Report to: The City of Mississauga

Date: February 18, 2026

Re: Request for Feedback on City of Mississauga By-law

Subject Matter Expert Karen Barnes BSc, MSc

I am a subject matter expert with a Bachelors of Science in Biology and Masters of Science in Ecology from McMaster University.

I live in the city of Burlington, Ontario.

Over the past 10 years, I have created a pollinator meadow on my property using well researched and proven ecological restoration techniques. I have seen first-hand the benefits of enhanced biodiversity of plant life and beneficial insects such as butterflies, dragonflies, moths and bees, as well as birds such as chickadees, blue jays, wood peckers, and cardinals.

I would like to thank the City of Mississauga for requesting my expert opinion.

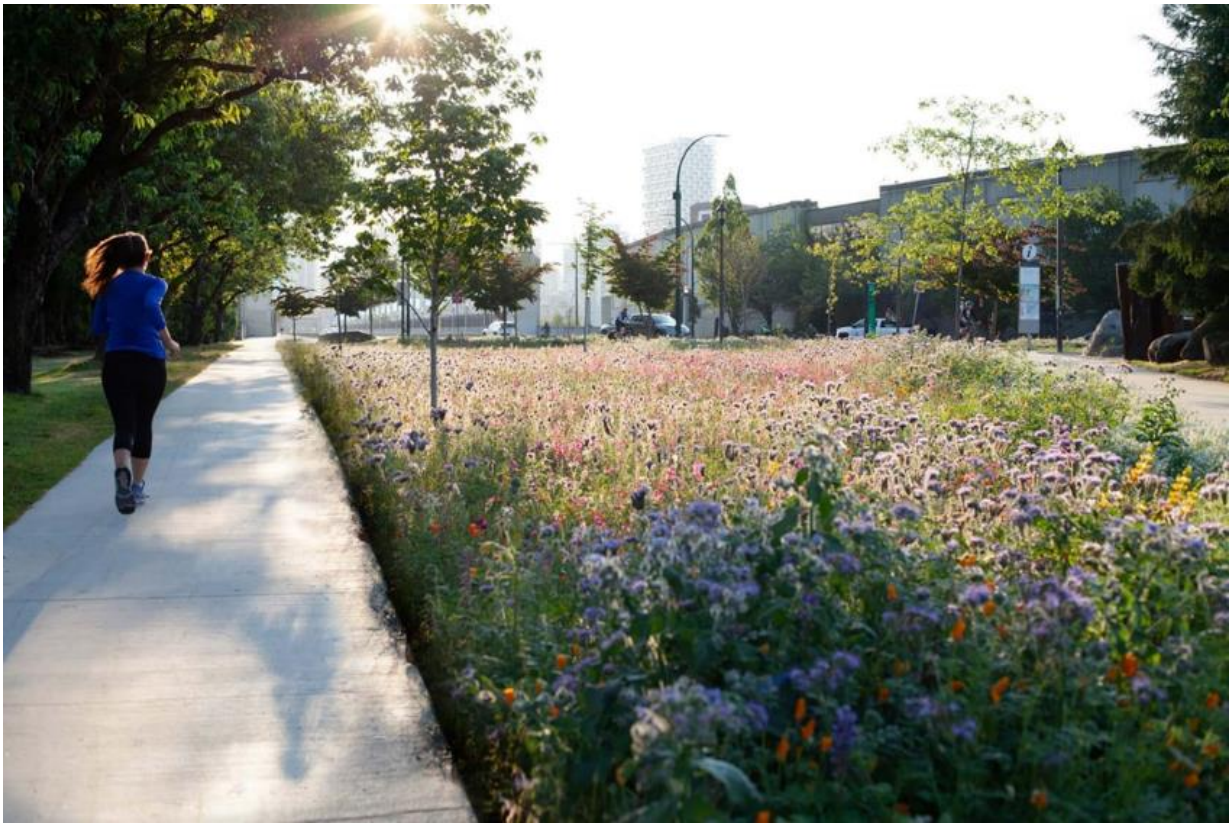
Naturalized Meadow Landscapes in Cities

Cities across Canada are embracing urban meadow landscapes. This form of landscaping is implemented through a variety of ecological restoration techniques. The first step is usually to remove the disturbance of mowing, letting grasses and other vegetation grow naturally, and allowing a variety of plants to germinate from the soil seed bank. This results in a functional, biodiverse ecosystem which typically includes a mixture of native and non-

native plants. Restoration can also include planting and/or seeding areas to encourage greater diversity of native and beneficial plants.

