OUR MISSION

"To ensure the preservation of the character and biological biodiversity of Wagner Natural Area for Educational, Scientific and Research purposes."

Friends of the Fen

Juvenile North American porcupine pictured in Central Field, likely born this spring. Mature porcupines can occasionally be found high in the trees of Wagner Natural Area feeding on their bark.

Photo courtesy of: Nathan Hempler

WAGNER NATURAL AREA SOCIETY NEWSLETTER

SUMMER'S LAST WEED PULL

Your last chance to contribute to Wagner Natural Area's weed management this summer!

When: Saturday/Sunday, August 9th & 10th
Where: Meet at WNA parking lot
Who: Volunteers interested in aiding WNA
What: Pulling weeds and managing trees

Gloves/boots suggested. Dress for the weather. Training, tools, snacks and water provided.

RSVP by sending an email to info@wagnerfen.ca

CASINO VOLUNTEERS NEEDED

Our next casino event will need 25 volunteers… are you interested in contributing? All training is provided, and a free meal is included!

When: Friday/Saturday, August 15th and 16th
Where: Century Casino St. Albert - 24 Boudreau Rd.

RSVP by sending an email to info@wagnerfen.ca

Of Bogs and Fens…

By *Nathan Hempler*

When I speak to someone whose only familiarity with Wagner Natural Area is having heard something or other about the space many years ago, I tend to hear one word that bothers me. This one word is a seemingly small misconception about Wagner Natural Area, but it nags at me all the same. The word in question is of course "*bog.*"

I hear Wagner referred to as a bog very often when speaking about the natural area and each time I have to explain that, in fact, Wagner Natural Area is a fen. Generally, that is the extent of the conversation, but I thought where better than in the newsletter to explain the difference between the two terms.

Bog and fen are both words used to denote a wetland (specifically a peatland), but they imply different things about its characteristics.

Bogs are wetlands that are covered in peat and are poor in nutrients. Their surface water primarily comes from precipitation, and it is notably acidic due to decaying plant material and poor drainage. These conditions allow few species to prosper in bogs, being largely dominated by sphagnum mosses and featuring black spruce as their only tree.

Fens on the other hand are also peat-covered wetlands, but in contrast to bogs they are fed by nutrient-rich groundwater. The increased abundance of nutrients supports greater biodiversity in fens than in bogs. A key indicator species used to separate fens from bogs are tamaracks, like the beautiful ones found in Wagner Natural Area.

So, while it may initially seem unimportant which three-letter word we use to describe Wagner Natural Area, it is in fact key to understanding what makes it so unique. Wagner being classified as a fen reinforces what we already know that it is a uniquely biodiverse place that provides key habitat to countless flora and fauna.

Support Us!

Police-car moth
(*Gnophaela vermiculata*)
Photo courtesy of:
Nathan Hempler

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The Wagner Natural Area Society welcomes new supporters, volunteers, and all people interested in natural history and the preservation of the ecological integrity of this delightful natural area.

VOLUNTEERS / MEMBERS

People of all talents and interests are desired and welcomed to become more closely involved with the Natural Area and the Society.
Email: info@wagnerfen.ca

DONATIONS

All donations help maintain the integrity of the Natural Area and its surroundings, provide educational material, enhance visitor experiences, and support ongoing research studies and surveys.

Visit our website for donation/member form.

Pale yellow iris Weed Pull with the NCC

By *Nathan Hempler*

On July 14th, a weed pull organized by the Nature Conservancy of Canada (NCC) was carried out at Wagner Natural Area (WNA). A group of nine gathered in the WNA parking lot at 9 a.m. with the goal of removing pale yellow iris (*Iris pseudacorus*) from the natural area. This group consisted of three NCC employees, two citizen volunteers, two board members of the Wagner Natural Area Society, and both WNA summer students.

