

# BUTTERFLIES OF TORONTO

A GUIDE TO THEIR REMARKABLE WORLD

• City of Toronto Biodiversity Series •



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Imagine a Toronto with flourishing natural habitats and an urban environment made safe for a great diversity of wildlife species. Envision a city whose residents treasure their daily encounters with the remarkable and inspiring world of nature, and the variety of plants and animals who share this world. Take pride in a Toronto that aspires to be a world leader in the development of urban initiatives that will be critical to the preservation of our flora and fauna.



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Cover photo: Kerry Jarvis, [www.kerryjarvis.com](http://www.kerryjarvis.com)

The exquisite orange, white and black markings of the Baltimore Checkerspot make this one of the most vibrant and beautiful butterflies to behold. These telltale colours are evident in the pupa and adult stages. The Baltimore Checkerspot is found in wetland areas where its caterpillar host plant turtlehead occurs. When they are nearly full-grown, the caterpillars leave their host en masse to overwinter in the leaf litter below, and emerge in early spring to continue feeding. Then, the magic of metamorphosis takes place. This image captures the beauty of both the newly-emerged adult and chrysalis in all their glory.



Bronze Copper  
photo: Mike Gurr



*“Indeed, in its need for variety and acceptance of randomness, a flourishing natural ecosystem is more like a city than like a plantation. Perhaps it will be the city that reawakens our understanding and appreciation of nature, in all its teeming, unpredictable complexity.” – Jane Jacobs*



Great Spangled Fritillary  
illustration: Susan Boswell

*“May the wings of the butterfly kiss the sun and find your shoulder to light on,  
To bring you luck, happiness and riches today, tomorrow and beyond.”*  
– Irish Blessing

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## Welcome!

To encourage the celebration of all life on earth, the United Nations declared 2010 to be the Year of Biodiversity. We congratulate the City of Toronto for honouring this special year with this Biodiversity Series celebrating the flora and fauna of our city. Each booklet within the series – written by dedicated volunteers, both amateurs and professionals – offers Torontonians a comprehensive look at a major group of flora and fauna within our city.

We hope that this Biodiversity Series will achieve its main goal: to cultivate a sense of stewardship in Toronto area residents. If each of us becomes aware of the rich variety of life forms, their beauty and their critical roles within the varied ecosystems of Toronto, we will surely be inspired to protect this natural heritage. After all, our own health and ultimately our very survival is linked to the species and natural spaces that share the planet with us. Without plants, there would be no oxygen; without the life of the soil, there would be no plants; without unpolluted fresh water, we would die.

While there are many organizations actively engaged in protecting our city's flora and fauna, the support of ordinary citizens is critical to the conservation of our natural habitats. We hope you'll take a walk in one of our parks and open spaces, lower your blood pressure, look around you, and enjoy the diversity of trees, animals, birds, flowers, and even fungi that flourish among us.

*Margaret Atwood*  
*Graeme Gibson*

With best wishes,  
Margaret Atwood and  
Graeme Gibson  
January 2011



## Introduction to the Butterflies of Toronto

In Toronto, we are often unaware of the myriad variety of life right in our own backyards. These species sometimes flourish or decline based on our activities and how we care for the local ecosystems in our trust. *Butterflies of Toronto* is not a field guide in the typical sense, but aims to share with you the expertise of local butterfly watchers (lepidopterists), scientists, conservationists and city planners. Inside you will find profiles of some of our most beautiful species, a checklist and images of all those you may see, where you can go to see them, threats to their survival, and what you can do to help them thrive in our wonderful city. From the stunning re-invention of self, represented by complete metamorphosis from egg to butterfly, to the prodigious migration of Monarch butterflies from Toronto to Mexico, you will gain a new appreciation for these resplendent, remarkable insects. This book will inspire you, as it has me, to admire butterflies not only for their beauty but also for their tenacity for survival in an ever-changing environment. I, for one, have broken out a new pair of binoculars and been converted to the ranks of the avid lepidopterist! Happy butterfly viewing!

Yours truly,

Dr. Mark D. Engstrom

Deputy Director, Collections and Research, Royal Ontario Museum

### City of Toronto Biodiversity Series

*Butterflies of Toronto* is part of the Biodiversity Series developed by the City of Toronto in honour of the Year of Biodiversity 2010. A number of the non-human residents of Toronto (defined here as a 50 km radius from the Royal Ontario Museum) will be profiled in the Series. It is hoped that despite the severe biodiversity loss due to massive urbanization, pollution, invasive species, habitat loss and climate change, the Biodiversity Series will help to re-connect people with the natural world, and raise awareness of the seriousness that biodiversity loss represents and how it affects them directly. The Series will inform residents and visitors of opportunities to appreciate the variety of species inhabiting Toronto and how to help reduce biodiversity loss by making informed individual decisions.

## Joy of Butterfly Watching

Butterflies! Colourful and beautiful, they are many people's favourite insects. Lepidoptera, meaning "scaly wings," is the name for the order of butterflies and moths. Butterflies' vibrant colours come from the many individually coloured scales on their wings. In years past, lepidopterists (people who study butterflies) were mostly collectors who sought out the most beautiful and sometimes rare specimens for their butterfly collections. Today, we are much more aware of our impact on the environment and try to reduce that impact. Those who love and enjoy butterflies observe them in their native environment, take pictures and sometimes catch them for close examination before releasing them.

Why are we so fascinated with butterflies? It could be their colourful beauty or their transformation from a caterpillar to a chrysalis to a magical winged creature. Every young child is mesmerized by the



Photographing an Eastern Comma  
photo: Antonia Guidotti

metamorphosis that they (and scientists) only poorly understand. These delicate creatures remind us that positive change is possible and bring us hope. Observing butterflies brings us closer to nature. If we admire them, know them and love them, then maybe we will take more care of the environment (even in a big city) that we share.

Populations of butterflies in Toronto are relatively small and should not be collected. As of 2011, 110 species have been recorded from the Toronto area. Of those, at least one is extirpated (locally extinct) and a few were only ever recorded a couple of times over the last 150 years. If you do catch a butterfly for observation, please treat it gently and release it immediately. Please report any unusual butterfly sightings to the Toronto Entomologists' Association at [www.ontarioinsects.org](http://www.ontarioinsects.org).

May you be inspired to look more closely at the world around you for these most beautiful animals. Follow the erratic flight of some of nature's most delightful citizens; observe them wherever you may be, in a garden, a park, or a field and enjoy the fleeting time that you have together!

### Tips for butterfly watching:

- Bring your binoculars on a hike so you can view them up close.
- A field guide may help you to identify butterflies and learn their food plants.
- Look for the specific host plants and check them for eggs or caterpillars.
- Use a notebook to write down observations (it will help you to learn the differences between species).
- Bring a camera and take pictures (you can try to identify the butterfly later using other references).



# The First Butterflies

Reprinted with the permission of the Royal Ontario Museum, from *Tales the Elders Told – Ojibway Legends* by Basil Johnson.

Long ago, when human twins were born to Spirit Woman, she relied on the animals to help her take care of them. All the animals loved the first human babies and did everything they could to help them.

The dog watched over them. The bear gave his fur to keep them warm. The wolf hunted for them. The doe provided them with milk. The beaver and the muskrat bathed them. The birds sang lullabies to them. The dog was an excellent guardian. The twins had only to cry out and the dog jumped to his feet, his tail wagging. When he found out what was troubling the children, he set it right – or called someone else who could help.

Did the babies need fresh moss to keep them comfortable? The dog appealed to the muskrat and the beaver. Were the babies hungry? The dog ran to the wolf, or to the doe who gave the babies her nourishing milk. Were the flies bothering the infants? The dog asked the spider for help – or jumped and snapped at the pests until the babies laughed.

When the babies wanted to be amused, the dog did his best tricks for them. He rolled over, he sat up, he wagged his tail. He tickled the babies into delighted laughter by licking their noses. When the babies were quiet again, the dog sank down beside them and covered his eyes with his paws – to rest until he was needed again.

After a long time, it became clear that something was wrong with the children. The worried animals, who had been summoned by the bear,

gathered round the twins.

"Brothers," said the bear, "the children cannot walk. They do not run and play as our young do. What can we do to help them?"

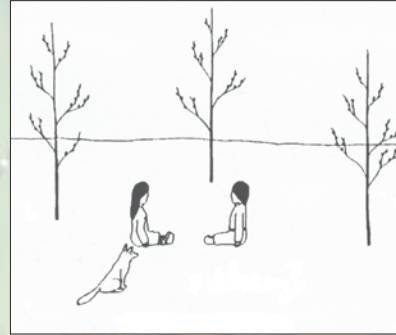
The wolf spoke first. "They eat the meat I bring them. They are not weak."

The doe agreed. "Every day they drink milk."

The beaver and the muskrat told the other animals that the twins waved their arms and legs with great strength at bath time. Indeed, they often splashed and splashed until the beaver and the muskrat were soaked and out of patience. Then the twins laughed as if they understood what they had done. They went on waving their arms and legs as the fish had taught them to do.

When Nanabush came to play with the children, the animals told him of their concern. Nanabush thought awhile and then he said, "You have cared for the children very well. In fact, you have cared for them so well that they never need to do anything for themselves. All little ones need to reach out for what they want instead of always having everything handed to them. I shall find out what we can do to help the babies learn to walk."

Nanabush journeyed far to the west to the land of high mountains, where the cloudy peaks stretch up to the sky. From the towering heights, he called to the Great Spirit who was the creator of the children and had been watching over them. The Great Spirit would know what should be



done to teach the children to walk. In reply to Nanabush's call, the Great Spirit told him to search along the slopes of the mountains. There he would find thousands of tiny sparkling stones. Nanabush did as the Great Spirit had said. He collected hundreds of stones – blue ones and green ones and red ones and yellow ones. Soon he had a huge pile that

gleamed through the clouds.

Nanabush squatted beside the pile of coloured stones and watched them for a long while – but nothing happened. At last Nanabush grew bored and restless and began to toss the stones, one after another, into the air. As the stones fell back to earth, he caught them.

Then he tossed a handful of stones into the air, catching them as they fell back. He threw a second handful, but this time nothing dropped back into his outstretched hands. Nanabush looked up. To his astonishment, he saw the pebbles changing into winged creatures of many colours and shapes.

The beautiful creatures fluttered here and there before they came to nestle on Nanabush's shoulders. Soon he was surrounded by clouds of shifting colours. And these were the first butterflies.

The butterflies followed Nanabush back to the twins, who crowed with pleasure and waved their legs and stretched out their arms to the beautiful creatures. But the butterflies always fluttered just beyond the grasp of the small outstretched hands. Soon the twins began to crawl, and then to walk, and even to run in their efforts to catch the butterflies.

~



## Early Toronto Entomologists

In Toronto's younger years, many naturalists were primarily birders, with very few active in entomology. However, there were some notable pioneering entomologists in Ontario and their contributions were considerable. While most of them did not have formal entomological training, some became professionals and many of them studied and collected butterflies at some point in their lives.

William Couper is one of the first noted entomologists who lived in Toronto in the mid-1800s. Although he is known for his descriptions of beetles, the butterfly *Glaucopsyche lygdamus couperi* (Silvery Blue) was named after him. He was one of the founders of the Entomological Society of Canada/Entomological Society of Ontario and the Entomological Society of Quebec.

Reverend Charles J.S. Bethune (1838-1932) was also one of the founders of the ESC/ESO, in addition to being the first editor of the journal *Canadian Entomologist*. He also established an entomology program at the Ontario College of Agriculture (now part of the University of Guelph) in the early 20th century. He collected butterflies from eastern Canada.

Dr. William M. Brodie, the first Provincial Biologist of Ontario from 1903 to 1909, was an avid collector. Some of his insect and bird collections reside in the Royal Ontario Museum. In 1877, he was the founding president of the Toronto Entomological Association which became the Natural History Society of Toronto and then part of the Royal Canadian Institute (not the same as the present day Toronto Entomologists' Association).

Arthur Gibson's collection of Lepidoptera provided the basis for the list of 79 butterflies in the *Natural History of the Toronto Region*, published in 1913 by the Royal Canadian Institute. This compilation was remarkable for its time, especially since Gibson lived in Ottawa.

A ROM research associate from 1962-1975, the late Reverend J.C.E. Riotte was one of the founding members of the Toronto Entomologists' Association and briefly, an editor of *Ontario Lepidoptera* (an annual summary of butterfly counts). He was an avid lepidopterist who published extensively about moths.

Other Toronto butterfly collectors of note include Paul Hahn, T. Irwin, C.E. Hope, W.M.M. Edmonds, and Quimby Hess.



Reverend J.C.E. Riotte  
photo: Brian Boyle  
© ROM

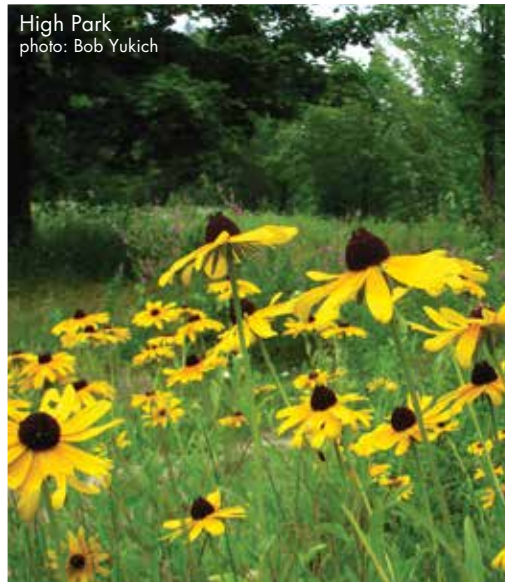
The Toronto Entomologists' Association (TEA) was founded in 1967 by Rev. J. C. E. Riotte. Initially, there were only three members (and their spouses) from the Department of Entomology at the Royal Ontario Museum (ROM). This founding meeting took place in High Park on September 17, 1967. In the early years (circa 1969), the focus of the TEA was on insect collecting and the exchange of specimens by members. However, the TEA has changed considerably over time, and has grown to reflect the diverse and evolving interests of insect enthusiasts. The TEA has many environmentally conscious members who are focused on the observation and preservation of insects in their natural environment. With the advent of digital technology, "insect photography" has replaced "collecting" as the main focus of the TEA. [www.ontarioinsects.org](http://www.ontarioinsects.org)

## Toronto's Plant Communities

Toronto lies at the junction of two vegetation regions, the Carolinian Zone and the Great Lakes-St. Lawrence or Mixed Forest Zone.

The Carolinian Zone, covering most of southwestern Ontario, is a continuation of the deciduous forest that extends south to the Carolinas in the U.S. It is composed of a wide spectrum of broad-leaved deciduous trees (maples, oaks, beech, tulip tree, sassafras and hickories) with an understory of tall shrubs. Historically, dense forest was interspersed with pockets of grasslands – tallgrass prairie and oak savannah lush with wildflowers and grasses. High Park is a remnant oak savannah.

Much of Toronto and the regions to the east and north lie within the Great Lakes-St. Lawrence or Mixed Forest Zone. These forests are transitional between the conifer-dominated boreal forests to the north and the deciduous forests to the south. They are composed of conifers and deciduous trees, especially maples,



oaks, beech, white pine and hemlock, and have an understory of low shrubs.

Toronto's position at this vegetation crossroads, along with its terrain, watersheds and shorelines, has afforded it a diverse flora which in turn attracts and supports a diversity of butterflies and other wildlife. Prior to European settlement, wetlands lined the shores of Lake Ontario and all of the rivers. The Toronto Islands were covered by dunes, sand prairie, wet meadows and poplar groves. Upland regions supported forests of oak and pine, hickory, maple, beech and hemlock. Forestry, agriculture and urban development have since diminished these habitats. However, remnants still survive in the city's ravines and parkland, forming green corridors for wildlife. Maintenance of these corridors and the diversity of native plant species within them is important for butterfly conservation and is an important focus for all conservation, restoration and planting projects.

**Invasive Plants** – Invasive plants are introduced species that survive without human assistance and negatively impact native biodiversity by reproducing aggressively and taking over, to the exclusion of other plants. They have the potential to interfere with native plant communities because they are highly successful at growth and reproduction. Most invasive plants in Toronto were introduced intentionally as garden plants and have escaped their garden boundary. When native species are displaced by invasives there are inevitable impacts on the fauna that rely on them. While some fauna have a remarkable capacity to adapt to changes in the plant communities that form their habitat, others cannot. Most adult butterflies respond favourably to exotic nectar-producing plants, and certain caterpillars can adapt to use non-native plants within the same plant family. However, since native butterflies have evolved alongside native plants, the loss of a caterpillar's native host plant can mean the loss of the butterfly in that area. The negative impact of invasive species on biodiversity is second only to habitat loss, so it is best not to plant invasive plants in your garden, especially if you live near a ravine or other natural area.



## Insect/Plant Co-evolution

The wonderful diversity of life on our planet can be attributed, in part, to co-evolution between plants and insects. Co-evolution happens when a change in one species affects or triggers a change in another species. Millions of years ago (during the Cretaceous period), a burst in insect evolution was fuelled by the rapid diversification of flowering plants. Some amazing partnerships have evolved. Insect/plant associations can be found virtually everywhere in nature.

Approximately half the species of known insects feed on plants. The caterpillars of all Toronto butterflies except one, the Harvester, feed on plants. Caterpillars are specialists; that is, each species feeds exclusively on one or several closely related species of plant.

Plants evolve traits, like toxins or spines, to help protect them against attack by herbivorous insects. But insects counterattack by developing strategies to overcome the plant's defences, such as a resistance to plant toxins. The ongoing evolution/counter-evolution struggle between insects and plants is sometimes called an "evolutionary arms race," with each partner developing measures to counteract the other. While most plants thrive in the absence of herbivorous insects, butterflies cannot survive without their host plants.

Some flowering plants have evolved particular odours, colours and shapes to attract specific pollinating insects. The most effective pollinators are those that consistently visit flowers of the same plant species. However, most adult butterflies are generalists that flutter from flower to flower and plant to plant, sucking nectar wherever they encounter it. This makes them incidental pollinators since they rarely feed on flowers of only one plant species.

### Examples of Insect/Plant Co-evolution:

- The co-evolution of Monarch caterpillars and milkweeds is well known.
- The Karner Blue/wild lupine dependence provides a dramatic example of what can happen when the host plant is lost from its habitat (see page 38).
- Cabbage plants and their relatives have evolved a very powerful chemical defense system, called glucosinolates (mustard oil glucosides), to keep away herbivores. Studies on the Cabbage White (*Pieris rapae*) have identified the specific gene that detoxifies glucosinolate chemical defenses. Some other *Pieris* species are also able to detoxify these chemicals.



