TORONTO POLLINATOR PROTECTION STRATEGY

DRAFT PRIORITIES AND ACTIONS

TORONTO

Live green Toronto

Since 2016, City of Toronto staff have been working together with expert stakeholders and concerned residents to develop a Pollinator Protection Strategy, which will be a component of the City's broader Biodiversity Strategy.

The goal is to identify what additional actions can be taken by the City and the community to protect, enhance and create habitat for pollinators, such as bees and butterflies. The City of Toronto is already doing many things to support pollinators, but we know there is more to be done. The final strategy will build upon and expand current activities and create opportunities to establish new initiatives, partnerships and collaborations.

This draft strategy document provides:

- an overview of Toronto's bees and butterflies;
- a summary of the key guiding priorities that shape the strategy; and
- a series of proposed actions that will help us to protect and sustain healthy pollinator populations in Toronto.

We have published this document to invite further input as we begin to finalize the strategy. We are aiming to deliver a final strategy by the end of 2017, following a series of public consultations, additional research, and input from our advisory groups.

For more information on the strategy and details on how to provide feedback, please visit:
livegreentoronto.ca

July 2017

Cover image: Bicoloured Agapostemon *(Agapostemon virescens)*

VISION

Toronto is home to healthy pollinator populations that support resilient ecosystems and contribute to a rich urban biodiversity.

Compton Tortoiseshell Butterfly *(Nymphalis vaualbum)*

TORONTO'S POLLINATORS

Toronto is home to a wide range of pollinators, including over 360 species of bees and 112 species of butterflies. Many of these insects provide important ecosystem services such as pollination and are a source of food for birds, while contributing to the overall health of biodiversity in our city.

WHAT IS POLLINATION?

Pollination is the act of transferring pollen from the male part of a plant to the female part of a plant, allowing fertilization to take place. Pollination allows plants to produce viable seeds, full-bodied fruits, and new plants. Most plants cannot pollinate themselves, they need to attract pollinators through scent, nectar and bright colours, to do it for them.

WHAT ARE POLLINATORS?

Animal pollinators include bees, butterflies, moths, wasps, flies, beetles, and birds. Bees are the most specialized and efficient insect pollinator. Butterflies are not very efficient when it comes to pollination.

Bumble Bee *(Bombus sp.)*

BEES IN THE NEWS

Significant media attention on the declining health of honey bees and the economic losses experienced by beekeepers, has taken the focus off the more ecologically-concerning decline of native bees. Evidence suggests that native bees are the most at risk, and if these species are lost, they cannot be replaced.

Toronto's bees

Native bees and managed bees can be found in Toronto. An average backyard garden in Toronto may contain over 50 species of bees, with some nesting and foraging there, and others visiting for pollen and nectar. Their entire lifecycle is dependent on their interactions with flowering plants - bees visit flowers to collect food for their larvae, but also feed exclusively on pollen and nectar as adults.

Bicoloured Agapostemon *(A. virescens)*

Rusty-patched Bumble Bee *(Bombus affinis)*

NATIVE BEES

Toronto's native bee community consists of over 360 species. Bee species vary tremendously in colour, size and shape, sometimes making it difficult to distinguish what is a bee and what isn't. For example, the *Augochlora* bee, commonly seen in Toronto, is metallic green.

Most native bees are solitary and nest in the ground or pre-existing cavities. Some, such as carpenter bees, excavate tunnels in wood. Native bees typically overwinter in pithy stems, rotting logs or underground burrows.

Ground nesting Bicoloured Agapostemon *(A. virescens)*

BEES AT RISK

Several species of native bees are at risk of extinction. Toronto's at-risk species include:

- Rusty-patched Bumble Bee (Endangered status),
- Gypsy Cuckoo Bumble Bee (Endangered status),
- Yellow-banded Bumble Bee (Special Concern status)

Did you know? Toronto's backyard fruits and vegetables are pollinated mostly by native bees. In some cases, native bees are more effective pollinators, than managed honey bees.

Native (or wild) pollinators exist naturally within the environment and have coevolved with native flowering plants for over 100 million years.

MANAGED BEES

Managed bees are not wild – they are used to pollinate Ontario crops and require humans to provide for some of their needs.

The European Honey Bee *(Apis mellifera)* is the most common managed bee in Ontario. It is an introduced species brought to Canada by European settlers and re-introduced annually.

Managed honey bees live in colonies (or hives), are black and yellow (or amber), and are known to sting. Honey bees produce honey and pollinate a broad range of Ontario crops making them economically valuable in the agricultural sector.