To provide a bit of background information, pale yellow iris is a perennial aquatic plant that is one of the province's most strictly regulated species. It is both designated as a prohibited noxious weed by the Alberta *Weed Control Act* and a prohibited species under the *Fisheries (Alberta) Act*. These designations demand that the weed be eradicated by the landowner. The plant is characterized by long sword-shaped leaves with raised midribs in a fan-like arrangement and by showy, yellow flowers. The plants we removed had not yet flowered, so we relied on the leaf morphology to identify them, taking care not to confuse them with the surrounding cattails. Collectively we dug, pulled, and bagged ~115 specimens around Morgan Creek on the natural area's East side. We had already been working towards this project of pale yellow iris removal since May so we were very pleased to see it go so smoothly.

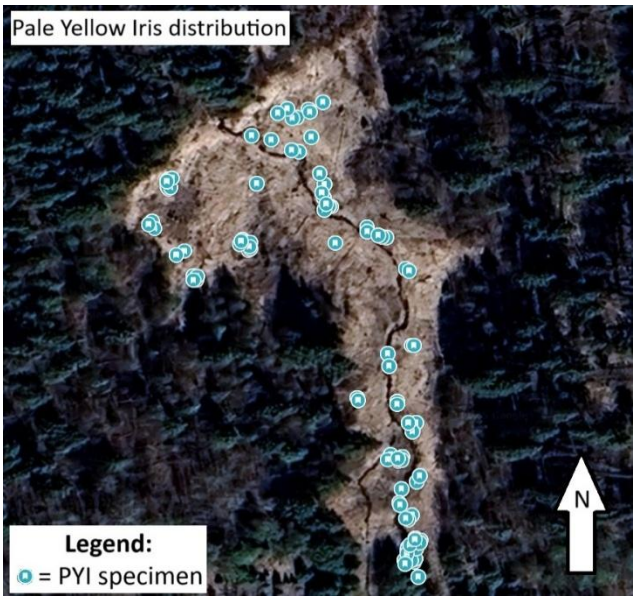
Removed pale yellow iris specimens

Photo courtesy of: Chris Saunders

We had previously performed two full cuts of the invasive reed canary grass (*Phalaris arundinaceae*) around Morgan Creek, one near the end of May and the other in mid-June. This methodology came on the recommendation of Hanna Schoenberg,

resource manager at Elk Island National Park, whose research determined that cutting the invasive reed canary grass at these intervals could prevent it from going to seed. By doing this not only did we stop the reed canary grass seed dispersal, but we also made the pale yellow iris population much more visible. If the reed canary grass had been left untouched the pale yellow iris would have been hidden by the dense, over two-metre-high monoculture and been far more difficult to see on the day of the weed pull.

In addition to cutting the reed canary grass we also flagged the general areas of each pale yellow iris cluster using orange flags attached to tall bamboo stakes. These flags made it clear where people would find plants to remove. Also, to the best of our abilities we added each specimen to a digital distribution map (included to the upper right) which was shared with participants. This allowed people to see a bird's eye view of where exactly the pale yellow iris was. Thanks to the clear sightlines, flags, and the map, we were able to make efficient work of the pale yellow iris, wrapping the removal up in little more than an hour. We then pivoted our efforts toward working on the common tansy in the area for the remainder of the weed pull. This is absolutely a success story, but the sheer number of pale yellow iris we removed also raises the question: *Where did they all come from?*



Morgan Creek pale yellow iris distribution

Photo courtesy of: Nathan Hempler

The pale yellow iris in WNA has its origins off-site, flowing downstream into the natural area from an abandoned private pond located on a bordering plot of land to the south. In the past, before pale yellow iris was regulated, it was planted ornamentally along this pond's edge by the landowner. Unfortunately, the buoyant seeds of the plants then went on to flow downstream into WNA via Morgan Creek, where a substantial infestation was subsequently

established. Floating seeds flowing down the creek into WNA is the source of our persistent problem. Pale yellow iris seeds make their way onto the top of the main channel's banks and the grass whenever the creek water levels are high. They also float up certain flooded tributaries when the main channel is backed up downstream, explaining the outer distribution of specimens. Even though the land from which pale yellow iris originated has since been sold and repurposed as environmental reserve, the invasive aquatic plant persists at the pond and adjacent Morgan Creek.