Cabbage White caterpillar feeding on cultivated broccoli  
photo: Glenn Richardson

## Butterfly Identification

Most people learn to identify a butterfly by a commonly used name (e.g., Monarch, Painted Lady). This may pose problems with a few butterflies that have a very wide distribution and are known by more than one common name. However, the scientific binomial name (*Genus* and *species*) is the same the world over. In the species list provided in this booklet, you will find butterflies listed by both their local common names and their scientific names. (Butterflies will often be given a subspecies name as well. One species that may be very widespread may be given different subspecies names in different geographic areas. Since subspecies are assumed to be able to interbreed, we have not included this information here.)

How do you identify a butterfly? The principal characters used in identifying adult butterflies are colour, size, patterns and wing shape. However, closely related species can be very similar in size and shape; they may be so similar that even experienced butterfly watchers have difficulty distinguishing one from the other. Sometimes, location and time of year also help to determine a species. For example, the Spring Azure is found in April, May and early June while the Summer Azure emerges later in the season. Behaviour can sometimes be used to differentiate butterfly species in the field. How and where they fly, and their proximity to certain plants may help to separate one species from another. While this booklet may help you identify some species, using a butterfly guidebook is recommended.

One example of a difficult-to-identify group is the Spring Azure complex. Are there three, four, five or six species? Is it one species in Ontario and another in eastern Canada and yet another in B.C. and Alberta? Are they able to interbreed? With the Azures, it isn't just that they are difficult to identify, but that it is uncertain how many species

### Relative sizes

All images are life-size. Sizes may vary according to gender and season of brood.



Cabbage White



Wild Indigo Duskywing



Eastern Comma



Little Wood-Satyr



Mourning Cloak



Monarch



Eastern Tailed-Blue



Crossline Skipper



Pearl Crescent



Acadian Hairstreak



American Lady

there are exactly. Lepidopterists who study this group have been confused by them for a long time. The Summer Azure was thought to be a second brood of the Spring Azure but is now considered its own species. This example shows that it is not always easy to determine exactly what the “species” may be.



**DNA barcoding** is a method that uses a piece of an organism’s DNA to identify it as belonging to a particular species. A species needs to have been described and known for this to work. An effort is being made to barcode all living species. Barcodes are sometimes used in an effort to identify unknown species or assess whether species should be combined or separated (i.e., is it one species or two?). While it may be a helpful tool in some particular cases, the scientific community is divided regarding the merit of using barcoding to identify new and cryptic species. One potential use may be to identify life stages that are presently unknown.



# Butterfly Biology and Life Strategies

## Basic biology

Butterflies – and this seems to come as a surprise to some – are insects. Insects are invertebrates, meaning their skeleton is on the outside. They have six legs, three body parts (head, thorax and abdomen), antennae, and wings in at least one stage. Butterflies smell with their antennae and taste with their feet. Through their proboscis, adults sip nectar from flowers. The wings of butterflies receive their colour from their covering of tiny scales. Caterpillars, the larval stage of butterflies, only have six jointed legs, any other “legs” are called prolegs; they are fleshy.

A butterfly’s body temperature is influenced by the sun and the ambient temperature. Since they are cold-blooded, when the temperature drops their body temperature drops and they slow down. They may vibrate their wings to increase their temperature on cooler days or they may bask in the sunshine in order to warm up. While caterpillars are mostly plant eaters, adult butterflies are liquid feeders. They may feed on nectar, sap, mud, rotting fruit, carrion or dung. They don’t sip nectar from only one type of flower; they will visit many different ones. Although butterflies have been widely praised for their importance in pollination, their contribution is actually minimal and incidental.

## Life history

Butterflies, as most elementary school children learn, undergo a seemingly magical change called “metamorphosis.” Female butterflies lay anywhere from a hundred to a few thousand eggs in their lifetime. They lay eggs on plants that will serve as food for the newly hatched,

*“There is nothing in a caterpillar that tells you it’s going to be a butterfly.”*

– R. Buckminster Fuller

## Life Cycle

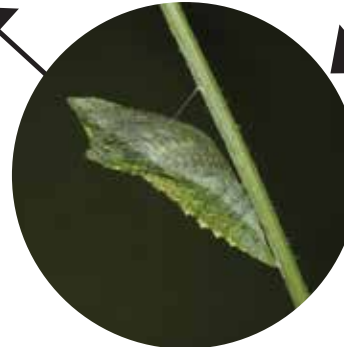
Stage 1: Egg



Stage 2: Caterpillar (larva)



Stage 3: Chrysalis (pupa)



Stage 4: Adult



photos of Black Swallowtail: Glenn Richardson

worm-like caterpillars. The tiny caterpillar eats plants ravenously (except for the Harvester whose caterpillars feed on woolly aphids) and every week or two sheds its skin. It may increase its mass 2800 fold. After its last molt, it transforms into a chrysalis. Unlike a moth cocoon which encases the pupa, a chrysalis does not have a hard outer case and is exposed to the elements. It relies on camouflage to protect it from predators. Once this “rest” stage is complete, the adult butterfly emerges out of its chrysalis. This four-stage process is called complete metamorphosis; some insects only have a three-stage metamorphosis (incomplete).



Question Mark  
photo: Bob Yukich

In complete metamorphosis, there is a dramatic change in appearance and habits of the different life stages. Often, the habitat differs as well. How long each species stays in each stage varies from one species to another. This life cycle may occur once a year, two to three times a year, or for some northern species, once every two years.

### Life strategies

For butterflies found in Toronto, there are different ways to overwinter. One option is to migrate south where it is warmer and not overwinter here at all. These species are referred to as “Migrants.” The Monarch, Painted Lady, Fiery Skipper, Question Mark and Red Admiral are examples of migrants that come to Toronto during the warmer months but (with rare exceptions) do not stay here year round. “Resident” species are those of which at least one stage of the species may be found year round in the Toronto area:

- Some species overwinter in the egg stage. European Skipper, Banded Hairstreak, Edwards’ Hairstreak, Acadian Hairstreak and Bronze Copper are examples.
- Some species overwinter in the larval stage. The Northern Cloudywing, Dreamy

Duskywing, Sleepy Duskywing, Leonard’s Skipper, Great Spangled Fritillary and Pearl Crescent all pass the winter as caterpillars.

- Some species overwinter in the pupal stage. The Silver-spotted Skipper, Spring Azure, all swallowtail species, Clouded Sulphur and Cabbage White are examples of species that overwinter as a chrysalis.
- Some species overwinter as adults. The Eastern Comma, Green Comma, Gray Comma, Compton Tortoiseshell, Mourning Cloak and Milbert’s Tortoiseshell are species that spend the winter here as adults in a state of dormancy.



Mourning Cloak  
photo: Bob Yukich

## Threats to Butterflies – Natural Enemies

### Factors affecting butterflies

It is an unfortunate fact of life that most butterflies don't live long. Monarchs that migrate to Mexico and species such as Mourning Cloaks that hibernate over the winter as adults, may live up to nine months. However, most butterflies live an active, glorious life that lasts about ten days, that is, if they can evade the many traps and tribulations that are a normal part of a butterfly's natural world. Enemies are abundant and occur at all stages of the butterfly life cycle. Enemies include predators, parasitoids, parasites, viruses, bacteria and fungi. Butterflies are food for many animals. The following are some of the biological and environmental factors affecting butterflies.

### Parasitoids

A parasitoid is an organism that feeds on a single host organism and ultimately kills it as it consumes it. Parasitoids are thought to cause more butterfly deaths than all their other enemies combined. Most parasitoids are from the insect orders Hymenoptera (ants, bees, wasps) and Diptera (true flies). Parasitoid life history is similar across all species. Generally, once a host has been located, the female parasitoid deposits her eggs or larvae in or on the host. The larvae then develop in the host, feeding on the host tissues. After the larva completes its development, the adult parasitoid emerges instead of the butterfly.

Different parasitoids may attack different stages of a butterfly. Wasps or flies may lay their eggs into butterfly eggs, caterpillars or even the chrysalids. The wasp or fly larva then consumes the egg or the caterpillar or the chrysalis, effectively killing the butterfly. Due to their lethality, parasitoids have a significant impact on butterfly populations, generally maintaining a balanced population.



Parasitized Monarch pupa  
photo: Sherry Skipper Spurgeon  
[www.learnaboutmonarchs.com](http://www.learnaboutmonarchs.com)



Ichneumonid wasp (*Trogus pennator*) emerging from an Eastern Tiger Swallowtail chrysalis  
photo: Sturgis McKeever,  
Georgia Southern University  
[www.bugwood.org](http://www.bugwood.org)



Braconid wasp larva emerging from a caterpillar  
photo: Glenn Richardson



## Predators

Butterflies and caterpillars are a food source for many insectivores. Assassin bugs, stink bugs, praying mantids and wasps all take a toll on butterflies and their caterpillars. There is even a beetle known as a caterpillar killer. Besides insects, there are spiders, birds, lizards and mammals that find caterpillars very tasty. In fact, caterpillars form a major part of many bird nestling diets. In defence, caterpillars are often cryptically coloured. Some eat only at night to miss detection. Other methods of avoiding becoming food include retaining the noxious parts of plants they eat or building shelters to live in that make them hard to find or difficult to dig out. Butterflies often are difficult to catch because of their erratic flight, speed, or in the case of evading spiders, their ability to shed scales on their wings to slip out of sticky webs.

## Microbial factors

Caterpillars also get sick. Bacteria, viruses and fungi can all attack and kill caterpillars. Under normal situations, the caterpillar's immune system can handle



Praying mantis  
with a Monarch  
photo: Don Davis

microbes that are in small numbers. However, when stressed due to cold, drought or high rainfall, caterpillars are killed more easily by microbes. Some species of bacteria such as *Bacillus thuringiensis* are specific to Lepidoptera and are used to control caterpillars that are considered to be agricultural pests.

## Environmental factors

Bad weather can adversely affect butterfly survival. A simple raindrop is capable of killing a butterfly. High winds can tear wings or a sudden temperature drop can kill them. A prolonged drought can reduce nectar sources or cause caterpillar food plants to wither and become dormant, preventing a second generation. Prolonged cool weather or several days of cloudy weather can prevent a butterfly from searching for nectar or reduce its chance of finding a mate. Despite all this, butterflies do survive, do find mates and continue to grace our meadows and gardens.



Eastern Pondhawk  
with a Cabbage White  
photo: Bob Yukich

## Threats to Butterflies – Human Effects

### Habitat loss

In urban settings, changes in habitat can greatly affect butterflies. Meadows may be flattened or converted to wooded areas by tree planting. Wetlands are often filled in. When butterfly habitat is converted to urban use, caterpillar food plants and overwintering sites disappear. Pesticides, herbicides, chemicals and cars kill butterflies. Colonial species with little mobility are the first to disappear, but others will follow if a source of nectar and caterpillar food becomes unavailable.

### Non-native species

Non-native butterflies threaten our native populations as they are frequently more successful competitors and will usurp the native species' habitat, causing a decline in that species.

**Cabbage White** (*Pieris rapae*) – Since its accidental introduction to Quebec in about 1860, the Cabbage White (known as the Small White in Europe) has spread through most of North America. In Toronto, it is one of the most common species seen. It is uncertain to what extent the Cabbage White has contributed directly to the decline of two native species, Mustard White and Checkered White. Cabbage Whites are considered an agricultural pest because their caterpillars feed on cabbage, broccoli, cauliflower and related plants of the cruciferous family. In abundant years, they can demolish entire plants in backyard vegetable gardens.

The Cabbage White can be found in any habitat and identification is generally easy because it is almost always the only white butterfly flying. At a distance, the uncommon white forms of the Clouded Sulphur and Orange Sulphur appear more greyish white and have



Cabbage White  
illustration: Susan Boswell



Cabbage White  
Note eggs (white dots) on underside of leaf.  
photo: Glenn Richardson

a faster, more direct flight which is closer to the ground. Male Cabbage Whites are distinguished by having only one dark spot on the forewing while the female has two dark spots.

**European Skipper** (*Thymelicus lineola*) – This Eurasian introduction is a small orange skipper of open fields, paths and roadsides. It has a somewhat weak, fluttering flight pattern. It may have arrived



accidentally, probably in a bale of hay or timothy (the main host plant). It was first noted in the London, Ontario region (circa 1910). It is now widespread in North America.

The European Skipper was first recorded in the Toronto region in the early 1950s. It has continued to spread since then and has become very common. The flight season starts in early June and is very strong by early July. There may be only one flight each year, but this skipper can sometimes be seen into September. It loves to nectar on flowers, especially species that are non-native.

#### Butterfly Releases

Over the past number of years, there has been an increased trend to release butterflies at various ceremonies or for educational purposes. The commercial butterfly breeding sector has grown exponentially, supplying butterfly species for weddings and remembrance ceremonies, or as part of school education programs. While butterfly releases may seem to have benefits or merit, they have become a controversial practice. Proponents of butterfly rearing and releasing feel that this practice helps to raise public awareness and instill a respect for butterflies and natural habitats. However, critics of this practice are concerned about commercially raised species being shipped and released in geographical conditions far from their point of origin. Issues cited include possible spread of disease or parasites, and risks of genetic mixing between raised and wild populations. On a more local level, large butterfly releases can interfere with tracking of wild populations, leaving butterfly counts skewed or misleading. Many feel that the risks of releasing commercially raised individuals from artificial conditions far outweigh the benefits.

The City of Toronto Municipal Code 608-36, prohibits the release of any animal (including butterflies) into a park.



# Butterflies of Toronto

## Toronto's (un)Official Butterfly: Eastern Tiger Swallowtail (*Papilio glaucus*)

The Eastern Tiger Swallowtail is a large, beautiful butterfly commonly seen in the Toronto region. It can be seen in fields, wooded openings, roadsides and gardens. In Toronto, it first appears around the end of May. Since it has two broods, it can still be seen (though more sparingly), through August and occasionally even into early September.

The Canadian Tiger Swallowtail (*Papilio canadensis*) looks superficially like the Eastern Tiger, but is not common in Toronto. It has only one brood, flying mostly in May and June. During the overlap in their flight periods, a confusing mixture of both species may be found north of Toronto.

Some of the Eastern Tiger Swallowtail's favourite nectar sources are lilacs, common milkweed and butterfly bush. Trees utilized by this species as caterpillar hosts are white ash, black cherry, and also the tulip tree. It overwinters in the pupal stage. To avoid the harsh winter weather, the Eastern Tiger caterpillar will seek shelter on tree trunks, wooden structures, or sometimes in ground litter. The male Eastern Tiger is territorial and will select a high perch from which it can aggressively protect its chosen area.



Eastern Tiger Swallowtail  
photo: Bob Yukich



Eastern Tiger Swallowtail adult emerging from chrysalis  
photo: Glenn Richardson

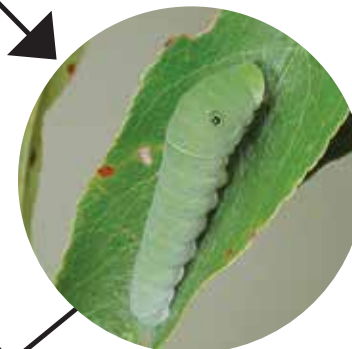
# Eastern Tiger Swallowtail

## Life Cycle

Stage 1: Egg



Stage 2: Caterpillar



Stage 3: Chrysalis



Stage 4: Adult



illustration: Susan Boswell

photos: Glenn Richardson, Bob Yukich

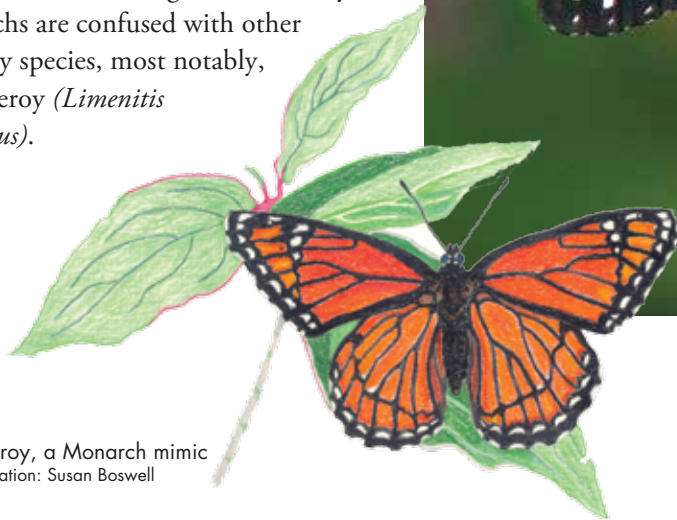
## Monarch (*Danaus plexippus*)

The Monarch butterfly is probably the world's most familiar butterfly, best known for the incredible migration made by the eastern North American population. Individuals fly 3200 km from Toronto to overwinter in the Monarch Butterfly Biosphere Reserve in central Mexico.

The adult Monarch is one of our largest butterflies, with a wingspan of approximately 9 to 11 cm. The overall black and orange patterning is distinctive, as is its wing shape and strong V-shaped (dihedral) flight pattern. Early Torontonians referred to Monarchs as “King Billies” in honour of the British King William of Orange. Occasionally Monarchs are confused with other butterfly species, most notably, the Viceroy (*Limenitis archippus*).



Monarch, male  
photo: Bob Yukich



Viceroy, a Monarch mimic  
illustration: Susan Boswell

The male Monarchs can be distinguished from the females by the presence of a black-coloured scent gland on both hind wings of the male. These two scent glands are sometimes described as “black dots.” The scent glands are only modestly developed in the Monarch, but other species in the Danainae subfamily attract mates with the scent or pheromone produced by these glands.



*“How does one become a butterfly? ... You must want to fly so much that you are willing to give up being a caterpillar.”* – Trina Paulus, Hope for the Flowers

Monarchs return to the Toronto area by late May each year, depending on breeding and migration conditions further south. Cool, damp conditions can result in late arrivals and reduced reproductive activity. In good years, migrating Monarchs have been reliably sighted as far north as James Bay.