Bumble bees, which are native to Ontario, are the primary managed pollinator for greenhouse tomato and pepper production.

Canadian Bees	European Honey Bees
Native	Not native
Wild	Managed
Don't produce honey	Make honey
Come in a wide range of colours	Black and yellow/amber
Nest in the ground	Live in hives
Are primarily solitary, some live in colonies (such as bumble bees)	Are social and live in colonies
In most cases don't sting	Sting

European Honey Bee *(Apis mellifera)*

Did you know? Native bees don't make honey, as they overwinter in a dormant state and do not require food stores. Honey bees make and store honey for overwintering needs.

COMPETITION BETWEEN NATIVE AND MANAGED BEES

In urban centres where habitat is limited, the introduction of non-native bees (such as honey bees), may negatively impact native pollinators.

Honey bee colonies are massive and can contain up to 50,000 bees in one hive. To sustain the colony, honey bees store honey, which requires them to collect additional resources to produce this stored food. This means that one honey bee colony can potentially out-compete thousands of native bees for food.

Recent studies suggest that high-honey bee densities may have an impact on local pollen and nectar availability. Studies have also shown that managed bees may be responsible for introducing parasites and diseases to native bees.

Did you know? European Honey Bees are not endangered in Canada. While there is growing concern about the declining health of the honey bee, they are not endangered in Canada. When beekeepers experience a loss of bees, they are able to order replacement bees, at a cost. If native pollinator species are lost, they cannot be replaced.

Toronto's butterflies

Butterflies are beautiful and an essential part of our interconnected ecosystem. There are 112 species of butterflies recorded in Toronto. Adult butterflies feed primarily on nectar from flowers. For each species of butterfly, its larvae (caterpillars) can only feed on specific plant species, called larval host plants. Caterpillars are immature butterflies. To nurture our butterflies, we must nurture our caterpillars first.

Monarch butterfly *(Danaus plexippus)*

MONARCH BUTTERFLIES

The Monarch butterfly is probably the world's most familiar butterfly, best known for the incredible migration of the eastern North American population. Individuals fly 3200 kilometres from breeding grounds in Toronto to overwinter in central Mexico. Their southward journey becomes noticeable in the Toronto area around late August to mid September each year. Monarchs return in the spring to find their larval host plants (milkweed), which do not grow in their overwintering sites.

Throughout their life cycle, Monarchs use three different types of habitat. Monarch larvae or caterpillars feed exclusively on milkweed plants and are confined to areas where milkweed grows. Adult butterflies can be found in more diverse habitats where they feed on nectar from a variety of flowers. Monarchs spend the winter in Oyamel Fir forests found in central Mexico.

WHY ARE BUTTERFLIES IMPORTANT?

Butterflies are an important part of our ecosystem. Caterpillars are a primary source of food for other animals, such as birds. While most people are not fond of caterpillars, they need to be nurtured both as the young of butterflies, and for their roles in the natural ecosystem.

MIGRANTS AND RESIDENT BUTTERFLIES

A few species of Toronto butterflies migrate south for the winter while the majority remain in the city and overwinter as eggs, chrysalides, larvae or adults. These species require particular habitat such as leaf piles or sheltered areas to successfully overwinter.

BUTTERFLIES AT RISK

Some butterflies are classified as Special Concern provincially such as the West Virginia White, the Mottled Duskywing and the Monarch Butterfly (endangered federally). In addition, all eight swallowtail species recorded in Toronto are specially protected. At least one species, the Karner Blue Butterfly, is locally extinct.

LOCAL THREATS TO POLLINATORS

These threats, resulting from human activities, are specific to bees and butterflies in an urban environment.

1. FORAGE HABITAT LOSS

When wildflower habitat is reduced, the availability of pollen and nectar for pollinators is also reduced. Bees and butterflies need continuous access to flowers during their foraging periods (spring to fall). Locally-grown, organic, native plants provide native bees and butterflies with the ideal forage habitat they need.

2. LOSS OF LARVAL HOST PLANTS

The larvae (caterpillars) of each species of butterfly can only feed on specific plants, known as larval host plants. For Monarch butterflies, this plant is milkweed. Monarchs cannot survive without milkweed. Planting native milkweed, such as common milkweed, swamp milkweed and orange milkweed, will help support Monarch populations.

3. NESTING HABITAT LOSS

Most native bees are solitary and nest in the ground or cavities. Converting a lawn or garden to concrete, gravel, mulch or artificial turf will make it impossible for bees to nest. Nesting sites can be provided by leaving bare patches of sandy soil, dry stems, and raspberry stalks.