Once established, these landscapes require minimal interference. The majority of plants will be perennials, which means they persist for many years. Others are self-seeding annuals or biennials, which return year after year to fill gaps in the landscape. These plants require little to no human intervention.

The City of Vancouver's Rewilding Effort



The city of Vancouver turned lawns into meadows by re-wilding. Photo: Shannon Mendes

This article highlights restoration efforts being led by the City of Vancouver.

> *Unlike other urban rewilding projects, which are typically community led, these meadows have been spearheaded by bureaucrats and are publicly managed. The meadows in Vancouver didn't require anything special other than changing how the space was maintained and letting nature, as opposed to people, do the work.*

Photo: Jennifer Cole

The sign posted in these rewilded areas reads:

> *NATURALIZED AREA*
>
> *Pollinator Meadow*
>
> *The long grasses and wildflowers here provide an important food source and habitat for beneficial insects and birds. Managing this area as a meadow reduces carbon emissions, helps the soil hold water and stay cool throughout the summer, and protects trees from drought…*


Runner and park meadow. Photo: Shannon Mendes.

There are many benefits to letting the grasses grow tall. The article continues,

> *Some of the meadows lean more toward grassland than wildflower. Grasses may not provide as much nectar or pollen, but they do offer shelter and nesting areas for pollinators, and their deep roots create small channels in the soil that help retain soil moisture.*

The City of Edmonton's Ecological Restoration

The City of Edmonton has also chosen to rewild some of its properties by intentionally letting the grasses grow, while adding wildflowers, bushes, and trees. The city is aiming to convert around 35 hectares per year.

This article explains why:

> *… a careful second look at some of the wilder areas within the city limits reveals a purposely un-sculptured appearance in select regions, including utility corridors, low-use parkland and environmentally sensitive spots. While it may take a little getting used to, the trend towards naturalization yields big benefits — from increased biodiversity to cost savings.*

Catherine Falk is community greening coordinator for the city of Edmonton. Photo: Greg Southam

> *Not only does naturalization encourage song birds to grass nest, it encourages pollinators… Other benefits include flood mitigation; plant*

> *materials absorb and deflect rain during big storms, helping to prevent floods. Over time, naturalization also saves money.*

Edmonton is also promoting naturalization on homeowner's yards.

> *A city website states that lawn naturalization can result in economic, environmental and quality of life benefits. That includes reduced maintenance costs, providing natural food for wildlife populations and reducing noise levels as plantings mature.*
>
> *There's a three-step naturalization process. It starts with every homeowner's dream — reduced or no more need to cut the lawn.*
>
> *"Regular grass mowing (turf maintenance) will decrease, or stop, allowing the grass to grow naturally," a report on naturalization reads.*
>
> *Trees and shrubs native to Alberta can be planted to help "establish a healthy and diverse ecosystem," the report says. The final stage is planting smaller native trees, shrubs and wildflowers.*

The first stage of Edmonton's approach to naturalization is to let the grass grow. Photo: City of Edmonton

Examples of Rewilding in Europe

Rewilding is a worldwide movement.

> *Since 2015, the Dublin City Council (DCC) has been allowing native wildflowers once considered weeds to flourish and seed in park*

grasslands, open spaces, roadside ditches and even graveyards. Rather than being cut back, clover and dandelion are also left to create habitat and food for insects, bees and other pollinators.

Rewilding has also been adopted across Germany. The cities of Dessau, Hanover and Frankfurt am Main began a five-year rewilding project in 2016 called "Städte wagen Wildnis" (Cities Dare Wilderness) that aims to increase habitat for diverse species... Self-regulation is the mantra.