Female Monarchs generally lay a single egg on the underside of a milkweed leaf, probably laying 300 to 400 eggs over the course of their lifetime. It is simply remarkable that Monarch caterpillars can feed on milkweed plants. Milkweed has evolved certain traits to protect it from becoming insect food. It has a bed of prickly hairs on its leaves that a caterpillar must remove before it can puncture the plant. If the caterpillar isn't careful, the milky latex that oozes from the puncture can entrap and kill it. Finally, cardiac glycosides within the leaf are toxic to most insects, but Monarch caterpillars are able to redeploy the plant's toxins for use in their own defense, retaining them in their body tissues even throughout the pupal and adult stages.

In the Toronto area, the best known milkweed species are common milkweed (*Asclepias syriaca*), swamp milkweed (*A. incarnate*) and orange milkweed (*A. tuberosa*).

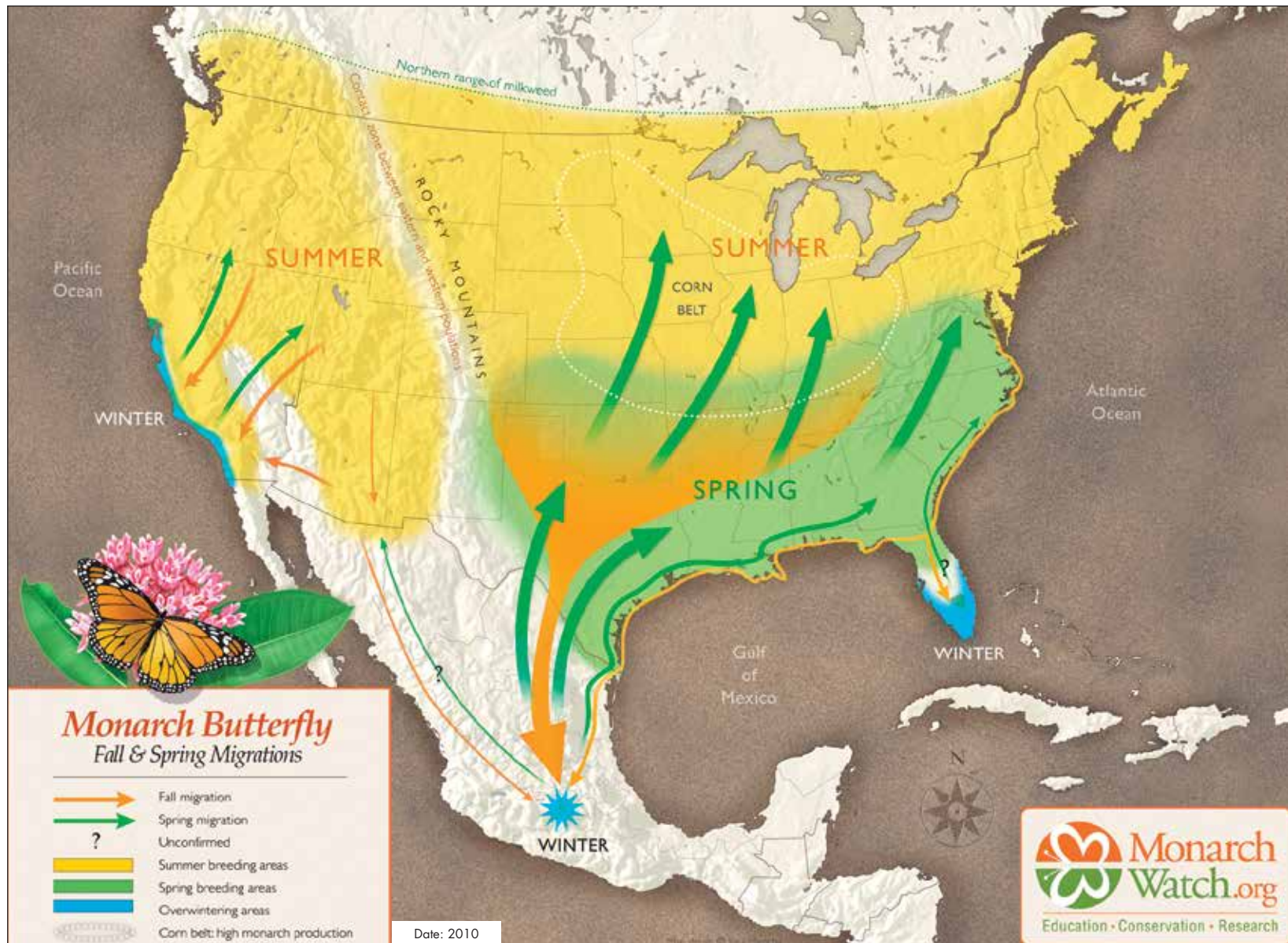
Monarchs in southern Ontario have two or more generations each year, with the adults living about 30 days. However, late summer adults emerge in a state of suspended reproductive development known as “reproductive diapause.” These are the true migrants that can live up to nine months, reaching the wintering sites in Mexico,



Monarch caterpillar feeding on common milkweed  
photo: Bob Yukich



Monarch chrysalis  
photo: Glenn Richardson





*“But most of all I shall remember the Monarchs, that unhurried westward drift of one small winged form after another, each drawn by some invisible force... Did they return?” – Rachel Carson, letter, 1963*

maturing over the winter months and beginning the northward journey to the southern U.S. in mid- to late February.

While the emergence and southward movement of the migratory generation in Ontario begins slowly and as early as mid-July, it becomes noticeable in the Toronto area around late August to mid-September each year. Individuals soar high in the sky, moving in a deliberate southwesterly direction over expressways and down city streets, stopping to nectar on the abundant flowering plants. Individuals take a path of least resistance through the city and along the waterfront. Observers have reported a “river” of Monarchs seen flying across the metal fence at the entrance to Leslie Street Spit and into the generous fields of goldenrod and other wildflowers there. The Leslie Street Spit and the Toronto Islands are among the sites along the waterfront that offer sheltered habitat and trees on which thousands of Monarchs may cluster for the night. While most of the migrating Monarchs will have left the Toronto area by late September, late-emerging individuals will continue to trickle through the city, with sightings possible into November.

The means by which Monarch butterflies survive the winter months was a source of much speculation and the impetus for a long-term research project founded by the late Dr. Fred A. Urquhart (1912-2002) and his wife, Norah Urquhart (1919-2009). Dr. Urquhart was



The Urquharts  
© John G. Powers [www.monarchdays.com](http://www.monarchdays.com)



Monarch tag  
photo: Kerry Jarvis

a Professor of Zoology at the University of Toronto. Internationally renowned pioneers in the field of insect migration research, the Urquharts developed an ingenious tagging method and expanded the program by enlisting volunteer Research Associates. After many years of documenting the recaptures of thousands of tagged Monarchs, the Urquharts suspected that the migrating Monarchs were overwintering somewhere in Mexico. A 1973 advertisement for support in a Mexican newspaper was seen by Ken Brugger, who with his wife Cathy discovered the first of the Monarch overwintering sites on January 9, 1975. This event, hailed as the greatest entomological discovery of the 20th century, was announced in the August 1976 issue of National Geographic magazine. In 1998, the Urquharts were jointly appointed to the Order of Canada for their research.



The Urquharts ended their tagging program in 1992, and Dr. Orley “Chip” Taylor of the University of Kansas in Lawrence, Kansas, coincidentally founded the Monarch Watch program the same year. A butterfly tagged in Toronto by Don Davis holds the Guinness Record for the Longest Migration by a Butterfly.

Today, many individual citizen scientists and schools continue to tag Monarchs in the Toronto area using Monarch Watch tags, which are easily applied directly to the outside of the rear wing. For more information on tagging, visit [www.monarchwatch.org](http://www.monarchwatch.org).

Since the 1990s, Toronto residents have increasingly participated in the many emerging local, provincial, national and international Monarch butterfly-related educational, research and conservation programs and initiatives. Monarchs are included in the North American Pollinator Protection Campaign. The Monarch Teacher Network has offered “Teaching and Learning with Monarch Butterflies” workshops in Toronto. Toronto teachers, students and naturalists participate in the various Monarch Watch and Journey North programs, including the Monarch Waystation program and Monarch Larval Monitoring Project.

*“Not the least of the mysteries is how such a fragile, wind-tossed scrap of life can find its way (only once) across prairies, deserts, mountain valleys, even cities to this remote pinpoint on the map of Mexico.”*

– Fred Urquhart, “Found at Last: Monarch’s Winter Home,” *National Geographic*, August 1976



A “flutter” of Monarchs resting during fall migration, Sept. 27, 2006, Toronto Islands  
photo: Bob Yukich

*“Happiness is a butterfly, which when pursued, is always just beyond your grasp, but which, if you will sit down quietly, may alight upon you.” – Nathaniel Hawthorne*

While the species itself is in no danger of extinction, the North American migration is considered an endangered phenomenon due to threats to its breeding, migratory and wintering habitats. The Monarch is listed as a species of “Special Concern” under the federal *Species at Risk Act* because of a combination of biological characteristics and identified risks, especially risks to the overwintering sites in Mexico. It has been similarly designated under the *Ontario Endangered Species Act, 2007*. The *Ontario Fish and Wildlife Conservation Act, 1997* listed Monarchs as “Specially Protected Invertebrates,” requiring Ministry of Natural Resources approval for collecting, breeding and conducting scientific research. A separate application must be made to conduct research in a provincial park under Ontario’s *Provincial Parks and Conservation Reserves Act, 2006*.

In March 2006, the Trilateral Committee for Wildlife and Ecosystem Conservation and Management initiated a project to establish a network of Sister Protected Areas across North America to collaborate on Monarch conservation projects. The Leslie Street Spit has been suggested as an addition to the 13 initial member sites.

The popularity of Monarch butterflies makes them a major focus of educational, science and conservation programs. They are easy to raise in captivity and many people enjoy watching a Monarch caterpillar transform into a butterfly. Monarchs have been the subject of many books, documentary films and even a Canadian postage stamp. In 2008, the North American Monarch Conservation Plan was released. It is hoped the measures taken under this tri-national plan to preserve and protect Monarch butterflies will also benefit many other species.



Monarch  
photo: Bob Yukich



Common milkweed at Lambton Prairie  
photo: Bob Yukich



## Resident Butterflies

These butterflies are breeding residents, present all year in the Toronto area. At least one stage of the life cycle is adapted to freezing temperatures and is able to survive our winters. As of 2011, 74 resident species have been recorded in the Toronto area.

## Resident Butterflies



Silver-spotted Skipper



Northern Cloudywing



Common Sootywing



Dreamy Duskywing



Juvenal's Duskywing



Mottled Duskywing



Wild Indigo Duskywing



Arctic Skipper



Least Skipper



European Skipper



Leonard's Skipper



Indian Skipper



Peck's Skipper



Tawny-edged Skipper



Crossline Skipper



Long Dash



Northern Broken-Dash



Little Glassywing



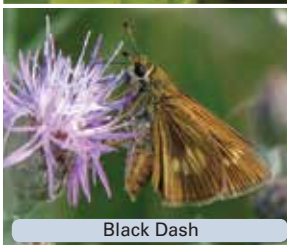
Hobomok Skipper



Broad-winged Skipper



Delaware Skipper



Black Dash



Dion Skipper



Two-spotted Skipper



Dun Skipper



## Resident Butterflies



Black Swallowtail



Giant Swallowtail



Canadian Tiger Swallowtail



Eastern Tiger Swallowtail



Spicebush Swallowtail



Clouded Sulphur



Mustard White



West Virginia White



Cabbage White



Harvester



American Copper



Bronze Copper



Acadian Hairstreak



Coral Hairstreak



Edwards' Hairstreak



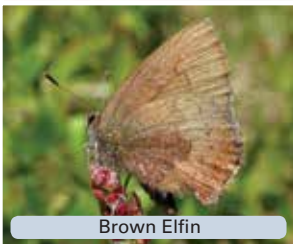
Banded Hairstreak



Hickory Hairstreak



Striped Hairstreak



Brown Elfin



Eastern Pine Elfin



Eastern Tailed-Blue



Spring Azure



Cherry Gall Azure



Summer Azure



Silvery Blue



\*Note: The White Admiral and the Red-spotted Purple are two forms of the same species.

## Resident Butterflies



\*White Admiral



\*Red-spotted Purple



Viceroy



Silver-bordered Fritillary



Meadow Fritillary



Great Spangled Fritillary



Aphrodite Fritillary



Tawny Emperor



Milbert's Tortoiseshell



Compton Tortoiseshell



Mourning Cloak



Eastern Comma



Gray Comma



Green Comma



Baltimore Checkerspot



Silvery Checkerspot



Harris' Checkerspot



Pearl Crescent



Northern Crescent



Northern Pearly-eye



Eyed Brown



Appalachian Brown



Common Ringlet



Little Wood-Satyr



Common Wood-Nymph

## Featured Resident: Silver-spotted Skipper (*Epargyreus clarus*)

The Silver-spotted Skipper is a large skipper with an unmistakable silvery white patch in the centre of the under hindwing. It is a very fast and powerful flier.

The Silver-spotted is usually seen in open areas bordering woods or copses and also along open trails or in flower gardens. Its favoured caterpillar host plants are black locust and sometimes hog peanut.

There are likely two broods here as it flies from late May until about mid-September, with some individuals being seen into early October in a good year. Some of its favourite nectar flowers are Canada thistle, cow vetch, Indian hemp, New England aster and Brazilian verbena.

The male perches on a leaf overlooking its territory and pursues any perceived intruder (another male, or sometimes a random insect) with a swift aerial attack, then often circles back to the same perch.

Individuals will stay at one site until nectar sources are no longer available.

The Silver-spotted Skipper hibernates as a chrysalis in leaf litter.



Silver-spotted Skipper  
photos: Bob Yukich



## Featured Resident: Black Swallowtail (*Papilio polyxenes*)

The distinctive Black Swallowtail is a fairly common butterfly in Toronto. Despite losing a large amount of its former territory to land development, it has managed to survive due to the prevalence of Queen Anne's lace, which is the main host plant for its caterpillars. It can be seen in open areas such as waste fields, open ravines, parks and gardens.

Seen from above, the male's wings have two lines of pale yellow spots, while the female is more subdued with bright blue areas on the hindwings. The striped emerald and black caterpillar, sometimes referred to as the "parsley caterpillar," is very attractive. If you grow carrots, parsley or dill in your garden, you may be fortunate enough to see one.

There are two broods, one in early May and the second in mid-July. By September, this species is no longer commonly seen, but may linger in reduced numbers until October. The caterpillars are seen into autumn as this species overwinters as a chrysalis.

The Black Swallowtail is an avid visitor of flowers such as purple loosestrife, thistles, common milkweed and red clover. The Leslie Street Spit and suburban fields are good places to look for this striking swallowtail.



Black Swallowtail, male (top), female (bottom left and centre)  
photos: Bob Yukich

Black Swallowtail caterpillar  
photo: Glenn Richardson

## Featured Resident: Clouded Sulphur (*Colias philodice*)

The Clouded Sulphur, with its bright yellow colouration, epitomizes the word “butterfly” as it flies swiftly over open meadows. It is believed that the yellow colour of European Sulphurs was the inspiration for the word “butterfly” itself.

The male Clouded Sulphur is yellow with solid black borders and pink wing fringes above, while the female is similar but with small yellow spots in the black borders. A less common form of the female has the yellow replaced with white, and is often mistaken for the Cabbage White at a distance.

A familiar butterfly in Toronto, this species usually flies from early May until late October. Individual sightings have been recorded as early as April 15 and as late as December 4. Although the Clouded Sulphur is able to overwinter as a partially grown caterpillar (usually 3rd or 4th stage), relatively few caterpillars actually survive. This is apparent from the relatively small numbers of Clouded Sulphurs seen in spring, as compared to the usual abundance of the butterfly in late summer and fall.

Eggs are laid on a variety of legumes; white clover, cow vetch and alfalfa are the most common host plants in Toronto. There are successive generations for as long as weather permits, with each brood increasing the numbers of adult butterflies. Clouded Sulphurs avidly visit the flowers of both the host plants and whatever seasonal nectar source is available. Mints, milkweeds, Queen Anne’s lace, thistles and asters are all used at different times of the year.

This common butterfly may be seen in any open meadow, vacant lot or city park where the host plants are found. An excellent viewing area in late summer and early fall is the Leslie Street Spit. The best months to see Clouded Sulphur are August, September and early October.



Clouded Sulphur  
photos: Bob Yukich



## Featured Resident: Silvery Blue (*Glaucopsyche lygdamus*)

The Silvery Blue is a relatively recent arrival in Toronto from central and eastern Ontario, where historically it has been common. The first known sighting of this butterfly in Toronto was in June 1992 near the Toronto Zoo. Silvery Blues are now permanent residents in Toronto, surviving the winter as a chrysalis.

Adult males are bright shiny blue above, slightly larger than the Spring Azure, Cherry Gall Azure, Summer Azure or Eastern Tailed-Blue, with which they are often found. They often bask with wings open, unlike a Spring Azure or Summer Azure. Adult females are similar but with dark grey wing borders covering 50 per cent or more of the blue above. The underside is pale grey with a distinctive pattern of white-rimmed black spots.

Eggs are laid on the emerging flower heads of cow vetch. The caterpillars eat flowers (seldom, if ever, leaves), and take about three weeks to complete their development, after which they drop off the plant and pupate until spring. The single brood of adults usually flies from mid-May until late June but adults have been observed as early as April 26 and as late as July 10.

The Silvery Blue is found in a variety of meadow habitats but usually in close proximity to the caterpillar food plant, on which the adults often nectar. Good viewing locations in Toronto include Rouge Park, Eglinton Flats, the Don Valley Brick Works and the Leslie Street Spit.

The best month to see a Silvery Blue is June.



Silvery Blue, male (top), mating pair (far left), female (left)  
photos: Bob Yukich



## Range Expansions

Not all the news is bad – certainly, many species are declining in numbers as their available habitat shrinks, but the Toronto area has also gained species through range expansions. This is often directly related to the introduction and spread of non-native plant species that have been adopted as host plants. Silvery Blue (on the facing page) is a prime example. It has extended its range southward following the spread of its adopted caterpillar host, cow vetch, and is rapidly populating areas where this plant occurs. The following three species have all expanded their breeding ranges into the Toronto area.

### Common Ringlet (*Coenonympha tullia*)

Historically, the Common Ringlet inhabited central and Northern Ontario. During the 1930s it started gradually expanding its range southward. Reasons for this remain unclear, but grasses along newly constructed highway corridors would have assisted its progress. The ringlet was first recorded in the Toronto area in the early 1960s. This species can now commonly be found in open meadows and roadsides where its host plants (various grasses) are abundant. There are two flight periods in Toronto, one from mid-May to early July, and the other from late July to the end of September.