4. OVERWINTERING HABITAT LOSS

Some native bees overwinter in cavities, tunnels, dry stems or wood. Bundles of raspberry stalks and other stems that are put out for yard waste collection in spring will often contain overwintering bees. Overwintering sites should be left undisturbed until the bees vacate, usually in spring or early summer.

5. INTRODUCED AND INVASIVE SPECIES

Non-native bees may negatively impact native bees. The European Honey Bee and Wool Carder Bee may make it more difficult for native bees to find food, and the Giant Resin Bee may displace nesting native bees. Dog strangling vine, an invasive plant from Europe, may negatively affect Monarch populations as it is closely related to milkweed. Female Monarchs lay eggs on it, but the larvae cannot survive.

6. PESTICIDES

Insecticides are the type of pesticide that pose the greatest threat to pollinators. In recent years, there has been attention on neonicotinoids, a class of systemic insecticides. While the intention of insecticides is to control unwanted insect pests, they can harm beneficial insects such as bees and butterflies. Many plants and seeds sold in garden centres are treated with pesticides, which can transfer into the nectar and pollen of the plant.

Common milkweed *(Asclepias syriaca)*

Did you know? Toronto passed a Pesticide By-law in 2003, banning the use of cosmetic pesticides. Ontario followed with a provincial ban in 2009.

What are neonicotinoids?

Neonicotinoids are a class of systemic insecticides that affect the central nervous system of insects, resulting in paralysis and death. Neonicotinoids have been widely used for agricultural seed treatment in Ontario since the mid 1990's. In 2015, Ontario became the first jurisdiction in North America to legislate restrictions on neonicotinoid treated corn and soybean seeds, under the Pesticides Act.

90% of all wild flowering plants depend on pollination

1 in every 3 bites of food we eat relies on bees for pollination

Red-belted Bumble Bee *(Bombus ternarius)*

WHY IS A POLLINATOR PROTECTION STRATEGY NECESSARY?

Conserving and properly managing Toronto's diverse pollinator community is a key component of a sustainable, resilient, and biodiverse city.

As pollinators, bees provide an invaluable service to the ecosystem. Without bees, much of the food we eat and the natural landscapes we enjoy would not exist.

Butterflies are also an essential component of our ecosystem. Caterpillars have important roles as natural herbivores and food for birds.

It is critical to ecosystem functioning to maintain healthy populations of bees and butterflies.

The decline in some species of pollinators is alarming. Once a species is lost from an area, it is extremely difficult to reintroduce it. The actions proposed in this strategy are intended to ensure that species still found in our city can survive and be sustained.

CITY OF TORONTO SUPPORT FOR POLLINATORS

The City of Toronto is already doing many things to support pollinators, and more can be done. Several of the initiatives already underway in our city are highlighted as success stories in this document. We will build upon and expand current activities, but also create opportunities to establish new initiatives, partnerships and collaborations.

BEES OF TORONTO & BUTTERFLIES OF TORONTO – THE BOOKS

Available at local libraries and online, these books are a part of the City's Biodiversity Series. These are made-in-Toronto guides to bees and butterflies in the city, featuring profiles of Toronto's (un) Official Bee – the Bicoloured Agapostemon and Toronto's (un) Official Butterfly – Eastern Tiger Swallowtail. Bees of Toronto, the first book on urban native and non-native bees in the world, was the result of a partnership between the City, researchers at York University and dedicated volunteers.

TORONTO, THE FIRST BEE CITY IN CANADA

In April 2016, City Council showed its commitment to raising awareness of the importance of pollinators by adopting a resolution designating Toronto a Bee City. With that decision, Toronto became the first Bee City in Canada. Participation in the Bee City program raises awareness of pollinator protection activities and encourages Toronto and other municipalities to take action for pollinators.

This draft Pollinator Protection Strategy will be used for public consultation purposes. We are seeking input on the proposed actions presented here and we want to hear from you.

Adult Black Swallowtail *(Papilio polyxenes)*

Caterpillar (larva) - Black Swallowtail *(Papilio polyxenes)*

DRAFT POLLINATOR PROTECTION STRATEGY: VISION, PRIORITIES AND PROPOSED ACTIONS

The vision is for Toronto to be home to healthy pollinator populations that support resilient ecosystems and contribute to a rich urban biodiversity.