Photo: DW/N. Zimmermann

Natural Ways to Support Biodiversity and Pollinators

According to the Xerces Society, there are many ways to create nesting and overwintering habitat for pollinators, including:

Leaving flower stalks and seed heads intact over the winter to provide food for birds and shelter for insects; leaving leaves where they fall to provide winter protection for butterflies and moths; reducing or eliminating mowing to support ground-nesting bees; leaving the lawn unmown to provide habitat and shelter for butterflies, moths, fireflies and lacewings; avoiding chemicals and fertilizers; avoiding landscaping with plastic mulch, landscape fabric, or heavy wood chips; using compost leaf litter and plant debris rather than wood mulch; using leaves around plants instead of mulch; constructing a brush pile as habitat for butterflies, fireflies, chickadees, warblers and songbirds.

Benefits of Habitat Creation on Yards

Saving Endangered Monarch Butterflies

There is a great deal of concern for the endangered Monarch butterfly. One of the ways residents can help prevent their extinction is to create a pollinator habitat which includes native species such as goldenrod and asters from which Monarch butterflies feed, and milkweed species which are the host plants for Monarch caterpillars.

Monarch Butterfly on New England Aster in Karen Barnes' Yard, 2025.

Through my efforts to create a pollinator-friendly meadow on my property, I have seen many Monarch butterflies visit and feed from my plants, fueling up for the long migration to Mexico.

New England Asters, Panicled Asters, and Milkweed on Karen Barnes' property.

Many people across the United States and Canada have registered their yards as “Waystations” for Monarch butterflies, which include Milkweed and native plants for Monarchs to feed from.

