

# NATURE ALBERTA

MAGAZINE

WINTER 2025  
VOLUME 54 | NUMBER 4



A COMMUNITY  
CONNECTED BY A  
LOVE OF NATURE



## Badgers

Unsung Heroes of  
the Prairie Grasslands

Boreal Songbirds  
and Energy  
Footprints

The Predator-Prey  
Dynamic of  
Wolves and Bison

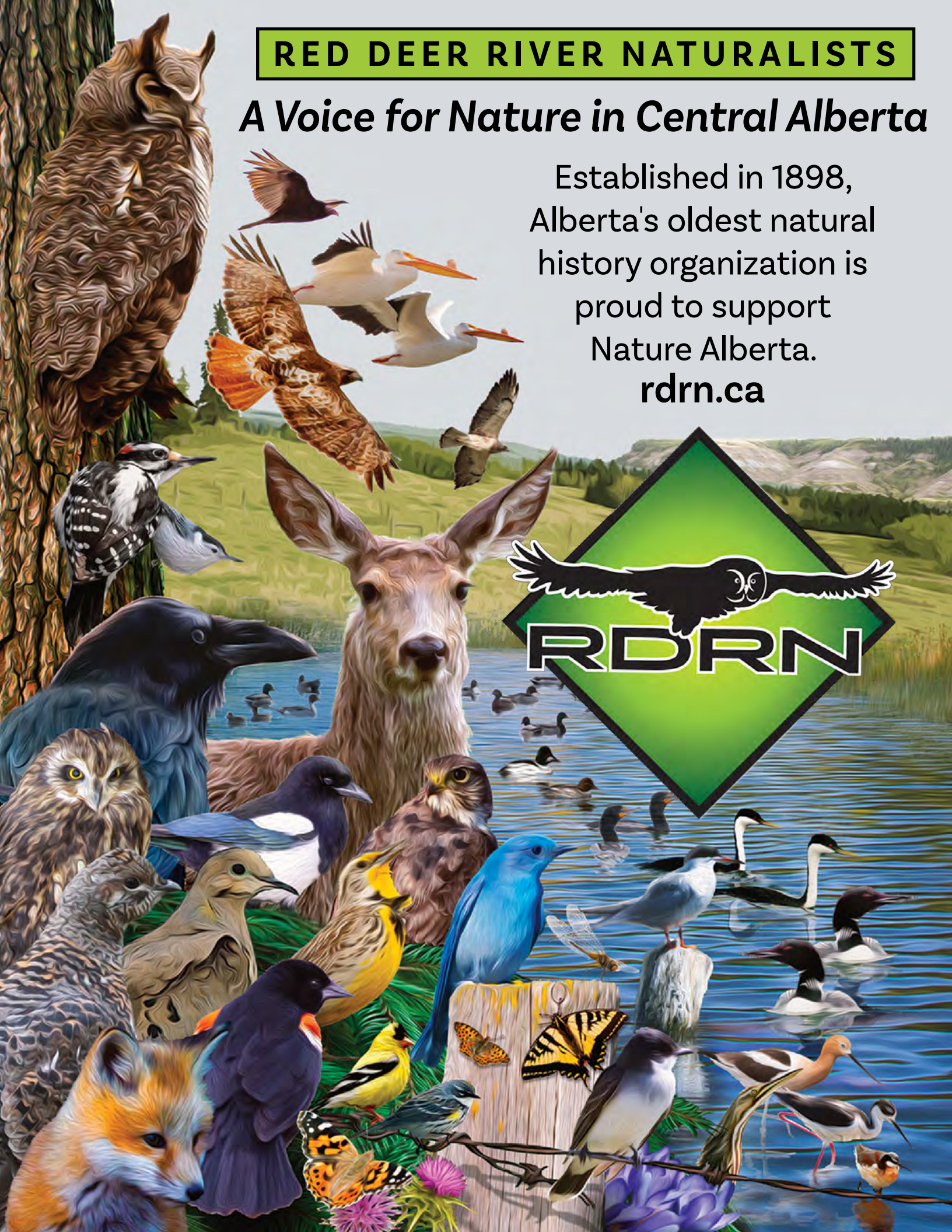
Rare Bird  
Sightings



# RED DEER RIVER NATURALISTS

## *A Voice for Nature in Central Alberta*

Established in 1898,  
Alberta's oldest natural  
history organization is  
proud to support  
Nature Alberta.  
[rdrn.ca](http://rdrn.ca)





# CONTENTS

WINTER 2025

- 2** President's Message
- 3** Nature Alberta News
- 4** Wolverines: The Latest Victims of Unsound Policy
- 7** Owl See You This Winter
- 10** Badgers with Benefits
- 15** Alberta's Nature Strategy
- 18** The Ancient Ritual: Wolves and Bison in Wood Buffalo National Park
- 23** Your Shot
- 24** Voices from the Forest: Boreal Songbirds and the Impact of Energy Footprints
- 29** Book Review: *Travels Up the Creek: A Biologist's Search for a Paddle*
- 30** Rare eBird Highlights: Summer and Fall 2024
- 32** Sylvan Silhouettes
- 33** Meet a Member Club
- 34** Nature Kids



# NATURE ALBERTA MAGAZINE

VOLUME 54 | NUMBER 4 | WINTER 2025  
ISSN 1713-8639

**Publisher** Nature Alberta  
**Executive Director** Stephanie Weizenbach  
**Editor-in-Chief** Erin McCloskey  
**Managing Editor** Jason Switner  
**Creative** Susan May, intrinsic design

*Nature Alberta Magazine* is published four times per year by:

Nature Alberta  
11759 Groat Road  
Edmonton, AB T5M 3K6  
(780) 427-8124  
info@naturealberta.ca

**Content** editor@naturealberta.ca

**Subscriptions** circulation@naturealberta.ca

*Nature Alberta Magazine* (electronic) is made available free of charge at [naturealberta.ca](http://naturealberta.ca). Print copies of *Nature Alberta Magazine* are available by annual subscription for \$32 (Canadian funds + GST), which covers four issues per year, plus postage and handling, within Canada. Subscriptions can be purchased at [naturealberta.ca/store](http://naturealberta.ca/store).

Publications Mail Agreement No. 40015475

Opinions expressed by the authors of articles included in this publication do not necessarily reflect those of Nature Alberta or its affiliates. Nature Alberta reserves the right to edit, reject, or withdraw any articles submitted. This publication is copyrighted and no part may be reproduced in any form, in all or in part, without the written consent of Nature Alberta.

©Nature Alberta 2025

## About Nature Alberta

Alberta is home to incredible natural spaces comprised of beautiful and varied landscapes, and rich biodiversity reflected in our abundant and diverse flora and fauna. Across the province, natural history clubs and their members are engaging Albertans in the conservation and appreciation of this natural heritage. Nature Alberta represents a network of these natural history organizations in Alberta.

Nature Alberta acknowledges that the land we know as Alberta resides within Treaties 6, 7, and 8, as well as portions of Treaties 4 and 10, and is the ancestral and traditional territory of First Nations, Inuit, and Métis Peoples. We have a responsibility to care for these lands and waters, and to honour the history and culture of those who have been here for generations.



NATURE  
ALBERTA

A COMMUNITY  
CONNECTED BY A  
LOVE OF NATURE

NATUREALBERTA.CA

## PRESIDENT'S MESSAGE

As we transition into another exciting season, I am honoured to step into the role of President of Nature Alberta. I would like to extend my sincere gratitude to our outgoing President, Kim MacKenzie, for her commitment to the organization over the past several years. Nature Alberta has long been a cornerstone of nature appreciation, ecological education, environmental stewardship, and conservation advocacy in our province. I look forward to both the challenges and the opportunities that lie ahead.

On that note, I would like to take a moment to reflect on our ongoing commitment to conservation and advocacy for Alberta's wildlife. I am proud of the strides we made towards raising awareness about the challenges facing Alberta's grizzly bears.

These iconic creatures are a listed "Threatened" species, and recovery efforts have been decades in the making. When the Wildlife Regulation Act was changed by ministerial order, effectively reinstating a grizzly bear hunt, Nature Alberta strongly opposed. It is our



"Morning Mist (Grizzly Bear)" by Cheryl Bozarth Soll

firm position that policy affecting wildlife populations must rely on sound scientific data, expert advice, and transparent consultation.

Thank you to everyone who wrote letters or expressed your concerns about Alberta's grizzlies. Your voices matter. But we still have a long way to go. Please stay up to date and engaged on this issue by visiting [naturealberta.ca/grizzly-hunt-action](http://naturealberta.ca/grizzly-hunt-action).

On page 4, Richard Schneider looks at the recent change to Alberta's trapping regulations, which now allow the unrestricted harvest of at-risk wolverines and other furbearer species. Another unsustainable policy change with respect to wildlife conservation, part of a string of recent policy changes that don't take into account the cumulative pressures wildlife face from human activity, habitat loss, and the impacts of climate change. We need to do better to support and sustain biodiversity in our province.

I look forward to moving into the future together with you, united in our mission to protect and promote Alberta's natural heritage.

CHERYL BOZARTH SOLL

## NATURE ALBERTA BOARD OF DIRECTORS

### Executive Committee

**President:** Cheryl Bozarth Soll  
**Past President:** Kim MacKenzie  
**Treasurer:** Lenka Stuchlik  
**Secretary:** Anne Wilson

### Patron

John Acorn

### Regional Representatives

**South:** Paul Thibault  
**Calgary:** Greg Appleyard  
**Central:** Claudia Lipski  
**Edmonton:** Shane Hammell  
**North:** Heather Stocking  
**Provincial:** Lu Carbyn

### Directors At Large

Daniela Mitrache  
Joshua Miller



# Nature Alberta News

## Welcome Our New Editor-in-Chief

Dr. Richard Schneider has retired as *Nature Alberta Magazine's* Editor-in-Chief, having generously volunteered his time and expertise in the role for the past five years. His contributions were critical in creating the high-quality *Nature Alberta Magazine* we all enjoy reading today. We want to thank him for his selfless contributions, and we look forward to publishing his future article submissions.

