



Bat Signals

Detecting Heroes

WRITTEN BY DON SCALLEN
PHOTOGRAPHS BY MIKE DAVIS
EXCEPT WHERE NOTED

the *of* Night

Fiona Reid, author of the *Peterson Field Guide to the Mammals*, lives in a home surrounded by Niagara Escarpment forest. Wildlife abounds, including the bats that Fiona loves.



An Eastern Small-footed Myotis, an endangered bat that was caught in a mist net in Hildebrandt + Davis Park, being examined by a team from Natural Resource Solutions of Waterloo.

In 2022 and 2023 Fiona coordinated a bat monitoring project under the auspices of the Toronto Zoo's Native Bat Conservation Program to gather data on the presence and abundance of the flying mammals on her property and the properties of several fellow members of the Halton/North Peel Naturalist Club. Participants took turns using a Toronto Zoo bat detector to record bat vocalizations. Each of Ontario's eight bat species has a distinctive ultrasonic call. We can't hear them, but the detectors can.

One of the bat monitoring volunteers was Gloria Hildebrandt, the editor of this magazine. A detector, installed by her co-publisher Mike Davis at their Hildebrandt + Davis Nature Park in north Halton, recorded a total of 1,095 acoustic observations of seven of the eight species of bats native to Ontario. This does not mean the presence of over one thousand bats, but simply the number of times the recording device detected calls – one bat may be responsible for several vocalizations.

Regardless, the Park's results were impressive. Most notably, the vocalizations of an endangered bat called the Eastern Small-footed Myotis were recorded 581 times. Subsequent mist netting at the park by Christy Humphrey of Natural Resource Solutions of Waterloo, resulted in the temporary capture of three of these bats, one a lactating female. Humphrey speculates that there is "likely a maternity colony" near the Park, "likely in a building" – an exciting finding.

Niagara Escarpment forests and wetlands, like those at the Hildebrandt + Davis Nature Park, play a vital role in sustaining bat abundance and diversity. But Fiona Reid notes that the Toronto Zoo bat monitoring project also found surprising numbers of bats flying in the suburban areas of Milton and Halton Hills. The bat detectors picked up the ultrasonic calls of bats wherever they were placed.

Bats Declining

A caveat is necessary,

however. We don't have historical benchmark data for this part of Ontario. While the species diversity and abundance of bats revealed by this bat survey appear impressive, we don't know how many bat vocalizations a similar study decades ago may have recorded. Our bats have been hammered by two novel threats since the early 2000s: the arrival of a virulent fungal disease called white-nose syndrome and the proliferation of wind turbines on the landscape

which, sadly, appear to be killing lots of bats.

Christina M. Davy, an associate professor at Carleton University in Ottawa, and her fellow researchers recently examined bat mortality data from 594 turbines in southern Ontario, as reported in the journal *Conservation Biology*. The findings were alarming. Her study found a "rapid decline in the abundance of four species in our study area." These results were so shocking that COSEWIC (Committee on the Status of Endangered



▲ A bat in the hand: an insectivore, the bat's specialized teeth help it consume its food. This Eastern Small-footed Myotis with its open mouth, that was caught in the Park, may be echolocating to try to understand what is happening. Bats navigate and find insects using echolocation, which is emitting high-frequency sound waves through their mouths or noses.



▲ A mist net, set up in the Park but not yet unrolled, for capturing bats.

► Christy Humphrey and colleagues from Natural Resource Solutions setting up their examination station while hoping to capture bats in the Park.





Mike Davis attached the recorder to this Horse Chestnut tree at the spring end of the pond.

▲ The Toronto Zoo's ultrasonic recorder was temporarily installed at the opposite end of this pond in the Park.

Wildlife in Canada) quickly acted to designate three formerly abundant species as endangered: Hoary Bat, Eastern Red Bat and Silver-haired Bat.