The history of pale yellow iris in WNA highlights the long-lasting effects and consequences of introducing non-native species to Alberta's wilderness. It takes only a single introduction to cause a long-lasting conservation issue.

To end on a high note, we would once again like to thank the Nature Conservancy of Canada and the dedicated citizen volunteers who joined us and helped us make such quick work of the pale yellow iris. Your efforts are truly appreciated.

Weed pull crew
Missing: Eagle Willier and Chris Saunders
Photo courtesy of: Chris Saunders

The Plant that Haunts WNA

By *Nathan Hempler*

The many species of orchid present in Wagner tend to garner the most attention of all the natural area's plants. It's not hard to see why the intricate and colourful flowers of these species make them the area's standout features. But there is another plant in Wagner Natural Area (WNA) that is equally, if not more intriguing, for completely different reasons. This spectral and elusive species is unlike anything else you will see in the natural area. Found tucked in the shaded, old-growth forests of WNA is the plant colloquially known as "Ghost pipe."

For my money, ghost pipe (*Monotropa uniflora*) is one of WNA's most fascinating native plant species. It is unlike anything else that you can see while exploring the natural area.

Ghost pipe (*Monotropa uniflora*)

Photo courtesy of: Nathan Hempler

The first feature that you are likely to notice when observing ghost pipe which differentiates it from most every other plant is its striking white coloration. This seemingly unnatural colour (or lack thereof) is because ghost pipe interestingly *does not* produce chlorophyll. As you may recall from elementary school science class, chlorophyll is the green pigment that allows plants to photosynthesize while also producing their green colour. So, with no chlorophyll in its tissue, ghost pipe is simply white. Another notable physical characteristic of ghost pipe is the singular, nodding flower at the end of

each stem, which is ultimately what gives the plants their pipe-like appearance. This feature is described in its species name "*uniflora*" a Latin term meaning one-flowered.

Now you know what ghost pipe looks like, but after learning about its lack of chlorophyll the inquisitive among you may have begun to wonder, *"If ghost pipe doesn't photosynthesize how does it obtain energy?"* This question leads us nicely to the most interesting part of ghost pipe's ecology.

Ghost pipe is a parasitic plant, more specifically a mycoheterotroph. This term means that it obtains its energy through a parasitic relationship with a fungus. Ghost pipe is only hosted by fungi belonging to the family *Russulaceae*. The fungi of this family have a symbiotic relationship of their own called "mycorrhiza" with the surrounding trees and shrubs. In this mutualistic relationship the mycorrhizal fungi, through their vegetative filaments, called hyphae, provide essential nutrients to the trees and receive sugars produced by photosynthesis in return. When ghost pipe parasitizes a fungus, these sugars are what it is stealing. So, to simplify, trees provide the fungi with energy in the form of sugars, which are then parasitically siphoned off by the ghost pipe.

Now you know the facts about one of WNA's most intriguing species. Ghost pipe serves as a small reminder that nature is both stranger and more interconnected than we may think. So, I will leave it to you to decide if this odd plant is as worthy of super-stardom as our beautiful orchids. And next time you find yourself in an old-growth forest scattered with mushrooms keep your eye to the ground. You might be able to spot a ghost.

Toad, Moth, and Bat Night

By *Dave Ealey with contributions from Nathan Hempler and Zan Hanrahan*

As my contribution to the account of a Toad-Moth-Bat (TMB) field tour, organized by the Alberta Amphibian and Reptile Conservancy along Wagner's Marl Pond Trail held on the evening of Saturday July 12th, I agreed to cover the general background of the annual event and do an in-depth focus on the Moth component (well, there wasn't a bird component, so I had to pick the next best thing!). Our summer students each chose to address the Toad (Nathan) and Bat (Zen) elements as other parts of this newsletter article. It is my hope that in future cooperative events that we can get other contributors to include their observations and commentary.