We are excited to welcome our new Editor-in-Chief, Erin McCloskey, who has worked closely with Richard on articles since 2022 and is keen to carry on his legacy of bringing together engaging, top-quality content to fill the magazine.

Erin has three decades of publishing experience, having worked for magazine and book publishers in Canada, the United States, Italy, and New Zealand. She has managed a magazine and written numerous articles for publications including *Geographical* and *New Trail*. Erin holds a degree in Environmental Conservation Sciences with a major in conservation biology and management from the University of Alberta. She has worked with nature organizations in Alberta and abroad on wildlife and wilderness campaigns, on endangered species expeditions, and as a guide and nature interpreter. Erin's interest and experience in both natural history and



publishing are a perfect fit in her new role as Editor-in-Chief of *Nature Alberta Magazine*.



## Save the Date

The 2025 Snow Goose Festival will take place in Tofield the weekend of April 26-27. This migration event is always a wonder to witness. Watch for all the exciting details at [naturealberta.ca/snow-goose-festival](https://naturealberta.ca/snow-goose-festival).

Experience the festival in a whole new way by participating as a Nature Alberta volunteer. Reach out to Nick at [naturekids@naturealberta.ca](mailto:naturekids@naturealberta.ca) for opportunities to get involved.



Nature Alberta had an eventful and impactful year. Read all about the past year's accomplishments in our *2023-2024 Annual Report* at [naturealberta.ca/annual-reports](https://naturealberta.ca/annual-reports).



**Correction:** The recovery plan for pygmy whitefish was posted in late 2021 and was not still awaiting ministerial approval as was stated in the article "A Small Fish with a Big Pull: The Curious Case of the Pygmy Whitefish," published in the Fall 2024 issue of *Nature Alberta Magazine*.



# Wolverines: The Latest Victims of Unsound Policy

BY RICHARD SCHNEIDER

**M**inister of Alberta Forestry and Parks Todd Loewen recently announced that trapping limits for wolverines, lynx, fishers, and river otters would be removed for the upcoming season. This decision is of serious conservation concern, given that unregulated trapping decimated Alberta's furbearer populations in the past.

The concern is greatest for wolverines, which are listed as a species of special concern at the national level.<sup>1</sup> Provincially, its status is "data deficient," meaning there is too little known about the species to give it a formal designation. What we do know is that the wolverine's range in Alberta has contracted from

its natural state, and this contraction appears to be ongoing, particularly in the foothills.<sup>2</sup> Moreover, two recent studies have determined that the rate of wolverine harvest has not been sustainable, even with strong limits in place.<sup>3,4</sup>

The reason wolverines are so sensitive to trapping lies in their biology. During winter, they cannot reliably take down large prey, so they depend mainly on carrion. Carrion is not an abundant food source, so wolverines have evolved to exist at low densities; home ranges are typically hundreds of square kilometres in size. This strategy requires a low rate of reproduction as a method of population control. As a consequence,

wolverines have a limited capacity to compensate for increased rates of mortality from trapping.<sup>5</sup>

Other furbearers have higher reproductive rates and are better able to withstand trapping. However, their capacity to absorb losses can still be exceeded. For example, fishers were extirpated from much of their Alberta range as a result of overtrapping, and only now are populations beginning to re-establish themselves in the southern parts of their natural range.

Given these well-established facts about furbearer biology and management, why would Minister Loewen suddenly decide to remove the trapping limits that had long been in place? In defence of his decision, he said that it was impossible for him to defend the existing virtual ban on trapping these furbearers, given that current population numbers for the animals are not known, especially in the case of wolverines. He went on to say that by lifting the limits, government officials and conservationists would get a better understanding of the overall health status of each species through the data collected by trappers.

It is true that researchers have used trapping records to gain insight into long-term population trends. For example, trapping records have been used to study population cycles in lynx. Trapping records, together with



Wolverine territories are enormous, covering hundreds of square kilometres, so their overall population numbers are much lower than other furbearers.





Wolverines are listed as a species of special concern in Canada because their populations have been in decline and their range has been contracting.

citizen science observations, have also been used to determine the spatial distribution of furbearers. But trapping data cannot provide the actual size of a population, nor its reproductive rate. And this is the information specifically needed to manage harvest rates.

No professional biologist would accept unlimited trapping as a legitimate tool for studying a species of conservation concern. The risk of harm is too great, especially for wolverines, which have low reproductive capacity and low abundance. Better methods are available, including mark-and-recapture techniques and systematic camera trapping. Indeed, these were

the techniques researchers used in the large-scale wolverine studies cited earlier.

While data gaps certainly remain, a flurry of studies conducted over the past few years paint a clear picture of the current status of wolverines.<sup>2-4</sup> This is not a species that can tolerate trapping, even at low levels. A key finding from the Barreto et al study in 2022 was that the density of wolverines within protected areas was three times higher than in other parts of their range, where trapping was permitted.<sup>4</sup> Wolverine populations are also declining because of habitat disturbance, particularly in the foothills.<sup>2</sup> Instead of removing trapping limits,

wolverines should be formally listed as a species at risk and all trapping should be curtailed.

To make sense of the minister's decision, it's important to understand that this is not a one-off incident; it's part of a pattern. Recall that in late 2024, the minister established a posse of sport hunters to "control" grizzly bears, overriding the direction prescribed by the Grizzly Bear Recovery Plan. Before that, it was an increase in cougar hunting quotas and opening new areas for cougar hunting, including inside some provincial parks. There has also been ministerial meddling with fishing limits and quotas for deer, moose, and mountain goats. Meanwhile, recovery efforts for species at risk have languished. And in general, the entire Fish and Wildlife department has been weakened and demoralized, as described by Lorne Fitch in the Fall 2024 issue of this magazine.

I have worked as a conservation biologist in Alberta for 32 years, and I can unequivocally state that these actions are unprecedented. Past governments have sometimes failed to take adequate measures to protect the environment, but there has never been a concerted attempt to systematically dismantle existing conservation measures, as we are witnessing now.

It just doesn't make sense. Existing wildlife conservation measures were not put in place by an opposition





Recent studies have shown that wolverine mortality from trapping is not sustainable, mainly because of their low reproductive capacity.

party pursuing an environmentalist agenda. They were enacted by previous Conservative governments to address public demands for meaningful stewardship of public lands and wildlife. Albertans want and expect the government to achieve a balance between economic and environmental objectives. This has not changed—public demand for effective environmental protection remains strong.

What we are witnessing is a disconnect in governance. The current government is focused on serving a small subset of Albertans rather than the broad public interest, more so than any previous government. The public has also become disconnected. The erosion of environmental protection has

advanced piecemeal, flying under the radar of most Albertans. The current political spotlight is dominated by social and economic issues and, when it comes to the environment, the main focus is climate change.

It is unlikely that matters will improve until the public becomes aware of what has been happening and holds the government to account. Such active engagement has happened before, with respect to protecting parks and preventing the expansion of coal mining. It needs to happen again in response to the ongoing dismantling of wildlife protection. Please spread the word among your circles, and make your voice heard by writing to Minister Loewen ([fp.minister@gov.ab.ca](mailto:fp.minister@gov.ab.ca)) and Premier

Danielle Smith ([premier@gov.ab.ca](mailto:premier@gov.ab.ca)), letting them know your concerns. We need wildlife management that is in the broad public interest, science-based, and delivered by experienced and properly resourced wildlife professionals. ■

### References

1. Committee on the Status of Endangered Wildlife in Canada (2014). COSEWIC Assessment and Status Report on the Wolverine *Gulo gulo* in Canada. Environment Canada, Ottawa, ON.
2. Chow-Fraser, G. et al. (2022). Landscape change shifts competitive dynamics between declining at-risk wolverines and range-expanding coyotes, compelling a new conservation focus. *Biological Conservation*, 266:109435.
3. Mowat, G. et al. (2020). The sustainability of wolverine trapping mortality in southern Canada. *The Journal of Wildlife Management*, 84:213-226.
4. Barrueto, M. et al. (2022). Protection status, human disturbance, snow cover and trapping drive density of a declining wolverine population in the Canadian Rocky Mountains. *Scientific Reports*, 12:17412.
5. Persson, J. et al. (2006). Reproductive characteristics of female wolverines (*Gulo gulo*) in Scandinavia. *Journal of Mammalogy*, 87:75-79.

Richard Schneider is a conservation biologist who has worked on species at risk and land-use planning in Alberta for the past 32 years.



# Owl See You This Winter

BY NICK CARTER



Snowy owls have brilliant yellow eyes with impeccable vision.

**N**ear the end of autumn, when the open fields of Alberta begin to resemble the stark polar tundra, the snowy owl returns to the province. An easily recognizable, iconic species, this regal bird of the north is a hit among both dedicated birders and casual nature appreciators. However, spotting a snowy owl is one thing; making sure it has a suitable winter home to come back to each year is something else.

The snowy owl is a big, formidable species. It's North America's largest owl by weight — males weigh an average of 1,600 g and females average about 2,100 g. The great grey owl may appear bigger, however a good deal of its external size is made up of its dense coat of feathers (it weighs an average 1,100 g).<sup>1</sup> Immature snowy owls are white with heavy dark-brown barring across much of the body except the face and underwings. This barring is more extensive on the female and tends to fade slightly as the owl reaches maturity.

The adult male loses much of the barring, rendering them almost entirely white. This makes telling immature males from adult females difficult, if not impossible at a distance, but at least the snowy owl is hard to mistake for any other species. Regardless of age or sex, all fledged snowy owls have striking yellow eyes that stand out brilliantly from their white faces. The hooked bill and talons are black, often just barely visible through the bird's dense plumage.

