



MAMMALS OF TORONTO

A GUIDE TO THEIR REMARKABLE WORLD

• City of Toronto Biodiversity Series •

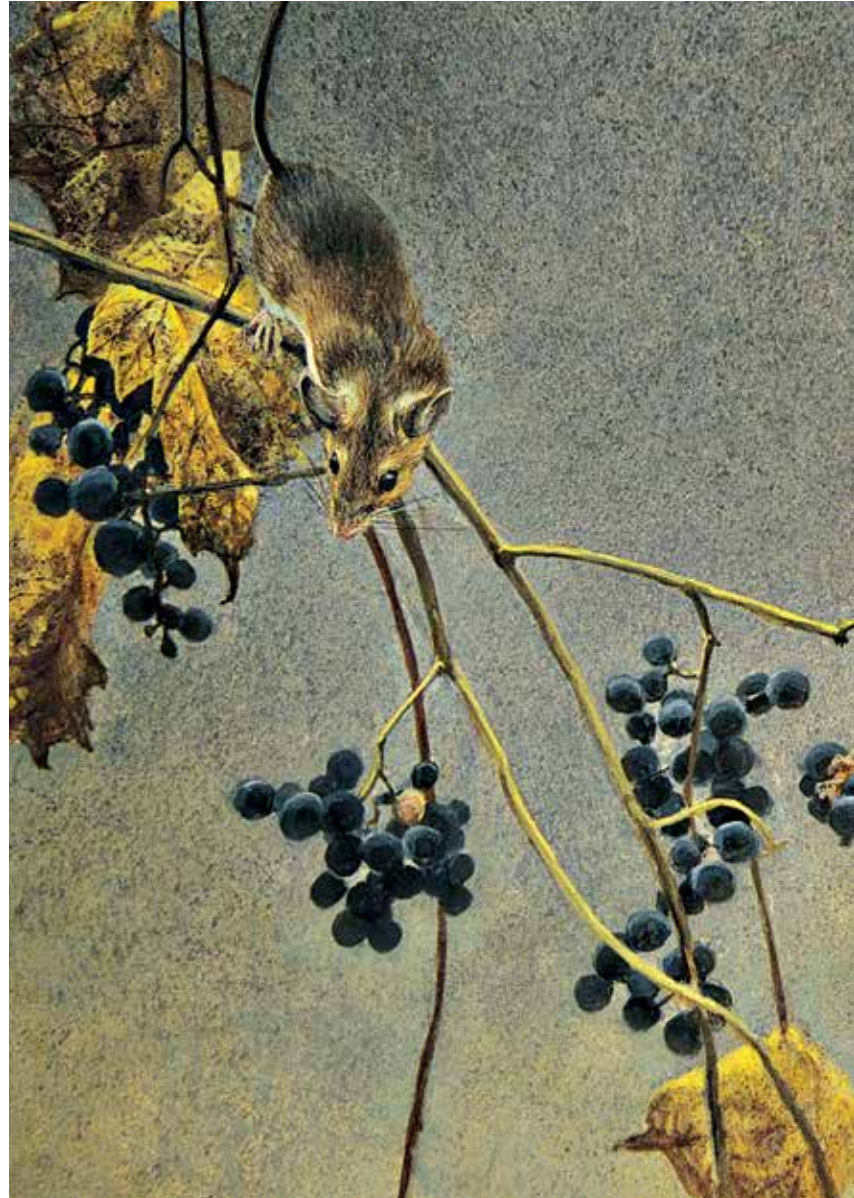


Imagine a Toronto with flourishing natural habitats and an urban environment made safe for a great diversity of wildlife species. Envision a city whose residents treasure their daily encounters with the remarkable and inspiring world of nature, and the variety of plants and animals who share this world. 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.



Cover photo: Ken Sproule

Juvenile Red Fox – The red fox is an integral part of Toronto's wildlife community, occupying diverse habitats from the lakeshore to ravines and woodlots and even people's backyards on occasion. It is well adapted to live in the city.



“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



“Young squirrel in nest”
Illustration: Ann Sanderson, 2008

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Winner of the 2012 Ontario Association of Landscape Architects Award for Service to the Environment

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, fishes, 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 Mammals of Toronto

Whether it is chuckling at squirrels chasing each other through the park or shouting in vain as raccoons get into your garbage yet again, mammals are wildlife we encounter on a daily basis in the city for better or for worse. I can just imagine the early settlers of York watching in wonder and apprehension as the occasional cougar or black bear roamed the then heavily forested area of our emerging town as recently as two centuries ago. The “Mammals of Toronto” installment of the Toronto Biodiversity Series is a little bit of history mixed in with educational information in field guide format but also has some insightful advice on living with wildlife in an urban setting. Written by a group of dedicated, volunteer amateur and professional mammalogists, the book is brought to life with liberal sprinklings of artwork and photography. I encourage people to explore the parks and ravines in the city. Have you gone bat watching at dusk in High Park during the summer? Those dark silhouettes flitting about in the night sky are not birds, but bats keeping insect populations in check – another good reason for humans and wildlife to share the city. So sit back and enjoy this book, but then get out there and go for a walk or animal proof your garbage bin.

Mark D. Engstrom

Dr. Mark D. Engstrom

Deputy Director, Collections and Research, Royal Ontario Museum

City of Toronto Biodiversity Series

Mammals of Toronto is part of the Biodiversity Series being developed by the City of Toronto in honour of the Year of Biodiversity 2010. A number of the non-human residents of Toronto 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.

How Bats Came to Be

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

Early one morning while he was on his way to his home in the sky, Father Sun got caught in the branches of a tall tree. He tried and tried to free himself, but only managed to entangle himself more firmly. Soon Father Sun could not move at all.

That morning all the animals waited in vain for Father Sun. When he did not appear, they went quietly back to their beds. They thought that they had not slept long enough and it was still night. The bear went back to his cave. The rabbit returned to his nest under a bush at the edge of a field of sweet clover. The chipmunk went into his hole in the roots of an oak tree. Only the owl, the wolf, and the fox were happy, for they could hunt a little longer than usual in the dark.

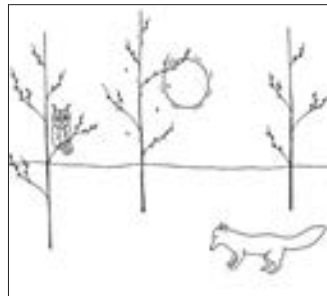
When Father Sun did not appear the next day, the animals began to suspect that he had got lost on the way home. They searched through most of the forest, but they could not find him.

One little squirrel always looked at the treetops because he liked to jump from branch to branch. He discovered Father Sun stuck in the topmost branches of a tall tree. By this time Father Sun was very pale and weak.

"Little squirrel, little squirrel," he rasped in a low voice, "little squirrel, set me free."

"Certainly, Father Sun," replied the little squirrel, and he ran up the trunk of the tree towards the topmost branches. But Father Sun's heat drove him back to the ground at once.

Again Father Sun called out, "Little squirrel, little squirrel, set me free, set me free."



"Oh, Father Sun, you are too hot," said the little squirrel sadly. "You have already burnt my fine long tail." He had always considered his tail very handsome and was sorry that it was gone.

"Try again," pleaded Father Sun. "I am so tired that my light will soon go out."

The little squirrel ran up the trunk of the tree a second time. He almost reached Father Sun before the fierce heat drove him back.

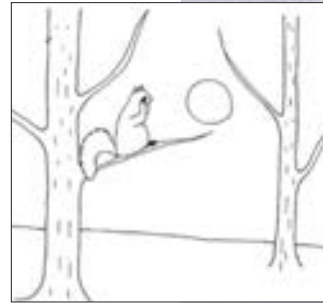
As the squirrel reached the ground once more, Father Sun groaned, "Little squirrel, little squirrel, please try one more time."

"Father Sun," cried the squirrel, "your heat has burnt off my fine long tail. My fur is black. What is more, I can't see. Your light has made me blind."

"Please, little squirrel, try again," whispered Father Sun. "My light will soon go out."

Once more the little squirrel ran up the trunk, this time as fast as he could go. When he reached the branches at the top of the tree, he gave Father Sun a tremendous push. At that moment Father Sun broke free and sailed up towards his home in the heavens.

The squirrel held on to the branches with all his might. The intense heat had made his arms grow longer and his skin stretch out. Now it seemed that he was caught at the top of the tree forever. There was no one that could rescue him. His scorched skin hurt and his eyes were so sore that he could not see at all.



Father Sun paused and looked back. He was distressed to see how much he had harmed the kind squirrel and knew that somehow he must help the little creature.

"Poor little squirrel," he said, "in helping me you have been hurt. Now I shall repay your kindness. What is your dearest wish?"

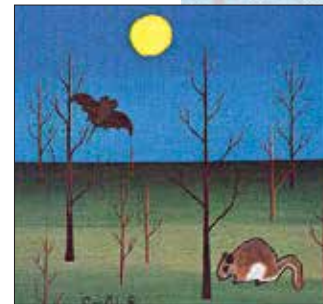
"I have always wanted to fly," the squirrel answered, "but now it is too late. I am blind and my skin hurts so much that I must surely die."

Father Sun nodded and suddenly the pain left the squirrel. But he still could not see and his skin and arms were still stretched.