### Wild Indigo Duskywing (*Erynnis baptisiae*)

This skipper was first seen at Scarborough Bluffs in 1998. Prior to the widespread practice of planting its adopted host, crown vetch, along highways, this southern species was uncommon throughout its range, occurring only in association with its historic host, wild indigo. It has now established a number of thriving colonies in the Toronto area. Wild Indigo Duskywing can be found along open trails, wood edges, and other habitats where crown vetch occurs. There are two broods and at least a partial third in our area; flight periods are early May through June, mid-July through August, and then again in September and early October.



### Giant Swallowtail (*Papilio cresphontes*)

With a wingspan of up to 10 cm or more, this boldly patterned black-and-yellow swallowtail is the largest butterfly in North America. Its historic range extended from southwestern Ontario south to northern South America and the Caribbean. The Giant Swallowtail has recently been expanding its range northward and is now gaining a foothold in Toronto, where it has become an uncommon breeder. The reason for this range expansion is unclear but climate change may be a factor. Its continued presence here is tied to the availability of suitable host plants. Its hosts in Ontario are hoptree (native near Lake Erie but occasionally planted here) and prickly ash (may occur locally in our area). It also uses garden ornamentals in the Rue family, such as gas plant. The Giant Swallowtail has two broods, flying from late May into July, and then again from late July to early September.



photos: Bob Yukich

## Annual Migrants

These butterflies cannot survive freezing temperatures at any stage and do not overwinter in Toronto, except on rare occasions. Migrating adults establish new breeding populations each season.



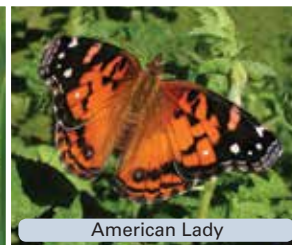
Fiery Skipper



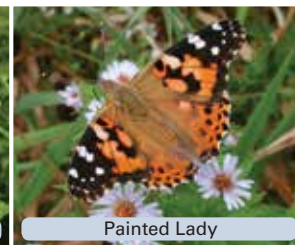
Orange Sulphur



Monarch



American Lady



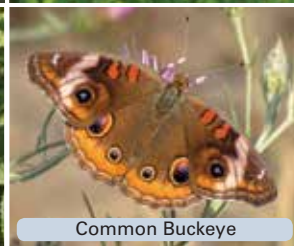
Painted Lady



Red Admiral



Question Mark



Common Buckeye



Black Swallowtail caterpillar  
illustration: Susan Boswell

## Historical Records

These species have not been seen in Toronto for more than 50 years.



Southern Cloudywing



Columbine Duskywing



Common Roadside-Skipper



Bog Copper



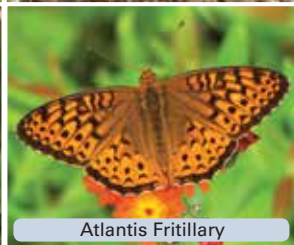
Purplish Copper



Early Hairstreak



Karner Blue



Atlantis Fritillary



Gorgone Checkerspot



Tawny Crescent

## Historical Records



## Infrequent Migrants



Horace's Duskywing



Zarucco Duskywing



Funereal Duskywing



Whirlabout



Sachem



Pipevine Swallowtail



Zebra Swallowtail



Little Yellow



Sleepy Orange



Southern Dogface



Cloudless Sulphur



Orange-barred Sulphur



Checkered White



Gray Hairstreak



White M Hairstreak



Marine Blue



American Snout



Variegated Fritillary



Orange-barred Sulphur  
illustration: Susan Boswell

## Infrequent Migrants

Over the years several very rare butterflies have been reported from Toronto, including the only Canadian records of Zarucco Duskywing and Whirlabout, two skippers from the southern U.S.

Some butterflies migrate northward in response to extreme weather conditions further south such as drought and floods. In hot years, some may be blown all the way up into Ontario on strong southerly breezes. Population explosions can also stimulate butterflies to move further north as they search for habitat and food to accommodate their increased numbers.

Strategically located on the north shore of a large lake, Toronto is the perfect migrant trap for these southern waifs. After crossing Lake Ontario or while following the shoreline, butterflies are attracted to the first green spaces they encounter, such as Scarborough Bluffs, the Leslie Street Spit, Toronto Islands and High Park.



## Featured Annual Migrant: Painted Lady (*Vanessa cardui*)

The Painted Lady (sometimes called the Cosmopolitan) is the most widespread butterfly in the world, found on every continent, except Antarctica. In Toronto, this butterfly is an annual migrant from the southwestern United States, and is seen most years but in greatly varying numbers. The most recent impressive migration of this butterfly was in 2001, while the next year the Painted Lady was almost absent from Toronto.

Adults are predominantly orange and black above, with white spots near the tip of the forewing. They are noticeably larger than other *Vanessa* species (Red Admiral and American Lady), but smaller than a Monarch. Both sexes are similar and can be difficult to distinguish in the field unless a female is observed laying eggs.

Due to an unusual migration pattern, the Painted Lady often appears in eastern Canada and Northern Ontario earlier than Toronto, and appears even later in southwestern Ontario. Arrival dates in Toronto vary from late April to mid-August. Generally, the earlier the first Painted Lady arrives, the more common the butterfly will be by late summer.

Thistles (particularly Canada thistle and bull thistle) are the preferred host plants for the caterpillars, but in abundant years, burdock, knapweed and a wide variety of other composite family plants may also be eaten. The adult butterflies readily visit flowers, including cow vetch, milkweed, goldenrod and asters. They can be observed in any open space where thistles are nearby, but are less common in backyard gardens than either the Red Admiral or American Lady.

The Painted Lady is one of the last butterflies to remain in Toronto in the fall, with the latest record being November 20. Most adults do not return south in the fall, but perish, along with any remaining immature stages, with the first killing frost.

The best months to see Painted Lady are September and early October.



Painted Lady  
photos: Glenn Richardson



## Featured Annual Migrant: Red Admiral (*Vanessa atalanta*)

The Red Admiral is a striking and readily identifiable butterfly with a very fast and somewhat erratic flight pattern. This species can be seen throughout much of North America and also in Eurasia and North Africa. As a southern migrant, it is normally first seen in Toronto about mid-April, when any dandelions, coltsfoot flowers or fruit tree blossoms are a welcome source of nectar.

As the season progresses, the Red Admiral will lay eggs on nettles, especially stinging nettles. It frequents brushy field edges, gardens and damp willow copses, persisting into October.

Usually, the Red Admiral is a fairly common butterfly in the Toronto region. Some years its numbers may be low, mostly due to weather fluctuations. In other years, the opposite is true, and a population explosion can occur. There is evidence that some Red Admirals are able to overwinter in southern Ontario during mild winters.

In late summer, this species avidly seeks out flowers for nectar to build up energy stores for migration. New England aster and bull thistles are among its favourites. The southbound population may cluster before migration, especially near the waterfront in areas such as the Leslie Street Spit.



Red Admiral adult (top), caterpillar (bottom left)  
photos: Glenn Richardson

Red Admiral  
photo: Bob Yukich



## Featured Infrequent Migrant: Cloudless Sulphur (*Phoebis sennae*)

The Cloudless Sulphur is the common large yellow butterfly of the southern United States, Caribbean, Central and South America. Adult males are unmistakable: clear yellow above, and much larger, faster and higher flying than our common yellow butterfly, the Clouded Sulphur. Females are similar to males but are more strongly marked below, and occasionally are white instead of yellow.

Since the caterpillar foodplant *Senna* species does not grow in our area, these butterflies never breed in Toronto. However, Cloudless Sulphurs are strongly migratory, ranging north to the midwestern United States and the northeast Atlantic seaboard every summer. In recent years, Cloudless Sulphurs have been seen with increasing frequency in Ontario, most commonly at Point Pelee. There are at least two records from the Toronto area.

Although they are not to be expected, Cloudless Sulphurs could show up in city parks or anywhere near Lake Ontario during late August, September or early October. Their appearance in Toronto may coincide with severe weather conditions farther south, such as hurricanes or drought.



Cloudless Sulphur  
photo: Bob Yukich



## Toronto Habitats

Butterflies are found in many diverse habitats throughout the city. Forested ravines, wetlands, meadows and savannahs are a few.



## Extirpated (locally extinct) Species: Karner Blue (*Plebejus melissa samuelis*)

Although last sighted in Ontario in 1991, the Karner Blue was listed as endangered under the provincial Endangered Species Act until 2009, when it was reclassified as extirpated. Two other butterfly species, not historically found in Toronto, Frosted Elfin (*Callophrys irus*) and Eastern Persius Duskywing (*Erynnis persius persius*), were also declared extirpated by the province in 2009 and 2007 respectively. These butterflies were all dependent on wild lupine as their caterpillar host plant. In Ontario, only oak savannah provides the appropriate microhabitat for wild lupine. Just 0.02 per cent of this habitat remains today in North America, with much of it in Ontario. Wild lupine was reduced due to habitat degradation and mismanagement, including fire suppression, the development of pine plantations, ATV traffic in sensitive areas, and the unprecedented growth in the white-tailed deer population. With these lupine-dependent butterflies already under extreme pressure, two consecutive years of drought in 1988 and 1989 were enough to extirpate the populations from Ontario.

“Extirpated” species no longer exist in the wild in Ontario, but are still known to occur elsewhere. Ontario’s new *Endangered Species Act, 2007* now automatically protects extirpated species if they reappear, whereas the previous Act only recognized “endangered” species for enhanced protection.

Historically, the Karner Blue was found in eight locations in Ontario, including Toronto’s High Park which supported a classic oak savannah. At the beginning of the 20th century, a large population of Karner Blues flourished here on what was described as a “blue sea” of lupine. In the 1920s, as the park became more manicured, much of the lupine was replaced by formal flower beds and lawn. The population of Karner Blues disappeared from the park around



Karner Blue  
photo: Bob Yukich

1926. This story repeated itself as other suitable sites became parks or suburbs to support the growing human population. Karner Blues held on at only two known sites in Ontario before the drought years brought about their demise.

In 1993, a group of interested individuals joined together to find ways to recreate the conditions needed to re-establish the Karner Blue in Ontario. Throughout the species’ range in the U.S., people have been doing similar work to restore habitat and encourage the re-growth of the distinctive oak savannah plant communities. Prescribed burns or





J.E.H. MacDonald, *Spring Breezes, High Park*, 1912  
Oil on canvas, 71.1 x 92.2 cm, National Gallery of Canada, Ottawa  
photo © NGC

J.E.H. MacDonald, *Brises de printemps, High Park*, 1912  
Huile sur toile, 71.1 x 92.2 cm, Musée des beaux arts du Canada, Ottawa  
photo © MBAC

Note the blue of the wild lupine among the tall grasses of the savannah.

Toronto Zoo has worked on developing protocols to mass-breed Karner Blues in captivity for re-introduction into sites where they once flew. In combination with restoration of black oak savannah, it is hoped that some day this butterfly may once again fly in Toronto's High Park.



Wild lupine, High Park, 2009  
photo: Bob Yukich

periodic mowing have replaced the natural fires that once kept the oak savannah in balance. In many cases, a natural seed bank lying dormant in the soil has sprouted, and plants such as wild lupine, New Jersey tea and blazing star have returned on their own. Others have been purposely replanted. Groups such as the High Park Nature Centre and the High Park Natural Environment Committee ensure that visitors to the Park are made aware of habitat restoration efforts. This tiny colourful blue butterfly has become the “flagship” species for the oak savannahs; it is hoped that one day it can be successfully reintroduced to Ontario and again thrive in this unique habitat.



## Checklist of the Butterflies of the Toronto Area (2011)

There are 110 species listed for the Toronto area (defined here as a 50 km radius from the Royal Ontario Museum). The species' abundance designations are based on a typical year and a skilled observer being in a suitable habitat, in the appropriate season, under favourable weather conditions. It should be noted, however, that the population of any butterfly species can fluctuate dramatically from year to year, or even within a breeding season, due to a variety of environmental factors.

### All species are breeding residents unless otherwise noted.

- ▶ Recorded on most visits, easily seen
- ▶ Present in small numbers, can be missed on most visits, and/or isolated colonies
- ⊠ Not likely to be seen, can be less than annual in occurrence
- ⊡ Not to be expected, 1 or 2 records, and/or several years between sightings
- H Bred historically, pre-1960
- \* Southern migrant, some species may occasionally breed if a host plant is found
- \*\* Annual breeding southern migrant

### Skippers

Skippers	Hesperiidae	
<input type="checkbox"/> Silver-spotted Skipper	<i>Epargyreus clarus</i>	▶▶
<input type="checkbox"/> Southern Cloudywing	<i>Thorybes bathyllus</i>	H
<input type="checkbox"/> Northern Cloudywing	<i>Thorybes pylades</i>	▶▶
<input type="checkbox"/> Common Sootywing	<i>Pholisora catullus</i>	⊠
<input type="checkbox"/> Dreamy Duskywing	<i>Erynnis icelus</i>	▶▶
<input type="checkbox"/> Juvenal's Duskywing	<i>Erynnis juvenalis</i>	▶▶
<input type="checkbox"/> Horace's Duskywing	<i>Erynnis horatius</i>	⊠
<input type="checkbox"/> Mottled Duskywing	<i>Erynnis martialis</i>	⊠
<input type="checkbox"/> Zaruco Duskywing	<i>Erynnis zarucco</i> *	⊠
<input type="checkbox"/> Funereal Duskywing	<i>Erynnis funeralis</i> *	⊠
<input type="checkbox"/> Wild Indigo Duskywing	<i>Erynnis baptisiae</i>	▶▶
<input type="checkbox"/> Columbine Duskywing	<i>Erynnis lucilius</i>	H
<input type="checkbox"/> Arctic Skipper	<i>Carterocephalus palaemon</i>	▶
<input type="checkbox"/> Least Skipper	<i>Ancyloxypha numitor</i>	▶▶
<input type="checkbox"/> European Skipper	<i>Thymelicus lineola</i>	▶▶
<input type="checkbox"/> Common Roadside-Skipper	<i>Amblyscirtes vialis</i>	H
<input type="checkbox"/> Fiery Skipper	<i>Hylephila phyleus</i> **	▶
<input type="checkbox"/> Leonard's Skipper	<i>Hesperia leonardus</i>	▶
<input type="checkbox"/> Indian Skipper	<i>Hesperia sassacus</i>	⊠
<input type="checkbox"/> Peck's Skipper	<i>Polites peckius</i>	▶▶
<input type="checkbox"/> Tawny-edged Skipper	<i>Polites themistocles</i>	▶▶

<input type="checkbox"/> Crossline Skipper	<i>Polites origenes</i>	▶
<input type="checkbox"/> Long Dash	<i>Polites mystic</i>	▶▶
<input type="checkbox"/> Whirlabout	<i>Polites vibex</i> *	⊠
<input type="checkbox"/> Northern Broken-Dash	<i>Wallengrenia egeremet</i>	▶▶
<input type="checkbox"/> Little Glassywing	<i>Pompeius verna</i>	▶
<input type="checkbox"/> Sachem	<i>Atalopedes campestris</i> *	⊠
<input type="checkbox"/> Hobomok Skipper	<i>Poanes hobomok</i>	▶▶
<input type="checkbox"/> Broad-winged Skipper	<i>Poanes viator</i>	▶
<input type="checkbox"/> Delaware Skipper	<i>Anatrytone logan</i>	▶▶
<input type="checkbox"/> Black Dash	<i>Euphyes conspicua</i>	⊠
<input type="checkbox"/> Dion Skipper	<i>Euphyes dion</i>	▶
<input type="checkbox"/> Two-spotted Skipper	<i>Euphyes bimacula</i>	⊠
<input type="checkbox"/> Dun Skipper	<i>Euphyes vestris</i>	▶▶

### Swallowtails

<input type="checkbox"/> Pipevine Swallowtail	<i>Battus philenor</i> *	⊠
<input type="checkbox"/> Zebra Swallowtail	<i>Eurytides marcellus</i> *	⊠
<input type="checkbox"/> Black Swallowtail	<i>Papilio polyxenes</i>	▶▶
<input type="checkbox"/> Giant Swallowtail	<i>Papilio cresphontes</i>	▶
<input type="checkbox"/> Canadian Tiger Swallowtail	<i>Papilio canadensis</i>	▶
<input type="checkbox"/> Eastern Tiger Swallowtail	<i>Papilio glaucus</i>	▶▶
<input type="checkbox"/> Spicebush Swallowtail	<i>Papilio troilus</i>	▶

### Papilionidae

### Sulphurs and Whites

<input type="checkbox"/> Little Yellow	<i>Pyrissitia lisa</i> *	⊠
<input type="checkbox"/> Sleepy Orange	<i>Abaeis nicippe</i> *	⊠
<input type="checkbox"/> Clouded Sulphur	<i>Colias philodice</i>	▶▶
<input type="checkbox"/> Orange Sulphur	<i>Colias eurytheme</i> **	▶▶
<input type="checkbox"/> Southern Dogface	<i>Zerene cesonia</i> *	⊠
<input type="checkbox"/> Cloudless Sulphur	<i>Phoebis sennae</i> *	⊠
<input type="checkbox"/> Orange-barred Sulphur	<i>Phoebis philea</i> *	⊠
<input type="checkbox"/> Mustard White	<i>Pieris oleracea</i>	▶
<input type="checkbox"/> West Virginia White	<i>Pieris virginianensis</i>	▶
<input type="checkbox"/> Cabbage White	<i>Pieris rapae</i>	▶▶
<input type="checkbox"/> Checkered White	<i>Pontia protodice</i> *	⊠