To achieve this vision, six priorities have been identified:

1) Create and enhance habitat

2) Design and connect green spaces

3) Partner and build relationships

4) Invest, incentivize and inspire

5) Educate and train

6) Celebrate and recognize achievements

For each priority, a series of proposed actions have been developed that will help the City of Toronto achieve its vision. These proposed actions will not only support native bees and butterflies, but will also be beneficial to all pollinators, including non-native honey bees. Habitat creation in particular will have a positive impact on all pollinators, and is the foundation of the City's actions.

1. CREATE AND ENHANCE HABITAT

Pollinators require high quality habitat to thrive in an urban environment. High quality habitat is any area that provides foraging resources (pollen and nectar from flowers), nesting and overwintering sites, and larval host plants (such as milkweed) that support butterflies.

Many of the places to create and enhance pollinator habitat already exist - on the ground and on our rooftops. Our urban environment with patches of parkland, ravine, urban gardens and green roofs, can provide an abundance of floral resources and nesting sites for a wide range of pollinators.

Proposed actions:

1. Conduct an assessment of how much existing and potential pollinator habitat there is in Toronto and set targets for pollinator habitat creation and enhancement.

2. Include in the City's existing guidelines regarding plantings in City parks, facilities and restoration projects, a commitment to plan more native trees, shrubs, and wildflowers that attract pollinators.

3. Work with members of City Council to identify at least one city-managed site in each of the 44 wards that can be enhanced for pollinators and serve as a model garden.

4. Develop guidelines for creating habitat specifically for pollinator species at risk, including the rusty-patched bumblebee, gypsy cuckoo bumblebee, monarch butterfly, yellow-banded bumblebee.

5. Develop and share lists of recommended native plants and flowering trees and shrubs that attract pollinators for various uses (private lands, roadsides, green streets, etc.) and environmental conditions (e.g. pollution, salt conditions, heat stress), and investigate the potential to create wildflower seed mixtures suited to the Toronto area.

6. Review the City's mowing practices with a view to preserving pollinator habitat, and work with Transportation Services and other relevant City divisions and agencies to identify areas that could benefit from less frequent mowing and/or strategically timed mowing, with the goal of developing guidelines and training for City staff and contractors.

7. Work with Solid Waste Management Services to identify City-owned closed landfill sites that may have the potential to become high quality pollinator habitat.

8. Review the City's practices for managing coarse woody debris (e.g. fallen branches after storm events) and the type, distribution and application of mulch in landscaping.

Success story

The Humber Bay Butterfly Habitat (HBBH) - This City of Toronto led ecological restoration project provides critical habitat for a variety of native butterflies and other pollinators. Located along the shores of Lake Ontario in Toronto's west end, HBBH incorporates a diversity of native flowers, shrubs, trees, grasses, sedges and a variety of physical features known to support butterflies throughout their life cycles. The goal of HBBH is to establish a self-sustaining native plant community which will support a variety of butterfly species, while engaging and educating park users about the value of urban wildlife habitat.

2. DESIGN AND CONNECT GREEN SPACES

As cities grow, habitat can be lost or fragmented into small patches, making it difficult for some species to access all of the resources they need to survive. By re-connecting green spaces, a continuous corridor of habitat can be created that allows pollinators to move freely from area to area and take advantage of the resources each patch has to offer.

On a city-wide scale, parks, ravines, green roofs, and infrastructure corridors present the greatest opportunity for the conservation of pollinators.

On a smaller scale, individual pollinator plantings such as urban gardens, parkettes, laneways, and planter boxes, can be linked to create a neighbourhood-scale pollinator corridor.

Proposed actions:

1. Identify potential linkages to connect areas of existing pollinator habitat on publicly managed lands through geospatial mapping, and identify “micro” corridor connections where small scale plantings could connect two large green areas in close proximity.

2. Support the efforts of the Toronto and Region Conservation Authority (TRCA) to create and connect pollinator habitat in utility corridors, and identify specific ways the City can work with TRCA to meet their goals.

3. Share information/resources with groups (such as TRCA, David Suzuki Foundation, school boards, horticultural societies, BIAs, and others) to foster corridor creation on public and private land.

4. Work with developers and property owners to include more pollinator friendly plantings and design in green roof projects on low- and mid-rise buildings, by including information in the Green Roof Construction Standards Supplementary Guidelines, such as: seasonally and biologically diverse and abundant flowering species; greater substrate depths (minimum 15 cm); appropriate substrate composition with high nutrient availability and water retention capacity; large stones and/or logs that provide nesting habitat; and adjusting maintenance practices to leave plant biomass over the winter to protect nesting species.

5. Enhance areas of the City Hall podium green roof with pollinator-friendly habitat, accompanied by educational signage, to demonstrate the role green roofs play in pollinator habitat and corridor creation.