"From now on," said Father Sun, "you will be able to fly into the heavens just as you have always wanted to do. Since my light hurts your eyes, you will fly at night. Although your eyes are blind, your ears are still very sharp. When you call out, the trees and rocks will send back echoes to you. Then you will know that there is something in your way and you will be able to dive and swoop to avoid hurting yourself. I shall see you in the morning and in the evening on my journey back and forth."

The squirrel dropped his arms from the branches and flew away. He had become a little brown bat. Ever afterwards he would hang upside down when he slept in the daytime. Then everyone would remember the day a squirrel saved Father Sun so that the world could have light and warmth.

And that is how a squirrel became a little brown bat.
(Wahwahskgone)



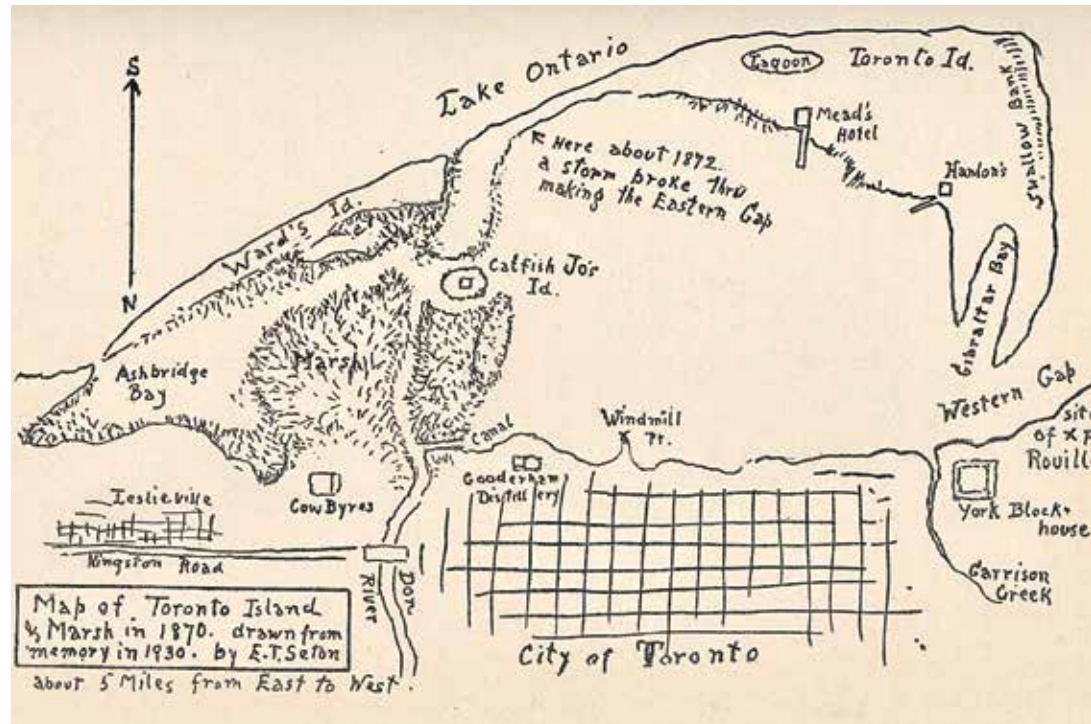
Yesterday's Habitats of Toronto

Trail of an Artist/Naturalist

from *The Autobiography of Ernest Thompson Seton*
Seton, Charles Scribner's Sons (1940)

"Coming from the backwoods to the great city of Toronto looked like leaving all behind and burning my boats. But the spirit power, the will power, was driving, and each year showed that even in the city the wild things came; they entered into my life in a way that startled those who were not so minded. Each year brought me new opportunity, and each year more surprising evidence of the occult law – I willed, so they came. I wonder if this urge is not also a creative force, for my brothers living in the house with me effected no such contacts as I did.

Not far, a quarter mile, from our home was Queen's Park, one hundred acres of virgin forest, preserved but little changed. Farther north were the grassy hills of Seaton Village and Wells' Hill where, not long before, a mountain lion had been killed. Then easterly was the Don Valley, a happy land of bosky hills and open meadows ... Far away to the south and east were the marsh and the sandy bars of Toronto Bay, a promising happy hunting grounds, but to me inaccessible – for a time – glorious mysteries to be explored ere long. I found joy in all these possibilities ... "



Ernest Thompson Seton (1860-1946)

Of Scottish origin from England, Ernest Thompson Seton moved to Canada with his family in the summer of 1866. He was barely 6 years old when they settled in Lindsay, Ontario to take up farming, but four years later the family moved to Toronto where he continued his interest in nature and art. Seton left Toronto in his late teens to study in London, England and eventually wrote and illustrated several books on natural history including the popular "Wild Animals I Have Known" and the 4-volume "Lives of Game Animals". He was also one of the original founding members of the Boy Scouts of America with Lord Baden-Powell. His earlier formative years in Toronto and love of nature were recognized by the naming of the Don River ravine area near the Ontario Science Centre as E.T. Seton Park.

Before we were here ...

Prior to humans coming to Toronto, many strange and bizarre creatures lived here. All are now gone from our area, but their legacy persists in the fossil record.

Earlier extinct Pleistocene mammals found in the Toronto area include woolly mammoth (*Mammuthus primigenius*), American mastodon (*Mammut americanum*), giant beaver (*Castoroides ohioensis*), and stag moose (*Cervalces scotti*). Other mammals, found in the Toronto area more than 10,000 years ago, include caribou, elk, muskox, and bison – none of which occur here now, but their presence indicates that a much different mosaic of environments existed here then. For instance, there was tundra in this region during the last ice age that could support populations of muskox. An interesting fossil of a wolverine-like animal has also been found, but its identity has not been confirmed.

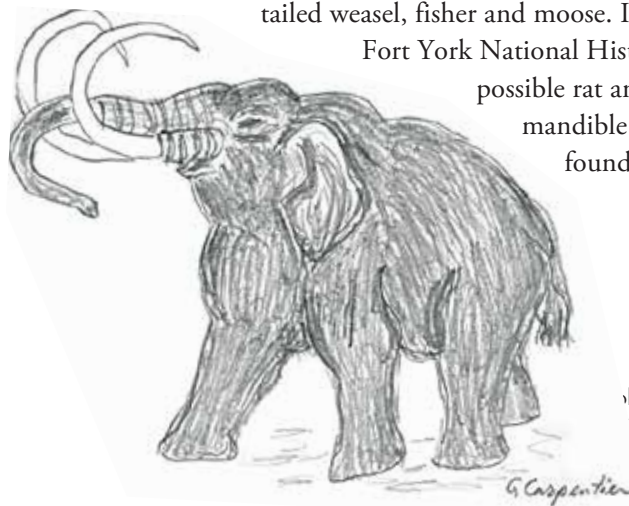
An exciting find was made during the excavation of the Toronto subway in April 1976 near the Islington subway station, when the fossil of a deer antler was discovered that was so different from other known animals that it was described as a genus and species new to



Deer antler fossil, found in Toronto subway, 1976

science. It was about the size of a caribou and named the Toronto Subway Deer (*Torontoceros hypogaeus*), which means “Toronto antler below the earth”. The fossil was radiocarbon dated as being 11,315 years old, just after the retreat of the glaciers and the formation of Lake Ontario. Associated pollen samples indicate there was a mixed hardwood and conifer forest of spruce and pine growing in Toronto at that time.

More recent prehistoric fossil remains, dated at 5,550 years ago, were excavated at the Scarborough Bluffs. Included in the finds were meadow vole and fisher. The best dig to yield mammal remains was at the Alexandra archaeological site in Scarborough. Here, 3,269 bones or fragments were found, including white-tailed deer (25% of the total), wolf or dog (14%), grey squirrel (12%), groundhog (4%), beaver (3%), rabbit (1.6%), and muskrat (1.4%). The remaining bones and fragments came from chipmunks, an unidentified shrew, red squirrel, red or grey fox, black bear, raccoon, long-tailed weasel, fisher and moose. In the dig at the Fort York National Historic Site, deer, a possible rat and the tusk and mandible of a pig were found.



Woolly mammoth
Illustration: Geoff Carpentier

MAMMALS.

By

JAMES H. FLEMING.

THIS list is in part based on three small collections of mammals made in the immediate vicinity of Toronto; one, by Mr. Ernest T. Seton, made between 1887 and 1891, and now in the Victoria Memorial Museum, Ottawa; another, made by Mr. C. W. Nash, now in the Provincial Museum, Toronto; and, finally, my own collection.

A very important list was published by Dr. Anthony Gapper in the "Zoological Journal of London" in 1830 (Vol. V, pp. 201-207). According to the late Mr. John Hallam, Dr. Gapper came from England about 1825 and settled with his brother on lot 40 or 41 on the east side of Yonge Street, less than ten miles from the present city limits. He returned to England in 1831 after collecting considerable natural history material. In his paper four new mammals are described, and the list gives a clear idea of the conditions before the original forest had disappeared. For conditions between Dr. Gapper's time and recent years I have used information given me from time to time by the late Dr. William Brodie, and, finally, I have to thank Mr. Gerrit S.

1

Mammals, James H. Fleming; reprinted from *The Natural History of the Toronto Region*, edited by J. H. Faull, published by the Canadian Institute, Toronto, 1913. The first list of the fauna in Toronto.