The snowy owl has a circumpolar distribution and spends the summer months on the Arctic tundra of North America and Eurasia. In this treeless habitat, they make their nests on the ground in little more than a small, scraped-out hollow lined with feathers and grass or bits of moss. The female lays from three to 11 eggs, and both the male and female provide for the young. "Snowies," as they are affectionately dubbed by birders, are a monogamous species that typically mates





Top: Juvenile and adult female snowy owls are heavily barred across much of the body. RICK PRICE

Above: Adult males have much lighter barring and can be almost entirely white. RICK PRICE

for life. After about a month of incubation, the fuzzy greyish-white owlets hatch, and within another month's time they have left the nest for good.<sup>2</sup>

The snowy owl is a medium-distance migrator. In November, North American snowies move south, leaving the Canadian tundra and migrating as far south as the U.S. border. The snowy owl is an irruptive species, appearing in large numbers one year and then essentially absent the next, depending on food availability across its range. On the tundra, it feeds almost exclusively on lemmings, though it may also hunt other small mammals and birds such as waterfowl and ptarmigan. In Alberta, it can show up just about anywhere with suitable habitat and typically

stays until the end of March if there's enough to eat. Their winter diet includes voles, mice, rabbits and hares, and the occasional songbird or duck. During this time, the snowy owl is typically a solitary bird, but occasionally multiple individuals share a wintering area encompassing just a couple square kilometres.<sup>3</sup> Juveniles seem to be especially willing to share space with one another. Many Edmonton-area birders may fondly remember the winter of 2018–2019, when two juvenile snowy owls spent at least part of the winter along Ray Gibbon Drive on the western edge of St. Albert. In good years and in the right place, birders can be treated to sightings of multiple snowy owls in a day without too much difficulty.

Fortunately for us, snowy owls are one of the most diurnal owl species, so you don't have to go out in the cold, dark woods at night to find them. Instead, drive open country roads by day and watch for distinctive white shapes, like little snowmen basking in the winter sun. It can take some practice to recognize them at a distance, though, and even experienced owl watchers have been fooled for a moment by the sight of a lump of snow or a white bit of garbage caught in a tree. Snowies also perch on roadside utility poles, fence posts, treetops, or anything else that offers them a good view of the landscape. Sturgeon County north of St. Albert, the prairies east of Calgary, and the rolling farmland west of Grande Prairie are among the more reliable snowy owl viewing areas in the province. While not often seen within busier human settlements, smaller cities and towns may host one or more snowy owls on any given winter. Airports can be a favoured area, as they offer plenty of flat, open space with convenient perches.

When out watching snowy owls, keep in mind the rules of ethical birdwatching. Like other owl species, snowy owls need their space and become stressed when we get too close and spend too long with them, no matter how drowsy and unbothered they might seem. All birds need a time and place to rest, digest, or look for more food. Humans crowding around with binoculars and cameras make birds like this uncomfortable, often interrupting what they were doing and causing them to waste more energy going to look for a quieter place to perch. Birdwatchers would do well to always prioritize the comfort and well-being of the bird over getting a closer look or a cool photo.

The irruptive and nomadic nature of this species, combined with its remote breeding habitat, make snowy

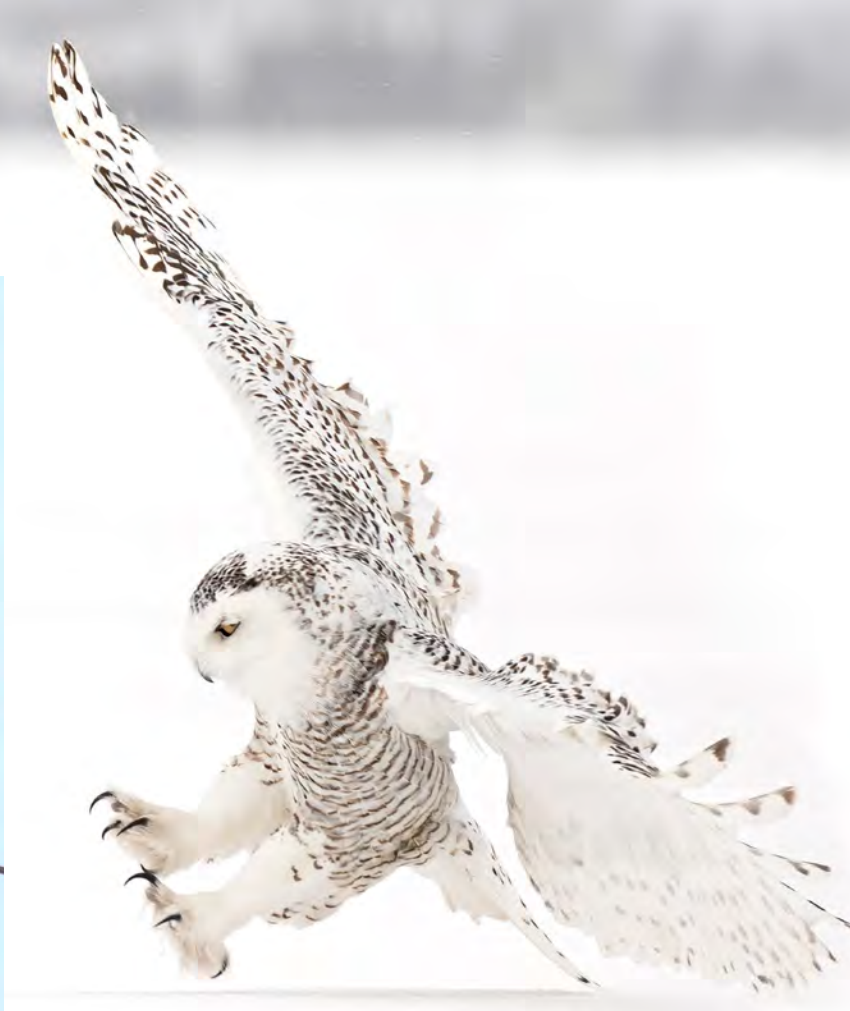




Tall structures in open areas, like power poles, are favoured perches for snowy owls. Unfortunately, power lines also present a threat of death by electrocution. NICK CARTER

owl populations difficult to assess with certainty. While it is listed as “Secure” in Alberta, internationally the snowy owl is regarded as “Vulnerable” and declining rapidly by the International Union for Conservation of Nature (IUCN).<sup>4</sup> While the breeding range of this species is minimally affected by direct human interference, climate change is an ongoing threat to prey and habitat availability in the Arctic. Threats in the wintering range include immediate dangers like collisions with vehicles or electrocution from power lines because of the owl’s habit of perching on utility poles. Additionally, as more of Alberta’s rural land gets converted into suburbs and other human developments, snowy owls will gradually have less room here to spend the winter.

Spotting a snowy owl sure makes toughing out the long, dark, cold months of winter in Alberta a little easier. This beautiful and uplifting species is a real symbol of the north, and hopefully we can make sure that Alberta continues to be a welcoming winter home for this species far into the future. ■



Snowy owls are diurnal hunters and are well adapted for catching smaller prey in open country.

#### References

1. Sibley, David Allen (2024). *The Sibley Field Guide to Birds of Western North America*. Alfred A. Knopf, New York.
2. The Cornell Lab of Ornithology. [https://www.allaboutbirds.org/guide/Snowy\\_Owl](https://www.allaboutbirds.org/guide/Snowy_Owl)
3. Holt, Denver W. and Steven A. Zetterberg (2008). The 2005 to 2006 Snowy Owl Irruption Migration to Western Montana. *Northwestern Naturalist*. 89(3):145-151. doi:10.1898/NWN07-19.1
4. BirdLife International (2021). *Bubo scandiacus*. The IUCN Red List of Threatened Species 2021: e.T22689055A205475036. <https://dx.doi.org/10.2305/IUCN.UK.2021-3.RLTS.T22689055A205475036.en>

Nick Carter is a naturalist and science communicator from Edmonton and is Nature Alberta’s Nature Kids Coordinator. He studied biology at the University of Alberta and has had a lifelong fascination for all things in the natural world.



# Badgers with Benefits

BY NIKKI HEIM

One cool spring morning, while crouching amid a few towered boulders on the edge of an open grassy field, I watched dirt fly and heard ground squirrels squealing. A female badger was on the hunt. She moved back and forth between a ground squirrel-laden field and her burrow on the other side of a gravel township road, which she paused at before each crossing as if checking for traffic. Upon each arrival at her burrow, a pair of smaller striped faces would appear. With two hungry mouths to feed, she was no doubt eager to make a kill. I remained quiet and still because badgers are most sensitive to human disturbance in the spring when rearing their young. With no apparent awareness of my presence, she began to move in my direction. I tucked myself low so as not to alarm her. My whole reason for being here was to observe her movements in her natural state.

I was assisting a graduate student with outfitting badgers with GPS backpacks so he could estimate badger population dynamics and monitor their movements, specifically where their habitat was intersected by roads. Little is known about badger population distribution or abundance across Alberta and the

Prairie provinces, but biologists have identified road mortality as the leading threat to badger survival. Additional threats include continued loss of native prairie; habitat conversion for agriculture and urban development; and removal of badgers and their primary

**“Badgers are elusive, spending most of their lives underground. When above ground, badgers move about relatively quickly and low to the ground, making them difficult to spot.”**



prey, ground squirrels, via poison or shooting. With much of our remaining grassland habitats bisected by roads, badgers are often struck by vehicles when moving across the landscape.

Badgers not only travel across roads but are often found burrowing in friable soils typical of roadsides and cut banks, leaving them increasingly vulnerable to passing traffic. Gaining a better understanding of movement patterns within their home ranges might aid in mitigating the number of badgers being struck by vehicles. Being part of this research afforded me a unique opportunity to observe — and grow fond of — these lesser-known carnivores.

Badgers give birth to an average of one to two kits, which disperse from their mothers by May or June. Juvenile female badgers typically disperse up to 52 km from their birthplace, while males disperse farther, up to 110 km. Similarly, home range sizes for individual badgers vary substantially by sex, ranging from as little as 2 km<sup>2</sup> to up to 300 km<sup>2</sup>, depending upon geographic location and prey availability. Badgers mate between July and August, live up to six years in the wild, and are generally solitary.

The badger continued to advance towards me, each step inciting squirrely alarm bells. Within moments, she was standing just in front of me, sniffing the base of the boulder. I watched her nose lift, presumably picking up my scent. She peered through a break between



the boulders. She had found me! With obvious surprise, she quickly turned and retreated, nearly as hastily as the panicky ground squirrels she'd been hunting moments before. Still crouched on my perch, I was thrilled. This brief and close interaction did not fit with the fierce or aggressive attitude I had been warned of before taking the job.