The extent and speed of these declines make it imperative that wind turbine operators take measures to mitigate bat mortality. That doesn't necessarily mean building fewer turbines. Recognizing the necessity of green power to counter climate change, Davy cites findings in her study that could inform the placement of future turbines. Her data show, unsurprisingly, that more forest-dwelling bats like Red Bats and Silver-haired Bats are killed by turbines close to woodlots, so a

possible solution would be to site turbines at a remove from such habitats. She also found that Big Brown Bat mortality decreased with elevation, suggesting that turbines be located in higher elevation areas. She also found that many more bats were killed in late summer than spring, indicating that

the operation and speed of wind turbines at that time of year be closely managed.

Some of us may believe that the mortality of bats is an

acceptable price to pay in our pursuit of green energy – that bat declines pale in contrast to the climate crisis we face.

Insect Control

Fiona Reid would

► A Big Brown Bat, although not one of the ones detected in the Park, being held for banding.
PHOTO BY
MELISSA DONNELLY
OF TORONTO ZOO.





▲ The ultrasonic recorder was left in place for several nights of monitoring.

disagree. She reminds us that the numbers of bats recorded in both urban and rural areas, revealed by the Toronto Zoo study, show the importance of these mammals in the biological control of insects.

Bats eat a lot of bugs – in fact, according to Bat Conservation International, reproductive-age Big Brown Bats, Ontario's most common species, can consume their weight in insects every night. The implications are profound. Bats save farmers a lot of money, and, new research suggests, may even save human lives.

Daniel Riskin, a bat researcher at the University of Toronto points to a

2024 study that “showed that by eating crop-pest insects, bats reduce the use of pesticides, which results in significantly lower human infant mortality. In doing so, bats literally save hundreds of our babies each year.”

The research Daniel cites was reported in an article in *Science*, the academic journal of the American Association for the Advancement of Science. The author and primary researcher was Eyal Frank, an assistant professor at the University of Chicago Harris School of Public Policy. Frank's research conclusions are startling and disturbing. He found that the decline of bats due



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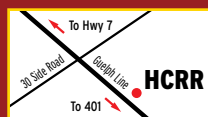


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to white-nose syndrome led to a 31.1 per cent rise in the use of pesticides by farmers in selected U.S. counties. The alarming downstream result of this increased pesticide use was a concurrent rise in infant mortality in those counties averaging 7.9 per cent! Simply put: fewer bats, more pesticides, greater infant mortality.

This study has only strengthened Daniel's appreciation for bats. "Bats have a lot in common with Batman," he says. "They do their good work at night, and it's mostly thankless. They're heroes."

Citizen Science

Toby Thorne, formerly the Toronto Zoo's Native Bat Conservation program coordinator, and now supervisor of Species Recovery at the zoo, agrees and lauds the value of surveying bats via citizen science. "By identifying areas and habitats with high levels of bat activity, we can continue monitoring populations and implement conservation efforts to protect these species." Toby says that the Toronto Zoo will be "recruiting new volunteer groups in an effort to increase the geographic spread of the dataset."

These citizen science efforts will be vitally important moving forward. The reality that seven of our eight species are now endangered is sobering. Bats are fascinating animals that contribute greatly to environmental health and, it seems, to ours as well. They deserve our admiration and our careful stewardship. **NEV**

Don Scallen, author of Nature Where We Live, most recently wrote "Halton Hills Turtle Guardians and Other Heroes" for the Spring 2025 issue of this magazine.



▲ Charles Hildebrandt installed this bat shelter at the pond in the Park many years ago. It's unknown whether this was ever used by bats.

ONTARIO'S BATS

Big Brown Bat (*Eptesicus fuscus*)

Eastern Red Bat (*Lasiurus borealis*) Endangered (Canada)

Eastern Small-footed Myotis (*Myotis leibii*) Endangered (Ontario)

Hoary Bat (*Lasiurus cinereus*) Endangered (Canada)

Little Brown Myotis (*Myotis lucifugus*) Endangered (Canada)

Northern Myotis (*Myotis septentrionalis*) Endangered (Canada)

Silver-haired Bat (*Lasionycteris noctivagans*) Endangered (Canada)

Tri-coloured Bat (*Perimyotis subflavus*) Endangered (Canada)



▲ Dan Riskin, a science journalist, bat biologist, and author, is best known as CTV's science and technology specialist, and as the former co-host of *Daily Planet* on Discovery. He is the author of the picture book *Fiona the Fruit Bat*.



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