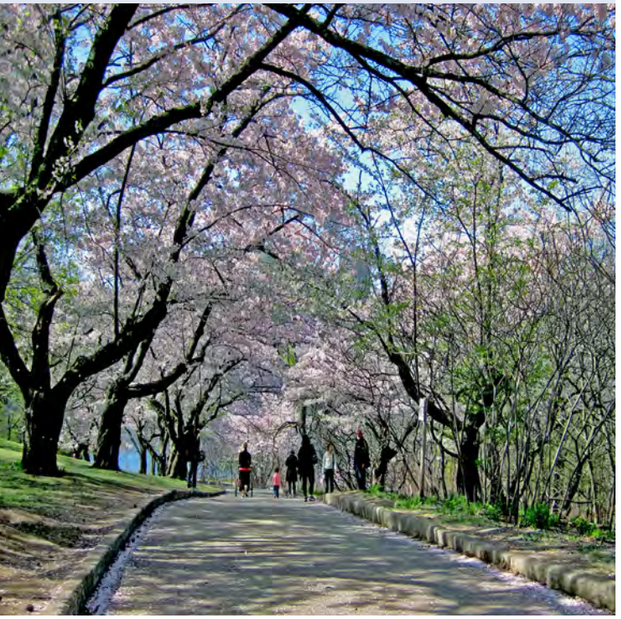
6. Work with relevant City divisions to ensure that the needs of pollinators are considered in all green infrastructure and stormwater management initiatives undertaken by the City of Toronto (such as green streets, green parking lots, street tree plantings, utility corridors, green roofs, hedge rows, rain gardens, bioswales).

Success story

The Scarborough Centre Butterfly Trail - This TRCA initiative with funding from the W. Garfield Weston Foundation, revitalized approximately 40 hectares of hydro corridor space. By converting the area from barren mown grass into a meadow that provides high functioning pollinator habitat to complement the multi-use trail for pedestrians; the initiative transformed an underutilized space into an important part of the natural system in Toronto. Through education and stewardship programs, community members are able to connect with nature and take active ownership of the space to maintain it for future generations to enjoy. This corridor represents an important pathway of connected greenspace, which allows pollinators to forage in a greater amount of area.

3. PARTNER AND BUILD RELATIONSHIPS

It is vital to pollinator protection that the City continues to build relationships, consult, and engage with stakeholders. There are groups in Toronto already working on pollinator protection initiatives and the City of Toronto can support and encourage their actions. Many of the actions proposed in this document cannot be achieved without the support and guidance of partners.



Proposed actions:

1. Support university and college-led research projects that support the goals of this project and that guide the development of best practices for pollinators in Toronto.

2. Work with the Toronto Association of Business Improvement Areas (TABIA) to create pollinator habitat on private lands, with the goal of creating at least one pollinator garden in each BIA and investigate support for ongoing garden maintenance.

3. Partner and build relationships with community based organizations working on pollinator protection initiatives, and identify ways the City can help to advance their efforts.

4. Engage with the Toronto School Boards to encourage schools to create pollinator habitat, with the goal of creating a pollinator garden at every school and investigate support for ongoing garden maintenance.

5. Connect with local growers/nurseries to encourage them to cultivate native, pesticide-free pollinator-friendly plant seedlings, and develop pollinator-friendly wildflower seed mixes, with emphasis on the City's list of recommended native plants and flowering trees and shrub species that attract pollinators.

6. Improve collaboration and coordination among City divisions, agencies, boards and commissions, and external partners through the Interdivisional Pollinator Working Group and continue to engage the External Pollinator Advisory Group by soliciting feedback and expert advice as needed, to facilitate progress on pollinator protection efforts.

7. Provide guidance and opportunities to volunteer groups looking to engage in pollinator protection initiatives, utilizing the expertise of the Live Green Toronto Volunteer program.

8. Continue to engage with the Province of Ontario on the Pollinator Health Action Plan and related Acts.

9. Engage with developers, property and rental associations that have the capacity to encourage pollinator habitat on their land, such as the Toronto Parking Authority, the Greater Toronto Apartment Association (GTAA), Building Owners and Managers Association (BOMA), condominium boards, and Toronto Community Housing, to promote the creation of pollinator habitat.

Success story

Parkland Naturalization Program - The City works with community and environmental groups and funding partners to restore degraded natural landscapes and establish new natural areas to create forest, wetland, and meadow habitats. More than 60,000 native trees and shrubs have been planted, as well as more than 50,000 wildflowers, herbaceous and aquatic plants.