### Pieridae

**Gossamer Wings**

<input type="checkbox"/> Harvester	<i>Feniseca tarquinius</i>	▶
<input type="checkbox"/> American Copper	<i>Lycaena phlaeas</i>	▶
<input type="checkbox"/> Bronze Copper	<i>Lycaena hyllus</i>	▶
<input type="checkbox"/> Bog Copper	<i>Lycaena epixanthe</i>	H
<input type="checkbox"/> Purplish Copper	<i>Lycaena helloides</i>	H
<input type="checkbox"/> Acadian Hairstreak	<i>Satyrium acadica</i>	⚡
<input type="checkbox"/> Coral Hairstreak	<i>Satyrium titus</i>	▶
<input type="checkbox"/> Edwards' Hairstreak	<i>Satyrium edwardsii</i>	▶
<input type="checkbox"/> Banded Hairstreak	<i>Satyrium calanus</i>	⚡
<input type="checkbox"/> Hickory Hairstreak	<i>Satyrium caryaevorus</i>	⚡
<input type="checkbox"/> Striped Hairstreak	<i>Satyrium liparops</i>	▶
<input type="checkbox"/> Brown Elfin	<i>Callophrys augustinus</i>	▽
<input type="checkbox"/> Eastern Pine Elfin	<i>Callophrys niphon</i>	▶
<input type="checkbox"/> Gray Hairstreak	<i>Strymon melinus</i> *	⚡
<input type="checkbox"/> White M Hairstreak	<i>Parrhasius m-album</i> *	▽
<input type="checkbox"/> Early Hairstreak	<i>Erora laeta</i>	H
<input type="checkbox"/> Marine Blue	<i>Leptotes marina</i> *	▽
<input type="checkbox"/> Eastern Tailed-Blue	<i>Cupido comyntas</i>	⚡
<input type="checkbox"/> Spring Azure	<i>Celastrina lucia</i>	⚡
<input type="checkbox"/> Cherry Gall Azure	<i>Celastrina serotina</i>	▶
<input type="checkbox"/> Summer Azure	<i>Celastrina neglecta</i>	⚡
<input type="checkbox"/> Silvery Blue	<i>Glaucopsyche lygdamus</i>	⚡
<input type="checkbox"/> Karner Blue	<i>Plebejus melissa samuelis</i>	H

**Brushfoots**

<input type="checkbox"/> American Snout	<i>Libytheana carinenta</i> *	⚡
<input type="checkbox"/> Monarch	<i>Danaus plexippus</i> **	⚡
<input type="checkbox"/> { White Admiral	<i>Limenitis arthemis arthemis</i>	⚡
<input type="checkbox"/> { Red-spotted Purple	<i>Limenitis arthemis astanayax</i>	⚡
<input type="checkbox"/> Viceroy	<i>Limenitis archippus</i>	⚡
<input type="checkbox"/> Variegated Fritillary	<i>Euptoieta claudia</i> *	⚡
<input type="checkbox"/> Silver-bordered Fritillary	<i>Boloria selene</i>	▶
<input type="checkbox"/> Meadow Fritillary	<i>Boloria bellona</i>	▶
<input type="checkbox"/> Great Spangled Fritillary	<i>Speyeria cybele</i>	⚡
<input type="checkbox"/> Aphrodite Fritillary	<i>Speyeria aphrodite</i>	⚡
<input type="checkbox"/> Atlantis Fritillary	<i>Speyeria atlantis</i>	H

**Lycaenidae****Nymphalidae**

<input type="checkbox"/> Tawny Emperor	<i>Asterocampa clyton</i>	⚡
<input type="checkbox"/> American Lady	<i>Vanessa virginiensis</i> **	⚡
<input type="checkbox"/> Painted Lady	<i>Vanessa cardui</i> **	▶
<input type="checkbox"/> Red Admiral	<i>Vanessa atalanta</i> **	⚡
<input type="checkbox"/> Milbert's Tortoiseshell	<i>Aglais milberti</i>	⚡
<input type="checkbox"/> Compton Tortoiseshell	<i>Nymphalis l-album</i>	▶
<input type="checkbox"/> Mourning Cloak	<i>Nymphalis antiopa</i>	⚡
<input type="checkbox"/> Question Mark	<i>Polygonia interrogationis</i> **	⚡
<input type="checkbox"/> Eastern Comma	<i>Polygonia comma</i>	⚡
<input type="checkbox"/> Gray Comma	<i>Polygonia progne</i>	⚡
<input type="checkbox"/> Green Comma	<i>Polygonia faunus</i>	▽
<input type="checkbox"/> Common Buckeye	<i>Junonia coenia</i> **	▶
<input type="checkbox"/> Baltimore Checkerspot	<i>Euphydryas phaeton</i>	▶
<input type="checkbox"/> Silvery Checkerspot	<i>Chlosyne nycteis</i>	▶
<input type="checkbox"/> Gorgone Checkerspot	<i>Chlosyne gorgone</i>	H
<input type="checkbox"/> Harris' Checkerspot	<i>Chlosyne harrisii</i>	⚡
<input type="checkbox"/> Pearl Crescent	<i>Phyciodes tharos</i>	⚡
<input type="checkbox"/> Northern Crescent	<i>Phyciodes cocyta</i>	⚡
<input type="checkbox"/> Tawny Crescent	<i>Phyciodes batesii</i>	H
<input type="checkbox"/> Northern Pearly-eye	<i>Lethe anthedon</i>	⚡
<input type="checkbox"/> Eyed Brown	<i>Lethe eurydice</i>	▶
<input type="checkbox"/> Appalachian Brown	<i>Lethe appalachia</i>	▶
<input type="checkbox"/> Common Ringlet	<i>Coenonympha tullia</i>	⚡
<input type="checkbox"/> Little Wood-Satyr	<i>Megisto cymela</i>	⚡
<input type="checkbox"/> Common Wood-Nymph	<i>Cercyonis pegala</i>	⚡



Least Skipper  
illustration: Susan Boswell

## A Chronology of the Toronto Butterfly Year

### January and February

These months are typically cold and windy and the ground is often snow covered. As we gradually move into February, the days become longer and brighter, though there is not much incentive for a hibernating butterfly to venture out. Still, there are occasional warm periods when an overwintering adult, such as a Mourning Cloak, may emerge briefly.

### March

The days are getting warmer now and sap is beginning to flow. If it is warm and sunny, some butterflies will come out of hibernation to bask in sheltered areas or start looking for sap. Usually by mid-March, a few Mourning Cloaks and Eastern Commas emerge. Later in the month, they are joined by colourful Compton Tortoiseshells.

### April

The weather continues to warm up, and the snow is either gone or remains in small patches only. On rare occasions, the vividly coloured Milbert's Tortoiseshell may appear in open wooded areas, often near stinging nettles. Dandelions are starting to bloom, and the first migrant Red Admirals are out searching

for this early nectar. By mid-April, the first Cabbage Whites and Spring Azures emerge. Often by month's end, the occasional Clouded Sulphur can be seen flying in open grassy areas.

### May

Early May temperatures are much warmer, often rising above 15°C. The first duskywings (Juvenal's, Dreamy and Wild Indigo) begin to appear along wood edges and clearings. American Ladies, and the occasional Orange Sulphur, having migrated from further south, are searching for nectar. Silvery Blues and Eastern Tailed-Blues are beginning to emerge, as are the first Pearl Crescents. Striking male Black Swallowtails can often be seen patrolling on grassy hillsides. Other difficult-to-find localized species are also beginning to appear in their specialized habitats, such as Mustard White, West Virginia White, Eastern Pine Elfin, Meadow Fritillary and American Copper.

As the month proceeds, more and more species appear. The first Monarchs arrive, often females searching for young milkweed plants to lay eggs on. Question Marks can be encountered sunning themselves

along trails. Viceroy's may be seen near wetlands, and if alders are present, the very local and unique Harvester may also be found. Little Wood-Satyr, Hobomok Skipper and the less common Arctic Skipper frequent wood edges, while Common Ringlets bounce across open fields.

### June

In June, temperatures are climbing and many newly emerged butterflies are basking and flying in the sun: Northern Cloudywings and Silver-spotted Skippers perch on territory in meadows and woodland edges; Long Dashes and weak-flying Least Skippers lurk in damper grasses and sedges; and often abundant European Skippers flutter through grassy fields. As Meadow Fritillary numbers go down, Silver-bordered Fritillaries are replacing them in wet meadows. Along wood edges and even urban streets, big showy Eastern Tiger Swallowtails are looking for flowers.

By mid-June, most Spring Azures have disappeared, replaced by a few Cherry Gall Azures and then Summer Azures. As Pearl Crescents phase out, Northern Crescents phase in. The flashy White Admiral and its species counterpart, the colourful Red-

spotted Purple, bask along sunny roadways and woodland edges. Species such as Tawny-edged Skippers are now a common sight in fields, while the less common Eyed Browns and Baltimore Checkerspots are found locally in sedge meadows and wet areas. Silvery Checkerspots, also very local, are sometimes found where there are native sunflowers. On rare occasions, a Pipevine Swallowtail may show up near the waterfront.

### July

This is normally a hot, sunny month. Many early species have already mated and died; only their eggs and caterpillars remain. Other species still persist or are now into their second brood. Some are making their first appearance as adults. By the wooded edge of a sedge marsh, freshly emerged Appalachian Browns bask on shrubs, while Eyed Browns continue to flourish in open marshland. Along a wooded trail, a Northern Pearly-eye may fly up from the base of a tree to dive at a presumed intruder. Many skippers and hairstreaks appear now. Peck's, Northern Broken-Dash, Dun, Little Glassywing, Crossline and Delaware Skippers may all occur together in rich meadows with

native grasses, and weak-flying Broad-winged Skippers weave through sedge marshes. Look for hairstreaks nectaring on wildflowers, such as common milkweed, or flying near their caterpillar host plants: Acadian Hairstreaks near willows, Coral Hairstreaks near plums and cherries, Banded Hairstreaks near oaks and walnuts, and Striped Hairstreaks near plums, cherries and hawthorns.

The impressive Great Spangled Fritillary is on the wing all month, often seen racing across shrubby fields or along forest edges. The now-abundant Cabbage Whites will be seen until October. In late July, a few Monarchs are already starting to migrate.

By the end of the month, the beautifully marked Common Buckeye, an annual migrant to our city, may occasionally be spotted basking in sparsely vegetated sandy areas where their host plants – gerardias, plantains or toadflax – are in bloom. Scarcer immigrants, such as Variegated Fritillaries, American Snouts, Fiery Skippers and Little Yellows occasionally show up at this time. Hickory Hairstreaks and Gray Commas also make rare appearances.



## August

As we enter the second full month of summer, the hot sunny weather continues. Many of the early summer skippers, hairstreaks and satyrs have disappeared or are found in small numbers, while some species such as Wild Indigo Duskywing and Least and Peck's Skipper are into their second broods. Tawny-edged Skippers may have a partial second brood at this time. The very local and late-flying Leonard's Skipper is occasionally found near native bluestem grasses. Immigrant Fiery Skippers may begin breeding near ornamental gardens.

The flight season continues for many immigrant butterflies, or resident species having second or third broods. These include swallowtails, sulphurs, coppers, blues, fritillaries, ladies, admirals, ringlets, Viceroy and Monarchs.

By month's end, most Common Wood-Nymphs are gone, and Question Marks and Eastern Commas are waning. Funereal Duskywing, normally a very rare visitor to Ontario, has shown up regularly in Toronto in August or September since 1998 (eight sightings)!

## September

The hot weather of August may extend into early September but temperatures usually cool as the month progresses. Though the ranks are thinner, there are still a number of butterflies on the wing. Most swallowtails have disappeared, but some Black Swallowtails are still flying. Late stragglers such as White Admiral, Red-Spotted Purple and Common Ringlet are recorded this month. A few Silver-spotted Skippers are still around and Wild Indigo Duskywing is having its third brood. Least Skipper numbers are slowly dwindling (they disappear by month's end), while Peck's Skipper is still holding its own. Female Great Spangled Fritillaries emerge from their brief August hibernation and begin laying their eggs near violet roots; males of this species have long since died off.

Cabbage Whites and sulphurs are still abundant through the month. In open areas or field edges, the last broods of Pearl Crescents and sometimes Northern Crescents emerge. In their respective habitats, Viceroy and the beautiful Bronze Copper continue to fly. Small numbers of Summer Azures linger until month's end. Some Question Marks and

Eastern Commas are still about, usually basking in the sun or feeding on fallen fruit. Compton Tortoiseshells and Mourning Cloaks, having spent the hottest part of the summer "resting," may now be out looking for rotting fruit or nectar. The uncommon Milbert's Tortoiseshell may also be seen at this time. American Ladies, and sometimes Painted Ladies, are seen nectaring on fall flowers.

With the waning of summer, impressive numbers of Monarchs congregate for their flight south. Though Red Admirals have already begun their migration, there are still many around. In some years, a few Mourning Cloaks can also be seen moving southwards.

If it's been a good year for Fiery Skippers, they may fly into late September or even longer. Similarly, in a good year, Common Buckeyes may still be seen, especially near the waterfront. There have also been rare September records of American Snout and Variegated Fritillary.

## October

As the days shorten and the weather gets cooler and unsettled, fewer butterflies are on the wing. However, summer-like weather can still occur,

especially in the early part of the month. On warm sunny days, a surprising variety of butterflies can still be seen, including both ladies, Red Admiral, Question Mark, Eastern Comma, Viceroy and Common Buckeye. The hardy Cabbage Whites and Clouded and Orange Sulphurs persist through the month. Most Monarchs have migrated south, but a few are still passing through. Small numbers of Wild Indigo Duskywings, Eastern Tailed-Blues and both crescents can still be found on open paths and fields. In warm years, Fiery Skippers and the occasional Peck's Skipper may linger in ornamental flowerbeds. A rare sighting of Variegated Fritillary is always a possibility.

## November

This is the last month for Toronto butterflies. While some days can be sunny, the weather is often cool, windy and cloudy, with rain or even snow – not ideal for butterflies. Only about nine species can meet this challenge. Cabbage Whites, Clouded Sulphurs and Orange Sulphurs are present in much reduced numbers early in the month, but die off before month-end. Most Eastern Commas and Mourning Cloaks have moved to their hibernation sites by early

November, although a late sighting is always possible. Also, by early in the month the last of the American Ladies and Red Admirals have migrated south, and most Painted Ladies have died off. With very few nectar sources available, any remaining Monarchs will be gone by mid-November.

## December

If this month is exceptionally mild, the odd rugged individual may still be flying. Clouded Sulphur, Mourning Cloak and Monarch have all been recorded once or twice.



Eastern Tailed-Blue  
illustration: Susan Boswell

## Exceptional Butterfly Viewing Locations in Toronto

### 1 EGLINTON FLATS

Located on the Humber River floodplain, this is a rich area for breeding butterflies. For years, this site supported a large colony of Silvery Checkerspots, although they are now becoming scarce. It also hosts the largest colony of Wild Indigo Duskywings in the Toronto area, and is the only known site for Coral Hairstreak in the west end of the city. Rarities recorded here are Milbert's Tortoiseshell, Eastern Pine Elfin and Harvester.

### 2 LAMBTON PRAIRIE

This small remnant prairie has attracted 58 butterfly species in recent years, including several rarities. Located at the intersection of the Humber valley, a railway line and a hydro right-of-way – all butterfly highways – this is a great spot to find wandering butterflies. Seven hairstreak species have occurred here, and it is the last known location in the city for Edwards' Hairstreak. This site is good for skippers; the usually scarce Crossline Skipper is common here.

### 3 HUMBER BAY BUTTERFLY HABITAT

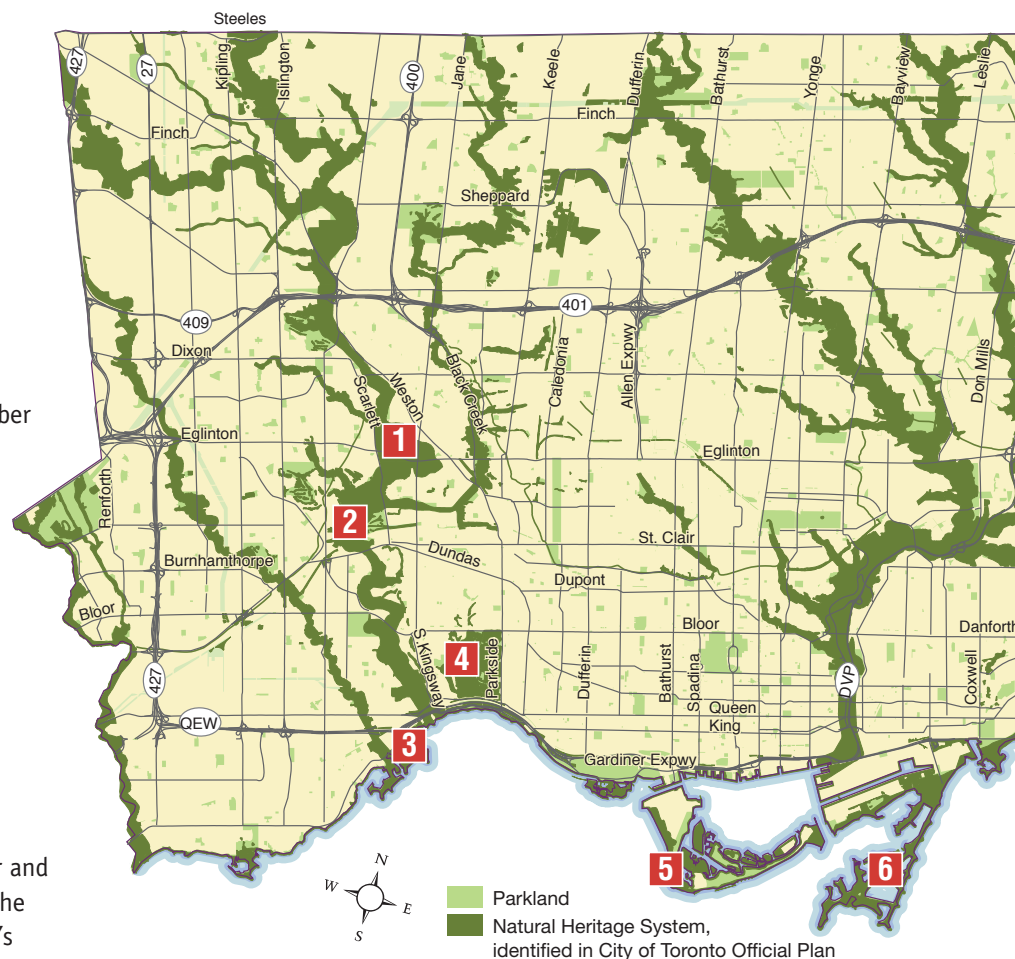
- featured on page 46

### 4 HIGH PARK

- featured on page 47

### 5 THE TORONTO ISLANDS

The islands offer varied habitats to many species: Silver-spotted Skipper and Summer Azure can be abundant here; rarities include American Snout. The colourful Common Buckeye breeds annually at Ward's Island and Hanlan's Point. Centre Island's ornamental gardens are a hotspot in late summer, attracting both common and uncommon migrants, such as Fiery Skipper. The islands are an excellent location for viewing Monarchs during fall migration – roosts of several thousand have been seen.