When I was invited as a representative of Wagner Natural Area Society to attend the March 4, 2025, meeting of the Alberta Amphibian and Reptile Conservancy (AARC) to plan the TMB-Night, I was pleased to see how organized the AARC and their partner, the Alberta Lepidopterist Guild (ALG), were. These two groups have undertaken joint field nights at Wagner Natural Area for several years, because of the diversity of the amphibian and moth communities protected there.

Shortly after the planning meeting, it was confirmed that we would be joined by the Alberta Community Bat Program of the Wildlife Conservation Society (WCS) Canada. I was thrilled to learn of the Bat Group involvement as Wagner Society has independently hosted them a few times in the past decade and many regular Wagner visitors have remarked at how much they enjoyed those Bat Nights.

For safety and in support of the organizers, the Wagner Natural Area Society (WNAS) supplied me, our two summer students and Executive Director Tristan Folinsbee to assist with orientation of the visitors to the natural area and to inform them about the natural environment and WNAS programs, including our Rewilding initiative for our hayfields.

I want to thank Alyssa Metro (AARC), Cheryl Tebby (AARC), Corianne Brons (ALG) and Cory Olson (Bat Group) for organizing and leading the field tour and for choosing Wagner Natural Area as the site. There were other experts/specialists who participated and shared their expertise for about 30 attendees. Many thanks to all involved!

The field tour was run in two shifts and included a slow walk around the Marl Pond Trail, focusing on detecting and examining the wood frogs and boreal toads. Handling of the amphibians was restricted to the leaders who were able to describe features of the animals and their behaviour. I leave further discussion of the amphibians to Nathan, except for one observation that triggered some further research on my part: Toad Flies! (See the white spots extending from lower left up to the middle of ventral side of the boreal toad displayed in the photo below.)

Ventral side of boreal toad displaying toad flies
Photo courtesy of: Dave Ealey

A week after the TMB-Night, I had an opportunity to discuss this affliction with Dr. Margo Pybus, a provincial wildlife disease specialist, who provided me with some information about this parasite and reference tips.

Toad flies are examples of "myiasis" a parasitic infestation of living animals by fly larvae (maggots). (Moose represent another wildlife species with similar infestations by their own exclusive fly.) The first record of myiasis in boreal and Canadian toads was reported by Eaton et al. (2008), which they attributed to the fly *Lucilia silvarum*.

Further literature on this topic has concluded that the species involved in infesting toads and frogs in Canada is, in fact, *L. bufonivora* (Whitworth et al. 2020). These researchers provide information that suggests that establishing the correct identification of the causative species provides some clarity on which fly species takes a parasitic approach versus a saprophytic approach (latter means laying eggs on dead animal tissue). For parasitologists and entomologists, this type of information is exciting as it enables them to better understand how certain species with distributions around the globe behave in one region versus another. For those of us who manage the Wagner Natural Area, documentation of the biodiversity and ecological processes protected on our site provides further validation for why it is important to maintain that protection.

[It is my understanding that a formal publication of the recent observation of these toad flies at Wagner Natural Area will be forthcoming.]

Now, on to my main focus of TMB-Night, the friendly, fluttery moths and other bugs that we were able to observe by attracting them to well-lit sheets in different habitat types. As anyone knows who has waited outside on a dark summer night close to a streetlamp or has tried to get into their house after the sun has gone down without letting the bugs in will know, many insects respond to and approach lighted areas. This may be due to confusion with celestial navigation, instinct to find gaps in vegetation or to escape predators, tendency to orient themselves relative to the sky, or confusion caused by blinding from the glare of lights. This technique to attract moths for study has been commonly used for sampling biodiversity in a non-destructive manner.