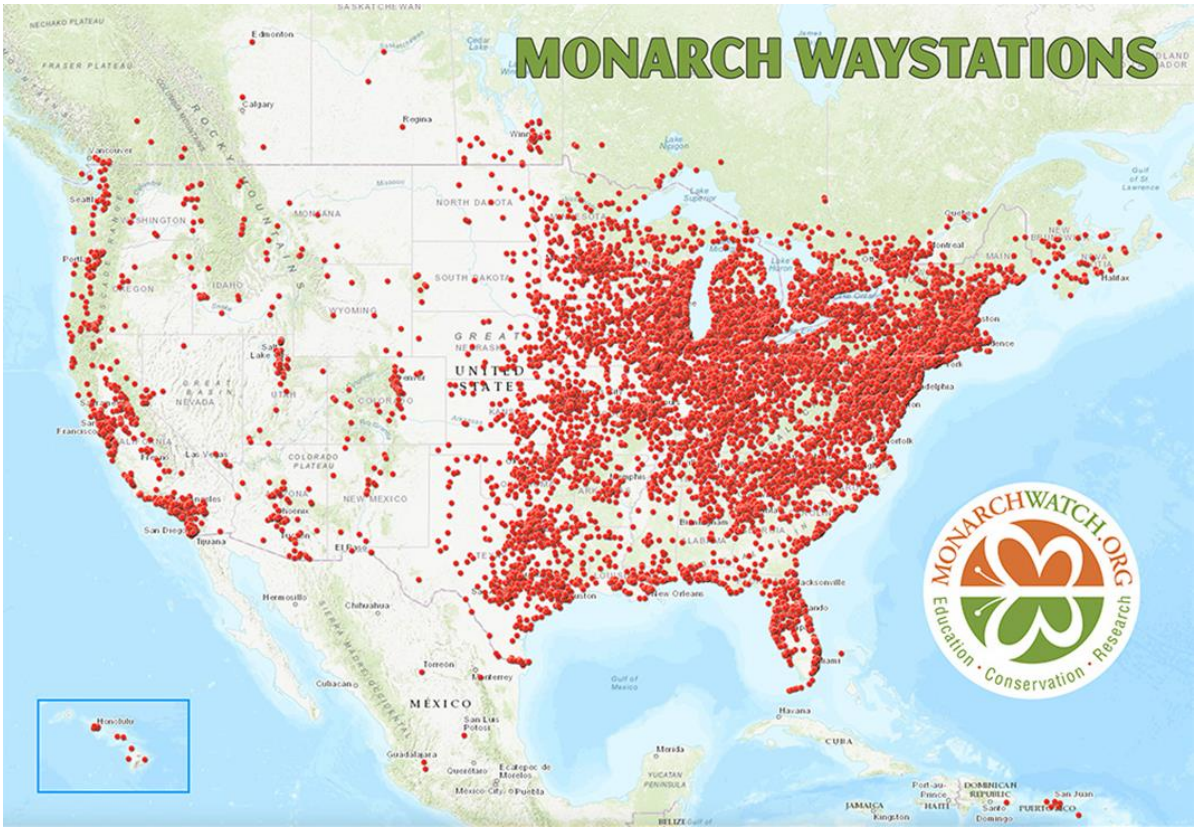
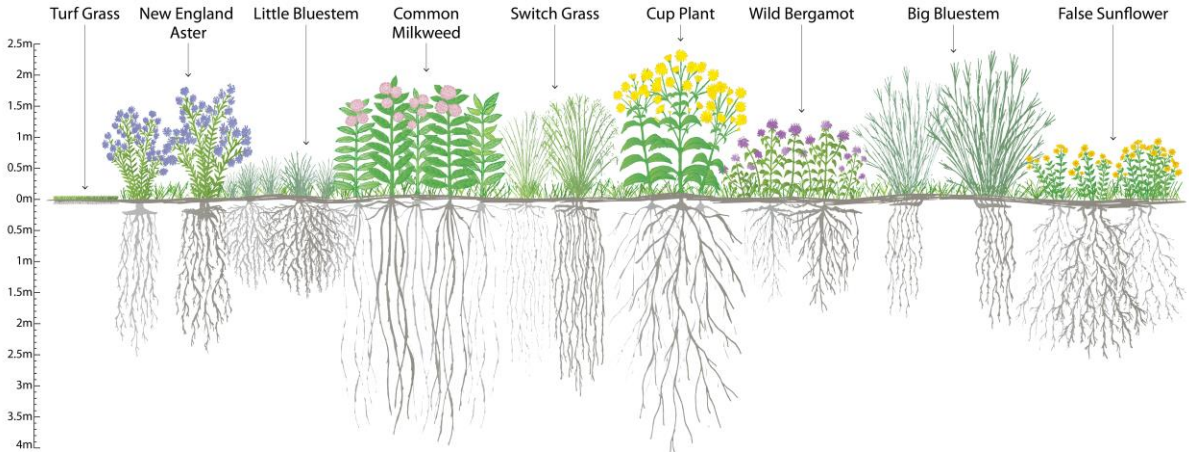


Image: Monarch Watch

Stormwater Runoff and Flood Mitigation Through Deep Rooted Plants and Tall Grasses



Length of roots of mown grass compared to deep roots of wildflowers and long grasses.

Flooding is a public health and safety issue. It endangers human life and exposes the public to pathogenic bacteria. An Environmental Development study finds that deep rooted plants are able to mitigate stormwater runoff:

> *The type of land cover reduces the amount of surface flow, the longer the root of the plant also increases the water absorption thereby reducing surface runoff.*

When cut short for turf, grasses have shallow roots, but if allowed to grow taller, grasses can establish long roots.

Carbon Sequestration Potential of Grasslands and Meadows

Grasslands and meadows can sequester vast amounts of carbon - 70% more carbon than a mown lawn - and aid in mitigating climate change.

> *In the face of climate change, grasslands also have a major role to play in sequestering carbon, storing as much as 180 tonnes of carbon per hectare, equivalent to the annual emissions of 39 cars per hectare.*