Toronto's many parks, ravines and natural areas provide ample opportunities for viewing butterflies. We encourage you to explore.





## 6 LESLIE STREET SPIT/TOMMY THOMPSON PARK

- featured on page 48

## 7 ROSETTA McCLAIN GARDENS

Strategically located along the Scarborough Bluffs, this small park's well-kept flower gardens feature butterfly favourites such as Brazilian verbena and butterfly bush. Almost anything can show up. Both Giant Swallowtail and American Snout have been seen. In a good year for Fiery Skippers, look for them on the verbena flowers. Silver-spotted Skipper, Red Admiral, Eastern Comma, and American and Painted Ladies are common here.

## 8 BELLAMY RAVINE (DORIS MCCARTHY TRAIL)

Cut into the Scarborough Bluffs, Bellamy Ravine offers shelter from cool lake breezes, a refuge where migrating butterflies can feed and bask in the sun. In early spring, Eastern Comma, Mourning Cloak and Compton Tortoiseshell dine on maple sap. Wild Indigo Duskywing breeds here, and in recent years the rare Funereal Duskywing has been seen a number of times. One year, Checkered Whites established a colony nearby along the waterfront. The adjacent Sylvan Park bluffs are a good place to observe Monarchs in spring and fall.

## 9 ROUGE PARK

- featured on page 49

## 10 TORONTO ZOO

Nestled in the heart of Rouge Park, Toronto Zoo is surrounded by some of the best butterfly habitat in Toronto. Re-naturalized meadows and forest edges within the zoo, along with a myriad of flowering annuals and perennials planted throughout the grounds, make it ideal for native butterflies. Since 1991, free-flying exotic butterflies have been released into the Malaysian Woods pavilion. From May to mid-October, zoo visitors are surrounded by species such as Clippers, Great Eggflies, Common Crows, Rice Paper butterflies and various tigers. Adult butterflies emerge from living pupae imported from Malaysia and the Philippines. By purchasing butterflies farmed especially for exhibits, the Toronto Zoo provides much-needed funding for farmers in Asia, encouraging them to continue this sustainable practice.

## Humber Bay Butterfly Habitat

The Humber Bay Butterfly Habitat (HBBH) is a naturalization project that provides critical habitat for many butterfly species. A partnership project between City of Toronto Parks, Forestry and Recreation and Toronto and Region Conservation, HBBH incorporates a diversity of wildflowers, grasses, shrubs and trees known to support a variety of butterfly species throughout their life cycles. HBBH also educates and engages the public about the value of wildlife and habitat conservation in an urban environment. The “Home Garden” section of HBBH demonstrates to the public the types of plants and design components they can use in their own backyards to increase urban wildlife habitat.

HBBH was made possible through inter-agency, federal, provincial, corporate and volunteer partnerships. A key component of the success of the project was the tremendous contribution of volunteers through planting, stewardship and monitoring. To find out more about the HBBH Stewardship Team, please call 311.

### HBBH – CSLA 2003 Regional Merit Award

HBBH was honoured with a 2003 Canadian Society of Landscape Architects Regional Merit Award. Award winners represent the very best regional work completed by Ontario Landscape Architects. Winning projects demonstrated excellence in visionary, artistic and environmentally responsible design solutions. The jury remarked that HBBH carries a strong sense of place, and it brings the importance of conservation to the public in a tangible way.

### Significance of HBBH for the Lake Ontario Region

- The size of HBBH (over one hectare), along with its diversity of plant species and vegetation community types, creates a complex system which can support a variety of southern Ontario butterflies throughout their life cycles.
- HBBH is located on the north shore of Lake Ontario, an important staging area on the Monarch butterfly migration route.
- Conservation and restoration of individual butterfly habitats is crucial, but the biggest value lies in the protection of networks or corridors of these safe havens across the province, country and continent.
- HBBH contributes a beautiful element to the Toronto waterfront park system – providing resting and refueling areas for butterflies and humans alike. It also demonstrates the importance and potential for conservation and naturalization in the urban environment.



Humber Bay Butterfly Habitat  
photo: Gera Dillon



## High Park

With its varied habitats and ease of access, High Park is an excellent place to observe butterflies within the heart of the city. At least 65 species have been recorded in recent years, and another 12, including the Karner Blue and Mottled Duskywing, were observed historically.

High Park lies at the easternmost edge of the Carolinian Zone. The recently restored black oak savannah, lush with wild lupines, woodland sunflowers and prairie grasses, provides nectar for adult butterflies and host plants for their caterpillars. Several species of small grass-skippers occur here, including Delaware and Crossline Skippers. It is also home to larger showy species such as Eastern Tiger Swallowtail and the rarer Spicebush Swallowtail. The latter is at the northern limit of its range in High Park and uses the abundant sassafras, a more southern tree species, as its host.

Oaks, the signature trees of High Park, are the food plants for the tiny and occasionally numerous Banded Hairstreak and, until recently, Edwards' Hairstreak. This species, local within its range, may one day return as young oaks continue to regenerate.

Northern Cloudywing and Eastern Tailed-Blue, both common throughout the park, lay their eggs on native tick trefoils. Silvery Checkerspot is seen on rare occasions. Its caterpillars feed on composites such as woodland sunflower. Two recent additions to the park's butterfly fauna, Silvery Blue and Wild Indigo Duskywing, arrived after range extensions following the spread of their adopted host plants, cow vetch and crown vetch.

There have been recent rare sightings of Bronze Copper, Broad-winged Skipper and Black Dash, all wetland species, along the re-vegetated shores of Grenadier Pond.

During late summer and fall the ornamental gardens of High Park are a magnet for butterflies, especially after nectar sources in the wild have disappeared. Migrating Monarchs, Red Admirals, American Ladies and Question Marks are more easily observed at this time, especially when on butterfly bush gorging themselves with nectar!

In warmer years Fiery Skippers, and sometimes other southern rarities, arrive in High Park after crossing Lake Ontario – look for them in flower beds.



High Park

Information on the natural areas of High Park and a detailed list of butterflies can be found at [www.highparknature.org](http://www.highparknature.org).

## Leslie Street Spit/Tommy Thompson Park

The Leslie Street Spit, including Tommy Thompson Park, is a man-made peninsula extending 5 km into Lake Ontario from the intersection of Leslie Street and Unwin Avenue. The area, including water lots, exceeds 500 hectares. The park's natural heritage is managed by Toronto and Region Conservation (TRCA).

Construction of the Baselands began in the 1950s, and the peninsula itself in the 1970s. The anticipated port-related industry never materialized, and the landscape naturalized. Through natural succession, as well as habitat creation and enhancement efforts by TRCA, the Spit contains diverse habitats including cottonwood forests, wet and dry meadows, shrub thickets, and sandy areas that benefit a range of butterfly species. The Baselands meadows and wet woods near the park entrance generate good species variety, including ringlets, blues, sulphurs, and an annually occurring colony of Common Buckeyes. The Spine Road extends the length of the Spit and produces excellent butterfly sightings, depending on the flowering cycle of host plants. Red Admirals can be plentiful, especially near the south end of the road where the caterpillar's host plant, nettle, flourishes. The Cell 1 Wetland and associated wet and dry habitats offer abundant food resources. At least 55 species have been recorded at the Spit and more species are a possibility as habitat restoration efforts continue and as habitats mature.

As the peninsula extends well out into Lake Ontario, mid- to late summer and early fall offer tremendous possibilities for viewing stray and migrant butterflies. Not to be missed is the spectacle of Monarchs resting here before they migrate south across Lake Ontario. The Urquharts did some of their now-famous tagging of Monarchs nearby at Cherry Beach.

The park is open to the public on weekends and holidays, except Christmas Day, Boxing Day and New Year's Day. Private vehicles, dogs and other pets are prohibited. For more information, visit [www.tommythompsonpark.ca](http://www.tommythompsonpark.ca) or phone 416-661-6600 or visit [www.friendsofthespit.ca](http://www.friendsofthespit.ca).



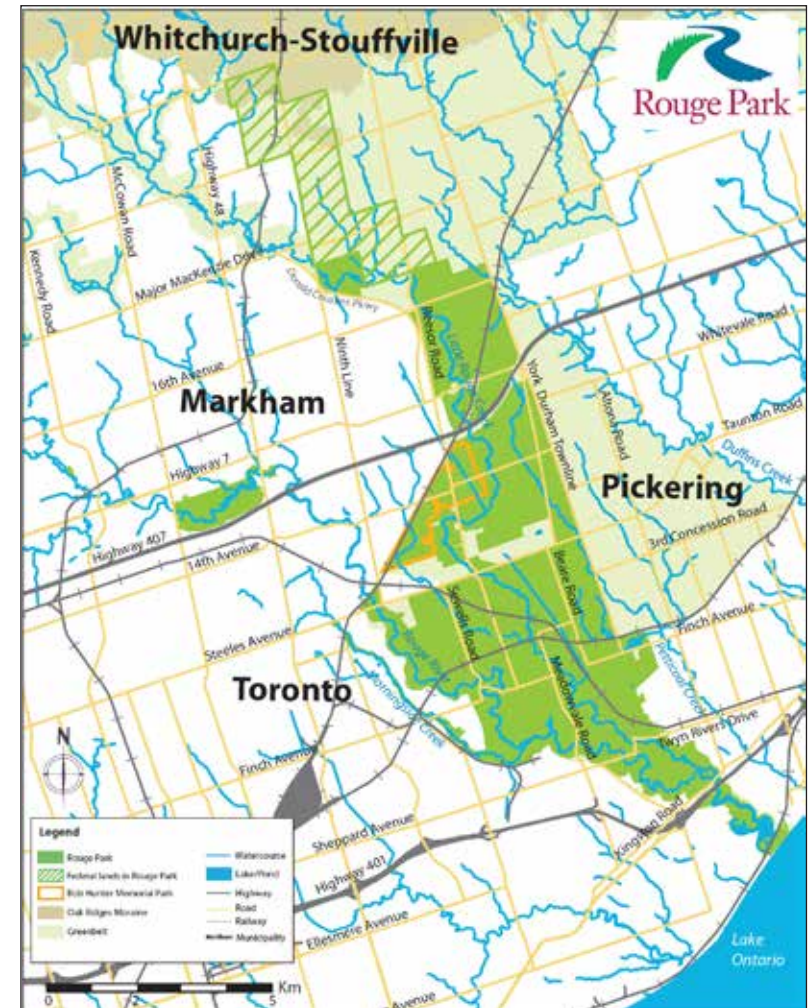
Leslie Street Spit/Tommy Thompson Park

## Rouge Park

Rouge Park protects over 40 square kilometres of green space in the heart of the Greater Toronto Area. The Park extends along the Rouge River watershed from the shores of Lake Ontario to just north of 16th Avenue in Markham, encompassing a rich mosaic of river valleys, creeks, marshes, forests, meadows and rural landscapes. Rouge Park is part of Ontario's Greenbelt and is Canada's largest natural environment park in an urban setting, harbouring over 100 nationally and regionally rare species of plants and animals.

Compared to other ravine systems in the Toronto area, Rouge Park has fewer disturbed areas and more continuous habitat, making it a haven for many species that have been lost to urbanization elsewhere. This diversified expanse provides habitat for at least 68 species of butterflies. Dreamy and Juvenal's Duskywings, Little Glassywing, Great Spangled Fritillary and Northern Pearly-eye are much more easily seen here than anywhere else in the city. Wetlands near the mouth of the Rouge support species such as Broad-winged and Dion Skippers, and Appalachian and Eyed Browns, all hard-to-find sedge-feeding butterflies. Other butterflies found here that have specialized habitat requirements are Leonard's Skipper, Harvester, Bronze Copper, Eastern Pine Elfin and Baltimore Checkerspot. Arctic Skipper has been seen recently. Gray Comma is scarce but regular in the Rouge, and the even rarer Green Comma has been seen in recent years – once more common in our area, this species is near the southern limit of its range.

Rouge Park has a network of trails for visitors to explore. Some of the better areas for viewing butterflies can be accessed from Twyn Rivers Drive and from Pearse House (east of Toronto Zoo). More information on the Park, including trail maps, can be found at [www.rougepark.com](http://www.rougepark.com). Park staff welcome reports of interesting sightings of wildlife, including butterflies.



Rouge Park



## Annual Butterfly Counts

Butterfly counts now take place across North America from Mexico to Canada. Essential information on butterfly populations is gathered and sent to the North American Butterfly Association (NABA). One year's information is interesting, but by itself does not tell us much. However, ten years or more of these records can show significant trends in populations that are not obvious in a single year. The longer these records are kept, the better researchers will be able to understand what is happening with butterfly populations across North America.

Anyone interested in joining a butterfly count would need basic knowledge of butterfly identification and, more importantly, the desire to learn more. Count information and contacts are listed on the Toronto Entomologists' Association (TEA) website at [www.ontarioinsects.org](http://www.ontarioinsects.org).

### Toronto East Butterfly Count

The Toronto East Count has run continually on July 1 since 1993. Every year, TEA members and amateur naturalists gather together to help count butterflies. The TEA sponsors this count for members and other interested people. The count allows people to see a large number of species within the city of Toronto. Some of the best



Banded Hairstreak  
photo: Bob Yukich

butterfly habitats in the city are found in this region. As many as 52 species have been observed in one day.

July 1 is a point in time where spring butterflies are ending their flight and summer species are just emerging. The average butterfly lifespan is about ten days and most species' flight periods are only a month. Flight periods vary from year to year. Late springs lead to more spring species being present in the counts. Early springs mean summer adults appear earlier. By using the same date over several years, a relatively complete list of species can be compiled.

Participants gather together at a site designated by the count leader. The participants are split up, with more

experienced members teaming up with the less experienced. Some of the participants will travel west to cover the Don Valley and hotspots in that area. Others will go north and a few towards the lake and central region. Most people remain in the Rouge Valley, which consistently harbours the most species. Often seen are Monarchs, Eastern Tiger Swallowtails, White Admirals and Viceroy's. If spring is late, then Hobomok Skippers, Dreamy Duskywings and Mourning Cloaks can be found. If it is an early spring, then Summer Azures, Silver-spotted Skippers and Banded Hairstreaks may show up. The most numerous species is the European Skipper.

## Toronto Centre Butterfly Count

The Toronto Centre Butterfly Count, established in 1995, is held annually on the second Saturday of July. At its basic level, the count exemplifies “citizen science.” Participants, organized in small groups, are assigned areas to census butterflies within the overall count “circle.” The 24 km (15 mile) diameter count circle is dictated by the North American Butterfly Association. The circle’s centre at the intersection of Dundas Street West and Bloor Street West was selected to incorporate City of Toronto lands from the Leslie Street Spit in the east, the Toronto Islands, High Park through to Marie Curtis Park in the west, to circle north and encompass Downsview Park, Earl Bales Park and Sunnybrook Park.

When the count was established, one of the stated aims was to document the butterflies which inhabit natural urban spaces and man-made habitats within the city. The hope was that the census would find that the city supported significant populations and species diversity. So far, the results have been positive!

Essentially, the day-long count is a “snapshot” of the butterflies seen that day, that year. The count results vary, dependent on the weather of the day, and the nature of the season in the weeks preceding the count. Count day species’ numbers have ranged from a high of 44, in both 2004 and 2006, to a count low of 23 in 2007. In a similar pattern, the number of individuals counted has ranged from a high of 6,069 in 1996, to a low of 448, again in 2007. The 2007 count day was wet and cold!

Over the last 17 years, a cumulative total of 62 species has been observed. Rarities have included Marine Blue (4th occurrence in



Common Buckeye  
illustration: Susan Boswell

Canada), Checkered White, Little Yellow, Harvester, Bronze Copper, Gray Hairstreak, American Snout, Meadow Fritillary, Gray Comma, Common Buckeye, Fiery Skipper and Dion Skipper.

The Toronto Centre Count results are forwarded to the North American Butterfly Association and, on a number of occasions, this count has recorded continent high totals for some species: Acadian Hairstreak (1996, 2004, 2008), Edwards’ Hairstreak (1996), Compton Tortoiseshell (2004), Eastern Tailed-Blue (2006), Summer Azure (2006), Northern Cloudywing (2008), Monarch (2010), and Red Admiral (2010). This proves the original hypothesis: that there is enormous potential for butterfly observation in Toronto.

## Local Policy Initiatives

### City of Toronto

Protecting and enhancing the natural environment and biodiversity is a high priority for the City of Toronto. The Official Plan is the City's guiding land use planning document. It protects important natural areas and functions, supports biodiversity and requires that the natural environment be taken into account as part of our city-building activities.

Toronto's natural heritage features and functions have been mapped and are identified as a natural heritage system on Map 9 of the Official Plan. The map on pages 44-45 includes these natural heritage areas. Most of these areas are located within the extensive network of valleys and ravines that cross our city, along the shoreline of Lake Ontario and in Rouge Park, and are protected by zoning and land use designations. These areas provide habitat for a wide variety of native plants and animals and help sustain local biodiversity. When new development is proposed in or near the natural heritage system, the proposed development's impact must be evaluated and measures must be identified to protect the system, mitigate negative impacts and improve the system.

Good stewardship supports and enhances biodiversity. The Ravine and Natural Feature Protection Bylaw protects forests



Compton Tortoiseshell  
photo: Bob Yukich



and valley slopes by regulating removal of trees and changes to grade. The City also undertakes a wide range of stewardship activities in parks and natural areas, often in partnerships with other agencies, institutions and community groups. Examples include control of invasive species in ravines and woodlands; naturalization programs; tree planting events; ecological enhancement of existing habitats; creation of new habitats such as wetlands and meadows; and restoration of rivers and streams.

Initiatives are under way to reduce the impact of the built environment on biodiversity and the natural environment. Toronto's *Bird-Friendly Development Guidelines* and the "Lights Out Toronto!" campaign identify building design and lighting strategies that reduce migratory bird deaths. The Green Roof Bylaw is creating green spaces on rooftops that support insects and some birds and have the potential for further biodiversity enhancements. The Toronto Green Standard, which all new development applications are required to meet, includes performance measures that help preserve the urban forest, encourage tree survival and growth, and ensure native species

are planted. Collectively, all of these actions are designed to reduce the impact of our city-building activities on the natural environment and help protect biodiversity.



## Toronto and Region Conservation



With decades of practical experience in protecting our environment, educating young people and engaging communities, Toronto and Region Conservation (TRCA) works with governments, businesses and individuals to build a greener, cleaner, healthier place to live – The Living City. TRCA’s mission is to work with our partners to ensure that The Living City is built upon a natural foundation of healthy rivers and shorelines, greenspace and biodiversity, and sustainable communities.