James H. Fleming, a Toronto born naturalist and ornithologist, became interested in wildlife at an early age, and by the time he was in his early 30s was well respected internationally. Among the many honours he received were Honorary Member of the Toronto Ornithological Club, Honorary Vice-President of the Toronto Field Naturalists' Club and Honorary Curator of the Royal Ontario Museum of Zoology. His love and understanding of nature led him into the field regularly and he eventually amassed a collection of over 30,000 museum specimens. In 1913, he published the first annotated list of the mammals of Toronto.

2

Miller, Jr., for checking the nomenclature, which seems to be as fleeting in mammals as in birds.

MARSUPIALIA.

1. **Virginia Opossum.** *Didelphis virginiana virginiana* Kerr. Accidental, one record.

UNGULATA.

2. **Northern Virginia Deer.** *Odocoileus virginianus borealis* Miller. Formerly common, exterminated, records up to 1837.

RODENTIA.

3. **Prairie Cottontail.** *Sylvilagus floridanus mearnsi* Allen. Common, first records about 1884. ("Ottawa Naturalist," 1908, pp. 158-9.)
4. **Southern Varying Hare.** *Lepus americanus virginianus* (Harlan). Formerly common, only recently exterminated; still found just outside in limits of this list.
5. **Jumping Mouse.** *Zapus hudsonius hudsonius* (Zimmermann). Generally distributed, not very common.
6. **Red-backed Mouse.** *Evotomys gapperi gapperi* (Vigors). Described by Gapper in 1830; no recent records.
7. **Meadow Mouse.** *Microtus pennsylvanicus pennsylvanicus* (Ord). Abundant.

3

8. **Muskrat.** *Ondatra zibethica zibethica* (Linnaeus). Still common.

9. **White-footed Mouse.** *Peromyscus leucopus noveboracensis* (Fischer). Common. This is the Mouse-like Hamster, *Oricetus myiodes* of Gapper.

10. **Canadian White-footed Mouse.** *Peromyscus maniculus gracilis* (Le Conte). One record, Deer Park (now part of Toronto). N. A. Fauna 28, p. 45.

11. **House Mouse.** *Mus musculus* Linnaeus. Introduced; very common according to Gapper in 1830.

12. **Brown Rat.** *Epimys norvegicus* (Erxleben). Introduced; had not penetrated further than the water front according to Gapper in 1830.

13. **Canadian Beaver.** *Castor canadensis canadensis* Kuhl. Once common; given by Gapper as very rare in 1830. A pair appeared in the grounds of Colonel Denison about 1884.

14. **Woodchuck.** *Arctomys monax monax* (Linnaeus). Common.

15. **Chipmunk.** *Tamias striatus lysteri* (Richardson). Very common.

16. **Northern Grey Squirrel.** *Sciurus carolinensis leucotis* (Gapper). Formerly common, becoming scarcer; the indigenous form was black, the grey animal on which Gapper founded his *leucotis* was rare, but it has become much commoner since then. The squirrels in High Park are black and have not been introduced.

17. **Red Squirrel.** *Sciurus hudsonicus loquax* Bangs. Very common.



White-footed mouse (*Peromyscus leucopus*)



Eastern grey squirrel (*Sciurus carolinensis*)

Illustrations from Vigors, N.A. 1935. Observations on the Quadrupeds found in the District of Upper Canada extending between York and Lake Simcoe, with

18. Flying Squirrel. *Sciuropterus volans volans* (Linnaeus). Not very common.

INSECTIVORA.

19. Eastern Short-tailed Shrew. *Blarina brevicauda talpoides* (Gapper). Common. This is the Mole-like Shrew, *Sorex talpoides*, of Gapper.

20. Masked Shrew. *Sorex personatus personatus* I. Geoff. St. Hillaire. Not common. This is illustrated by Gapper as Forester's Shrewmouse, *Sorex foresteri* (Richardson).

21. Brewer's Mole. *Parascalops breweri* (Bachman). Rare. This is perhaps the mole referred to by Gapper as the Shrew Mole, *Scalops canadensis* (Cuvier)=*Scalops aquaticus* (Linnaeus), which has not as yet been found here. Gapper's record was not based on personal knowledge.

22. Star-nosed Mole. *Condylura cristata* (Linnaeus). Not uncommon.

CHIROPTERA.

23. Brown Bat. *Eptesicus fuscus* (Beauvois). Not very common, if the number of skins in collection is a safe indication.

24. Say's Bat. *Myotis subulatus* Say. Gapper says, "The most common Bat in the home district." Several specimens from the vicinity of Toronto are in the Museum of the Geological Survey at Ottawa, from the Seton collection.

25. Silver-haired Bat. *Lasionycteris noctivagans* (Le Conte). Apparently common.

26. Red Bat. *Nycteris borealis borealis* (Müller). Apparently common.

27. Hoary Bat. *Nycteris cinerea* (Beauvois). Rare.

CARNIVORA.

28. Otter. *Lutra canadensis canadensis* Schreber. Apparently rare in 1830, as Gapper had only seen skins, but according to the late Dr. Brodie the animal persisted till a very much later date.

29. New York Weasel. *Mustela noveboracensis noveboracensis* Emmons. Not very common.

30. Small Brown Weasel. *Mustela cicognanii cicognanii* (Bonaparte). Probably occurs; recorded by Gapper.

31. Mink. *Mustela vison vison* (Schreber). Still not uncommon.

32. Fisher. *Martes pennanti pennanti* Erxleben. One recorded by Gapper in 1830.

33. Pine Martin. *Martes americana americana* Turton. Recorded by Gapper in 1830 and, according to the late Dr. Brodie, common till a much later date.

34. Skunk. *Mephitis mephitis mephitis* (Shaw). Common. Gapper had seen only skins in 1830.

35. Raccoon. *Procyon lotor lotor* (Linnaeus). Still not uncommon. Listed by Gapper in 1830.

36. Black Bear. *Ursus americanus americanus* Pallas. Listed by Gapper in 1830, but probably not exterminated till much later.

37. Red Fox. *Vulpes fulva fulva* (Desmarest). Still common.

38. Grey Wolf. *Canis lycaon* Schreber. Gapper had seen only imperfect specimens, probably skins, in 1830, but, according to the late Dr. Brodie, wolves occasionally drove deer into Markham as late as 1840.

39. Wild Cat. *Lynx rufus rufus* (Gueldenaed). One specimen taken at Scarboro was in the possession of the late Dr. Brodie, and I have seen others near Toronto, but it never was common.

40. Canadian Lynx. *Lynx canadensis canadensis* Kerr. One recent record; has never been more than a migrant.

41. Panther. *Felis couguar* Kerr. Accidental, one record. ("Biological Review of Ontario," 1894, pp. 18-23.)



Red-backed vole (*Myodes gapperi*)



Northern short-tailed shrew (*Blarina brevicauda*)



Masked shrew (*Sorex cinereus*)

Today's Habitats of Toronto

The Toronto landscape has undergone vast changes since Europeans settled and developed the area, and the composition of wildlife, particularly mammalian species also changed dramatically. Lands that were once lush forests, expansive wetlands and flourishing meadows were first transformed into agricultural land and then into large areas of concrete, glass and turf that exist today.

Mammals that require large intact forested or natural areas such as black bear and moose, disappeared from the landscape. However, some habitats, notably the city's ravines, were not developed and now act as green corridors allowing wildlife to live within them and disperse to other green spaces within the city and beyond the city's limits. The forested ravines that network through the city are critical wildspaces, but other green spaces also provide important mammalian habitat – the parklands of varying sizes dotted throughout the city, the Lake Ontario shoreline that anchors the city, including the Toronto Islands and the Leslie Street Spit, and the system of utility corridors that thread through the area, all provide critical habitat for mammals within an urbanized and densely populated area. In addition to green spaces, the urban environment itself is habitat for several species that are able to exploit and adapt to an unnatural environment and coexist among us. This can result in conflicts with mammals as they use their natural resourcefulness to try to survive, while we often have conflicting ideas on how we want to use the same habitat or resources.

Mammalian habitat in Toronto's natural areas is a target of habitat restoration efforts lead by Toronto and Region Conservation (TRCA) and the City of Toronto. Habitat restoration, along the city's shorelines and in its green spaces, benefits wildlife by providing essential habitat to ensure its survival. Plantings of native trees, shrubs,



Parkland
photo: Aerographic



Ravine
photo: City of Toronto



Urban
photo: TRCA



grasses, wildflowers and aquatic plants directly benefit mammals by providing food, shelter and nesting/denning material. Targeted mammalian habitat enhancements, such as strategically placed piles of woody material and rocks, create shelter and den opportunities for small mammals. Wetland and riparian habitat restoration targets aquatic and semi-aquatic mammals, and has improved mink populations along the waterfront.



Importance of Corridors

Habitat loss and fragmentation is largely caused by urban and agricultural development. After development, the remaining greenspaces are often the only local natural habitat left. Wildlife corridors are green spaces that allow wildlife to travel from one area to another. These corridors must be preserved because they are essential for the survival of wildlife populations as they provide direct habitat and genetic exchange.

Corridors play a very important role in the successful breeding of wild mammals. They allow mammals to move to new areas to seek prospective mates and allow young to successfully disperse to spread their genes elsewhere. In urban areas, corridors are the only appropriate means that wild mammals have to leave and establish their own home and territory.

Corridors in Toronto include the Humber and Don River ravines. There are many parklands along these rivers and these spaces provide appropriate wildlife habitats that are connected. Other critical wildlife corridors in the city are utility corridors, like hydro rights-of-way, and even our own backyards.