Participants looking at a moth sheet
Photo courtesy of: Dave Ealey

Various moths and insects on a moth sheet
Photo courtesy of: Dave Ealey

The accompanying pictures show some of the variety of species that we can document for comparing insects in different habitats and at different times over the summer.

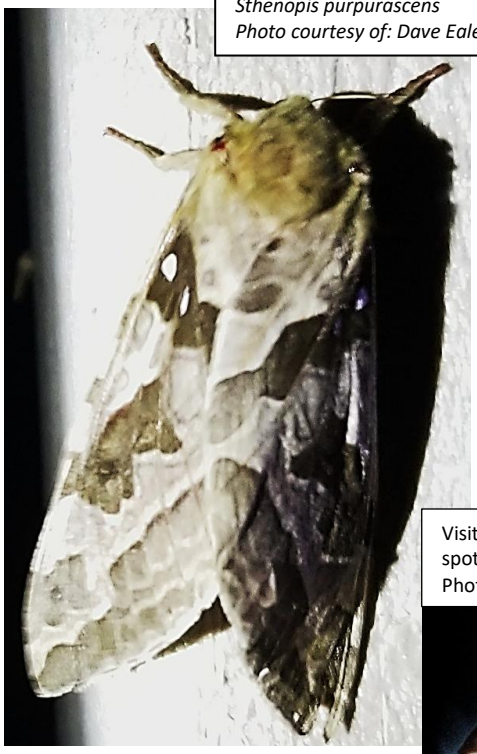
Some moth surveys conducted at WNA more than a decade ago by summer students may be useful for comparison with recent surveys and citizen science initiatives. That will be for another day!

What follows are a few of the moths seen on July 12th that were notable for their size, pattern, or behaviour.

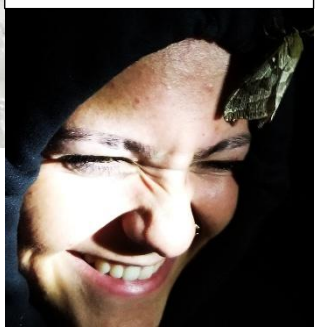
Four-spotted ghost-moth (*Sthenopis purpurascens*) [iNaturalist suggestion]

Moths in this genus have the habit of dancing in the air at sunset and perform very peculiar gyrations over the spot where oviposition is to take place (Holland 1968, Winn 1909). According to one of the moth specialists from ALG, whose name I did not get, this behaviour has been characterized as a "lek" similar to what some grouse do, i.e., where the males call and dance in large groups, and the females select the males for mating. The larvae of similar moths feed on roots of alder and enter the stems (Holland 1968). This moth (pictured to the right) was one of the largest seen coming into lights.

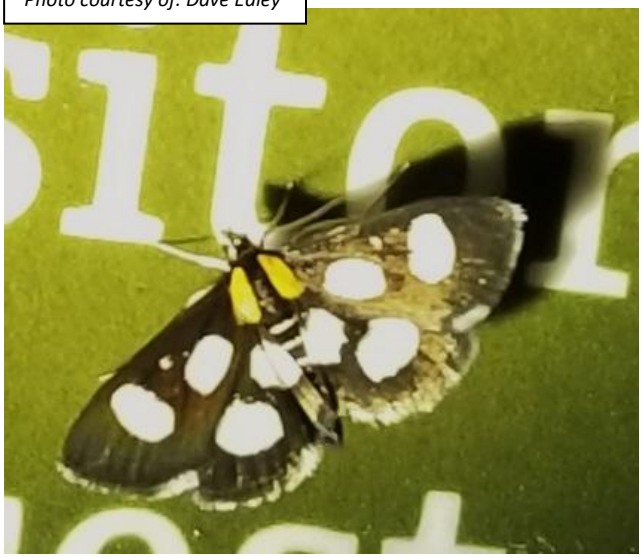
Sthenopis purpurascens
Photo courtesy of: Dave Ealey



Visitor displaying a facial four-spotted ghost-moth
Photo courtesy of: Dave Ealey



Anania funebris
Photo courtesy of: Dave Ealey



White-spotted sable (*Anania funebris*)

Pictured to the left is the eye popping, white-spotted sable—this is actually a day-flying moth of the family Crambidae and must have been up past its bedtime to get caught at our lights; larvae feed on goldenrod leaves (Holland 1968).