The Terrestrial Natural Heritage Program identifies and builds on the region’s critical network of natural areas by inventorying habitats and the plants and animals that use those habitats. These data show the linkages between terrestrial natural systems and aquatic habitats, identify the ideal network of natural areas needed for a healthy functioning ecosystem, and are used to set priorities for protection and restoration. Most importantly, this program provides a science-based tool that helps inform planning and development decisions that protect important natural features and functions.

TRCA is actively restoring habitats that benefit butterflies, including wet and dry meadows, wetlands and shrublands. Often restoration plans include the provision of native nectar and host plants. Invasive species represent a significant threat to butterfly biodiversity, and TRCA actively manages invasive plants and protects quality habitats through the Terrestrial Invasive Plants Strategy. TRCA is also involved with the Monarch Teacher Network, an organization devoted to teaching and learning with Monarch butterflies.

## Provincial



The Ontario Ministry of Natural Resources is responsible for the province’s two pieces of legislation that provide protection for butterflies: the *Endangered Species Act, 2007 (ESA)* and the *Fish and Wildlife Conservation Act, 1997 (FWCA)*.

Under the *ESA*, species listed as extirpated, endangered or threatened are protected from being harmed, harassed, captured, transported or killed. Endangered and threatened species receive recovery strategies and habitat protection. Management plans are prepared for special concern species. The *ESA* lists five butterflies:

- Eastern Persius Duskywing – extirpated
- West Virginia White – special concern
- Frosted Elfin – extirpated
- Karner Blue – extirpated
- Monarch – special concern

The *FWCA* also has a list of “specially protected invertebrates” that are protected from the same types of activities. The *FWCA* controls their capture, possession, propagation, buying, selling and releasing to the wild. There are currently 14 species of butterfly classified as specially protected:

- |                              |                             |
|------------------------------|-----------------------------|
| • Mottled Duskywing          | • Eastern Tiger Swallowtail |
| • Pipevine Swallowtail       | • Spicebush Swallowtail     |
| • Zebra Swallowtail          | • West Virginia White       |
| • Black Swallowtail          | • Frosted Elfin             |
| • Old World Swallowtail      | • Bog Elfin                 |
| • Giant Swallowtail          | • Karner Blue               |
| • Canadian Tiger Swallowtail | • Monarch                   |

Furthermore, the *FWCA* makes it illegal to release any wildlife into Ontario – including insects – that are not from here or raised from local stock.

## How You Can Help

What can each one of us do to help stop the decline of butterflies in Toronto? The protection, preservation and restoration of natural habitats and wild spaces in the Toronto area is critical. Below are a number of activities you can get involved with.

### Participate in a butterfly count

There are a number of annual butterfly counts held in the Toronto area, in conjunction with the North American Butterfly Association (NABA). These are posted at [www.ontarioinsects.org/counts.htm](http://www.ontarioinsects.org/counts.htm).

### Report your butterfly sightings

Aside from butterfly counts, you can regularly report your first sightings to various groups. Extensive discussions and reports about Monarch butterfly sightings take place on the Monarch Watch internet-based discussion group. Also, first sightings of adult Monarch butterflies, eggs and caterpillars are welcomed by Journey North on their online report form ([www.learner.org/jnorth](http://www.learner.org/jnorth)). The Toronto Entomologists' Association (TEA) publishes an annual summary of *Ontario Lepidoptera* sightings, and you can submit your sightings to [www.ontarioinsects.org](http://www.ontarioinsects.org).



Common Wood-Nymph  
illustration: Susan Boswell

### Attend a butterfly workshop or event

The TEA holds regular monthly meetings in Toronto from September to April, and some of these focus on butterflies. This organization also conducts a number of summer outings ([www.ontarioinsects.org](http://www.ontarioinsects.org)). Toronto and Region Conservation and partners host the annual Tommy Thompson Park Butterfly Festival in late August. Butterfly identification workshops may take place in Toronto from time to time. One such workshop is hosted by The Arboretum at the University of Guelph ([www.uoguelph.ca/arboretum/ProgsWrkshps](http://www.uoguelph.ca/arboretum/ProgsWrkshps)). Across the province, many provincial parks host annual events related to the migration of the Monarch butterfly, including the Monarchs and Migrants Weekend at Presqu'île Provincial Park over Labour Day weekend.

### Engage in citizen science projects

While most of the above activities can also be described as citizen science projects or programs, there are many others that Toronto residents can participate in. Monarch Watch coordinates a Monarch butterfly tagging program each year. MonarchLab coordinates the Monarch Larval Monitoring Program to assess how the Monarch butterfly population is faring by monitoring the number of eggs and caterpillars found in a specific area on the milkweed plants present ([www.mlmp.org](http://www.mlmp.org)).

In order to maintain Toronto's butterfly biodiversity, it is essential to preserve special habitats (meadows and woodlands) that support the wild host plants of caterpillars. Get involved in greening projects in your local community park or green space by participating in planting events and restoration events ([www.toronto.ca/greentoronto](http://www.toronto.ca/greentoronto) or [www.trca.on.ca/events](http://www.trca.on.ca/events)). Join a nature walk to learn more about butterflies and the habitats they depend on.

### Design and create a butterfly garden

It is quite amazing how many butterflies can be found in Toronto. Fragments of urban wilderness, parks, and ravines still hold diverse butterfly populations. By providing small wildlife refuges in your backyard or green space, you can help butterflies! The urban ecosystem is increasing in size and now covers much of southern Ontario, making the creation of these mini-refuges all the more important.

A garden can be created in almost any space, from backyard to balcony! It is not hard to attract butterflies to your garden if you know what they need to support each of their life stages. Butterflies look for two types of plants: nectar plants for the adults to feed on and caterpillar food/host plants for them to lay eggs on. Adult butterflies will choose from a variety of nectar plants, but caterpillars will only eat specific host plants. Determine what butterflies are in

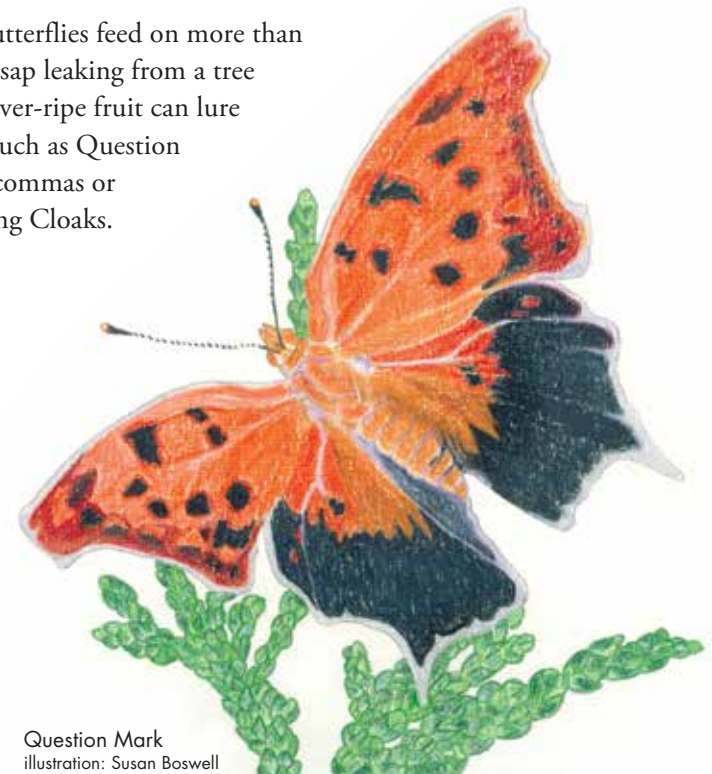
your area and what type of host plant their caterpillars need. The plant list in this book is a good starting point, as well as the Select Butterfly Resources starting on page 61.

To attract butterflies throughout the season, combine different plants for continual bloom from early spring until fall. Butterflies find it easier to feed from old-fashioned, simple blossoms as opposed to modern hybrids with extra petals. For example, butterflies can feed on single hollyhocks, but not the double-blossom hybrids.

Some butterflies feed on more than flowers: sap leaking from a tree or soft over-ripe fruit can lure species such as Question Marks, commas or Mourning Cloaks.

#### Did you know...

- Butterflies and caterpillars are especially vulnerable to pesticides. Don't use them.
- Butterflies need a variety of habitats. Support "wild areas" in your greenspace where plants such as goldenrod, nettles and thistles are allowed to grow along with uncut grass.
- Butterflies have trouble picking out the colour red, so it's better to plant blue, purple, white and yellow flowers.
- Butterflies find their nectar sources by sight. Once they have found nectar, scent also plays a role.
- Butterflies prefer to fly on warm days. Often you'll see them basking in the sun with their wings spread.



Question Mark  
illustration: Susan Boswell



However, if offering such delicacies, beware of unwanted guests such as wasps or fruit flies.

Other features you can add to your garden are mud puddles or a pond for water, salt and nutrients, or a flat rock in a sunny location for butterflies to bask on. If space allows, consider a brush pile in a protected area which would offer overwintering shelter.

Butterfly gardens will also attract other wildlife, especially birds, and provide excellent educational and interpretive opportunities when

created in spaces like schools, public parks and retirement residences. Community and environmental organizations may also support your garden project, either financially or with labour and material donations.

While there is no guarantee, a well-planned garden can be a real attraction for butterflies. If you plant their favourite plants, butterflies will come to nectar on your flowers and may even reproduce, so you can observe their amazing life cycle from egg to adult!

Buyer beware! Some nursery plants marked "native" may not be native to our area. Also, many native species adapted for plant nurseries, usually labeled "cultivar" or a variety, lack the butterfly-friendly traits of their wild ancestors.

#### **LEAF (Local Enhancement and Appreciation of Forests)**

LEAF offers native trees, shrubs and habitat kits at a subsidized price, as well as planting advice and educational resources. Visit [www.yourleaf.org](http://www.yourleaf.org)



"Roadside Tapestry, 1998"  
© Robert Bateman

## Plants Used by Butterflies and Caterpillars

These are some common plants used by butterflies for nectar and by caterpillars as food in the Toronto area. This list is not comprehensive. Where several species (spp.) in a genus are suitable, only the genus name is given (e.g., *Asclepias* spp. for various milkweed species). The status of different species in a genus may vary (i.e., some may be invasive while others are not). **Some species may not be suitable in a butterfly garden because they can be aggressive or invasive.** For information on plants recommended for butterfly gardening, please see the Select Butterfly Resources starting on page 61.

- **Native** plants grew in our area before the arrival of Europeans.
- **Cultivated** plants are introduced species that grow in our area only with human assistance.
- **Naturalized** plants are introduced species that survive without human assistance and now reproduce here.
- **Invasive** plants are naturalized species that negatively impact native biodiversity by reproducing aggressively and taking over natural habitats, to the exclusion of other plants.

spp. = various species in the genus

### Caterpillar Plants (Host Plants)

Common Name	Scientific Name	Species whose caterpillars use this plant
● ● speckled alder	<i>Alnus incana</i>	Harvester (woolly aphids)
● hog peanut	<i>Amphicarpaea bracteata</i>	Silver-spotted Skipper, Northern Cloudywing
● pearly everlasting	<i>Anaphalis margaritacea</i>	American Lady
● bluestem	<i>Andropogon</i> spp.	Leonard's Skipper, Crossline Skipper, Delaware Skipper, Common Wood-Nymph
● dill	<i>Anethum graveolens</i>	Black Swallowtail
● burdock	<i>Arctium</i> spp.	Painted Lady
● Dutchman's pipe	<i>Aristolochia durior</i>	Pipevine Swallowtail
● milkweed	<i>Asclepias</i> spp.	Monarch
● ● birch	<i>Betula</i> spp.	Compton Tortoiseshell
● ● ● thistle	<i>Carduus</i> spp., <i>Cirsium</i> spp.	Painted Lady
● sedge	<i>Carex</i> spp.	Broad-winged Skipper, Black Dash, Dion Skipper, Dun Skipper, Eyed Brown
● New Jersey tea	<i>Ceanothus americanus</i>	Mottled Duskywing, Summer Azure
● hackberry	<i>Celtis occidentalis</i>	American Snout, Tawny Emperor, Question Mark
● ● turtlehead	<i>Chelone</i> spp.	Baltimore Checkerspot
● ● dogwood	<i>Cornus</i> spp.	Spring Azure, Summer Azure
● crown vetch	<i>Coronilla varia</i>	Wild Indigo Duskywing
● native hawthorn	<i>Crataegus</i> spp.	Striped Hairstreak, White Admiral/Red-spotted Purple
● Queen Anne's lace	<i>Daucus carota</i>	Black Swallowtail
● tick trefoil	<i>Desmodium</i> spp.	Northern Cloudywing, Eastern Tailed-Blue
● fennel	<i>Foeniculum vulgare</i>	Black Swallowtail





Common Name	Scientific Name	Species whose caterpillars use this plant
● gerardia	<i>Gerardia</i> spp.	Common Buckeye
● ● wild sunflower	<i>Helianthus</i> spp.	Silvery Checkerspot
● butter-and-eggs	<i>Linaria vulgaris</i>	Common Buckeye
● wild lupine	<i>Lupinus perennis</i>	Wild Indigo Duskywing, Karner Blue
● ● apple	<i>Malus</i> spp.	White Admiral/Red-spotted Purple
● alfalfa	<i>Medicago sativa</i>	Clouded Sulphur, Orange Sulphur, Eastern Tailed-Blue
● sweet-clover	<i>Melilotus</i> spp.	Orange Sulphur, Summer Azure, Silvery Blue
● panic grass	<i>Panicum</i> spp.	Tawny-edged Skipper, Northern Broken-Dash, Hobomok Skipper
● parsley	<i>Petroselinum crispum</i>	Black Swallowtail
● timothy	<i>Phleum pratense</i>	European Skipper, Long Dash
● ninebark	<i>Physocarpus opulifolius</i>	Spring Azure, Summer Azure
● English plantain	<i>Plantago lanceolata</i>	Common Buckeye
● native pine	<i>Pinus</i> spp.	Eastern Pine Elfin
● bluegrass	<i>Poa pratensis</i>	Long Dash, Hobomok Skipper, Common Ringlet, Little Wood-Satyr
● native poplar	<i>Populus</i> spp.	Dreamy Duskywing, Canadian Tiger Swallowtail, Red-spotted Purple/White Admiral, Viceroy
● ● cherry/plum	<i>Prunus</i> spp.	Canadian Tiger Swallowtail, Eastern Tiger Swallowtail, Coral Hairstreak, Striped Hairstreak, Spring Azure, Cherry Gall Azure, Red-spotted Purple/White Admiral
● hoptree	<i>Ptelea trifoliata</i>	Giant Swallowtail
● ● oak	<i>Quercus</i> spp.	Juvenal's Duskywing, Edwards' Hairstreak, Banded Hairstreak
● black locust	<i>Robinia pseudoacacia</i>	Silver-spotted Skipper
● curled dock	<i>Rumex crispus</i>	American Copper, Bronze Copper
● sheep sorrel	<i>Rumex acetosella</i>	American Copper
● rue	<i>Ruta graveolens</i>	Black Swallowtail, Giant Swallowtail
● ● willow	<i>Salix</i> spp.	Dreamy Duskywing, Red-spotted Purple/White Admiral, Viceroy, Compton Tortoiseshell, Mourning Cloak, Green Comma
● sassafras	<i>Sassafras albidum</i>	Spicebush Swallowtail
● wild mustard	<i>Sinapis arvensis</i> spp.	Mustard White
● ● aster	<i>Symphyotrichum</i> spp.	Pearl Crescent, Northern Crescent
● clover	<i>Trifolium</i> spp.	Clouded Sulphur, Eastern Tailed-Blue
● ● elm	<i>Ulmus</i> spp.	Mourning Cloak, Question Mark, Eastern Comma
● ● nettle	<i>Urtica</i> spp., <i>Laportea</i> spp.	Red Admiral, Milbert's Tortoiseshell, Question Mark, Eastern Comma
● ● viburnum	<i>Viburnum</i> spp.	Spring Azure, Summer Azure
● ● vetch	<i>Vicia</i> spp.	Clouded Sulphur, Orange Sulphur, Eastern Tailed-Blue, Silvery Blue
● ● violet	<i>Viola</i> spp.	Variegated Fritillary, Silver-bordered Fritillary, Meadow Fritillary, Great Spangled Fritillary
● pansy	<i>Viola wittrockiana</i>	Variegated Fritillary
● prickly ash	<i>Zanthoxylum americanum</i>	Giant Swallowtail





## Nectar Plants

### SPRING FLOWERING (March – early June)

Common Name	Scientific Name
●● serviceberry	<i>Amelanchier</i> spp.
●● dogwood	<i>Cornus</i> spp.
●●● hawthorn	<i>Crataegus</i> spp.
● fleabane	<i>Erigeron</i> spp.
● wild strawberry	<i>Fragaria virginiana</i>
● dame's rocket	<i>Hesperis matronalis</i>
●● apple	<i>Malus</i> spp.
● ninebark	<i>Physocarpus opulifolius</i>
●●● buttercup	<i>Ranunculus</i> spp.
●● blackberry/raspberry	<i>Rubus</i> spp.
● elderberry	<i>Sambucus</i> spp.
● cup plant	<i>Silphium perfoliatum</i>
● lilac	<i>Syringa</i> spp.
● dandelion	<i>Taraxacum officinale</i>
● coltsfoot	<i>Tussilago farfara</i>
●● thyme	<i>Thymus</i> spp.
●●● viburnum	<i>Viburnum</i> spp.
●● violet	<i>Viola</i> spp.