Badgers are carnivorous members of the weasel family, or *Mustelidae*. Compared with other weasels, badgers are mid-sized: 60 to 90 cm in total body length including a 13- to 16-cm tail, with females averaging 8.2 kg and males 13.6 kg. But they have learned how to bluff and intimidate much larger species, including canids, felids, and bears. They

show off their defensive display when threatened by any species, including humans. While badgers can defend themselves, they prefer to use avoidance strategies. When a threat persists at their burrow entrance, badgers will backfill the entrance with soil, as if closing the door to an unwanted visitor. Of course, they do this as a warning and with a guttural



Badgers have distinct striped facial markings, with brown or blackish “badges” marking their cheeks and a white stripe extending from the nose to the base of the head.  
DRAGOMIR VUJNOVIC



growl that gives the impression they're about to turn and bite. It's not until it is cornered or confronted by a persistent threat that a badger would bite. When asked if badgers are dangerous, I like to suggest refraining from sticking your hand in a burrow should you wish to keep all your fingers. Badgers have very sharp teeth, mainly used for hunting and consuming prey.

Badgers have evolved to dig. Their long, showy claws, more round than sharp, are excellent digging tools that can make quick work of a road cut, open meadow, or pasture, and are highly effective at moving rock and ripping through tree roots. They dig large holes, or burrows, which are an

integral part of any badger's life history. Badgers have flat, oblong bodies, short legs and ears, and loose skin around their necks, allowing them to squeeze into shallow holes and tunnels. Burrows are used for safety, shelter, and resting, for birthing and rearing their young, and for storing food. Badger burrows can have a single entrance or multiple entrances with a series of underground chambers and tunnels, called setts. These extensive networks are used generationally; some are estimated to be over 100 years old.

Badgers are elusive, spending most of their lives underground. When above ground, badgers move about relatively quickly and low to the ground,

making them difficult to spot. When met with a human or a wild competitor, badgers quickly retreat to the nearest underground sanctuary, making them even harder to spot. Because they are rarely observed during the day, badgers are often mistakenly assumed to be nocturnal. People living and working in the Alberta foothills and prairies can observe badgers at all times of day; most people, however, will likely never see one, much less have a conversation about them.

For landowners and operators, large badger holes with large soil mounds are sometimes perceived as hazards to machinery, horses, and cattle. To reduce



Badger burrows provide numerous benefits to grassland ecosystems that often go underappreciated or simply unnoticed — as cryptic as the animal itself. DRAGOMIR VUJNOVIC





Not true hibernators, badgers are active throughout the year. During the coldest months they may go through periods of torpor, a deep resting state characterized by reduced body temperature and metabolic rate that can last for hours or days at a time.

this risk, direct or indirect persecution via shooting or secondary poisoning of their prey is the most common management action. Though badgers pose some known risks, the benefits they may provide are greater and act as a good indicator of range health.

Badgers are generalist predators that hunt everything from bird eggs to reptiles to slightly larger mammals, such as muskrats, but small mammals make up most of their diet. Their preferred prey are rodents, such as ground squirrels and prairie dogs. Badgers are estimated to consume two to three ground squirrels per day and can knock a population of squirrels down by 50% while in the area. A healthy badger can have disproportionate impacts on foraging small mammals. As such, some contend

that badgers are keystone predators in grassland systems. For a landowner, the reduction in ground squirrels could mean fewer ground squirrel holes as well as the retention of rangeland vegetation. For example, a few badgers capable of preying on over 300 ground squirrels in a summer season equates to 1 Animal Unit Measure (AUM) of feed for one cow-calf pair.

While a single badger is an effective hunter on its own, their success has been observed to be enhanced alongside a cooperative coyote. These two grassland predators coexist to improve each other's hunting success, further regulating small mammal populations. Badgers and coyotes hunt differently — badgers dig and coyotes pounce. On the hunt, they take advantage of each other's strategies.

When a ground squirrel retreats from a badger and exits another hole, the coyote waits, ready to pounce. Conversely, a ground squirrel will retreat from a coyote by fleeing into a nearby burrow, where a badger can quickly dig it up. Coyotes and badgers have been observed travelling together, exhibiting behaviour towards each other that suggests a relationship that may be more than simply tolerance, but perhaps even friendship. With or without the company of a coyote, the badger's ability to regulate small mammal numbers is highly beneficial in supporting healthy grassland systems.

Badger excavations and burrow networks can function as a natural disturbance, enhancing soil structure and composition, increasing water infiltration, soil aeration, nutrient cycling,



There are four subspecies of badgers found across North America. The subspecies of American badger found in Alberta and across the Prairie provinces is referred to as the prairie badger (*Taxidea taxus taxus*). They occur in parkland, prairie, and cold desert habitats with availability of preferred prey and silty or loamy soils that are less likely to collapse when tunneled. DRAGOMIR VUJNOVIC

and organic decomposition rates, as well as supporting vascular plant and soil invertebrate diversity. Badgers will move across the landscape, occupying areas for various periods of time. Vacant burrows become habitat for a wide variety of secondary users, such as western rattlesnakes, Great Basin spadefoot toads, and western tiger salamanders.

Recovery strategies for endangered swift fox and burrowing owl also include supporting the presence of badgers.

Researcher Sheri Monk of the organization Snakes on a Plain, in Redcliff, Alberta, recently shared: “I’ve studied snakes for 20 years, and the more time I spend in snake habitat, the more I see the badger’s signature all around and throughout it. Snakes need badgers to secure access to suitable denning opportunities. Many snake hibernacula are in unstable ground, which can collapse. A healthy badger population ensures new potential den entrances are being created. Habitat is dynamic on the prairies, and badgers are the driving force behind that.”

Canada’s prairie grasslands, home to badgers and many obligate grassland species, are listed as one of the world’s most endangered ecosystems, with an

estimated 74% already lost. At a time of climatic and ecological uncertainty, retaining healthy populations of species such as badgers may improve grassland resiliency and support habitat for fellow grassland species. Given the long list of beneficial contributions badgers provide, perhaps we can learn a little something from coyotes and explore ways to coexist for our mutual benefit. It’s not always easy to do, but it’s something I have thought about a lot since that morning when I watched that female badger hunt with utmost persistence to feed her two hungry kits. ■

Nikki Heim is a Wildlife Ecologist based in Canmore, Alberta who has spent the past 20 years focusing on better understanding medium- to large-sized carnivores across western Canada and the United States.



Watch footage of a badger and coyote hunting together: [bit.ly/badger-coyote-hunt](https://bit.ly/badger-coyote-hunt)

For more information about Alberta’s badgers, educational material, and to report observations, visit [prairiebadger.ca](https://prairiebadger.ca)

“While a single badger is an effective hunter on its own, their success has been observed to be enhanced alongside a cooperative coyote.”



# ALBERTA'S NATURE STRATEGY

BY KECIA KERR

This fall was an important moment for nature and biodiversity — globally, but also in Alberta. Or at least it should have been. Globally, countries from around the world gathered in Cali, Colombia, between October 21 and November 1 for the 16th Conference of the Parties (COP16) to the Convention on Biological Diversity ([cbd.int/convention](http://cbd.int/convention)), also known as the Nature, or Biodiversity, COP.

## Biodiversity in Decline

The initial signing of the Convention began in 1992 at the United Nations Conference on Environment and Development (“Earth Summit”) in Rio de Janeiro, Brazil, with the objectives of: 1) the conservation of biological diversity, 2) the sustainable use of its components, and 3) the fair and equitable sharing of benefits arising from the use of genetic resources. Thirty years later, in December 2022 in Montreal, the now 196 signatory nations agreed to the Global Biodiversity Framework (GBF), an ambitious but necessary set of targets to deliver on halting and reversing biodiversity loss by 2050 ([cbd.int/gbf/vision](http://cbd.int/gbf/vision)).

Biodiversity refers to the variety of life on Earth. It encompasses diversity at the species level, but also at the

population or genetic level, as well as the ecosystem level. Unfortunately, biodiversity at all of these levels is in decline.<sup>1</sup> Many scientists now acknowledge that we are currently in the sixth global mass extinction and that this one has the dubious distinction of being the only mass extinction to have a biological cause: humans.<sup>2</sup> Canada, and Alberta, are not immune. One out of five species that have been assessed in Canada is at some level of risk of extinction.<sup>3</sup> Alberta is home to over 90 species that are considered “at risk.” Probably our most well-known species at risk, caribou, have plummeted over the last few decades, and several populations have blinked out completely. None of Alberta’s remaining 15 herds are considered self-sustaining, and most continue to decline.



The author, right, and CPAWS Southern Alberta Executive Director Katie Morrison at COP16 in Cali, Colombia.

The primary driver of biodiversity loss is habitat loss and degradation. Other factors, such as over-exploitation, climate change, invasive species, pollution, and a combination thereof, are also at play for some species. The Alberta Biodiversity Monitoring Institute’s human footprint map of Alberta provides a very clear view of why nature and biodiversity are in decline in the province (see Figure 1). It is clear that more needs to be done to stop the bleeding when it comes to nature in Alberta.

### Vision vs. Jurisdiction

In the lead-up to COP16, signatory countries were tasked with developing strategies and action plans laying out how they will implement the GBF and reach its targets. Canada released its strategy in June 2024.<sup>5</sup> However, in many countries, including Canada, national governments do not hold much of the jurisdiction over lands and waters that will determine the success of a country in reaching its commitments. In Canada, much of the responsibility for land management and protection is in the hands of the provinces and territories. This was a major topic of conversation at COP16. In some cases, the discussion focused on concern over subnational governments putting up roadblocks to progress, but in many cases, there were excellent examples of leadership and pride in doing what is needed to bring humans towards being at “peace with nature” (the theme of COP16). Several provinces in Canada have committed to the GBF or some of its targets, including Quebec, Manitoba, B.C., and Yukon. Quebec, true to form, has charted its own path to reverse biodiversity loss, including developing its own plan and using innovative initiatives to get the public involved.