These spaces are much more important than many of us realize because of the essential role they play in the viability of Toronto's ecosystems. The greater the number of corridors and green spaces within Toronto, and the better connected these areas are to one another, the more healthy our wildlife and plant communities are and consequently so too is the overall biodiversity.

Biodiversity affords Torontonians a high quality of life and a healthy economy. Corridors and green spaces provide increased opportunities for human relaxation, education, and wildlife viewing. They also



help control or mitigate pollution, temperature, climate and noise. It is difficult to imagine a life in the city where biodiversity continues to decrease; where there is more concrete, more smog and pollution, less green space in which to live, and decreased animal populations. Toronto residents are very fortunate to live in an attractive city where both people and wildlife can co-exist. Protecting and restoring green spaces and corridors is necessary to maintain and improve our quality of life.

Subsidized Urban Wildlife

The phrase “subsidized predators” seems to be relatively new in the field of conservation but it applies to a phenomenon that has been around for millennia and is now becoming more and more of a problem for native fauna, and particularly for various avian, amphibian and reptilian species. Certain animals have long been associated with and have adapted to and benefited from human societies. In North America there are several opportunistic native faunal species that have thrived around urbanization and all of the free food or garbage that such an environment can supply. The problem is that these “subsidized” species – raccoons, skunks, opossums, foxes, chipmunks, red squirrels, crows, Blue Jays*, etc. (not to mention the domestic cat!) – are all predators on prey species that do not benefit from the same “subsidies”.

Under natural conditions (i.e. where no “subsidies” are available) predator and prey populations exist in a self-regulating balance. As predators force prey populations down and hunting for scarcer prey becomes inefficient, the predator populations decline thereby reducing the predator pressure on the prey population which then rebounds, ad infinitum. Unfortunately, if the predators are being “subsidized” their populations are maintained at an artificially high level which thereby maintains predator pressure on declining prey populations which eventually face extirpation – local extinction. Add together enough local extinctions and you have the potential for species extinction.

**Wildlife names follow typical grammar rules for capitalization, however according to the American Ornithologists' Union certain bird names are capitalized. For more info visit www.aou.org*



Introduced, Expanding and Declining Species

Several species present in Toronto are relatively "new" to the region. They have either been deliberately released, hitched rides on the European ships that stopped in the area, or are expanding from regions further south.

Some native species, here before Toronto became a city, did not adapt well to the new urban landscape, and have disappeared from the scene. The struggle to survive in the city continues, and those species that cannot adapt quickly enough will eventually also fade from the landscape.

Virginia Opossum

The Virginia opossum (*Didelphis virginiana*) is a southern species that, until recently, was not part of Ontario's mammalian fauna. When exactly it arrived in Toronto is not well documented, but they are now relatively common, particularly in larger parks and ravines. Generally,

they are quite secretive and seldom encountered. They are active throughout the year, and as omnivores (i.e. they eat almost anything), they sometimes invade garbage storage areas, composters, or bird feeders and may come into conflict with humans as a result.

Feral Cat Colonies

Domestic cats that are permitted outdoors can be of concern in some areas, but not as much as feral cats. A feral animal is one that was once tame, but is now wild. It is estimated that there are thousands of feral cats living in Toronto. While they seldom interact with humans, they can be a source of feline parasites and diseases, which may impact pets. They can and do have a devastating effect on wildlife, killing millions of birds and small mammals annually. It is estimated that over half a billion birds are killed in North America annually by feral and domestic cats.



European Hare

Native to Europe, the European Hare (*Lepus europaeus*) – sometimes incorrectly called a jackrabbit – was introduced into Ontario in 1912, when nine animals were released near Brantford. It adapted well, and spread throughout southern Ontario as far east as Gananoque by the 1950s and north to Ottawa by 1961. Never common in the Toronto area, it has fared poorly in recent years as coyotes have expanded and habitat has severely diminished. It is unlikely it will ever again be a common sight in Toronto.



European hare
illustration: Fiona Reid

Groundhog

The groundhog (*Marmota monax*), or woodchuck, used to be very common in Toronto, but now it is rarely seen, and is quietly disappearing from the Toronto landscape – almost unnoticed. The reason for its demise may again be linked to habitat loss and fragmentation, increasing predator populations (coyote) and impacts with cars.



Invasive Species

Norway (Brown) Rat (*Rattus norvegicus*)

An invasive species is a non-native plant, animal, or other organism that damages native biodiversity when introduced to a new environment. The Norway rat invaded North America aboard ships coming from Europe, beginning in about 1775, and were already reported as “common” in the warehouses along the waterfront of Toronto by 1830.

Although commonly called the Norway rat, it is native to Asia and was introduced to Europe in the early 18th century before being spread throughout the world (except Antarctica) during colonial expansion. The smaller invasive black rat (*Rattus rattus*) has never really gotten a foothold in Ontario probably because it is outcompeted by the more aggressive and larger Norway rat.

It has coarse brownish and/or greyish fur that is lighter on the underbelly. An adult Norway rat can weigh up to 500 g and reach about 25 cm in length, with a tail almost equal in length.

Although Norway rats can breed year round producing five litters averaging nine young, their lifespan may only be one year.

The Norway rat is considered a serious pest by many as it can destroy crops and carry diseases. However, we must keep in mind that it has been bred into a variety of laboratory rats, which serve as important models for studying human health and disease. Additionally, they have been bred as fancy rats and are popular pet animals in some parts of the world.



Norway rat
illustration: Fiona Reid

House Mouse (*Mus musculus*)

The house mouse, originally from the Old World, was introduced into Canada at an unknown time in the past. It now inhabits the continental U.S. and much of southern Canada. In Ontario, the house mouse's distribution is similar to that of the Norway rat, where it is found in close association with human settlements in southern and central towns and cities.

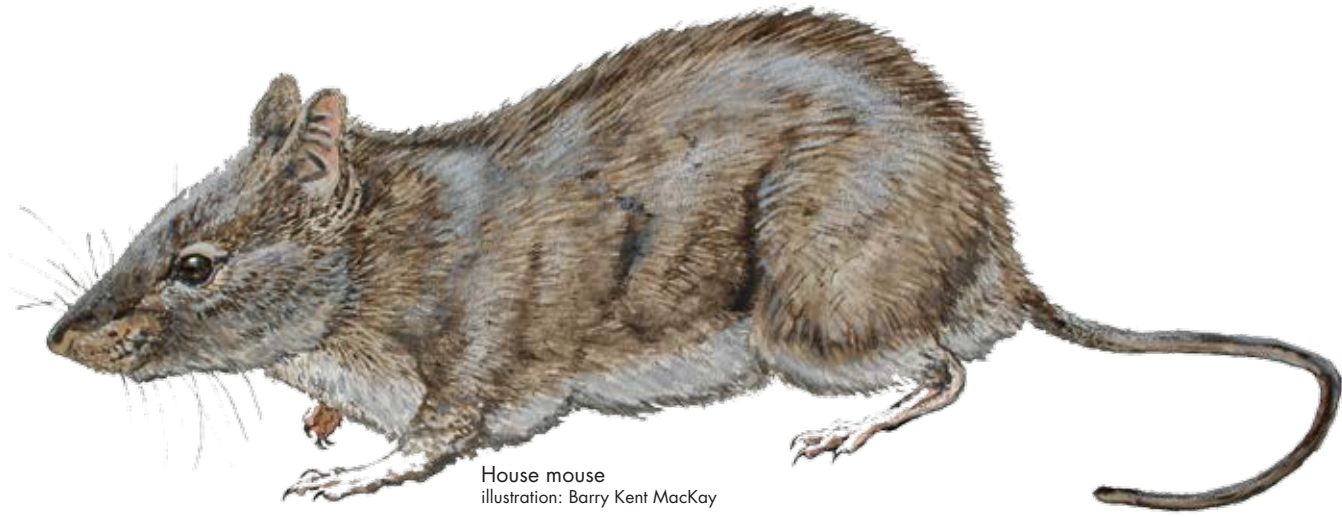
House mice are good jumpers, climbers, and swimmers, and are mostly active during the night. They build well-hidden nests close to food sources, and are very territorial.

They feed on fruits and other plant matter, but they will also eat some meat and dairy products. They can survive on the moisture contained in their food, so don't need a water source to survive.

They are prolific breeders, and rely on vocal cues, odours and pheromones (hormones) to find mates and commence breeding. After breeding and a gestation period of about 19-21 days, they give birth to a litter of 3-14 young (average 6-8). One female can have 5-10 litters per year, as they can breed throughout the year.

Born blind and without fur, they are helpless at birth, but their fur starts to grow about three days after birth and the eyes open after one to two weeks. Females reach sexual maturity at about six weeks and males at about 8 weeks, but both can breed as early as five weeks.

They invade homes and businesses and cause problems by contaminating food, gnawing through wires, and damaging furniture and stored goods. Their presence is often first noted by the odour of their urine.



