

YARD NATURALIZATION: A "HOW-TO" GUIDE

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WHY NATURALIZE?

Naturalizing your yard, even in part, represents a commitment to supporting biodiversity. This commitment is significant as biodiversity has proven to be our greatest natural defense against climate change (United Nations, 2022). Naturalization is a form of ecological restoration, through the transformation of a garden to have more natural characteristics. To foster a greater sense of naturalness, this process involves human interference through acts of landscape tending, planning, and care (Toni & Duinker, 2015).

A garden is always a planned space, usually outdoors, set aside for the cultivation, display, and enjoyment of plants and other forms of nature.

The single feature identifying even the wildest [wild garden](#) is control.

Gardens can incorporate both natural and artificial materials, and thus exhibit human interference to some degree (Lister, et al., 2024). Additionally, many studies have found that gardening supports mental and physical health, by providing a means of connecting with nature and fostering well-being (Corley et al., 2021; Paudel & States, 2023; Toni & Duinker, 2015). There are countless physical, ecological and social benefits in choosing to cultivate a more natural garden.

Traditional turfgrass lawns on the other hand, are maintained through intensive management practices, aimed at achieving a specific traditional aesthetic (Bormann et al., 2001; Smith et al., 2015). Traditional turfgrass lawns are costly, and tend to require increased water use, fertilizers, and mowing, directly impacting greenhouse gas emissions as well as urban contamination levels (Watson et al., 2020; Smith et al., 2015; Paudel & States, 2023). A study conducted by Paudel and States (2023) identifies four ecosystem disservices associated with traditional lawns: 1) financial costs of maintenance; 2) loss of biodiversity; 3) environmental pollution; and 4) contributions to global warming.

Traditional turfgrass lawns are a desert for biodiversity, providing virtually no habitat for urban ecology, in a time where habitat destruction is cited as the primary cause of global biodiversity decline (Gawecka & Bascompte, 2021; Talbot, 2016). Alternative landscape practices (including naturalized lawns, pollinator patches, habitat gardens, rain gardens, rewilded meadows and xeriscaping, etc.) represent tangible solutions to reversing this downward trend, and provide the opportunity to create habitat - most notably with a garden of native plant species - and fight mass species decline (e.g., the [Insectageddon](#)) (Zitani, 2018).

Such approaches (generally referred to as 'naturalized gardens' or 'habitat gardens') have proven to support thriving insect, pollinator and bird communities in residential areas and beyond (Sahraoui et al., 2021; Gerner et al., 2022; Amaya-Espinel & Hostetler, 2019; Johnson & Colla, 2023; Padullés et al., 2020; Larson et al., 2022; Paudel & States, 2023; Larson et al., 2020; Levé et al., 2019; Majewska & Altizer, 2020). Natural gardens are also a great water management strategy, proven to be more effective at stormwater retention, reducing urban contamination and risks of flooding across urban areas (McFarland et al., 2019; Paudel & States, 2023). Countless studies have shown how alternative approaches to landscape care that prioritize the reduction of maintenance (e.g., infrequent, rather than intensively trimmed) as well as the establishment of natural characteristics, have significant impacts on mitigating the biodiversity crisis, even in highly populated or degraded urban areas (Wastian et al., 2016).

HOW TO BEGIN NATURALIZATION?

The first step to naturalization is considering your space. What is the soil, moisture, sun, size and surrounding area like? The [Planning Your Garden Guide compiled by Birds Canada](#) is a helpful resource to understand these characteristics about your space. When deciding what to plant, cold-hardiness is an important factor. The [Government of Canada's Interactive Plant Hardiness Map](#) provides insights about what can grow across the country's variety of climatic conditions, which can be used to understand the plants that thrive in your region. Working within the bounds of what you can grow, in the conditions of your garden, you should also establish your gardening goals - do you want to support pollinators, birds, grow food, all of the above? For Gardens in the Greater Toronto Region the [City of Toronto Biodiversity Booklets](#) are an excellent place to start understanding local plants and animals. These answers and goals will help inform your species selection.

