole should just be wide enough to fit in rootball. Do not add any amendments around the shrub/tree or below the rootball. The desire is to have the roots grow outward to seek needed nutrients from the current soil rather than to receive it from amendments added near the base of the plant.

Identify the root flare and plant with the flare just above the ground but allow for a bit of settling. For a tree check to see if the trunk is straight. Stakes are not needed – if a tree can bend with the wind, it will allow itself to anchor better as it grows.

Before planting, it is extra critical to ensure that the roots are healthy and are not circling around the bottom of the pot or in the root ball. Cut the plant out of the container or burlap and hold by the rootball rather than the trunk (as this might damage the plant). Trim any circling roots and carefully pull apart roots a bit to encourage outward growth. Add some water to the bottom of the hole before setting the plant in place.

Reuse the earth that was been displaced to dig the hole. Fill the hole up half way with this earth, water roots and then fill up the rest to the base of the flare.

Do not compact the soil too much. Use your hands to press down on the soil to secure the tree rather than using your full weight and stepping around it. Remember tree roots thrive in aerated soil.

Water one last time, thoroughly soaking the soil base of the new plant once the hole is filled up and then add mulch (see below for information on mulch). Many plants lose a high percentage of their roots when transplanted and cannot take in enough water on their own. For the first two weeks after planting, water daily. Then water two to three times a week for the next month to six weeks focusing on the



rootball area. After two months, the tree can be watered weekly (a heavy watering) all the way out to canopy edge – as the roots should be growing outwards by then.

Trunks of trees and shrubs should be protected from mice with plastic shields for the first few years. In the winter mice seek out nutrients and chew at the bark of young trees below the snow cover.

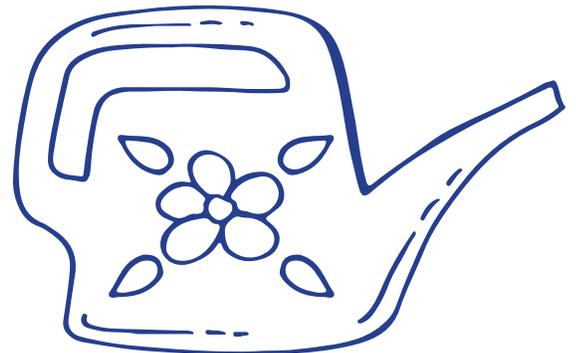
MULCH (Water Savings + Healthy Plants + Weed Barrier)

Most mulches do help with water retention. Depending on the number of garden beds and your garden resources (volunteers vs landscaping company), consider creating mulches from organic materials readily available on your property including fallen leaves and grass clippings. A natural mulch like this can create a great organic cover and provide nutrients (acting as both a mulch and fertilizer) – especially if it has been composted over a season before added to gardens.

If purchasing an organic mulch, consider mulches such as natural (golden red) cedar mulch as opposed to dyed, recycled wood chips, as the recycled wood can have arsenic and a dark dye can elevate the temperatures of the soil. The cost may be higher but cedar mulches break down slower and have natural insecticides that can be helpful in reducing bug pests. Pine bark and needles are another option that breaks down slowly (and great as they are a by-product of the lumber industry) but be warned as this mulch will make the soil more acidic. Also, avoid cocoa bean mulch as it can be poisonous to pets. Your local garden supply source may have other recommendations for the best natural local mulches. If you are getting a large supply order a truck load rather than buying a large amount of bags, where you have to discard all the plastic.

Other Mulch Tips:

- A mixture of shredded leaf and grass clippings and compost and /or manure can act as a simple mulch made on your property and provides the same water retention benefits.
- For new plants, add around 5 cms of mulch and wet mulch right after spreading as this will help establish healthy micro-organisms. Only top up if needed (not yearly).
- Do not create mulch volcanoes or add mulch near the trunks of trees. Trees breathe through many surfaces so keep the first 10 cms bare.
- Mulch around trees as far as the drip line if possible (this is best for Maple or Beech as these have shallow roots and shouldn't be competing for water).
- Don't pile mulch close to any permanent structures or buildings as this provides an area for insects to accumulate and possibly damage structures.
- Fungus/mold on mulch is not a bad thing and doesn't hurt plants. However, if the mulch creates a thick stiff layer break it up so that it functions well and allows water to percolate down to plant roots.





GENERAL MAINTENANCE:

Weeding:

Weeding is generally needed more in the spring and early summer than later in the growing season. If you stay ahead of undesirable “weed” plants at this time – there will be less later. Avoid deep turning of the soil, as this stirs up more unwanted seeds. A long-handled weed tool that pulls out plants at the surface is a good investment so that volunteers and garden staff can avoid uncomfortable positions and have less gardening aches especially if there are many ornamental gardens. Weeding is also easier in soft soil after it rains as plants are easier to pull up.

Mulch provides a barrier so that these undesirable plants cannot get established and if it’s difficult to get to everything, ensure that at least unwanted plants are eliminated before they go to seed. Keep in mind that some of these naturalized plants can withstand drought better, especially if they have established some good roots so in drought situations, weeding is key to ensure water gets to the plants you want to keep. Also, as much as possible, keep any permeable pavement dry so as not to encourage growth between pavers or stones.

Watering:

- Watering is best during cooler times of the day so that there is less evaporation and water loss. But avoid watering in the late evening as plants can develop fungus if wet during colder nights.