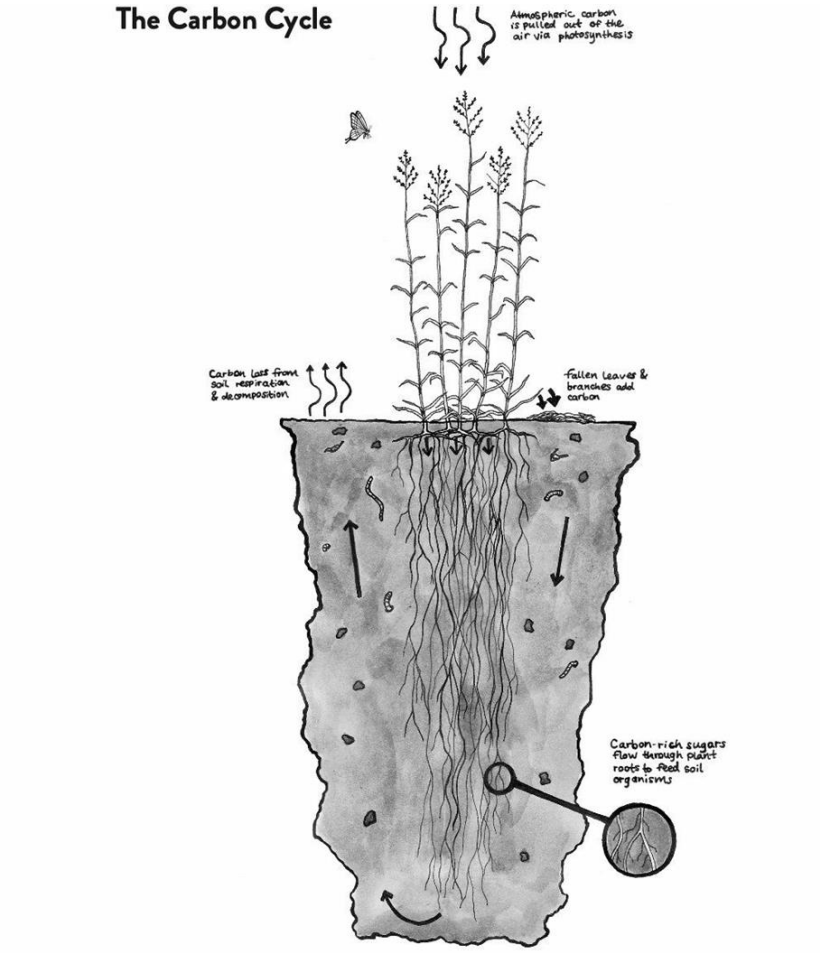


Image: Owen Wormser. *Lawns Into Meadows, 2nd Edition*

Increased Biodiversity

In 2022, Canada hosted the UN Biodiversity Conference (COP15), which culminated in the adoption of the Kunming-Montreal Global Biodiversity Framework. One of the primary goals of this framework is the restoration of degraded ecosystems.

Mown lawns represent a prevalent degraded ecosystem, and the largest opportunity for restoration in a city. Considered "biodiversity deserts", they typically consist of a monoculture that supports very few species.

Naturalization greatly increases the biodiversity of both plant and animal life. Ecological restoration of these spaces supports the survival of threatened species, as well as the overall health and resilience of the ecosystem.

Supporting Pollinators

Rewilded landscapes support crucial pollinator populations. There is a great deal of concern about the decline in pollinators. Around 80% of wild plants rely on insects for pollination, and 75% of the world's crops are pollinated by insects. Restoring urban landscapes to meadow habitats is an important solution to the pollinator crisis.

Health and Environmental Risks of Lawn Equipment

Lawn Mower Injuries

A study of lawn-mower–related emergency department visits and hospitalizations from 2006-2013 analyzed data on demographic characteristics, age, geographic distribution, type of injury, injury severity, and hospital charges, and found:

- 51,151 lawn-mower injuries during the 8-year study period.
- Lacerations were most common 46% (23,907 people)
- Fractures were the second most common injury 22.4% (11,433people)
- Amputations were the third most common 21.5% (11,013 people)
- Children aged 0-4 were more likely to be injured on the foot or toe and sustain an amputation injury. Based on the experience of the emergency room doctors in treating the children, "this finding equates with young children running into the yard while a family member is operating a lawn mower or sitting on the lap of a riding mower operator, falling, and their foot becoming trapped in the machine."
- The conclusion of the article states: "Lawn mowers are a source of preventable injury among children and adults."