Police-car moth (*Gnophaela vermiculata*)

To the right is another example of a day-flying moth (Picture taken July 14th on the Marl Pond Trail). See reference to its larvae, which feed extensively on common lungwort, in the June 2025 issue of **Friends of the Fen.**

Gnophaela vermiculata.
Photo courtesy of: Dave Ealey

Xanthotype sp.
Photo courtesy of: Dave Ealey

Geometrid species – *Xanthotype sp*.

This bright yellow moth with a few spots is a species of Geometrid. The larvae of geometrids are referred to as inchworms or loopers because of the way they move, apparently measuring the vegetation they are crawling along. The adults seem to hold their wings like butterflies, and many are colourful, which makes them stand out amongst mostly drabber moths.

Modest furcula moth (*Furcula modesta*)

The striking patterns of the modest furcula moth don't stand out when the moth alights on patchy bark of trees. Its larvae feed upon willow and poplar leaves. May have two generations a year (BugGuide 2025).

Furcula modesta
Photo courtesy of: Dave Ealey

Poplar carpenter-worm moth (*Cossus centerensis*) [iNaturalist suggestion]

The larvae of this species are common woodborers on trembling aspen, as well as balsam poplar. Birds, notably woodpeckers serve as particularly effective biocontrol agents to these larval insects. Parasitic wasps are also among the natural controls (Natural Resources Canada 2025).

Cossus centerensis
Photo courtesy of: Dave Ealey

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The following section of this article was written by Nathan Hempler

The two amphibian species seen during the count were boreal toads (*Anaxyrus boreas boreas*) and wood frogs (*Lithobates sylvaticus*) with the boreal toads being the more abundant of the two. On the night of the toad walk we were very fortunate to be joined by members of the AARC who both counted and safely handled these amphibians. This safe handling allowed attendees to get up close looks at both species.

Broadly, we can differentiate between frogs and toads using a few key characteristics. Frogs have smooth, moist skin and are generally found in or very near to a water source. Toads on the other hand have characteristically warty complexions and more stout bodies. They are also more likely to occur on land farther from a water source. Their eggs can even be easily told apart as frog eggs are laid in clusters whereas toads lay their eggs in extended "chains."

Boreal toad being safely held around the hind legs
Photo courtesy of: Nathan Hempler

Boreal toad (*Anaxyrus boreas boreas*)

Boreal toads, with their wart-covered bodies, are your textbook examples of a toad. They can be identified by the pronounced, oval-shaped parotid glands behind their eyes (pictured to the right). Their warts are generally brown/reddish, and some exhibit a white dorsal stripe running down their spine (Edmonton Area Land Trust 2025).

Anaxyrus boreas boreas
Note the distinct parotid gland behind the eye
Photo courtesy of: Adonia Ghi

An interesting thing that I learned from the AARC while they were handling the toads was a technique that they use to sex them. This method involved lightly grabbing a toad's sides behind the forelimbs to simulate amplexus. Amplexus is the way that toads mate wherein the male clasps around the female's back. When the toad being grabbed is male, he will respond with a short, displeased squeak to say, "*let me go!*" but if the toad is female, it stays silent. However, it is very important to be diligent when using this technique or when handling any amphibian capable of cutaneous respiration because chemicals present on the skin of your hands (e.g., bug spray, sunscreen, etc.) can easily enter their body when you touch them. This can have any number of varying negative effects upon the animal depending on what the compound is. This is why the handling of amphibians is advised against and is best left to specialists like the good folks at the AARC.