As a general rule, it is always a good practice to begin by sourcing plants locally, and prioritizing a selection of native plants. For Ontario and beyond, [Watersheds Canada Plant Database](#) is an interactive tool that allows you to discover native plants and compile a list of your favorite ones that are best suited for your region. A native plant finder tool, such as [Pollinator Partnerships Find Your Roots](#) is helpful for creating a list of native plants for your urban habitat garden. A common roadblock new gardeners face is where to source plants, seeds and supplies. In Ontario, you can begin by navigating the [Native Plant Nurseries in Southern Ontario guide, by the Halton Region Master Gardeners](#). For the Greater Toronto Area, [EcoMan Jonas Spring](#) with the [Toronto Plant Market](#) is a trusted source for a large selection of locally grown native plants. For an extensive list of nurseries for all the Canadian Municipalities, to source native plants and seeds, visit the [Canadian Wildlife Federation's Canadian Native Plant Suppliers List](#).

Choosing benign (not harmful) ornamentals and non-natives are next best to native plants. There are many non-native plants that are beneficial

and do not threaten native biodiversity, and can be appropriate for some gardens where they can grow easily and are not prohibited. For example, Bull Thistle (*Cirsium vulgare*) is a non-native plant to Ontario, but is known to be good sources of nectar for pollinating insects, like the eastern giant swallowtail butterfly, as well as a source of seeds for overwintering and resident native birds, like goldfinches.

Understanding the plants you choose to cultivate can help to ensure your garden remains free of invasive plants, which second to habitat loss has been identified as the most significant threat to biodiversity by the International Union for Conservation (Ontario Invasive Council, 2020). Most [Canadian municipalities have published an invasive plants list](#), and elect to include a list of plant alternatives to grow instead. The [Grow Me Instead Guide for Southern Ontario](#) highlights an extensive list of invasives with alternatives to those plants, as a tool to ensure gardens across Ontario remain invasive-free. For more good garden practices, visit the [Gardening for Biodiversity](#) resources page, on the [Ecological Design Lab](#) website.

CREATING HABITAT:

What is considered a habitat garden? What are the benefits of cultivating a habitat garden, and how do they support biodiversity?

Habitat fragmentation across our cities creates small populations of wildlife species by increasing genetic isolation. In turn, this increases the risk of species extinction due to the fact that these isolated populations are more vulnerable to the negative impacts of human-driven causes of climate change (Mantyka-pringle, et al., 2012). In this context of rapid urbanization, biodiversity conservation is critical in minimizing both the extinction of species and the decline of ecosystem services. In this way, urban gardening presents a tangible solution to improving landscape connectivity. Gardens provide critical life sustaining services to both humans and wildlife. When managed within the interconnected network of green spaces across spatial scales in urban landscapes, they also play a crucial role in collectively creating resilient local ecosystems, and supporting wildlife mobility across urban habitats (Goddard et al., 2010).

Thus, habitat gardens are ecologically restorative landscapes, characterized by the vegetation that comprises them (Padullés et al., 2020). The complexity of this vegetation (including its type and height) provide essential resources for wildlife, including shelter, reproductive sites, and food and water sources (Coetzee et al., 2018; Levé et al., 2019; Padullés et al., 2020). For example, habitat gardens can supply nectar and pollen for insects, as well as provide reproductive resources like caterpillar host plants (Fardell et al., 2022; Majewska & Altizer, 2020; Larson et al., 2022; Levé et al., 2019; Padullés et al., 2020; Paudel & States, 2023).

WHAT CAN NATURALIZATION LOOK LIKE?

Naturalization is not an all-in or nothing task. There are small changes that can be made, which have a large positive impact on biodiversity. This section illustrates some examples of small changes that you can make to your lawn, backyard or balcony, by cultivating various types of habitat gardens. In fact, habitat gardens can be made up of a combination of aspects from each garden style listed and more.

Remember: [the less lawn you have in your garden, the more life you can support.](#) Even just removing a portion of the turfgrass in your front or back yard, and converting it to native plants or grasses that aren't mowed, will have profound benefits for local biodiversity. Instead of traditional turf-grass, you can also consider a variety of grasses and shrubs that both act as great ground cover and make an excellent understory for trees. The goal is to create layers of habitat for biodiversity to thrive.