When the national Nature Strategy came out, the Government of Alberta labeled it “unconstitutional.”<sup>6</sup> The provincial government has since announced it will be developing a Nature Strategy of its own and began public engagement for development of the strategy in the fall.<sup>7</sup> Unfortunately, government communications on the Strategy do not make clear that an Alberta Nature Strategy’s primary goal would be halting and reversing biodiversity loss. In fact, a government spokesperson stated the nature strategy would “help continue

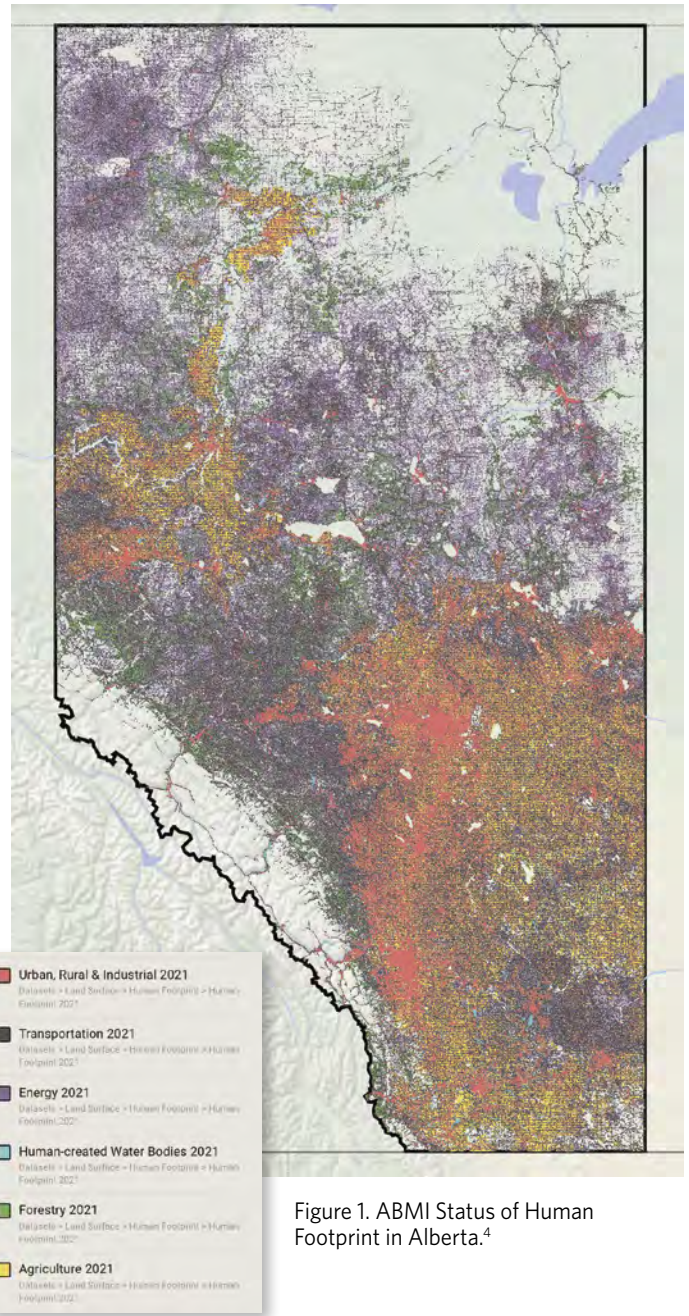


Figure 1. ABMI Status of Human Footprint in Alberta.<sup>4</sup>

our proud environmental legacy while also keeping people working.”<sup>8</sup> At the government-hosted Nature Summit, a gathering of stakeholders to discuss the development of a Nature Strategy on October 16, 2024, three Alberta ministers emphasized that the strategy would help Alberta communicate about what is currently being done to manage nature.

These communications point to a denial that current policies, strategies, and actions are precisely what has resulted in consistent declines in nature and biodiversity. We need much more than the status quo to turn things around. Hence, my initial reference to the fact that fall 2024 SHOULD have been





A status quo strategy will not suffice to halt and reverse the decline of at-risk species in Alberta, such as the iconic caribou.  
MARK BRADLEY

an important moment for nature in Alberta. Fortunately, many Albertans did fill out the government's Nature Strategy survey, quite a few with the help of the Canadian Parks and Wilderness Society (CPAWS) survey guide.<sup>9</sup> And a dozen Alberta-based organizations, including CPAWS Northern and Southern Alberta chapters and Nature Alberta, released *A Collaborative Vision for Alberta's Nature Strategy*, and sent those ideas to the government.<sup>10</sup> Once the province releases its draft Strategy, hopefully it will be open for public comment. This will be an important moment for Albertans to speak up for nature.

Albertans care deeply about nature and want to see more of it protected, and all of it better managed. Public engagement on a Nature Strategy for Alberta will be a great opportunity for us to make that clear to the government, once again. ■

Kecia Kerr is the Executive Director of the Canadian Parks and Wilderness Society (CPAWS) Northern Alberta Chapter, a role she has held since June 2017. She holds a PhD in ecology from McGill University and is a Professional Biologist. She is fortunate to be able to walk her dog in Edmonton's river valley and ravine system every day.

## References

1. Finn, C., F. Grattarola and D. Pincheira-Donoso (2023). More losers than winners: investigating Anthropocene defaunation through the diversity of population trends. *Biological Reviews*, 98: 1732-1748. <https://doi.org/10.1111/brv.12974>
2. Kolbert, E. (2014). *The Sixth Extinction: An Unnatural History*. United States: Henry Holt and Company.
3. Canadian Endangered Species Conservation Council (2022). *Wild Species 2020: The General Status of Species in Canada*. National General Status Working Group: 172 pp. <https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry/general-status/wild-species-2020.html>
4. ABMI: The Status of Human Footprint in Alberta (2023). <https://archive.abmi.ca/home/reports/2023/human-footprint/details.html>
5. Environment and Climate Change Canada (2024). *Canada's 2030 Nature Strategy: Halting and Reversing Biodiversity Loss in Canada*. <https://www.canada.ca/en/environment-climate-change/services/biodiversity/canada-2030-nature-strategy.html>
6. "Federal Nature Strategy is unconstitutional: Minister Schulz." Government of Alberta, 14 June 2024. <https://www.alberta.ca/release.cfm?xID=90520F1689378-A3D4-43B5-ED237B85D81F9EA9>
7. Nature strategy engagement. Government of Alberta (2024). <https://www.alberta.ca/nature-strategy-engagement>
8. "Conservation groups, NDP critical of survey for Alberta's nature strategy." CTV News, 29 Oct. 2024. <https://edmonton.ctvnews.ca/conservation-groups-ndp-critical-of-survey-for-alberta-s-nature-strategy-1.7091436>
9. A CPAWS Guide to the "Nature Strategy" Survey (2024). <https://cpawnsab.org/wp-content/uploads/2024/09/CPAWS-Survey-Guide-to-Nature-Strategy-Survey.pdf>
10. "Government of Alberta must commit to expanding parks, protecting wildlife and biodiversity, says coalition of conservation and environmental experts." CPAWS Northern Alberta, 15 Oct. 2024. <https://cpawnsab.org/all-news/engos-release-vision-for-nature-strategy/>





A remarkably close encounter between the author and the bison of Wood Buffalo National Park (WBNP). LU CARBYN



*I*n my 31-year career as a biologist and research scientist with the Canadian Wildlife Service, I had the good fortune

# The Ancient Ritual: Wolves and Bison in Wood Buffalo National Park

BY LU CARBYN

to work on wolf-prey systems in Canada and other parts of the world. Some of my most memorable experiences were within Wood Buffalo National Park (WBNP), a huge boreal forest environment with a generally flat topography, interspersed with glacially formed eskers, within a major landlocked delta system (the Peace-Athabasca Delta, which has an area of approximately 5,000 km<sup>2</sup>). During an official seven-year study, alongside students and wardens, we captured and collared 43 wolves (tracking them from the air). I continued on-ground observational research independently for an additional 14 years, following bison herds in the delta to document wolf-bison interactions.

I was spending weeks at a time in the delta, following bison herds to watch wolves preying on them. I relished the solitude of hiking along a ribbon of water bearing the unlikely name of Lousy Creek. My nearest human neighbours were in Fort Chipewyan, a hamlet six hours away by low-powered motorboat, or two days by canoe!

One particularly momentous mid-October morning, I left my tent early and went exploring on a trail that led to my favourite lookout. As the sun's rays began to penetrate the mist, I could make out a herd of bison — 30 of them, mostly lying down. Scanning the area with my binoculars, I spotted more bison in the distance. A faint long line of black, possibly 200 bison, were coming to join this smaller herd. Then I noticed a shorter, white line moving briskly towards the herd — wolves!

The bison began to run, and the wolves picked up their pace. As they closed in, the black line split in two. Calves, the prime targets for wolves, usually move to the centre of the herd when wolves are in pursuit. The wolves had succeeded in exposing the calves. The black and white streaks intermingled. The smaller







Top: Wolves evolved a pack hunting strategy for preying on large prey like bison. Pack sizes average about 10 individuals, though the author has seen packs in WBNP as small as three and congregations as large as 42 wolves. CAROLINE V.

Above: Bison cow with vulnerable calf. In the summer months, predation pressure is largely directed towards calves. LU CARBYN

herd closer to me seemed oblivious to the drama unfolding in the background for a few minutes, until they too became embroiled in the meleé.

With wolves pressing hard, the large herd stampeded in my direction. First came the lead cow, thundering at full speed, with the rest following. Then, dashing in and out, came the wolves. Except for the muffled rumble of hooves, predator and prey were so eerily silent that it all seemed surrealistically mechanical. I saw wolves attempting to tear at the hindquarters of bison, bison wheeling about to face the wolves and then running again in panic. I could feel my heart pounding in my throat. The closer the action, the more engrossed I became. There was no escape, no cover if I were to be surrounded. Nothing to do but watch and wait!

The wolves had isolated a large calf. Within minutes they were slashing and tearing at its hind end. In their frenzy, they also attacked its front and middle. Most of the adult bison moved on, but three cows made a vain attempt at rescue. They soon left as well. It seemed the calf's fate was sealed. The wolves and calf formed a single, moving mass. As the calf's stomach was ripped open, the heat of the body cavity mingled with the cold air around it, forming a halo of condensation around the wolves and calf. That image was burned into my mind — both the beauty and the cruelty of the sight. A large wolf braced its hind legs firmly on the ground and clawed itself onto the calf, gripping its back with its teeth. Suddenly, the action stopped.