4. INVEST, INCENTIVIZE AND INSPIRE

Investing in pollinator protection initiatives and incentivizing actions that create pollinator habitat will inspire and motivate people to act. Incentives play a key role in changing behaviour, encouraging new approaches, and supporting the current community interest in pollinator protection.

City purchasing practices can be designed to support healthy pollinator populations. For example, the City purchases a great deal of plant material annually for use in our parks. This purchasing power can be utilized to shift the market toward growing and distributing pesticide-free native plants that are beneficial to pollinators.

Eastern Tiger Swallowtail *(Papilio glaucus)*

Proposed actions:

1. Develop the criteria and seek funding sources for an incentive program that provides modest financial support or resources (e.g. soil, seeds, and plants) to encourage neighbourhood-scale, pollinator habitat creation or enhancement, and pollinator education initiatives.

2. Encourage biodiverse, pollinator-friendly green roofs through the City's Eco-Roof Incentive Program, by identifying an appropriate criteria to encourage the use of materials and design elements that increase the capacity of the roof to serve as pollinator habitat.

3. Leverage City planned investments in green infrastructure, such as right-of-ways, to incorporate pollinator plantings and habitat creation, and coordinate these activities through the Interdivisional Pollinator Working Group.

4. Explore the creation of a City procurement policy to purchase more native pollinator friendly plants, and to select plants and seeds that have not been treated with systemic pesticides (e.g. neonicotinoids) for use in City-managed spaces, and incorporate these guidelines into tender documents for all City divisions.

5. Revise the City's existing pesticide use policy, as well as guidelines regarding plants grown in City greenhouses, to include a commitment to grow plants and seeds that have not been treated with systemic pesticides (e.g. neonicotinoids).

6. Investigate the feasibility of creating a full-time staff position dedicated to the implementation of pollinator related initiatives.

7. Work with relevant City divisions to determine the costs and savings associated with transforming and maintaining existing City-managed spaces to pollinator habitat.

8. Seek sponsorship, grant and external funding opportunities to support the actions presented in this report.

Success story

Live Green Toronto Grants - An initiative of the City's Environment and Energy Division, this successful grant program ran from 2008-2015 and funded 168 community-led greening projects. The grant recipients included 40 garden projects that provide important habitat for Toronto's pollinators. One grant recipient, the Dallington Pollinators Community Garden, also won the RBC Blue Water Award and City of Toronto Garden Award. Another grant recipient, the Franklin's Children's Garden Pollination Station, on Toronto Island, welcomed close to 40,000 visitors in the summer of 2016.

5. EDUCATE AND TRAIN

Strengthening education initiatives will leverage the interest in protecting pollinators that already exists in the community. The City has the opportunity to promote practices that are beneficial to pollinators, and identify those that can be harmful.

For example, well-meaning individuals who want to help pollinators may pursue hobby beekeeping, when planting pollinator-friendly plants is an easier and more effective way to create much needed habitat.

It's also important to recognize the role of City staff, and the importance of delivering and expanding the "Horticulture Program of Excellence", which provides education and training to City staff.

Proposed actions:

1. Develop and promote a series of practical how-to guides for specific audiences (businesses, schools, local communities, gardeners, etc.) that offer advice on actions to take to help pollinators, including creating pollinator habitat, and identifying practices which threaten pollinators.

2. Enhance existing educational programming offered by the City of Toronto, such as Day Camps, Children's Gardening programs and Live Green Toronto, to include information, activities and educational signage in City spaces on the importance of pollinators.

3. Work with Toronto School Boards and the Ontario Institute for Studies in Education to provide pollinator information packages for teachers, investigate the opportunity to offer native pollinator education sessions in Toronto schools, and make links with indigenous culture and stewardship information.

4. Update the City's Free Tree Planting brochure to identify which trees are pollinator-friendly, and provide information about why pollinators are important.

5. Create an online resource on the City's Live Green Toronto website that includes: information about pollinators and species at risk, and shares best practices, including plant lists, and information about harmful practices, such as pesticide use.

6. Work with Live Green Toronto programming to deliver workshops for gardeners on how to create a pollinator garden, and investigate delivering the workshops at libraries and community centres.

7. Continue and expand training for City staff through the Horticulture Program of Excellence on topics such as creating pollinator habitat in City parks; best practices for pesticide application, roadside management and mowing, and look for opportunities to expand the training to more staff and other divisions.

8. Investigate the development of a point-of-sale campaign to help residents identify pollinator-friendly plants and seeds at local nurseries, and create lists of retailers that offer pesticide free plants.