### SUMMER FLOWERING (June – August)

Common Name	Scientific Name
● chives	<i>Allium schoenoprasum</i>
● dogbane	<i>Apocynum</i> spp.
●● milkweed	<i>Asclepias</i> spp.
● butterfly bush	<i>Buddleja davidii</i>
● virgin's bower	<i>Clematis virginiana</i>
● coreopsis	<i>Coreopsis</i> spp.
● purple coneflower	<i>Echinacea</i> spp.
●● Joe-Pye weed	<i>Eupatorium purpureum</i>
● heliotrope	<i>Heliotropium</i> spp.
● lantana	<i>Lantana</i> spp.
●● blazing star	<i>Liatris</i> spp.
● purple loosestrife	<i>Lythrum salicaria</i>
● alfalfa	<i>Medicago sativa</i>
● sweet-clover	<i>Melilotus</i> spp.
●●● mint	<i>Mentha</i> spp.
● bee-balm	<i>Monarda didyma</i>
● wild bergamot	<i>Monarda fistulosa</i>

### SUMMER FLOWERING (June – August, cont'd)

Common Name	Scientific Name
● catnip	<i>Nepeta cataria</i>
●● phlox	<i>Phlox</i> spp.
●● cinquefoil	<i>Potentilla</i> spp.
●●● buttercup	<i>Ranunculus</i> spp.
●● prairie coneflower	<i>Ratibida</i> spp.
● staghorn sumac	<i>Rhus typhina</i>
●● black-eyed Susan	<i>Rudbeckia hirta</i>
●● tall coneflower	<i>Rudbeckia laciniata</i>
●● brown-eyed coneflower	<i>Rudbeckia triloba</i>
● rue	<i>Ruta graveolens</i>
● salvia	<i>Salvia</i> spp.
● scabiosa	<i>Scabiosa</i> spp.
● clover	<i>Trifolium</i> spp.
● heliotrope	<i>Valeriana officinalis</i>
●● vervain	<i>Verbena</i> spp.
●● ironweed	<i>Vernonia</i> spp.
● zinnia	<i>Zinnia</i> spp.

### FALL FLOWERING (September – October)

Common Name	Scientific Name
● spotted knapweed	<i>Centaurea maculosa</i>
●● boneset	<i>Eupatorium perfoliatum</i>
● showy stonecrop	<i>Sedum spectabile</i>
● goldenrod	<i>Solidago</i> spp.
●● aster	<i>Symphotrichum</i> spp.



## Conclusion

Over the last two centuries, Toronto's landscape has changed dramatically. Urbanization and development have transformed and fragmented natural habitats within the city and the Toronto area. Some butterfly species, especially those with naturally small populations, could not adapt to these changes. As a result, these species can no longer be found in Toronto. However, many species still thrive, and Toronto's current mosaic of meadows, wetlands, shrublands and forests supports a wide diversity of plant and butterfly species.

Habitat loss and the threat of invasive species are serious concerns: we must be committed to protecting and enhancing habitat for our native flora and fauna. With the help of stewardship groups, concerned citizens and the scientific community, the City of Toronto and its partners are achieving a better understanding of the biodiversity within our urban area and how it can be strengthened and improved. Through initiatives like the Humber Bay Butterfly Habitat and the annual Tommy Thompson Park Butterfly Festival, the public is becoming more aware of the need for butterfly habitat conservation.

You can help butterflies and biodiversity too! Be a green steward and plant native grasses and wildflowers in your yard, greenroof or balcony. Join forces with your neighbours to volunteer at a planting event in your local park or conservation area. Become a citizen scientist by participating in an annual butterfly count. Attend a butterfly event to learn about butterflies and tell others about the joys of butterfly watching. Make wise consumer choices that will have overall and wide-reaching benefits for our ecosystems. Many small steps combined will contribute towards protecting Toronto's biodiversity and butterfly populations. Biodiversity is an international issue, but the responsibility to protect and maintain that diversity starts at home.



Silvery Blues, mating pair  
photo: R.W. Bullock

## Select Butterfly Resources

### BOOKS

#### Field Guides

Allen, T.J., J.P. Brock and J. Glassberg. 2005. *Caterpillars in the Field and Garden: A Field Guide to the Butterfly Caterpillars of North America*. Oxford University Press, New York. [ISBN 978-0195149876]

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Giant Swallowtail caterpillar  
illustration: Susan Boswell



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### Butterfly Gardening

Dole, C.H. (Ed.). 2003. *The Butterfly Gardener's Guide*. Brooklyn Botanic Gardens, New York. [ISBN 978-1889538587]

Emmel, T.C. 1997. *Butterfly Gardening: Creating a Butterfly Haven in Your Garden*. Cavendish Books, Vancouver. [ISBN 978-1567995251]

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### Butterfly Photography

Folsom, W.B. 2009. *Butterfly photographer's Handbook: A Comprehensive Reference for Nature photographers (paperback)*. Amherst Media Inc., Buffalo. [ISBN 978-1584282471]

### Beginner/Juvenile Books

Mikula, R. 2000. *The Family Butterfly Book*. Storey Books, Pownal, VT. [ISBN 978-1580172929]

Opler, P.A. and A.B. Wright. 1998. *Peterson First Guide to Butterflies and Moths*. Houghton Mifflin Harcourt, Boston. [ISBN 978-0395906651]

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### DVDs

Ebner, J. and P. Kreutzer. 2008. *Audubon VideoGuide to Butterflies: Common and Endangered (1 DVD)*. 120 min. Mastervision Studio. [ASIN: B001B23EBS]. [www.shoppbs.org](http://www.shoppbs.org)

Mastervision Studio. 2008. *Audubon Butterfly DVD – Essentials for Beginners and Gardeners (1 DVD)*. 155 min. [ASIN: B0014D5QRY]. [www.shoppbs.org](http://www.shoppbs.org)

PBS Home Video. 2009. *The Incredible Journey of the Butterflies (1 DVD)*. 56 min. [ASIN: B001RV53TE] [www.shoppbs.org](http://www.shoppbs.org)

*The Secret Lives of Butterflies*. 2000. 46 min. [www.filmwest.com](http://www.filmwest.com)

Walton, R.W. and G. Dodge. 2004. *Common Butterflies and Skippers of Eastern North America (1 DVD)*. 60 min. Brownbag Productions, Hillsborough, NC. [ASIN 1888814101]



Red Admiral  
illustration: Susan Boswell

## BUTTERFLY SOFTWARE

BirdBase – Santa Barbara Software Products with LepList add-on:  
<http://birdbase.com/lepilist-demo.htm>

Scott, J.A. Butterflies of North America CD-ROM – A Natural History and Field Guide. [ASIN: B000BFW]. Hopkins Technology, LLC:  
[www.hoptechno.com/butterfly.htm](http://www.hoptechno.com/butterfly.htm)

Wildlife Recorder – Software for keeping bird, butterfly, dragonfly, mammal, and other wildlife sightings organized: [home.surewest.net/bruwebb/Butterflychecklist.htm](http://home.surewest.net/bruwebb/Butterflychecklist.htm)

## BUTTERFLY PERIODICALS

Journal of the Lepidopterists' Society [ISSN: 0024-0966] and News of the Lepidopterists' Society are published quarterly by The Lepidopterists' Society:  
[www.lepsoc.org](http://www.lepsoc.org).

American Butterflies [ISSN 1087-450X] is published quarterly by the North American Butterfly Association: [www.naba.org](http://www.naba.org).

## WEBSITES

Master websites to extensive libraries of butterfly links:

Database of the World's Lepidopteran Hostplants:  
[www.nhm.ac.uk/research-curation/research/projects/hostplants](http://www.nhm.ac.uk/research-curation/research/projects/hostplants)

Butterflies of America: [butterfliesofamerica.com](http://butterfliesofamerica.com)

The Butterfly Site: [www.thebutterflysite.com](http://www.thebutterflysite.com)

The Butterfly Website: [www.butterflywebsite.com](http://www.butterflywebsite.com)

## Greater Toronto Area Butterfly Resources

High Park: [www.highparknature.org](http://www.highparknature.org)

Humber Bay Butterfly Habitat: [www.toronto.ca/parks/featured-parks/humber-bay](http://www.toronto.ca/parks/featured-parks/humber-bay)

Leslie Street Spit/Tommy Thompson Park: [www.friendsofthespit.ca](http://www.friendsofthespit.ca),  
[www.tommythompsonpark.ca](http://www.tommythompsonpark.ca)

Tommy Thompson Park Butterfly Festival: [www.butterflyfest.ca](http://www.butterflyfest.ca)

Toronto Entomologists' Association: [www.ontarioinsects.org](http://www.ontarioinsects.org)

## Ontario/Canada Web Resources

Butterflies North and South: [www.virtualmuseum.ca/Exhibitions/Butterflies/english/gallery/index.html](http://www.virtualmuseum.ca/Exhibitions/Butterflies/english/gallery/index.html)

Butterflies of Canada (Canadian Biodiversity Information Facility SpeciesBank based on "Butterflies of Canada"): [www.cbif.gc.ca/spp\\_pages/butterflies/index\\_e.php](http://www.cbif.gc.ca/spp_pages/butterflies/index_e.php)

Entomological Society of Canada: [www.esc-sec.ca](http://www.esc-sec.ca)

Entomological Society of Ontario: [www.entsocont.ca](http://www.entsocont.ca)

Niagara Parks Butterfly Conservatory: [www.niagaraparks.com/garden-trail/butterfly-conservatory.html](http://www.niagaraparks.com/garden-trail/butterfly-conservatory.html)

Ontario Butterflies (Google Groups): [groups.google.com/group/onbutterflies](http://groups.google.com/group/onbutterflies)

## North American Web Resources

Animal Diversity Web – Order Lepidoptera: [animaldiversity.ummz.umich.edu/site/accounts/information/Lepidoptera.html](http://animaldiversity.ummz.umich.edu/site/accounts/information/Lepidoptera.html)

Butterflies and Moths of North America: [www.butterfliesandmoths.org](http://www.butterfliesandmoths.org)

Butterflies of America (Interactive Listing of American Butterflies):  
[www.butterfliesofamerica.com](http://www.butterfliesofamerica.com)

Caterpillars of Eastern Forests:  
[www.npwrc.usgs.gov/resource/insects/cateast](http://www.npwrc.usgs.gov/resource/insects/cateast)

International Butterfly  
 Breeders Association, Inc:  
[www.butterflybreeders.org](http://www.butterflybreeders.org)

Leps-L – The Lepidoptera  
 Listserver: [www.peabody.yale.edu/collections/ent/ent\\_LEPS.html](http://www.peabody.yale.edu/collections/ent/ent_LEPS.html)

North American Butterfly  
 Association: [www.naba.org](http://www.naba.org)

Skipper Butterflies of the North East  
 (a series of videos):  
[www.rkwalton.com/skip.html](http://www.rkwalton.com/skip.html)

The Lepidoptera  
 Research Foundation, Inc:  
[lepidopteraresearchfoundation.org](http://lepidopteraresearchfoundation.org)

The Lepidopterists' Society:  
[www.lepsoc.org](http://www.lepsoc.org)



Fiery Skipper  
 illustration: Susan Boswell

### International Web Resources

Lepidoptera Barcode of Life: [www.lepbarcoding.org](http://www.lepbarcoding.org)

Moths and Butterflies of Europe and North Africa: [www.leps.it](http://www.leps.it)

Nymphalidae Systematics Group: [nymphalidae.utu.fi/Nymphalidae.htm](http://nymphalidae.utu.fi/Nymphalidae.htm)

### Monarch Butterfly Related Sites

Field Guide to Monarch Caterpillars: [www.cec.org/Storage/62/5479\\_Monarch-caterpillar-guide\\_en.pdf](http://www.cec.org/Storage/62/5479_Monarch-caterpillar-guide_en.pdf)

Hinterland Who's Who (Monarch Butterfly): [www.hww.ca/hww2.asp?id=34](http://www.hww.ca/hww2.asp?id=34)

Journey North: [www.learner.org/jnorth](http://www.learner.org/jnorth)

Monarch Butterfly Conservation in North America: [www.fs.fed.us/monarchbutterfly](http://www.fs.fed.us/monarchbutterfly)

Monarch Butterfly Fund: [www.monarchbutterflyfund.org](http://www.monarchbutterflyfund.org)

Monarch Joint Venture: [www.monarchnet.org](http://www.monarchnet.org)

The Incredible Journey of the Butterflies (on-line video - 52:17 min.): [video.pbs.org/video/1063682334](http://video.pbs.org/video/1063682334)

MonarchHealth and Monarch Butterfly Parasites Web Page: [www.monarchparasites.org](http://www.monarchparasites.org)

Monarch Lab/Monarchs in the Classroom: [www.monarchlab.umn.edu](http://www.monarchlab.umn.edu)

Monarch Larval Monitoring Project: [www.mlmp.org](http://www.mlmp.org)

Monarch Teacher Network: [www.eirc.org/website/Programs+and+Services/Monarch-Teacher-Network.html](http://www.eirc.org/website/Programs+and+Services/Monarch-Teacher-Network.html)

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

North American Monarch Conservation Plan: [www.cec.org/Storage/62/5431\\_Monarch\\_en.pdf](http://www.cec.org/Storage/62/5431_Monarch_en.pdf)

North American Network of Monarch Monitoring Programs: [www.monarchnet.org](http://www.monarchnet.org)

### Butterfly Gardening Web Resources

Canadian Wildlife Federation – Gardening for Butterflies Handout: [www.cwf-fcf.org/en/resources/posters-handouts/booklets-handouts/gardening-for-butterflies.html](http://www.cwf-fcf.org/en/resources/posters-handouts/booklets-handouts/gardening-for-butterflies.html)

Canadian Wildlife Federation – Wild About Gardening: [www.cwf-fcf.org/en/what-we-do/habitat/wag-home.html](http://www.cwf-fcf.org/en/what-we-do/habitat/wag-home.html)

Compost Council of Canada: [www.compost.org](http://www.compost.org)

Evergreen (home greening resources; native plant database; funding & grants): [www.evergreen.ca](http://www.evergreen.ca)

How to Make Butterfly Gardens: [www.ca.uky.edu/entomology/entfacts/ef006.asp](http://www.ca.uky.edu/entomology/entfacts/ef006.asp)

How to Plant a Monarch Friendly Garden: [www.naturecanada.ca/take\\_action\\_monarch\\_friendly\\_garden.asp](http://www.naturecanada.ca/take_action_monarch_friendly_garden.asp)

Including Butterflies in the Garden: [www.seeds.ca/proj/poll/index.php?n=Butterfly+Gardening](http://www.seeds.ca/proj/poll/index.php?n=Butterfly+Gardening)

International Butterfly Breeders Association, Inc – Butterfly Gardening: [www.butterflybreeders.org/public/bflygdning/butterflygardening.html](http://www.butterflybreeders.org/public/bflygdning/butterflygardening.html)

LEAF - Backyard Tree Planting Program: [www.yourleaf.org](http://www.yourleaf.org)

North American Native Plant Society: [www.nanps.org](http://www.nanps.org)

Regional Guides to Butterfly Gardening: [www.enature.com/backyardwildlife/butterfly/butterfly\\_garden\\_home.asp](http://www.enature.com/backyardwildlife/butterfly/butterfly_garden_home.asp)

Seeds of Diversity: [www.seeds.ca](http://www.seeds.ca)

Toronto Botanical Garden: [www.torontobotanicalgarden.ca](http://www.torontobotanicalgarden.ca)

Toronto Region Conservation Authority – Butterfly Garden Factsheet: [www.trca.on.ca/dotAsset/58627.pdf](http://www.trca.on.ca/dotAsset/58627.pdf)

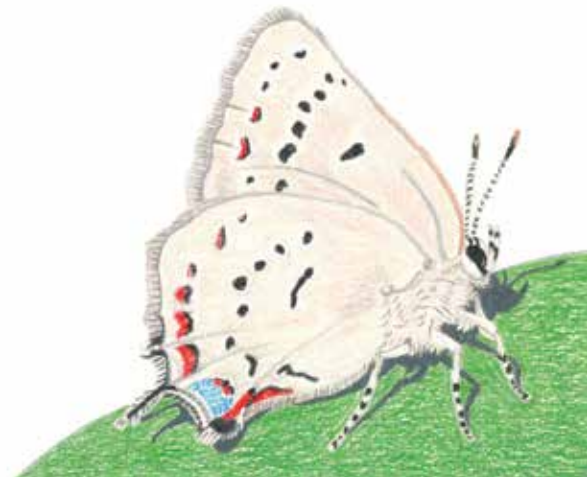
Toronto Region Conservation Program – Healthy Yards Program: [www.trca.on.ca/get-involved/stewardship/healthy-yards-program](http://www.trca.on.ca/get-involved/stewardship/healthy-yards-program)

### Beginner/Juvenile

Planning A Pollinat  
kidsgardening.com

Raising Butterflies:  
www.raisingbutterf

The Children's Buttl  
www.kidsbutterfly.c



Acadian Hairstreak  
illustration: Susan Boswell



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### Contributing Authors

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### Partners

City of Toronto: [www.toronto.ca/planning/ze\\_index.htm](http://www.toronto.ca/planning/ze_index.htm)  
 Monarch Butterfly Fund: [www.monarchbutterflyfund.com](http://www.monarchbutterflyfund.com)  
 Ministry of Natural Resources: [www.ontario.ca/speciesatrisk](http://www.ontario.ca/speciesatrisk)  
 Royal Ontario Museum: [www.rom.on.ca](http://www.rom.on.ca)  
 Toronto Entomologists' Association: [www.ontarioinsects.org](http://www.ontarioinsects.org)  
 Toronto Field Naturalists: [www.torontofieldnaturalists.org](http://www.torontofieldnaturalists.org)  
 Toronto and Region Conservation: [www.trca.on.ca](http://www.trca.on.ca)  
 Toronto Zoo: [www.torontozoo.com](http://www.torontozoo.com)

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### Contributing Artists

**Robert Bateman** – Robert's fascination with nature dates from his boyhood in Toronto, where he began his lifelong education as a naturalist by studying and sketching the species he saw in the ravine behind his house. An internationally acclaimed artist whose paintings can be found in collections worldwide, he is the best-selling author of several books. An officer of the Order of Canada, the recipient of nine honorary doctorates and an honorary life member of many conservation organizations, he devotes a great deal of his time to finding ways to preserve the natural world.



**Susan Boswell** – Sue grew up in Toronto and graduated from the post-secondary Art Course at Central Technical School where she received two scholarships upon graduation. Although Sue primarily works as a fine artist in oils and canvas, over the past few years she has been pursuing nature studies which has recently developed into an interest in butterflies.



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- Toronto Field Naturalists: [www.torontofieldnaturalists.org](http://www.torontofieldnaturalists.org)
- The Schad Foundation
- MacFeeters Family Fund at the Toronto Community Foundation
- Ministry of Natural Resources: [www.ontario.ca/speciesatrisk](http://www.ontario.ca/speciesatrisk)
- Conservation Foundation of Greater Toronto: [www.trca.on.ca/foundation](http://www.trca.on.ca/foundation)
- Toronto and Region Conservation's Paddle the Don Fund: [www.paddlethedon.ca](http://www.paddlethedon.ca)

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