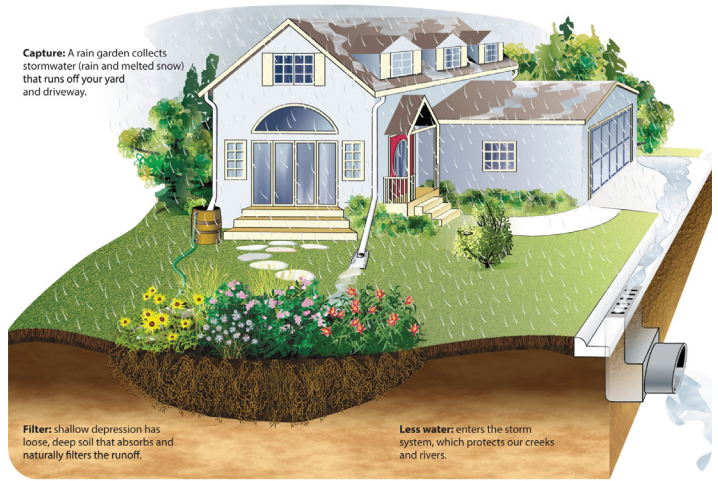
Front hedgerow. [Growing with Nature, 2020](#)

Lawn Borders and Native Hedgerow:

Historically synonymous with agricultural lands, hedgerows are a linear planting strategy using rows of woody shrubs and trees. They are often used to delineate lawn or property boundaries creating visual privacy barriers, while also greatly supporting local biodiversity. Hedgerows are also used to provide protection to crops and other plant species, and are known to provide wider ecosystem service benefits, such as climate change mitigation and flood and drought mitigation (Biffi et al, 2022).

The [Canadian Wildlife Federation has an excellent guide to planting hedgerows](#) with helpful tips to aid in determining the ideal height for your hedgerow. It includes considerations for overhead utility lines and other limitations, and plant selection according to height and width at maturity. Hedges also provide great habitat for garden snakes - whose presence signifies signs of a balanced ecosystem as they are predators to mice and slugs, and prey for small mammals. The [David Suzuki foundation has a published resource dedicated to snake-friendly gardening](#).

Pacific Northwest United States. West Coast Seeds also provides [Crop Planning Tools](#), as well as [Vegetable and Herb Planting Charts](#) to keep track of your seed sowing.



Rain Garden Illustration. [TRCA, 2018](#)



Front yard urban edible garden. [Just Food, n.d.](#)

Foodscape:

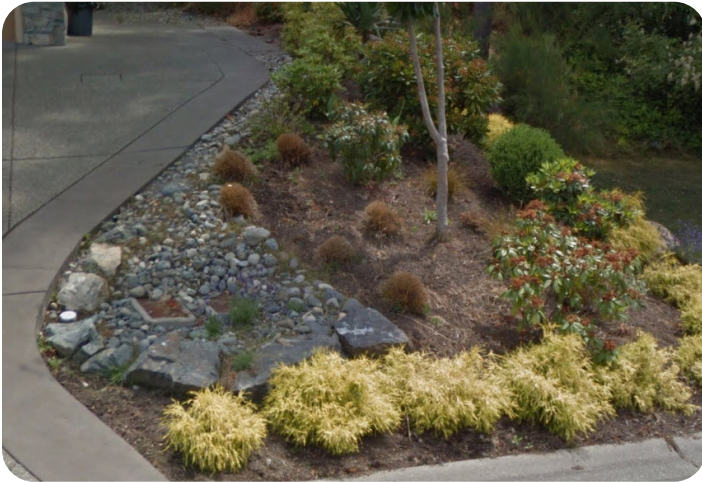
The practice and development of urban food landscapes is increasingly recognized as part of creating long-term sustainable cities and urban areas. Not only do urban foodscapes contribute to food security by increasing urban food production, but they foster human relationships with the land and provide a range of ecological benefits, such as aiding biodiversity and nutrient cycling among other things (Davis, 2021). There are many ways to incorporate foodscaping in your garden, from fruit trees, edible flowers and nuts, to herbs, seeds, and beds of perennial vegetables.