Success story

Tickle Bees and City Staff - In the spring of 2015, thousands of gentle, ground-nesting native bees emerged with the warm weather in a City park. Being in close proximity to a playground, members of the public voiced their concern to the Park supervisor. City staff, having recently completed training on pollinators as part of the Horticulture Program of Excellence, identified the bees as Mining bees, nicknamed the "Tickle Bee" by school children, as they don't sting and are very gentle.

Staff installed educational signage about the "Tickle Bees" and the vital role they play in pollination. The community was thrilled to host these important pollinators and often stopped to observe their activity. Educating City staff about this important pollinator led to this learning opportunity with members of this community.

6. CELEBRATE AND RECOGNIZE ACHIEVEMENTS

There are many ways to celebrate and recognize achievements in pollinator protection. National Pollinator Week is a well-established annual celebration that raises awareness and celebrates action taken to protect pollinators.

The City can recognize the efforts of residents, businesses, community organizations, and institutions by celebrating milestones and honouring the contributions of members of our community. Public signage, awards, and certification programs will also raise the profile of pollinators and assist in educational efforts that encourage further action.

Proposed actions:

1. Celebrate and promote National Pollinator Week (third week in June) and Toronto's status as the first Bee City affiliate in Canada by undertaking at least one public education and/or habitat creation or restoration activity each year.

2. Work with the Canadian Wildlife Federation and their existing Backyard Habitat Certification Program to tailor a program specific to Toronto that will guide and recognize property owners in creating pollinator habitat.

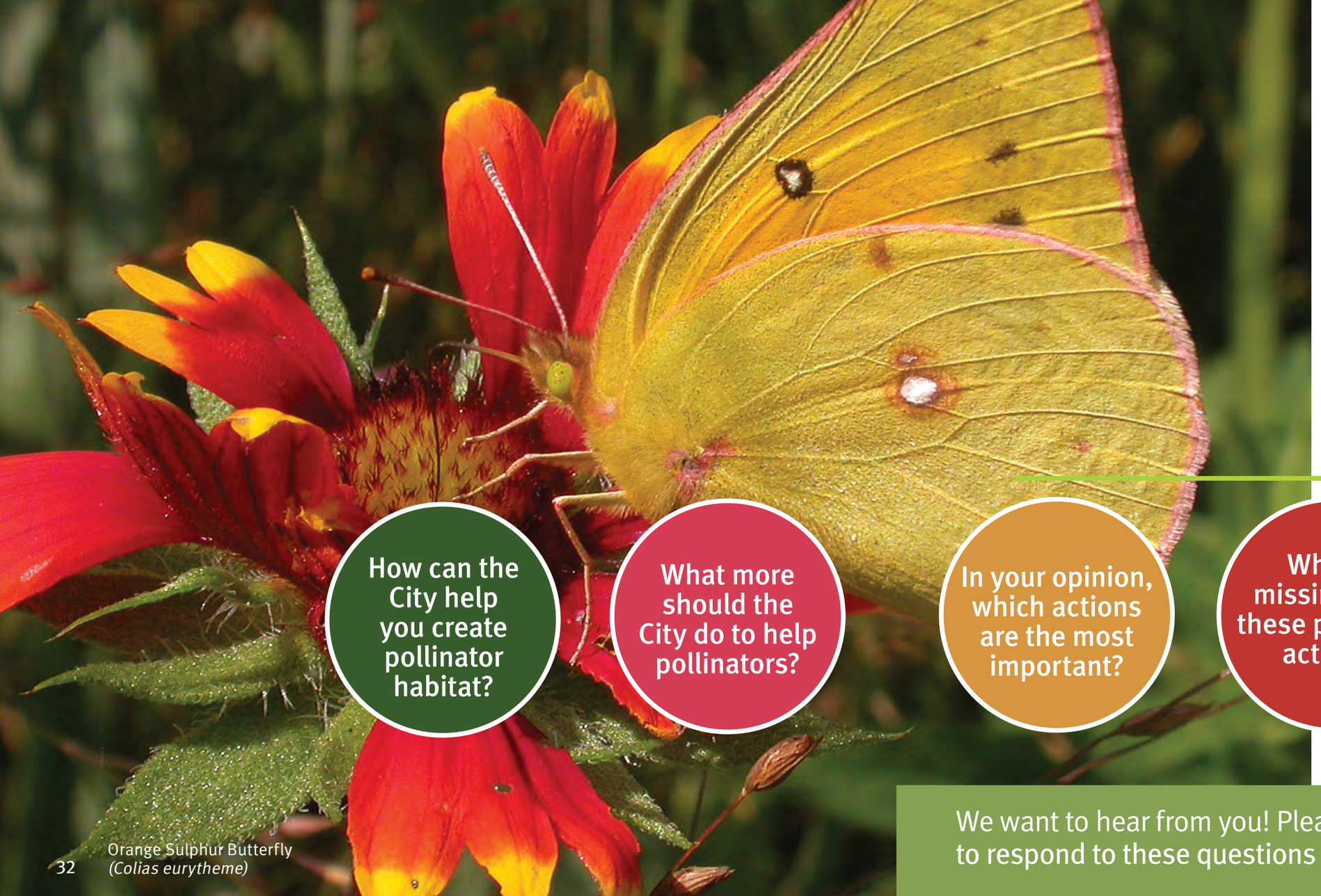
3. Provide recognition through signage (e.g. Pollinators are Welcome Here!) to acknowledge the efforts of property owners who have created or enhanced pollinator habitat and/or contributed to corridor building in their neighbourhoods.