Though wolves are efficient predators, hunting bison is difficult and dangerous work. Bison have thick hides, deadly horns, and are surprisingly agile when defending themselves. LU CARBYN

The wolves quickly slunk off, abandoning the injured calf, which now lay hunched. I was perplexed, until I was finally able to hear what the wolves' sharper ears already had: motorboats. Every fall and spring, Indigenous hunters from Fort Chipewyan motor up and down rivers and creeks, shooting ducks and geese.

The wolves dispersed over the meadow, some lying down, others moving about restlessly, but unwilling to finish off the wounded calf. One wolf was licking blood from its front paw, the white fur around its muzzle smeared red. I could count the wolves: 17, all light in color. After some time, four returned to the injured calf, which lay exhausted, abandoned by the herd. The foursome grabbed at the victim, which once more stood to defend itself. But the four attackers moved off again as the drone of the motorboat continued to threaten.

The herd returned and a single cow deliberately and rapidly advanced and sniffed the calf. Then the most heartrending sight unfolded. The mortally wounded calf began to follow the cow. It could only move very slowly, head bent to the ground. A few remaining wolves watched from a distance as the cow and calf moved off into the aspen forest.

I sat in a daze. How tough and stoic the calf was. I tried to master my feelings of pity. I wanted to end its misery, but in a national park, nature must be allowed to run its course unimpeded.

This codependent wolf-bison relationship is unique to WBNP. Nowhere else do wolves prey primarily on bison; only incidentally. In other multi-predator-and-prey systems, such

as Yellowstone and Banff National Parks, wolves are far less likely to prey on bison because smaller hooved mammals, such as elk and deer, are abundant and easier to kill. Wolves prey primarily on hooved prey animals, with rare exceptions, such as along Canada's west coast, where wolf packs exclusively feed on salmon during the spawning season. WBNP does not have any substantial populations of deer species; therefore, wolves must rely on wood bison for prey. This predator-prey dynamic is doubly unique for also being between the largest canid on Earth and the largest land mammal on the continent.

The "buffalo wolf" is an apex predator that has evolved a strategy for hunting bison. Though efficient predators, it is a very difficult task for wolves to kill a prey species as large as bison. Consider the odds: wood bison can weigh up to 1,200 kg and wolves average 45 kg. Wolves bring down this large prey by using their dagger-like canine teeth to slash and maim an intended victim on the run. Wolves have strong jaw muscles and once clenched, exert severe bite pressures — among the strongest in the animal kingdom. The wolf's muscular body, long legs, and physiology allow wolf packs to travel over large areas to track and run down prey. An individual wolf can maintain a steady trot of about 8 km/h, resulting in long-distance movements recorded as far as from northern Canada to the western United States. Such movements, however, render the species vulnerable to human-caused mortality. The top running speed of a wolf is around 60 km/h, while that of bison is around 45 km/h. It would seem at first consideration that, based on speed alone, it would





The wolf-bison predator-prey dynamic is unique to WBNP, an ancient and dramatic struggle between Earth's largest canid species and the largest land mammal in North America. STEPHANIE WEIZENBACH, LU CARBYN

be easy for a wolf to outrun, slash, and kill its victim. But that is not the case. Bison have thick hides, deadly horns and, above all, are persistent and agile in defending themselves. Wolves cooperatively hunt in packs, making it possible for them to kill a bison, although I have witnessed incidents where a single wolf was able to kill an adult bison that was in a very weak state. Wolves are known for their social pack structure. Pack sizes can be as small as three wolves but usually average about 10 individuals. In WBNP, I have encountered aggregations of as many as 42 wolves on a single lake near large bison herds. I was not sure whether these represented large single packs or several packs that had given up on territorial strife to access a limited food supply.

Observations in WBNP have shown bison staying in proximity of wolves for hours on end without much in the way of visible signs of fear or agitation. Once wolves show intent of predation, bison behaviour can quickly change from tolerance to alarm. Initially, adult bison may act with aggressive defensive behaviour, particularly to protect wounded or even dead calves. Bison defences can seriously injure wolves. Ultimately, bison will adopt a flight response. Attack by wolves places a constant pressure on movements by bison in their home ranges. One such displacement recorded one herd moving 82 km within a 24-hour period.<sup>1</sup>

An important part of my research in WBNP was conducting cow-calf counts to determine the number of calves born in spring and what percentage survived the first year and got

*"Though efficient predators, it is a very difficult task for wolves to kill a prey species as large as bison."*





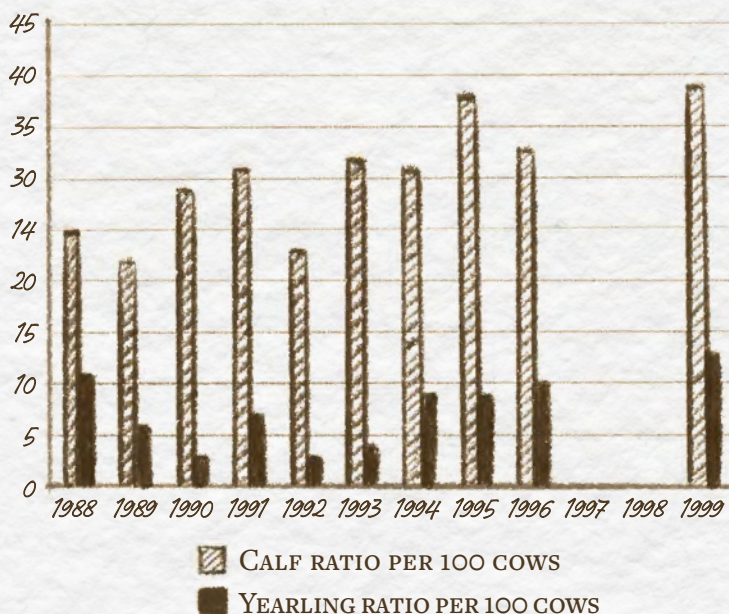
The “buffalo wolf,” an apex predator weighing an average 45 kg whose primary prey, the bison, can weigh over a tonne.  
STEPHANIE WEIZENBACH

recruited into the herd the following year. My study at the time had shown that predation pressure in summer is largely directed towards bison calves.<sup>2,3</sup> Ground observation on calves born in spring was about 30 calves per 100 cows. These are well below maximum potential birth rates in bison, as determined from calf production seen in captive animals on game ranches. Wolves live in a world of feast or famine. Individuals have been known to survive for several weeks without much, if any, food intake. However, when available, 3.5 kg of meat per wolf per day is optimal for survival. After making a fresh kill, a single wolf can consume 15–20% of its own body weight. I have had close

encounters with wolves after such events and saw their bellies swaying back and forth as they tried to run away. In winter, there was a marked shift of predation to all age and sex classes.<sup>3</sup> Survival of calves to the yearling stage in WBNP was so low that it was undoubtedly a significant factor in the decline of bison numbers in WBNP. Much of that was because of wolf predation.

Which brings us back to the tragic fate of our calf. Nature can seem cruel, but it forces the dynamics of change, driving ecosystems to adjust and evolve. Without the wolves, the bison would populate beyond the capacity of the park; without the bison, the wolves would not have a sustainable food source. Hard as it is to watch, death is the companion of life, and the natural cycle continues in WBNP. After all that wolves and bison have endured in the past couple of centuries, we are fortunate to still be able to witness this ancient ritual of death and survival in the wilds of our province. ■

GROUND OBSERVATIONS ON COW/CALF RATIOS IN SPRING AND YEARLING SURVIVAL THROUGH THE FIRST YEAR OF LIFE



References

1. Carbyn, L.N. (1997). Unusual movement by bison, *Bison bison*, in response to wolf, *Canis lupus*, predation. *Canadian Field Naturalist*, 111(3):461-462.
2. Carbyn, L.N. and T. Trottier (1987). Responses of bison on their calving grounds to predation by wolves in Wood Buffalo National Park. *Canadian Journal of Zoology*, 65(8): 2072-2078.
3. Carbyn, L.N., S.M. Oosenbrug and D.W. Anions (1993). Wolves, Bison and the Dynamics Related to the Peace-Athabasca Delta in Canada's Wood Buffalo National Park. Circumpolar Research Institute. University of Alberta, Edmonton.

Lu Carbyn is an adjunct professor at the University of Alberta, a retired Canadian Wildlife Service biologist, and a Provincial Regional Representative of Nature Alberta.



# YOUR SHOT

Images of Alberta's  
Natural Heritage



## FLICKER OF LIGHT

*“It was a cold yet clear day in January, hoar frost glimmering in the sunlight. I decided to take a walk in a nearby ravine, hoping for a cool find. To my delight, I stumbled upon a flicker basking in the sun. While I typically wait to catch them in flight to admire their stunning underbellies, this time the light was too perfect to resist.”*

—Joanne Klausner



## MOMENT OF IMPACT

*“It was a cold day at Windy Point on Abraham Lake when we came across a large group of over two dozen bighorn sheep — rams, ewes and lambs — during the November rut. It was a good thing traffic was light, as the rams were continually crossing the highway, looking for ewes and trying to assert their dominance. We watched them for hours, the rams’ high-impact antics completely taking our minds off the chill in the air, until the light started to fade. Returning to this area a week later, the bighorns had moved on.”*

—Archie Richardson

Your Shot celebrates the amazing work of Alberta photographers and the special places and species they encounter. Photos are selected from submissions to the Nature Alberta image library, which we draw on to create the magazine and other outreach materials. If you have a special photo you would like to contribute to the image library, and possibly have published in the magazine, please send it as an email attachment, at full resolution, to [communications@naturealberta.ca](mailto:communications@naturealberta.ca). Photos of all native species and natural landscapes within Alberta are welcome.





Bird's-eye view of seismic lines and well sites in the boreal forest of Alberta. XUE YAN CHAN, DEPARTMENT OF GEOGRAPHY, UNIVERSITY OF CALGARY

# VOICES FROM THE FOREST: Boreal Songbirds and the Impact of Energy Footprints

BY THARINDU KALUKAPUGE

If you have ever flown over Alberta or looked at the boreal region on a map, you might have seen a widespread network of thousands of cut lines and open patches dissecting the boreal forest. These are likely the result of forest clearings, such as seismic lines, pipelines, and well pads, created by decades-old and still expanding energy development activities.