House mouse
illustration: Barry Kent MacKay

Extirpated Species

No species of mammals, previously found in the Toronto area, has gone extinct since colonial times. Many of the larger-sized species have been extirpated from southern Ontario with the appearance of settlers and the associated loss of forest habitat that has been converted to agricultural land or cleared for development. The carnivores have been most affected with eight native species now extirpated from Toronto. By the beginning of the 20th century, the Northern river otter (*Lontra canadensis*), fisher (*Martes pennanti*), American marten (*Martes americana*), black bear (*Ursus americanus*), wolf, cougar (*Puma concolor*), Canada lynx (*Lynx canadensis*), and bobcat (*Lynx rufus*) had vanished from the regional landscape. Moose (*Alces alces*) and elk (*Cervus elaphus*) disappeared even earlier during the initial European settlement of the Toronto area in the 1700s.



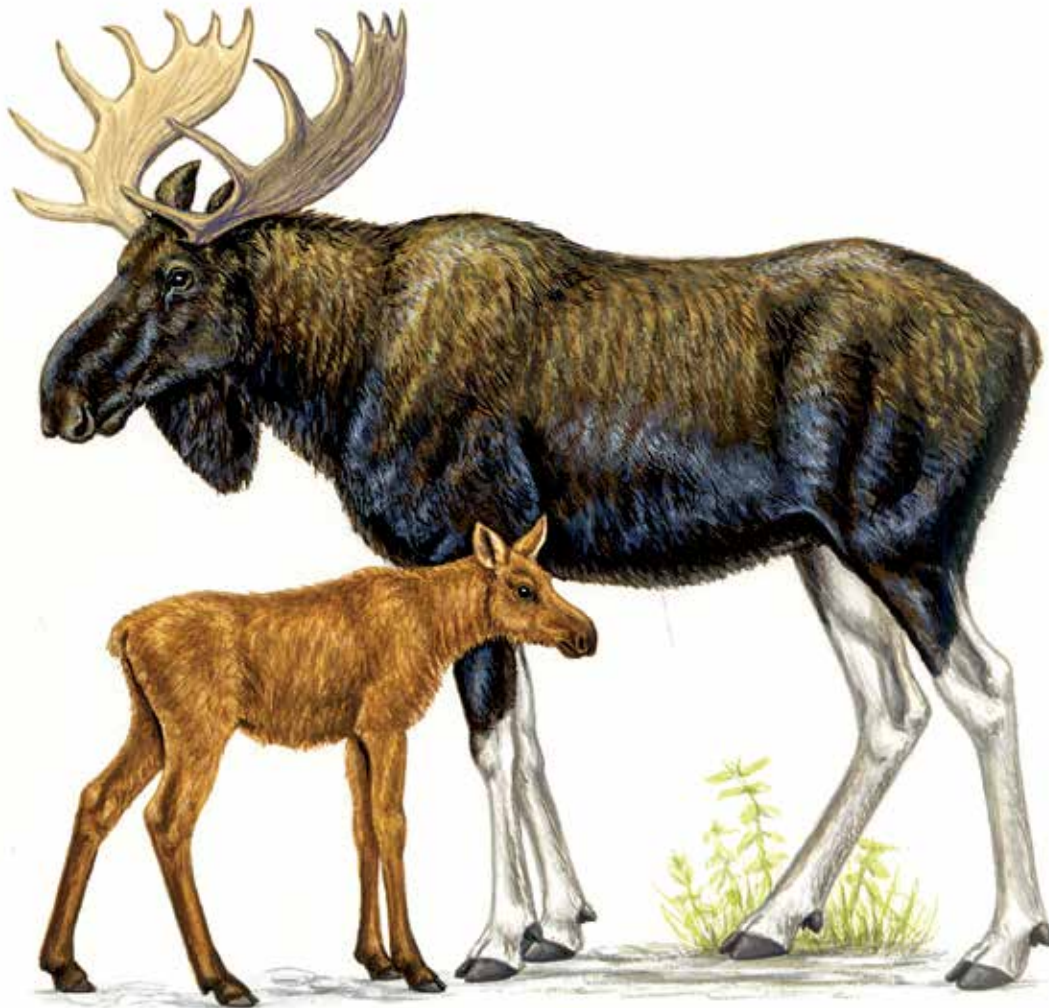
Marten
illustrations: Fiona Reid



Wolf



Lynx



Moose with calf



Breaking News! - Fall 2012

River otters have been sighted at the edge of the Toronto city limits. While these individuals may not remain in the area, their presence is a hopeful sign that local habitat restoration efforts are improving the landscape.

Mammals of Toronto

Toronto's (un)Official Mammal: Red Fox (*Vulpes vulpes*)

In a natural history publication from 1913, it was reported that the red fox was still common in Toronto. Nearly 100 years later, after considerable urban development, the red fox still has a presence in the city. Their territories in Toronto include utility corridors, parks and golf courses. They use ravines as their main routes of travel and may cover up to 20 km in one night.

The red fox is the most widely distributed species of carnivore in the world. It is found in many regions of North America, North Africa, and Eurasia. After being introduced to Australia, it also spread throughout most of this southern continent. This generalist species is found in many different types of habitats including grasslands, forest, and tundra. However, only in Europe has it become a regular occurrence in cities that have milder winters than Toronto.

This sleek handsome fox is characterized by its red coat contrasted by its white chest and belly, black stockings on the legs, and thick luxuriant tail tipped with white. It is primarily a nocturnal species that is somewhat active during dusk and dawn, and cold days during winter. Its diet is quite varied with mice and voles being preferred, but the red fox will also prey on birds, rabbits, and squirrels, and will eat fruits, berries, and invertebrate organisms depending on the time of year. A study done in the Toronto area found that human garbage was rarely part of the diet of the red fox.

Before a concerted rabies control program was implemented in Ontario by the Ministry of Natural Resources, red fox accounted

Did you know... Foxes can hear a watch ticking 40 yards away.



Red fox
photo: Brad Gates

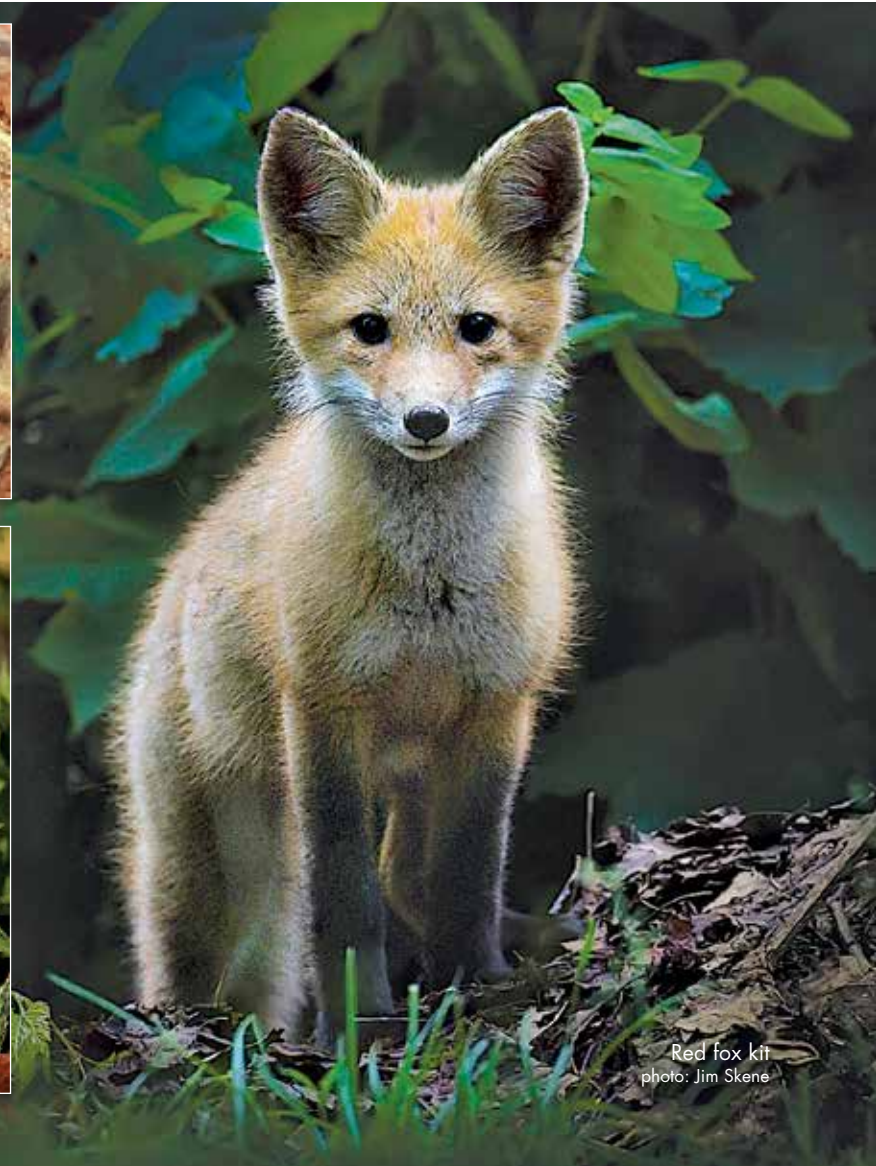


Red fox
photo: Andrea Chreston

for almost half of the reports in the province. The main rabies control method was an orally ingested vaccine bait that was distributed throughout the Toronto area for more than 10 years beginning in 1989. It has been considered a success because the last reported case of a rabid red fox in Toronto was 1996.