4. Add a pollinator-friendly garden category to the City's existing Garden Awards program, and inspire others by offering in person and virtual tours of award-winning gardens.

5. Create a recognition award (e.g., Native Pollinator Supporter of the Year) for residents and organizations (e.g. schools, businesses, institutions) that have contributed to the protection of pollinators.

Success story

Celebrating National Pollinator Week - As part of Toronto's commitment to raising awareness of the importance of pollinators and celebrating our status as the first Bee City in Canada, an event was organized as part of National Pollinator Week. In June of 2016, a mural of a green metallic sweat bee was unveiled at Bloor Street and Howland Avenue and a proclamation declaring "Pollinator Week" in Toronto was announced. The mural was the result of a partnership between Burt's Bees and the City's StreetARToronto and Live Green Toronto programs. Painted by Toronto artist Nick Sweetman, the mural is roughly 65' long by 35' high and serves as a stunning reminder of the importance of pollinators in our urban environment.



Orange Sulphur Butterfly
(Colias eurytheme)

NEXT STEPS

While a great deal of work has been done to date, there are several additional actions that need to be taken to develop the final Pollinator Protection Strategy, including continued public engagement, consultation with the expert advisory group and internal working group, and additional research.

The final Pollinator Protection Strategy, to be completed this year, will form a part of the City's Biodiversity Strategy.

WHAT'S THE BUZZ? HAVE YOUR SAY!

- How can the City help you create pollinator habitat?
- What more should the City do to help pollinators?
- In your opinion, which actions are the most important?
- What is missing from these proposed actions?
- How should we celebrate pollinators?

We want to hear from you! Please visit **livegreentoronto.ca** to respond to these questions and share your ideas.

SPECIAL THANKS TO OUR POLLINATOR ADVISORY GROUP:

The City acknowledges the important role of academic community, subject matter experts, and concerned non-profit groups in providing guidance to the City on pollinator protection. This group is made up of conservation biologists, academic researchers, pollinator and native plant experts, green roof researchers, beekeepers, and community based organizations.

City staff are fortunate to be able to tap into the expertise of this group and receive evidence-based research and advice on how to approach pollinator protection. We thank the members of our Advisory Group for donating their time, expertise and enthusiasm to this effort. This group has been instrumental in guiding the development of the proposed actions presented in this document.

Pollinator Advisory Group members:

Antonia Guidotti, Royal Ontario Museum
Brock Harpur, York University
Charlotte de Keyzer, University of Toronto
Clement Kent, York University and Master Gardener
Dave Barr, Toronto Field Naturalists
Gillian Leitch, Landscape Designer and Beekeeper
Jode Roberts, David Suzuki Foundation
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LEARN MORE AND GET INVOLVED:

Live Green Toronto: livegreentoronto.ca
Bumble Bee Watch: bumblebeewatch.org
David Suzuki Foundation's Butterflyway Project: butterflyway.davidsuzuki.org
Evergreen's Native Plant Database: nativeplants.evergreen.ca
Monarch Butterflies and Butterfly Watching: ebutterfly.ca
North American Native Plant Society: nanps.org
Ontario Invasive Plant Council: ontarioinvasiveplants.ca
Ontario Nature: ontarionature.org
Pollinator Partnership Canada: pollinator.org/Canada
Toronto and Region Conservation Authority: trca.ca
Wildlife Preservation Canada: wildlifepreservation.ca
Xerces Society for Invertebrate Conservation: xerces.org

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