[West Coast Seeds has a detailed guide for Footscape gardening](#). Their planting information provided is also regionally specific for geographies including British Columbia, Ontario, Quebec, and the Maritimes, and Far North, as well as the Coastal

Rain Garden:

A rain garden is a depressed area in a landscape that uses selected plant species (e.g., native grasses, shrubs, and perennials) to capture and temporarily retain stormwater run-off, filtering pollutants and recharging groundwater via infiltration (Bağ, & Barjenbruch, 2022). The use of rain gardens represent a blue-green water management solution with countless ecological benefits, as well as many social and health benefits. Not only do they protect surface and groundwater systems from contaminated rainwater runoff, but they also improve habitat for wildlife, attracting beneficial garden insects including pollinator and bird species, and increasing biodiversity by preserving natural vegetation (Bağ, & Barjenbruch, 2022).

Translated in both English and French, the [Government of Canada has published a guide for Canadian homeowners to design and build a rain garden](#), with tips for improving stormwater management across your yard. The Toronto Region Conservation Authority has also published a [Complete Guide to Building and Maintaining a Rain Garden](#), a part of their [Healthy Yards Guide](#).



Xeriscape Ideas. [Island Pro Landscaping, 2017](#)



Ecologically-informed garden sign in meadow. [Lister, 2024](#)

Desert / Dry Garden (Xeriscaping):

Xeriscapes (pronounced zeer-i-scapes) are desert-like gardens that are comprehensively designed for seasonal water supply shortages. This landscaping method is a low-maintenance low water demand option using drought tolerant plants, and as a result are especially successful in drought-prone regions where widespread use of water-intensive landscapes like turfgrass lawns are contradictory to long term sustainability (Parkinson, 2003).

Studies have shown that Xeriscapes not only reduce urban water use and maintenance costs, but also have the potential to reduce urban temperatures by creating microclimates (Chow & Brazel, 2012; Lewis et al., 2018). The adoption of this technique means using local native plants in your garden which require little to no irrigation, such as mulches, sedums and succulents, and those that are drought-tolerant and / or require a dormant dry season (Lewis et al., 2018).

[West Coast Seeds has published a guide to Xeriscaping](#) with a diverse list of flowers ornamental grasses that require minimal irrigation. For more examples of drought tolerant landscaping practices, the [City of Toronto has a Resource](#) that includes an extensive list of water efficient plant species, as well as southern Ontario and culturally significant drought tolerant landscape examples.

Pollinator Patches and Meadow:

“Pollinator” is a category of species defined by their function to pollinate. Pollination occurs when pollen is moved from one flower to another via pollinating species. The process of pollination is essential to plant reproduction to produce fruit and seeds, crucial for food webs, and creating genetic diversity and balanced ecosystems (Sahraoui, et al., 2021). Beyond bees, pollinating species are a wide variety of insects and animal species that include birds, bats, butterflies, moths, beetles, opossums, spiders, and more!

As a result of anthropogenic activities causing a loss of suitable habitat, rapid pollinator decline is occurring globally, threatening critical ecosystem services provided by these organisms (Sahraoui, et al., 2021). Design practices that do not advance sustainability or environmental efforts, result in loss and fragmentation of habitat, increases of impervious surfaces, non-native species, urban warming, and widespread contamination, reducing the availability of opportunity for pollinators to nest (Schueller, et al., 2023).

A pollinator garden is specifically designed with plant choices that emphasize attracting and providing habitat for pollinators (Toronto Master Gardeners, 2019). In this way, urban gardens have the capacity to serve as a bee refugia, promoting pollinator conservation and biodiversity, and must be supported in conservation policy development,

pollinator friendly behaviors, and conscious sustainable design practices (Lerman, et al., 2018; Del Toro & Ribbons, 2020; Baldock, 2020).