Red fox kits
photo: Brad Gates



Red fox kit
photo: Jim Skene



Red fox and kit
photo: Gard Sawyer

Our Only Flying Mammals

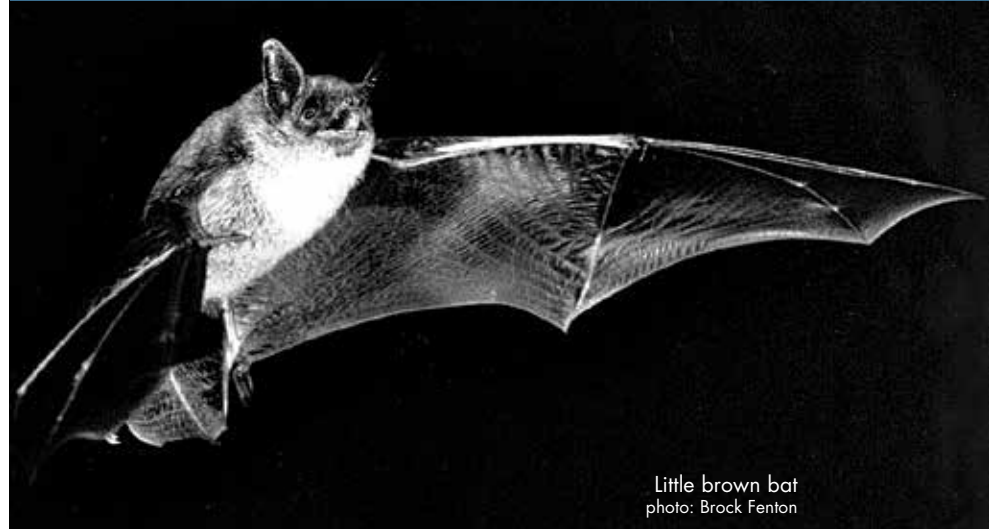
Bats are probably the most inconspicuous part of the mammalian fauna in Toronto. Most people are not aware of bats – unless they go out for a walk with a high-tech bat detector. Only seven of the world's 1,200 species of bats regularly occur in Toronto. The big brown bat (*Eptesicus fuscus*) is by far the most commonly reported bat in Toronto, probably because of its habit of roosting in the attics or eaves of buildings. The other common “house bat”, the little brown bat (*Myotis lucifugus*), is less common in the city and more often found in and around woodlands and streams.

Bats are very inconspicuous, so they may go unnoticed. For example, the tricoloured bat (*Perimyotis subflavus*) is known from southern Ontario; however, it has not been officially documented in Toronto. Ontario's bats are typically small, ranging from a 4 gram eastern small-footed bat (*Myotis leibii*), equivalent to the weight of a 25-cent coin, to a 30 gram hoary bat (*Lasiurus cinereus*). While the big brown bat weighs 14 to 20 grams, the little brown bat weighs 6 to 12 grams.

Roosts

Being small and secretive by day, bats are easily overlooked. Three species of bats use day roosts in the foliage of trees or shrubs. The eastern red bat (*Lasiurus borealis*), hoary bat, and tricoloured bat are difficult to spot as they roost among leaves. Red bats and hoary bats roost alone, except for females nursing their young, while groups of female tricoloured bats often roost together when pregnant or nursing. It was only recently discovered that tricoloured bats roost in foliage. Before then it was thought that these bats roosted in hollows and crevices like the other bats of Toronto. Females of these other species form nursery colonies often in and around trees, as well as in buildings where little brown bats and the big brown bats are usually found.

Did you know... Hibernating Little Brown Bats can stop breathing for almost an hour to reduce their energy needs.



Little brown bat
photo: Brock Fenton

Reproduction

Bats are small mammals with low reproductive rates. The little brown bat, eastern small-footed bat, northern long-eared bat, and silver-haired bat produce only one individual per year. The tricoloured bat, big brown bat and hoary bat all have twins (two young per litter), but only produce a single litter per year. The eastern red bat has been recorded having twins, triplets, and quadruplets, making them one of the most productive bats.

While bats in Toronto mate in the late summer and early fall, females do not become pregnant until the following March or April because females store sperm in the uterus from the time of mating until spring when they ovulate and become pregnant. This delay of fertilization usually coincides with overwintering. Male little brown bats mate

with several females during mating season, and the reverse is also true. The same appears to apply for big brown bats, where genetic studies have revealed that twins of big brown bats often have different fathers.

Bats can be long-lived animals. The oldest little brown bat on record is 35 years of age; information obtained by following an individual for 35 years after it was banded. The big brown bat appears to have a shorter life-span. The age record for them is 20 years in the wild.

Bats reproduce slowly and some of them live a long time. For some species of bats, about half do not survive their first year in the wild. The main cause of mortality appears to be failure to put on enough fat to survive the winter. When thinking of bat conservation, it is vital to remember the mortality that occurs in the first year as well as the low reproductive output.

At birth, all bats are relatively large in comparison to their mothers – 25 to 30 per cent of her body mass. This means that little brown bats bear young that are 2.5 to 3.0 grams at birth. Young bats consume



vast quantities of milk, typically their own body weight every day. This demand puts an enormous amount of pressure on females who have to eat enough to cover the costs of milk production.

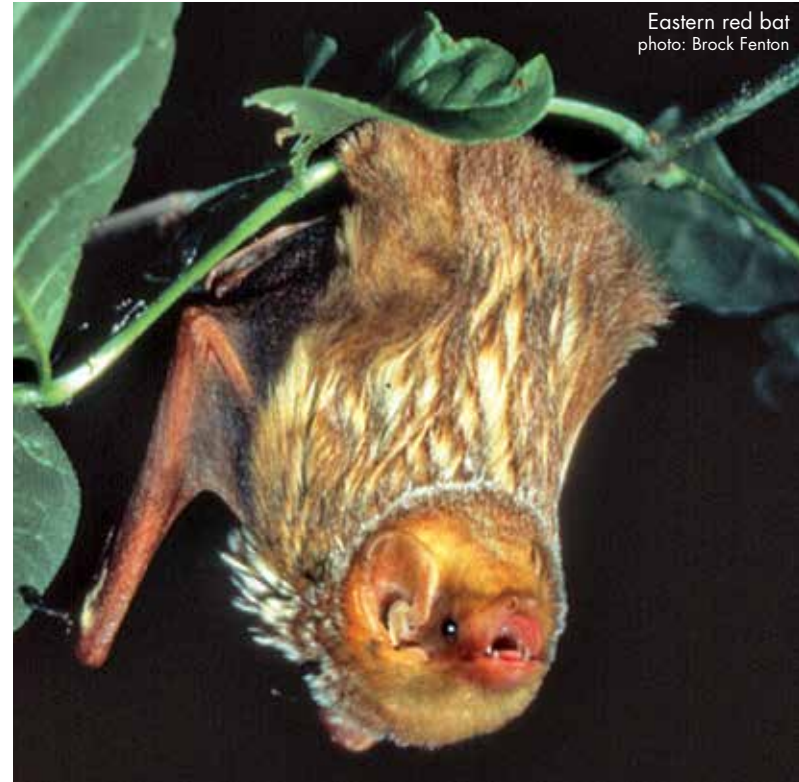
Food

Bats are notorious for their large appetites, a reflection of the cost of flight. A flying little brown bat can have a heart rate of 1,200 beats per minute. When it lands, its heart rate drops to about 300 beats per minute. While lactating, female bats can consume more than their own body mass in food every day. When they are pregnant, or after their young are weaned, their daily food consumption drops to about 50 per cent of their body mass.

All of the bats that occur in Canada are primarily insectivorous, although some occasionally eat spiders. In general, larger bats eat larger prey than smaller bats. It can be difficult to tell exactly what insects a bat has eaten because they thoroughly chew their food and what comes out in their droppings is a fine mash of insect parts. Using the new genetic technique of DNA barcoding we have learned more about what species of insects eastern red bats and little brown bats eat. The eastern red bat eats mostly moths, and the list of its prey species exceeds 100. The little brown bat prefers to eat mayflies, caddis flies and midges. But they do occasionally eat mosquitoes. It remains to be determined if any of the bats of Toronto eat enough insects to play an important role in the control of insect pests.

Hibernation or Migration

The essential disappearance of insects in winter means that bats have to have an alternate plan for survival, usually hibernation – a long winter sleep. The big brown bat often hibernates in the nooks and crannies of buildings where temperatures remain above freezing. The ideal hibernation site is warm enough to keep the bat from freezing, yet cool enough to ensure that the bat has enough fuel (i.e. body fat) to survive the winter. This usually means temperatures within the 1°C to



Eastern red bat
photo: Brock Fenton

5°C range. Only the big brown bat is known to hibernate in buildings, while the other bats of Toronto must emigrate for the winter. Some, little brown bats, northern long-eared bats, tricoloured bats, and eastern small-footed bats, move to underground locations, typically caves and abandoned mines. These bats make fall migrations to their hibernation sites, and return migrations in the spring. Some of these migratory flights can be 1,000 km one way.

The silver-haired bat, eastern red bat, and hoary bat appear to make longer migratory flights. These bats are thought to fly south to sites as far away as Mexico. The evidence for long distance migrations is based on the sightings of bats in areas during certain times of year. For example, red, silver-haired and hoary bats make an appearance on the Toronto Islands in the fall. Like migratory birds, these bats use the islands as a staging area for migration.

Health concerns

Bats are not dangerous animals, but they are susceptible to rabies like all other mammals. Rabies is a disease of the nervous system caused by a lyssavirus. Mammals infected with the virus may show signs of paralysis in their limbs and face. Paralysis of the throat muscles means that rabid animals cannot swallow the saliva they produce, giving them the appearance of “foaming” at the mouth.