Weed Whacker (Lawn Trimmer) Injuries

A study estimated the number of patients treated in U.S. emergency departments for lawn trimmer-related injuries and found:

- 81,907 injuries involving a lawn trimmer occurred from 2000-2009.
- The most commonly injured body part was the head, specifically the eye, accounting for 42.5% of the injuries.
- Contusions and abrasions were the most common type of injury to the head, but lacerations were the most common injury to the extremities, and strains/sprains were the most common injury to the trunk.
- Most of the injuries were due to foreign objects.

Noise Pollution from Lawn Equipment

Gasoline mowers generate noise over 100 dB. Leaf blowers generate noise levels 100 – 115 dB. Any sound above 85 dB can cause hearing loss, and the loss is related both to the power of the sound as well as the length of exposure.

A study of grass trimming workers found high levels of hearing loss. There was a significant correlation, with noise-induced hearing loss found in 82.6% of those workers.

> *A total of 75 grass-trimming workers and a similar number of clerks participated in this study. The range of noise level of the machines was in between 91.3 dB and 100.7 dB with the mean of 95.0 dB. There was a significant correlation of noise-induced hearing loss in the grass-trimming workers (p value = .010) with the prevalence of 82.6%.*

Lawn Mowers and Air Pollution

- One hour of gas lawnmower use emits greenhouse gases equivalent to driving a car 480 km from Toronto to Ottawa, according to the Government of Canada.
- Gas-powered lawn equipment releases about 80,000 tonnes of emissions in Canada per year and uses 151 million litres of gasoline.
- Gas-powered lawn and garden equipment emit air pollutants such as carbon dioxide, carbon monoxide, hydrocarbons, volatile organic compounds, nitrogen oxides, and particulate matter.
- Exhaust emissions from gasoline-powered engines can lead to health problems such as respiratory disease, cancer, cardiovascular disease, neurological conditions, and premature death.

Leaf Blowers and Air Pollution

Leaf blowers cause pollution in the form of:

- Volatile organic compounds (VOC)
  - Benzene
  - 1,3 butadiene
  - Acetaldehyde
  - Formaldehyde
- Nitrogen oxides (NOx)
- Carbon monoxide
- Carbon dioxide
- Hydrocarbons
- Aerosolized particulate matter (including animal feces, pet waste, fertilizers, and mold)

Alternatives to Leaf Blowers

It is recommended that homeowners leave the leaves on the ground instead of removing them. Decaying leaves support soil health and form a protective layer that provides shelter for snails, bees, butterflies, and moths.

If homeowners want to remove leaves, they can use rakes as an alternative to blowers.

Lessons from Municipal Bans on Cosmetic Pesticide Use

Bans on cosmetic pesticide use were centered on eliminating unnecessary risks to human health and the environment. Key reasons included protecting vulnerable populations, reducing chemical pollution, and recognizing that non-toxic alternatives existed.

Before the Ontario ban on cosmetic pesticides came into effect, many municipalities enacted their own bans on cosmetic pesticides, one-by-one.

After the first municipal ban on non-essential pesticides, other municipalities followed.

Banning Powered Lawn Equipment for Cosmetic Use

Similar to cosmetic pesticides, powered lawn and garden equipment poses imminent as well as long-term threats to human health and the wellbeing of the environment. The unnecessary and preventable harms include injuries such as hearing loss, lacerations, burns, amputations, and deaths. Long-term exposure to emissions from gasoline-powered engines can lead to

health problems such as respiratory disease, cancer, cardiovascular disease, neurological conditions, and premature death.

The environmental harms include habitat loss, biodiversity loss, and pollution.

Alternatives to powered lawn equipment exist, including (for those who still desire lawns) scythes, push-mowers, and rakes, (and for those who want to support biodiversity) naturalization, and the implementation of meadows or pollinator gardens.

To support community health, safety and well-being, the City of Mississauga should take steps to reduce or eliminate the use of powered lawn equipment for cosmetic purposes on both city and private properties.

Mississauga could be the first municipality to lead the way on banning the cosmetic use of powered lawn equipment.