BirdLife International's State of the World's Birds: 2024 Annual Update highlights that energy production and mining are major threats to birds worldwide.<sup>1</sup> In fact, 18% of globally threatened bird species are impacted by energy production and mining. When we think about the energy sector's impacts on birds, we often picture oil spills, wind turbine collisions, or the effects of burning fossil fuels. A less commonly discussed, yet equally important, issue that needs more awareness and attention is the impact of forest clearings resulting from energy development activities, which is common across Alberta.

## **"Energy Footprints" in Alberta's Boreal Forest**

Alberta's boreal forest is undergoing extensive energy-related development activities. Many of these require clearing the forest to allow vehicles and people to access the sites and establish the infrastructure to extract, store, and transport the extracted energy products. We can define all these development activities as "energy footprints," meaning areas that have been altered by energy-related human activities. Other infrastructure, such as the road network and transmission lines that facilitate industry operations, also adds another layer, making the energy footprint network more complex.

Among all the types of energy footprints, the most ubiquitous in Alberta's boreal forest are seismic lines. Seismic lines are narrow, linear forest clearings created to allow seismic recording equipment and crews to access the areas to conduct surveys to locate underground oil and gas deposits. There have





Top: Alberta's boreal forest provides habitat for more than 300 species of birds and serves as an essential breeding ground for millions of migratory birds each year, including long-distance migrants like the Cape May warbler. DEBBIE GODKIN

Below: A powerline right-of-way creates wide gaps in the boreal forest and changes vegetation structure. THARINDU KALUKAPUGE



been different seismic line programs throughout history. The most common up until at least 1990, 2D seismic lines were used to map what lay underground directly beneath the survey lines. Though still used today, they are less common, though abandoned 2D seismic lines remain. Around the mid-1980s, 3D seismic lines were introduced in Alberta. They are arranged on a grid to generate a three-dimensional image of the subsurface.

Seismic lines come in different widths. Conventional seismic lines typically range 6–8 m wide. Those built before around 2002 are referred to as “legacy lines.” In the late 1980s, industry started creating narrower seismic lines to reduce the timber damage caused by conventional lines. This led to the development of “low-impact” seismic lines, which are less than 6 m wide and are now considered to have reduced impacts on certain wildlife species compared to other, wider cut lines.

Not as abundant as seismic lines but still common energy footprints include pipelines and well pads. Alberta built its first pipeline in 1912 at Bow Island, which also gave rise to the development of the province's first large natural gas production field. Today, Alberta has thousands of kilometres of pipelines that transport energy products such as oil and natural gas within the province and beyond its borders. Oil and gas wells also involve the removal of vegetation and soil during the active stage, and the history of these wells in Alberta dates to 1902, with the





An autonomous recording unit (ARU) used for monitoring songbirds associated with linear features in the boreal forest.  
THARINDU KALUKAPUGE

first oil well in western Canada located in what is now Waterton Lakes National Park. Once a wellsite is abandoned, it leaves a square-shaped patch in the forest, perforating the landscape until the area is fully restored to its original state.

### Millions of Birds Overlap With the Energy Industry

The oil and gas industry in Alberta creates a concerning situation because a significant portion of these activities take place in one of the most unique ecosystems on the planet: the boreal

forest. Alberta's boreal forest is a massive northern ecosystem that covers 58% of the province's land and is a large part of Canada's boreal forest, which spans approximately 270 million hectares and accounts for 28% of the world's largest terrestrial biome. The boreal region, particularly in Alberta, is heavily impacted by human activities. These human footprints occupy around 20% of the boreal forest; energy activities alone affect approximately 7,000 km<sup>2</sup> of the boreal landscape in Alberta.

Alberta's boreal forest is an ecologically sensitive region, home to 48 Important Bird Areas (IBAs), such as the Peace-Athabasca Delta and Hay-Zama Lakes. These areas are also protected under the Ramsar Convention, which designates wetlands of international importance ([ramsar.org](http://ramsar.org)). Alberta's boreal forest provides essential breeding ground for millions of migratory songbirds each year. Among them are long-distance migrants like the Cape May warbler, which winters in the Caribbean or the southern United States and migrates thousands of kilometres to breed in the boreal forests, or the white-throated sparrow, known for its "Oh sweet Canada Canada Canada" song, which winters as far south as Florida, returning each year to the boreal forest during the breeding season.

### The Impacts of Energy Footprints on Birds

Even though the energy industry in Alberta has been around for decades, its impacts on boreal wildlife, especially birds, have not been explicitly studied in some aspects. Specifically, how birds perceive these forest clearings; whether all footprints cause the same disturbance effects and, if not, how much they vary

and what drives these variations; and how we can restore these landscapes with a wildlife perspective rather than a human one.

Over the past four years of my PhD research, I have hiked along thousands of linear features, including seismic lines, pipelines, and transmission lines, and visited hundreds of wellsites in the northern and northeastern boreal forests of Alberta. In the field, I use autonomous recording units (ARUs) to monitor the response of songbirds to energy footprints. ARU technology is becoming a popular choice for wildlife research in North America because it collects wildlife vocalizations, as well as other sounds in the environment, in a non-invasive manner. ARUs provide valuable information about not only species presence and abundance, but also changes in vocal behaviour in response to human activities, habitat use and avoidance, and even body condition data that previously could only be collected through direct observations or mist netting. In my research, ARUs help us understand how songbirds respond to different energy footprint types and how their community structure changes as vegetation recovers in these disturbed areas.

### Why Focus on Birds?

Birds have long been used as indicators of environmental changes caused by human activities. A notable example comes from Rachel Carson's groundbreaking 1962 book *Silent Spring*, in which she described that birds were among the first to respond to the harmful effects of DDT. Birds, being highly mobile, can give us a lot of information about habitat quality by either moving away from or returning to their original habitats. Over the years, our understanding of how birds





We observed higher species richness associated with wider pipelines and transmission lines, including early-seral habitat-associated birds such as Wilson's warblers (left) and alder flycatchers (right).  
DAVID SCOTT, JACK WALLER

respond to human activities around the world has grown immensely. This accumulated knowledge allows us to ask new questions and learn even more about these responses.

Birds, particularly songbirds, are highly vocal compared to other organisms in the environment. Their vocalizations bring valuable information, such as how many are present; their behavioral responses, like courtship and territoriality; and even details about human activities happening in their surroundings. A good example comes from my colleague Natalie Sánchez, who found that Lincoln's sparrows in the boreal forest adapt their vocalization in response to the noise from compressor stations. While they keep the same song type, they increase how often they sing, likely to make sure that songs reach their mates despite the background noise.<sup>2</sup>

From a public engagement perspective, people like birds. We find them charismatic, admire their beautiful plumage and songs, and are fascinated

by their behaviour. This connection helps the findings generated through scientific research reach the public more effectively.

### Signs of Hope for Boreal Forest Recovery

In the discussion of oil and gas development in Alberta, the answers birds provide to the question of whether we can restore these landscapes are fascinating. Here are two examples from the research of my colleagues. Jocelyn Gregoire found that Canada warblers are more likely to be found near regenerating seismic lines in the boreal forest when these lines have more woody vegetation cover.<sup>3</sup> Similarly, Hedwig Lankau showed that ovenbirds avoid seismic lines with little to no vegetation but will use those with vegetation recovery.<sup>4</sup> These species' responses give us hope that some energy footprints can be recovered, either by allowing natural regeneration or through effective active restoration practices.

### What Does Our Recent Study Tell Us About Energy Sector Linear Features?

In our recent article published in the journal *Avian Conservation and Ecology*, we presented our findings on how songbird communities respond to energy sector linear disturbances, such as seismic lines, pipelines, and transmission lines.<sup>5</sup> These linear features vary from 4- to 6-m-wide seismic lines to 100-m transmission lines. To the human eye, the impacts of a 6-m seismic line are different from those of a much wider pipeline or transmission line, and their impacts can range from habitat dissection, to fragmentation, to habitat loss as the cutline gets wider. However, how boreal songbirds respond to specific widths of these linear features was not fully understood.

To address this question, we monitored songbirds in thousands of different linear features using ARUs in various forest types in the northern and northeastern boreal forest of Alberta over the past four years. Our findings from the study, which



focused on deciduous-dominant forests, show that mature forest species and forest specialists decline in areas with wider linear features like pipelines and power lines. Interestingly, we observed higher species richness associated with wider pipelines and transmission lines compared to narrow seismic lines. This is likely due to the changes in vegetation caused by wider linear features, which seem to attract more shrub and early-seral birds into the linear feature area.

This study provided new insights into the management and restoration of linear features in the boreal forest, showing that the width of linear features generates specific impacts that influence changes in songbird communities. We recommend that impact assessments and provincial bird models used for regulatory decision-making focus on the effects generated by specific widths rather than grouping all energy sector linear features into broader categories that may overlook the specific impacts associated with each width.

### What's Next?

We now know that songbirds likely respond to the width of linear features because of the associated changes in vegetation. Our next aim is to understand what a recovered energy footprint is from birds' perspectives, and how birds settle back into recovering areas as vegetation regrows. This will help us identify the level of vegetation recovery needed in energy sector footprints and inform stakeholders on the actions required to facilitate recovery, ultimately converting these footprints so they no longer act as a human footprint for boreal birds. ■



Mature-forest species and forest specialists, such as Canada warblers, decline in abundance in areas with wider linear features like pipelines and powerlines. BARRY PHIPPS



Setting up an ARU in the boreal forest of northeastern Alberta to monitor songbirds. EMMA GLINNY

### References

1. BirdLife International. State of the World's Birds: 2024 Annual Update. <https://datazone.birdlife.org/2024-annual-update>
2. Sánchez, N.V., E.M. Bayne and B. Hilje (2023). Lincoln's sparrow (*Melospiza lincolni*) increases singing rate in areas with chronic industrial noise. *Ibis*, 165(3):944-958. <https://doi.org/10.1111/ibi.13174>
3. Gregoire, J.M., R.W. Hedley and E.M. Bayne (2022). Canada Warbler response to vegetation structure on regenerating seismic lines. *Avian Conservation and Ecology*, 17(2):26. <https://doi.org/10.5751/ACE-02262-170226>
4. Lankau, H.E., E.M. Bayne and C.S. Machtans (2013). Ovenbird (*Seiurus aurocapilla*) territory placement near seismic lines is influenced by forest regeneration and conspecific density. *Avian Conservation and Ecology*, 8(1):5. <https://doi.org/10.5751/ACE-00596-080105>
5. Kalukapuge, T., L.F.V. Leston, J.A. Martínez-Lanfranco and E. Bayne (2024). Response of boreal songbird communities to the width of linear features created by the energy sector in Alberta, Canada. *Avian Conservation and Ecology*, 19(2):14. <https://doi.org/10.5751/ACE-02730-190214>

Tharindu Kalukapuge is a researcher/PhD student in the Bayne Lab in the University of Alberta Department of Biological Sciences, in collaboration with the Boreal Ecosystem Recovery Assessment project.