- For lawns, water once a week deeply, rather than every day. Lawns need about 2.5 cms of water a week and allow grass to go dormant during heat waves.

- Locate garden beds that need more water, closer to building and water source so that they are easier to water. Annuals, container gardens and ornamental plants typically need more water. Group plants (if possible) by their water needs so as not to overwater those that

don’t require as much.

- Newly planted perennials, trees and shrubs will need extra watering (some up to two years) to establish well. Once established allow them to continue to develop deep roots by watering just once a week with slow, deep soaks.

- Water at the root level to optimize water conservation and ensure plant roots are well soaked. Drip irrigators, hand watering cans and hoses that can be directed towards the roots are better than overhead sprinklers or spraying water from above, with the water hitting the plants and leaves.

- Keep in mind that some plants may wilt during the day as a way to protect themselves from the heat. This is not necessarily a sign that they need to be watered. Check the moisture level of the soil first.

- Water trees during droughts rather than lawns. Trees will not show signs of stress. Damage to trees from droughts will only be seen in the following year. Trees need extra care to help ensure their long-term survival.

Wildlife Helpful Weeds:

Consider letting a garden area in the back or edge along a fence, to grow a bit more wild. Many “weeds” are beneficial to native insects and in turn help out our feathered friends. A shady area is better so they do not need to be thinned or controlled too much. Do eliminate Ragweed (which can be found with Goldenrod) however as this is the wind-pollinated flower that aggravates many allergy-sufferers and gives Goldenrod a bad rap as they both bloom at the same time. Learn how to identify it in early growth during the spring along with other invasive plants. Some wildlife helpful “weeds” include:

- Dandelions (naturalized) is one of the first plants to flower in the spring and support native bees.

- Fleabane (native) is an aster-like flower that blooms in late spring that supports many small insects.

- Common Milkweed (native) provides both habitat and nutrients for the endangered Monarch.
- Canada Thistle (naturalized) is a favourite of the Goldfinch and could be left in less visible areas.
- Evening Primrose (native) provides sustenance to many insects and birds and has a long bloom.
- Queen Anne's Lace (naturalized) is a favourite of some pollinators including butterflies.
- Golden rod (native) is an important late season native plant that many pollinators seek out.
- Asters (native) are another late season bloom that provide sustenance to many insects.

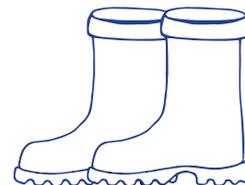
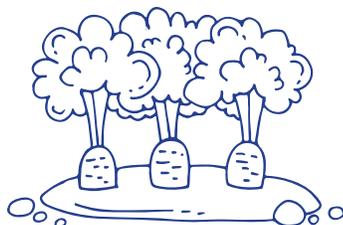


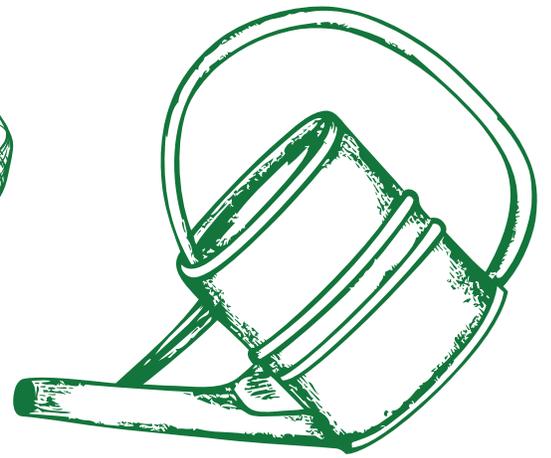
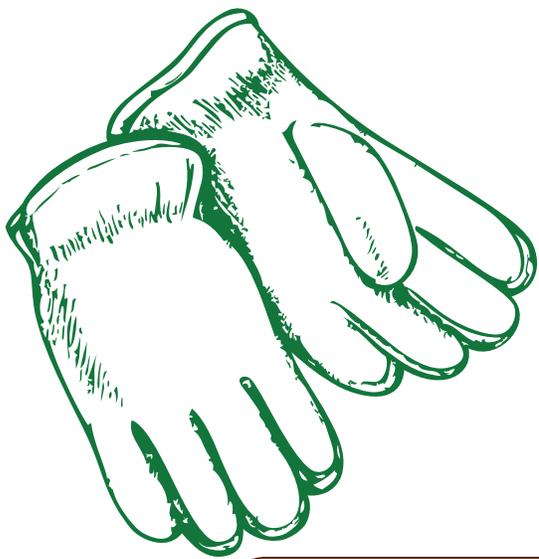
Fall Maintenance:

Consider replenishing nitrogen annually to keep soil healthy by adding manure or compost in the fall.

Consider easing up on fall maintenance as many insects spend the cold months protected under layers of leaf litter or in grassy thatch. They can survive the winter as long as they find moist areas to hibernate. There are also many eggs that have been laid in stalks, on leaves, etc. so if twigs, ornamental grasses and other plants can remain on the property in a brush pile, it will ensure the survival of the next generation. Your property will be healthier and attract more birds if native insects and pollinators can enjoy full life cycles and return for another season.

ABOVE ALL ELSE, HAPPY GARDENING!





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