Evidence in data suggests that natural gardens, abundant in native plant species, specifically angiosperms, are associated with greater pollinator abundance, pollinator activity, and overall species richness including that of pollinators (Majewska et al., 2018; Pardee & Philpott, 2014; Fukase & Simons, 2016; Schueller et al., 2023). Natural gardens with high percentages of native plants provide pollinators with the necessities to survive (e.g. nectar, pollen, larval food), including shelter and a habitat for the next generation of pollinators (TRCA, 2016; Lerman et al., 2018; Fukase & Simons, 2016; Schueller et al., 2023). In some cases more practical small interventions (e.g., using railing planters on balconies, or vertical hanging baskets) in gardens can significantly benefit pollinator conservation, especially when distributed across large urban areas (Donkersley, et al., 2023).

The effectiveness of urban gardens in supporting pollinator populations is largely dependent on the composition of the garden, where particular plant selection directly affects the abundance of pollinator species (Majewska & Altizer, 2020). Although there are many non-native ornamental plants that attract pollinators, evidence shows that pollinator abundance and diversity is greatest in landscape with native plants and thus have more floral abundance, taller vegetations and more cover (Schueller et al., 2023).

Meadowscapes are excellent examples of pollinator patches, as a gardening strategy inspired by natural meadows, using a range of grasses and flowers with overlapping blooming periods to support pollinators at significant times of the year. Meadowscaping can occur on a portion or the entirety of your lawn. For selecting plants for pollinators, tailored to specific regions across Canada, visit the [Pollinator Partnership's Eco Regional Planting Guides](#), and enter the first 3 digits of your Canadian postal code. For more information on overwintering and

nesting habitats, as well as designing for continuous blooms, and maintenance visit the [Pollinator Garden Design guide developed by In our Nature](#).



Balcony Container Garden. Barry Grary / Hamilton Spec., 2022

Balcony Gardens

In dense urban settings, there is a growing trend toward vertical greening rather than horizontal ground-level greening, driven by an increasing population residing in high-rise buildings (Mladenović et al., 2017). Green spaces are widely recognized for their contribution to a variety of ecosystem services. Balconies can serve as valuable green spaces, offering both ecological and psychological benefits characterized mostly by small, lightweight, shallow-rooted plants in confined space (Mladenović et al., 2017; Bal & Pal, 2020; Ahsan, 2022). The practice of establishing and maintaining these gardens is referred to as balcony gardening (Ahsan, 2022).

Research has demonstrated that balcony gardens facilitate evapotranspiration, resulting in cooling effects that help mitigate urban heat, commonly referred to as the urban heat island effect (Mladenović et al., 2017; Bal & Pal, 2020). Balcony gardens can also buffer noise, capture dust, provide shade, and cool buildings, not to mention, they also enhance the aesthetic value of neighborhoods (Mladenović et al., 2017). Regarding psychological benefits, a study by Chang and Chen (2005), found that looking at a green space through a window

reduces stress levels and increases resilience to stressors. Overall, balcony gardens offer a range of ecosystem services comparable to those provided by other urban green spaces, highlighting their role in fostering an ecological balance. The [Toronto Urban Growers Blooming Our Balconies article](#), prepared with Toronto Master Gardeners, is a great place to start planning your own balcony garden! Toronto Master Gardeners also has an excellent [Guide to Container Gardening](#), to help you get to know your space!

ADDITIONAL RESOURCES:

[City of Toronto FREE Biodiversity Booklets](#) (SCROLL TO THE BOTTOM and click on the individual guidebooks e.g. [birds](#), [butterflies](#), [reptiles and amphibians](#), [spiders](#), [trees and shrubs and vines](#), [bees](#), etc.)

[Nature Canada: Your Guide to Native Ontario Plants](#)

[Toronto Master Gardeners: Ask a Gardener](#)

[Ontario Nature: Reimagining Lawns Blog](#)

[Ontario Nature Magazine: Backyard Habitats Guide](#)

[David Suzuki Foundation: Nine Lawn Alternatives](#)

[Nature Conservancy Canada: Native Gardening 101](#)

[North American Native Plant Societies](#)

Lorraine Johnson & Sheila Colla: [A Garden for the Rusty-Patched Bumblebee](#) (Book)

[Birds Canada: Gardening for Birds](#)

[1000 Islands Master Gardeners](#)

[In the Zone](#)

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