Lithobates sylvaticus
Photo courtesy of: Dave Ealey

Wood frog (*Lithobates sylvaticus*)

The wood frog (pictured to the left) is much slighter than the boreal toad (above). Adult wood frogs are identified by characteristic black "masks," facial markings which run underneath and past their eyes (iNaturalist 2025). Their bodies are typically brown, tan, or reddish in colour—variably light or dark.

The last section of this article was written by Zen Hanrahan.

Right before the sun sets, the bats come out. Swooping overhead, they use ultrasonic clicks (ranging from 14,000-100,000 Hz) to "see." They listen for the bounce back of the click to create acoustic images in their minds, this process is called echolocation. The specific frequency of their clicks is how we identified them during the toad-moth-bat walk. Using some small red blocks that plug into smart devices, the ultrasonic sensors detect the clicks expelled by the bats and reference them with the catalogue of bat clicks it has. The bat with the best match is selected and presented to the observer. There are a couple issues with it though. In discussion with Cory Olson, Alberta Bat Program Coordinator, he mentioned that there are several bats with similar click patterns and frequencies that can often trick the sensor. So, it requires some discretion to identify the specific bat. Usually, the sensor will narrow it down to three or four bat species, then the observer (using some bat knowledge) can assess the habitat and overall geography to make the best identification.

There are nine species of bat in Alberta, six of which occur in the Edmonton region. All nine species are migratory to an extent, but only three actually leave the province–the hoary bat (*Lasiurus cinereus*), the Eastern red bat, and the silver-haired bat (Alberta Community Bat Program 2025).

Five of the nine species are designated as endangered. The infamous white-nose syndrome severely affects the little brown and big brown bats, causing significant declines in both populations. It is assumed that the fungus associated with the syndrome is not directly causing the mortality, but in fact the necessary grooming to remove the fungus during their hibernation period causes unnecessary waking and the draining of their fat stores, causing them to perish. Cory mentioned that there are efforts to develop a probiotic that can combat the fungus, hopefully saving these flying furballs.

Check out this website for more information on the project: https://wcsbats.ca/probiotic .

Believe it or not, windmills are also a significant cause of bat mortality. There are two ways windmills can kill a bat. Through collision with the fast-moving blades, or through barotrauma caused by the low-pressure zone that they create. Researchers are still debating which happens more regularly but are in consensus that both causes are significant.

While out doing some research, a friend of Cory's came across a Hoary Bat with a broken wing. A bat incapable of flying is soon to pass, so they took it in and eventually it ended up in the possession of Cory as an educational animal. It was named the Great Batsby and now lives a comfortable life getting all the grubs he'd like. The Great Batsby made an appearance during our toad-moth-bat walk and was fed a plethora of bugs that were attracted to the lights and. It was truly a buffet for Batsby, and we got to observe how he ate.

"*Batsby*" the hoary bat (*Lasiurus cinereus*)
Photo courtesy of: Adonia Ghi

Bats use just their mouths to maneuver their food and clip off distasteful portions, like scrawny legs or wings, then eat up the juicy midportions. Hoary bats are the largest species in Canada weighing in at 35 grams (Alberta Community Bat Program 2025). They regularly eat their body weight or more in a single night. Most of their diet is moths, with mosquitoes, flies, and a variety of other insects making up a smaller portion (Alberta Community Bat Program 2025).

Despite their significant impact on pest insect populations, bats are notoriously understudied. Many of their hibernation sites are unknown, compounding how to deal with white-nose syndrome—if they can't be found, bats can't be treated (i.e., once a treatment is developed!). In urban settings, pesticides and the removal of roosting sites have led to declines of bats. Avoiding pesticide use and the use of bat boxes are excellent ways to promote little brown and big brown bats in your area. The other seven species don't seem too keen on bat boxes, reinforcing the importance of mitigating pesticide use and maintaining natural areas, both urban and rural.

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