Rabies is usually spread by bites that break the skin and allow the transmission of the rabies virus from the saliva of an infected animal. People can avoid possible exposure to rabies in bats by leaving them alone. Under no circumstances should you handle a bat. People who ignore this advice, handle a bat and are bitten, should immediately report the incident to a physician. Fortunately, the vaccinations that protect us from rabies are effective and readily available.



Bat droppings may contain the spores of a fungus that causes histoplasmosis. In Toronto, this disease is more often associated with pigeon droppings. The symptoms of histoplasmosis are often flu-like; luckily, infections are easily diagnosed with a skin test.

Echolocation and Folklore

Bats are not blind but are perhaps best known for their use of echolocation, similar to sonar, that allows them to “see” with their ears. The calls that are used for echolocation are ultrasonic (beyond the range of human hearing) and readily detected by bat detectors. Bat biologists use these detectors to find out where bats are active at night. Bat detector research in Toronto suggests that most species of bats are more active in parks, wooded areas along ravines, and streams than in downtown areas. It is relatively easy to identify different species of bats by their echolocation calls, allowing biologists to collect more information about bats, their distribution and habits.

In folklore, a “vampire” is a human that comes back from the dead to feed on the blood of living people. European explorers arriving in Central and South America in 1500 A.D. called the blood-feeding bats they found there “vampires”, the name coming from the folklore. When writing the book *Dracula* in London, England in the late 1800s, Bram Stoker wrote bats into the story because vampire bats were in the news.

You can learn more about bats by visiting your local library, the Toronto Zoo, and the Royal Ontario Museum.

Featured Mammal: Big Brown Bat (*Eptesicus fuscus*)

The big brown bat is one of the largest bats found in Ontario, but its head and body length is still only around 80 mm in length with a wingspan of 300 mm. However, its size and glossy brown fur should distinguish it from the other six species of bats that occur in the Toronto area. It is a common species that can be found roosting inside buildings, as well as caves, mines, tree hollows, and under the bark of trees during the summer. In the winter, the big brown bat hibernates in caves, but it is the only bat in Ontario that may also hibernate in buildings if the temperature remains just above freezing.

In Canada, big brown bats usually breed in September but there is delayed fertilization with ovulation beginning in early April followed by the birth of two young in late May. It takes about one week before their eyes open, during which time the mother carries the young while foraging. Food consists of flying insects such as beetles, that they catch in the skin membrane between the hind legs before transferring them to their mouth. Because big brown bats are relatively abundant, widely distributed from Central America into southern Canada, and closely associated with roosting in man-made structures, they may be beneficial as a natural predator of insect populations, including many agricultural pests.



Big brown bat
illustration: Ann Sanderson

Featured Mammal: White-tailed Deer (*Odocoileus virginianus*)

Despite being Toronto's largest mammal, the white-tailed deer is adept at camouflage and elusion. Its brownish appearance allows it to blend into its habitat. Adult deer stand about one metre at the shoulder and weigh 50 to 110 kgs, with females being smaller. Male deer, or "bucks," are larger than females and start growing antlers when they turn two, developing new antlers each summer and shedding them each winter. In the fall, during the breeding season or rut, males rub their antlers on small trees to mark territory and may even spar with other males for females. Female deer, or "does," give birth the following spring to one or two young called "fawns." Fawns have reddish-brown fur with small white spots for excellent camouflage especially when lying down. They can stand while nursing within a few hours of being born, but spend most of the next several weeks hidden in vegetation while their mother forages for food. Fawns are weaned from their mother at about four months old.

Deer generally travel in small groups through the city's natural areas, occupying a mixture of young forest stands, shrub thickets and open areas near cover. In the winter they use a network of trail systems and may even move to conifer forests, known as "deer yards" where snow depth is lower. In spring and summer, deer eat a variety of tender plants and grasses and, in the winter, they eat the ends of woody twigs and needles of some evergreen trees. They may also venture into backyards to forage, eating garden plants and seed from bird feeders. Deer need to eat about 2-5 kg of food per day – or a lot of woody twigs!

Deer are a prey species, but in Toronto coyotes are their only predator, usually taking young deer or adults weakened by winter conditions or disease. Their speed and agility are their strongest prey adaptation. Deer can reach speeds of up to 48 km/hr and jump 3 m high and 9 m long in a single leap.

Did you know... Deer use their white tails to communicate with other deer. A tail held in an upward position means "run for cover."



White-tailed deer
photo: Ken Sproule



White-tailed deer
photo: Geoff Carpentier

Featured Mammal: Striped Skunk (*Mephitis mephitis*)

The skunk is best known for the white stripe, contrasting with black fur, running down the length of its back and for their ability to secrete a liquid with a strong, foul-smelling odour. Skunks use the secretion as a defence against threats from predators or humans. They are expert diggers and will dig a living space for themselves under any kind of structure like a shed or a deck. Skunks are omnivorous (i.e. they will eat almost anything) and are usually nocturnal (i.e. active at night). In Ontario, skunks breed from February to March and gestation is about eight weeks. They produce four to seven young, which are usually independent by mid-summer.

The smelly liquid that skunks can secrete comes from two glands in their back end. These glands produce a mixture of chemicals, which have a highly offensive smell that can be described as a combination of the odours of rotten eggs and burnt rubber. Skunks are reluctant to use their smelly weapon, as they carry just enough of the chemical for five or six uses; it takes about 10 days to produce another supply.

Skunks in Toronto vary in weight, but the average is 2.25 - 3.6 kg. They have a moderately elongated body with relatively short, well-muscled legs, and long front claws for digging. Skunks are not true hibernators in the winter, but do den up for extended periods of time during which they remain generally inactive and feed rarely, going through a dormant stage (i.e. torpor). They often overwinter in a huddle of multiple (as many as twelve) females, while male skunks usually den alone. Skunks will often use the same winter den site repeatedly from year to year.

Although they have an excellent sense of smell and hearing, they have poor vision. They cannot see objects more than about three metres away with any clarity, which makes them vulnerable to road traffic. They are short-lived animals with fewer than 10% surviving for longer than three years. Skunks are attracted to spaces under porches, sheds, woodpiles, rocks or debris, garbage, pet food and open composts. Removing a skunk without repairing or attending to the attractants creates an opportunity for other skunks to move in.

Did you know... Skunks commonly fall into window wells and because they are poor climbers, they need help to get out.



Striped skunk
photos: Leanne Pancer

Featured Mammal: Raccoon (*Procyon lotor*)

The raccoon's facial mask and extremely dexterous front paws are two of its most distinctive features. Almost 90% of the raccoon's greyish coloured coat is made of the underfur, which insulates against cold temperature. Raccoons are also very intelligent; they are able to remember the solution to tasks up to three years after they learn them.

A raccoon's mating season is triggered by increasing daylight, usually between January and April. The gestation period of a raccoon is usually about 8 weeks after which three to five young, called "cubs" or "kits," are born in spring. The kits are raised by their mother until late fall when they are able to find and use den sites and forage on their own. Their average life expectancy in the wild is only two to three years. In Toronto, traffic accidents are the most common cause of death, with viral diseases also contributing to their death toll.

By late fall, raccoons can weigh twice as much as in the spring and are prepared to go into a winter rest, reducing their activity drastically.

Except during breeding season, or when with young, raccoons are territorial and usually solitary. Though primarily nocturnal, the raccoon is sometimes active in daylight to take advantage of available food sources. Raccoons are omnivorous and in Toronto they are able to find a good portion of their food by eating garbage. Raccoons will eat insects, worms, and nuts such as acorns. They will also eat other animals, and prefer prey which is easier to catch, specifically fish and amphibians.

Raccoons are not only intelligent, but very adaptable, and for this reason have been able to thrive in urban habitats. Skillfully securing your property will help prevent habitation by raccoons. Raccoons have amazing dexterity and use their front paws to pry things open,

Did you know... When coming down a tree, the raccoon can turn its hind feet backwards to make it easier.



Raccoon
photo: Robert Rafion

turn knobs and handle objects. Their vocalizations include purrs, whimpers, snarls, growls, hisses, screams and whinnies.

Although raccoon families can be fun to watch and attacks on people and pets are extremely rare, feeding raccoons or making any physical contact with them should be strictly avoided.

Featured Mammal: Coyote (*Canis latrans*)

The most notable and important characteristic of the coyote is its intelligence and ability to adapt. It is a curious animal, which is non-confrontational by nature. Despite being one of the most persecuted animals in history, its story is one of great success and survival.

The colour of the coyote's fur varies from greyish brown to yellowish grey on the upper parts, while the throat and belly tend to have a buff or white colour. The ears are proportionately large in relation to the head, while the feet are relatively small in relation to the rest of the body. The straight tail, pointed at an angle down to the ground, is a feature that distinguishes it from its domestic cousin, the dog.

Coyotes have adapted very well to city life. River valleys in Toronto offer a very attractive habitat for coyotes. They are active during the day and at night and do not hibernate. They are commonly seen in the winter when the lack of foliage on the trees makes them more visible. It is estimated that there is one coyote per 13 square kilometres, but this can vary greatly in different areas and territories may overlap to some extent.