Myths and Misconceptions About Naturalization and Pests

A report by Ecological Design Lab examines the question of whether naturalized areas attract pests.

> *One of the greatest misconceptions about naturalized landscapes is that they are more likely to host vermin species, compared to traditional turfgrass. However, research shows that the primary factor attracting vermin to urban environments is the availability of food sources, such as domestic animal feed and human garbage coupled with easy movement between harborage sites.*
>
> *In fact, naturalized gardens have been proven to be effective at limiting movement of these species across urban environments, opposed to that of traditional turfgrass which facilitates movement more easily. Further evidence has shown that naturalized gardens boost greater levels of genetic plant and animal diversity, which will decrease pest abundance in urban and suburban areas.*

Precedents for Naturalized Landscapes

Since 1996, Sandy Bell v. Toronto established that a limit of 20 cm on vegetation is contrary to Canadian's constitutional rights to express environmental beliefs by growing tall grasses and wildflowers.

In 2002, Douglas Counter v. Toronto established the right to freedom of expression through gardening on the City boulevard adjacent to one's residence.

Currently, the city of Toronto allows residents to garden on the boulevard with a height restriction of 1 meter on the boulevard so as not to obstruct sightlines.

Wolf Ruck has now re-established that a 20cm height limit on grasses is contrary to Canadian's constitutional rights.

Other city bylaws exempt naturalized areas from plant height restrictions.

Why a Naturalization Exemption is Not the Best Approach

The Naturalization exemption has not worked well in practice, because it centers mown lawns as the standard landscape, while stigmatizing other forms of landscaping like naturalization or rewilding.

These bylaws can set unrealistic standards for naturalization, and often leave room for biased interpretations by bylaw officers who view lawns as desirable and naturalized landscapes as "untidy".

People who grow turfgrass lawns do not have to jump through hoops to have their landscaping methods approved, despite the fact that many of these lawncare practices are ecologically harmful. This makes lawns the easy default choice for homeowners who want to avoid conflict, while making naturalization prohibitively difficult, and discouraging homeowners from participating in ecological restoration.

Having separate rules for mown lawns and naturalized areas is also problematic because it does not leave room for the transition from lawn to meadow.

Height limits on grasses need to be removed in order to allow homeowners to convert their lawns into meadows using the best practices in restoration, such as those utilized by the City of Edmonton and the City of Vancouver.

Recommendations

1. Encourage naturalization, pollinator gardens, urban meadows, rewilding, and habitat restoration on both City and private lands. This will increase biodiversity, mitigate climate change, mitigate flooding and stormwater runoff, support endangered butterflies and beneficial insects, and support healthy bird populations. Creating more naturalized landscapes on City property will set an example of good landscaping practices while providing savings in the City's budget.

2. For flood mitigation, the deep roots of long grasses and wildflowers is an essential ecosystem service that can be implemented in everyone's yard and is under-utilized on city properties. Encourage and educate about the practice of ecological restoration for flood prevention.

3. Encourage naturalization on boulevards and in drainage ditches.

4. Remove the 20cm height restriction on all plants on private yards, and on boulevards, except where there may be sightline issues, such as corner lots. Boulevards should have no height restrictions unless sightlines are impaired, in which case 1 meter is a common recommended height limit for sightline triangles and corners.

5. Reclaim as many areas of the City as possible for ecological restoration. Implement naturalization and meadow-scaping in public parks, on boulevards, and on right of ways under powerlines.

6. Implement a public education campaign about the benefits of naturalizing.

7. Create signs such as those in Vancouver and Edmonton that can be displayed on public property to educate about the naturalization process.

8. Encourage citizen science and create a page on the City website where people can post photos of the species they have seen in their yards after creating pollinator gardens or meadows.

9. Collaborate with environmental groups to host events where people can buy or share native plants and seeds.

10. Do <u>not</u> create a "naturalized area" exemption, as this stigmatizes naturalization rather than encouraging it.

11. Ban the cosmetic use of powered lawn and gardening equipment. This will protect public health and safety, prevent unnecessary injuries and deaths, and eliminate unnecessary environmental harm.