Coyotes are versatile and opportunistic carnivores. They primarily eat small mammals, such as voles, eastern cottontail rabbits, squirrels and mice, though they will eat birds and snakes as well as large insects. Though they will consume large amounts of carrion (dead animals found in the environment), they tend to prefer fresh meat. Part of the coyote's success as a species is its dietary adaptability. As such, coyotes have been known to eat garbage produced by humans. Urban populations of coyotes have been known to actively hunt cats, and to leap shorter fences to take small dogs and other domestic pets.

Did you know... Coyotes use their keen sense of smell to spot prey that is scurrying below the snow.



During mating season, coyotes are very active and seem to become more curious about our domestic dogs. In Ontario, coyotes breed from late January to March and after a gestation period of 60-63 days, they produce one litter of one to 12 young. The pups attain full growth between 9 and 12 months and sexual maturity is reached by 12 months. Coyotes have an average lifespan of six to eight years and weigh between 16.4 - 27 kg. The calls a coyote makes are high-pitched and variously described as howls, yips, yelps and barks. These calls may be a long rising and falling note (a howl) or a series of short notes (yips) and are most often heard at dusk or night, but may be heard during the day.



Despite being extensively hunted, coyotes are one of the few medium-to-large-sized animals that have increased their range since human encroachment began. It originally ranged primarily in the western half of North America, but it has adapted readily to the changes caused by human occupation and, since the early 19th century, has been steadily and dramatically extending its range. Sightings now commonly occur in every province in Canada.

Coyotes have adapted well to living in densely populated urban environments while avoiding contact with humans. It has been found that urban coyotes tend to live longer than their rural counterparts and live anywhere from parks to industrial areas. Coyote attacks on



humans are very unusual and when they happen, rarely cause serious injury.

Coyotes are one of Toronto's most controversial urban wildlife species. Some residents believe that they don't belong in Toronto and should be removed. The facts are that wild animals in Ontario cannot be legally relocated for reasons of animal and human welfare (see Provincial Policies, page 52) and removing coyotes by lethal methods (often called a "cull") is not effective. Lethal control methods have been tried as a way to manage coyotes in other areas and municipalities, but lethal control methods usually result in increases in immigration, reproduction, and the survival of remaining coyotes.

Like most wild mammals, when coyotes are removed from a territory they are quickly replaced by those seeking new territories and their litter sizes increase in response to lower population densities. Whether we like it or not, the coyote has become an urban wild neighbour.

Some people in the community believe that coyotes should not live in the urban environment because of the danger they pose to pets. When pet owners are provided with the right advice and information, most understand that their actions can influence coyote behaviour. Pets left outdoors unattended, especially at night, can be at risk of a negative encounter with a coyote. Pet owners who leave their pets outdoors unsupervised are assuming that risk. In rare cases, pets are injured or killed by a coyote while they are under the supervision of their owners and this may indicate an escalation in coyote habituation behaviour (behaviour resulting from a loss of natural fear of humans). In these rare cases, incidents should be reported to appropriate officials who can analyse the incident and determine the appropriate course of action.

Conflicts between coyotes and people or pets arise when coyotes lose their natural fear of humans and/or they become accustomed to eating human food. Conflicts can be prevented by reducing food sources from humans and by confronting (but not injuring) bold coyotes so that they can regain their fear of people.

The latest and most reliable research on urban coyotes was conducted in Chicago, Illinois (Gerht, 2006). Some of the most notable conclusions of the research are:

- Coyotes naturally avoid humans, but human actions, such as feeding, can negatively affect a coyote's behaviour.
- Coyotes involved in conflicts with humans have almost always been fed either intentionally or unintentionally by humans.
- Coyote management strategies that emphasize public education, with a focus on untangling facts from myths, can be effective in preventing coyote-human conflicts.
- Coyotes primarily prey on rodents; pets make up a very small percentage of their diet.
- Large numbers of coyotes exist in cities, most without being noticed by people.
- Intentional feeding should be prohibited, otherwise other management solutions will be temporary at best.
- Removal, especially lethal removal, is often controversial within communities. This is especially true when the perceived threat by coyotes is somewhat ambiguous to residents.

There are many residents in Toronto who enjoy their proximity to coyotes and understand that they should be enjoyed from afar; left alone to do what comes naturally. Other people who are not as accepting of coyotes are encouraged to seek the information they need to become more comfortable and co-exist peacefully with these wild canines in Toronto.

"Hoot and Howl" – Toronto and Region Conservation (TRCA) hosts several "Hoot and Howl" events each winter at local conservation areas. Participants learn about owls and coyotes and call for them, hoping they'll call back. For more information on free Family Nature Events visit www.trca.on.ca/events

Featured Mammal: Mink (*Mustela vison*)

The mink is well known because of its former fame as a fur-bearing animal, popular for making coats in the 20th century. Even back to the heyday of trapping, when the Hudson's Bay Company administered the fur trade in Canada, the mink's pelt was worth money. Today, the wearing of fur is not popular, so this weasel can once again move freely with little fear of being trapped.

It is a large dark brown, skinny mammal, with a white chin and sometimes a white mark on the chest. Its partially webbed feet help it swim – and it is superbly at home in the water. The male is about 25 per cent larger than the female, reaching about 1 kg in weight and 500-600 mm in length. Like all weasels, it has a musk gland that it uses to mark territory and attract a mate.

Solitary for most of the year, minks come together to breed in February or March. After a gestation period of about 51 days on average, three to six helpless young are born. Sometimes, when food is scarce or the female is distressed, the blastocyst (which becomes the embryo) does not get implanted in the uterus immediately and the young can be born up to 75 days after copulation. Twenty-five days later, their eyes open and at about eight weeks of age, they set out on their own. Life in the wild is tough, and a long-lived mink will live eight or nine years.

Food consists of both terrestrial and aquatic organisms, such as fish, frogs, salamanders, crayfish, invertebrates, birds, small mammals (up to the size of muskrats – a favourite food), and snakes. Excellent divers, they can dive to depths of 5-6 metres and swim under water for about 30 metres. Red foxes, bobcats and great horned owls will gladly make a meal of the mink, if the opportunity arises.

Did you know... When threatened, the mink can expel the contents of its anal glands to a distance of up to 30 cm.



Mink
photo: Ann Gray



Mink
photo: Ian Sturdee



Mink with fish
photo: Bart B. Van Bockstaele

Featured Mammal: Beaver (*Castor canadensis*)

Weighing up to 32 kg and measuring up to 1.3 m, the beaver is the largest rodent in North America. Recognizable for its flat, scaly tail and its dependence on aquatic habitat, beavers are commonly seen along the Lake Ontario shore and throughout the stream corridors that run through the city.

Beavers mate for life and breeding occurs in January and February. Three to four babies, or “kits”, are born in May or June and the young stay with the family for two to three years. The family colony builds a lodge, usually in the bank of a shoreline, and uses it for resting and feeding, especially in the winter. The lodge is usually used for many years by the same pair of beavers. Beavers are active all year long, typically at dawn and dusk, eating mainly the small branches of trees and shrubs, but also herbaceous vegetation in the spring and summer.

A Canadian icon and natural architect, the beaver is renowned for its incredible ability to alter watercourses and change habitat. It has a natural instinct to dam up streams with woody branches, vegetation and mud, which floods the upstream area. Beavers require underwater habitat that does not freeze to the bottom so they can access stored food beneath the ice and build dams to create these conditions. By flooding the area, beavers change the landscape, creating different habitat for other species that require ponds and wetlands. Eventually beavers abandon the dam, and the pond or wetland drains creating a meadow, benefiting more species. The meadow will ultimately grow back into a forest community that is preferred by yet another suite of species, all the result of this industrious rodent and the cycle of nature.

Learn about humane beaver control here: wildlifeinfo.ca/beaver.html

Did you know... Beavers will slap their tails hard on the water surface to warn their family of danger; a beaver's slap can be heard up to $\frac{3}{4}$ of a kilometre away.



Beaver
photo: Ken Sproule



Beaver at beaver lodge on the Leslie Street Spit
photo: Ann Gray

Featured Mammal: Eastern Chipmunk (*Tamias striatus*)

The eastern chipmunk is the only striped squirrel in southern Ontario. It has dark and pale stripes on its back and rump. Otherwise, the short dorsal fur is a reddish brown and the belly is white. There are pale stripes above and below the eyes, and it has rounded ears. The relatively short, flattened, hairy tail of about 100 mm represents nearly half of its head and body length, and is brown mixed with black and white hairs.

This is a very vocal, diurnal animal that can often be heard emitting its trademark "chip" call. Although this friendly looking creature can be encouraged to take food from your hands, you risk being bitten and teach the chipmunk to look for a handout, instead of actually collecting food. During the fall, it frenetically collects berries, seeds, and nuts with its cheek pouches to store food in its underground burrow to sustain it during the winter months. The eastern chipmunk is not a true hibernator but instead enters a short period of "torpor" in between bouts of eating and defecating in special parts of its burrow. It is active from March to November, and is commonly found in city parks.



Eastern chipmunk
photo: Geoff Carpentier

Did you know... A Chipmunk's mouth is very small, but its pouches can expand to three times that of its head.



Eastern chipmunk
photo: Ken Sproule

The eastern chipmunk is found in eastern Canada and the United States. The average lifespan of the eastern chipmunk is up to three years. In southern climes, the female has two litters per year beginning in April and July averaging four young, but only one litter in northern areas.