# Book Review

REVIEW BY KEVIN VAN TIGHEM

It's become almost trite to compare nature writers to Aldo Leopold, the legendary American conservationist whose *A Sand County Almanac* has been revered by generations of naturalists, biologists, and outdoorspeople. Leopold, after all, was a rare bird — few could hope to match his combination of deep ecological insight, decades of hands-on working experience in the conservation trenches, and evident love of the English language that revealed itself in poetic passages and well-turned phrases.

Still, it's impossible not to see parallels between Leopold's prose and the writing in Lorne Fitch's *Travels Up the Creek: A Biologist's Search for a Paddle*. In this, his second collection of essays and reflections, Fitch reveals himself to be a natural successor to Leopold — and a man whose love and understanding of Alberta run decades deep.

Fitch is well known in western Canada's conservation community as, among other things, a co-founder of the riparian restoration program popularly known as Cows and Fish. Working collaboratively, ranchers, farmers, biologists, and conservation volunteers have rescued thousands of kilometres of stream banks from what once seemed like inevitable, creeping degradation. Cows and Fish is only one of many hard-fought wins for the wild that mark Fitch's long career as what he describes as a “combat biologist.”

What is a combat biologist? That and many other questions are answered in this collection of well-crafted and deeply insightful essays about the nature of

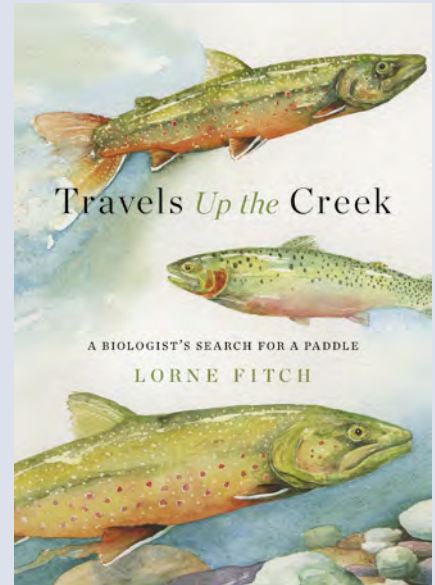
Alberta — and what's been done to it over the last half-century or more.

Fitch grew up hunting, fishing, hiking, and studying Alberta's prairies, foothills, boreal forests, and mountains. His career, like Leopold's before him, entailed scientific study of fish and wildlife populations, clear-eyed assessment of the conservation challenges facing them, and creative thinking in finding solutions. Some of those solutions continue to be evaded by those who wield political and economic power, and Fitch makes no secret of his exasperation for those who continue to squander our future.

Fitch's prose is rich with scientific insight, poetic in style, and blunt in its assessment of where we've gone wrong, what we've gotten right, and where we still need to go to find a sustaining relationship with the wild nature and living places that are Alberta at its best. Perhaps its most refreshing element is the way it cuts through greenwash, myth, and denial to get to the root of our thorniest conservation dilemmas. Such intellectual honesty is both refreshing and rare.

“Mitigation is one of those words, like radiation or poison, of which one should be wary,” he says, before offering better solutions to the clash between industrial greed and the nature of our home place.

*Travels Up the Creek* is a work of Leopoldian stature. As we teeter on the edge of an increasingly troubling future, this book's passion, clear vision, and urgency come, perhaps, just in time.



## ***Travels Up the Creek: A Biologist's Search for a Paddle***

**By Lorne Fitch**

**Rocky Mountain Books, 2024,  
232 pp.**

**Available at [rmbooks.com](http://rmbooks.com)**

“You can see a grizzly in a zoo,” writes Fitch. “A little snippet of the DNA of a westslope cutthroat trout could be held on ice, against a day we might recreate it. But, without place, without the surroundings, without the earth, the wind, the water, and the context, we will effectively lose these creatures, and others.”

For those who study to belong, and strive to sustain, this book is essential reading. ■

Alberta-born naturalist Kevin Van Tighem is the author of *Wild Roses Are Worth It* and *Our Place: Changing the Nature of Alberta*.



# Rare eBird Highlights Summer and Fall 2024

BY NICK CARTER

Despite its name, the prairie warbler is normally found only in southeastern North America, not the Alberta prairies. MELISSA PENNEY



A little “virtual exploration” on [eBird.org](https://eBird.org) reveals a variety of memorable and rare bird sightings in the province during the summer and fall of last year. Great egrets continued to be regular sightings in both the Edmonton and Calgary areas. In early July, a northern mockingbird drew birdwatchers northwest of Beaverhill Lake. Lesser black-backed gulls were discovered in Calgary over the summer and fall. In southwestern Alberta, black-chinned hummingbirds made appearances throughout the area, and Anna’s hummingbirds were glimpsed in several locations over the summer. To the north, a long-tailed duck was identified at Saskatoon Island Provincial Park on July 20. And in late July, a whooping crane was present for several weeks west of Calgary.

Lark sparrows were observed in both Lacombe and Calgary in early August. Nashville warblers made several noteworthy appearances in Calgary, Glenbow Ranch Provincial Park, and Park Lake Provincial Park. Through the second

half of August, buff-breasted sandpipers were spotted at Murray Marsh north of St. Albert, Cooking Lake, Beaverhill Lake, and Weed Lake. A ferruginous hawk soared above Cooking and Beaverhill Lakes. Four parasitic jaegers darted across the sky above Saskatoon Lake Provincial Park. Cottagers at Gull Lake

spotted a red-throated loon and, at the start of September, noted a harlequin duck! Perhaps the biggest sighting for September, though, was a black-legged kitiwake in Calgary.

October started off with a prairie warbler flitting around in Edmonton. A Pacific loon was afloat at Genesee



While whooping cranes have recovered over the past century after nearly going extinct, this graceful species remains rare enough to be a thrilling sighting for any Alberta birdwatcher. SYNDEY MOHR





Left: Black-legged kittiwakes are small gulls common along the coasts and open oceans, but rarely seen inland. Unlike our native gulls, the wingtips of this species are almost entirely black. NICK CARTER

Below: A very rare visitor from Siberia, the tundra bean goose normally spends the winter along the European coasts. FISHER STEPHENSON AND MICHELLE DAY



Lake, a western sandpiper was spied at Weed Lake, and both short-billed and Iceland gulls were observed across the province throughout October. A Barrow's goldeneye was spotted at Little Fish Lake Provincial Park, a western cattle egret appeared at Kitsim Reservoir, and a tundra bean goose enchanted birders at Cochrane Lake!

You can explore recent sightings and contribute your own observations to the birding community at [eBird.org](http://eBird.org). Common or rare, all sightings contribute to our shared pool of knowledge about the distribution and status of birds. ■

Nick Carter is a naturalist and science communicator from Edmonton and is Nature Alberta's Nature Kids Coordinator. He studied biology at the University of Alberta and has had a lifelong fascination for all things in the natural world.



## If you like us online, you'll love us in print!

We hope you're enjoying viewing *Nature Alberta Magazine* online, in its entirety with no paywall.

To enhance your connection, consider ordering a print subscription. There's no substitute for engaging with this informative content and beautiful photography directly on the page. And print subscribers always get the first look, before the magazine goes online.



NATURE  
ALBERTA

Get your annual print subscription (or give it as a gift!) for \$32 at [naturealberta.ca/store](http://naturealberta.ca/store)



# Sylvan Silhouettes

BY MARGOT HERVIEUX

Whenever I'm out on a winter day, I find myself noticing tree silhouettes. Without leaves to block the view, it's easy to pick out different branching patterns and bark textures. Tree shapes vary depending on where the tree is growing, but each species has traits that make it unique.

Our most common tree is the aspen poplar, easily recognized by its straight, slender trunk and rounded top. The closely related balsam or black poplar has heavier branches and a more cone-shaped profile. The delicate, crooked branches of the white birch have an almost feathery appearance, especially when coated with frost.

Trees can also be identified by looking at their bark. Both aspen and birch have smooth bark, but birch bark, of course, can be recognized by the way it peels. In contrast, balsam poplar bark has deep ridges from the bottom of the tree up to the top.

In early spring, you might notice that aspen bark looks rather green. This is because it contains chlorophyll for capturing the sun's energy before the leaves come out. In exposed locations, this thin bark can be damaged by too much sun, so the tree produces a white powder that acts as a sunscreen.

Pine and spruce trees are easy to pick out because of their needles. White

spruce, which usually grows in upland forests, has a classic cone shape. The black spruce of bogs and muskegs has a much narrower profile and often a club-shaped



top. The dense growth at the top is partly due to squirrels pruning the branches as they collect cones. The arrangement of branches on spruce trees also helps the trees survive in our winter forests. When covered with heavy snow, the branches droop down like a closing umbrella instead of breaking off.

Lodgepole and jack pine tend to grow in more open forests. As the trees age, their branches spread, and the lower branches die from lack of light. The long, paired needles of the pine also give the trees an airy appearance compared to the short, dense, single needles of the spruce.

My favourite winter silhouette belongs to the larch or tamarack. This tree grows needles but loses them every fall. It has

an open cone shape and the bare winter branches are thin and bumpy. Larch also make a striking contrast to the black spruce that often grow around them.

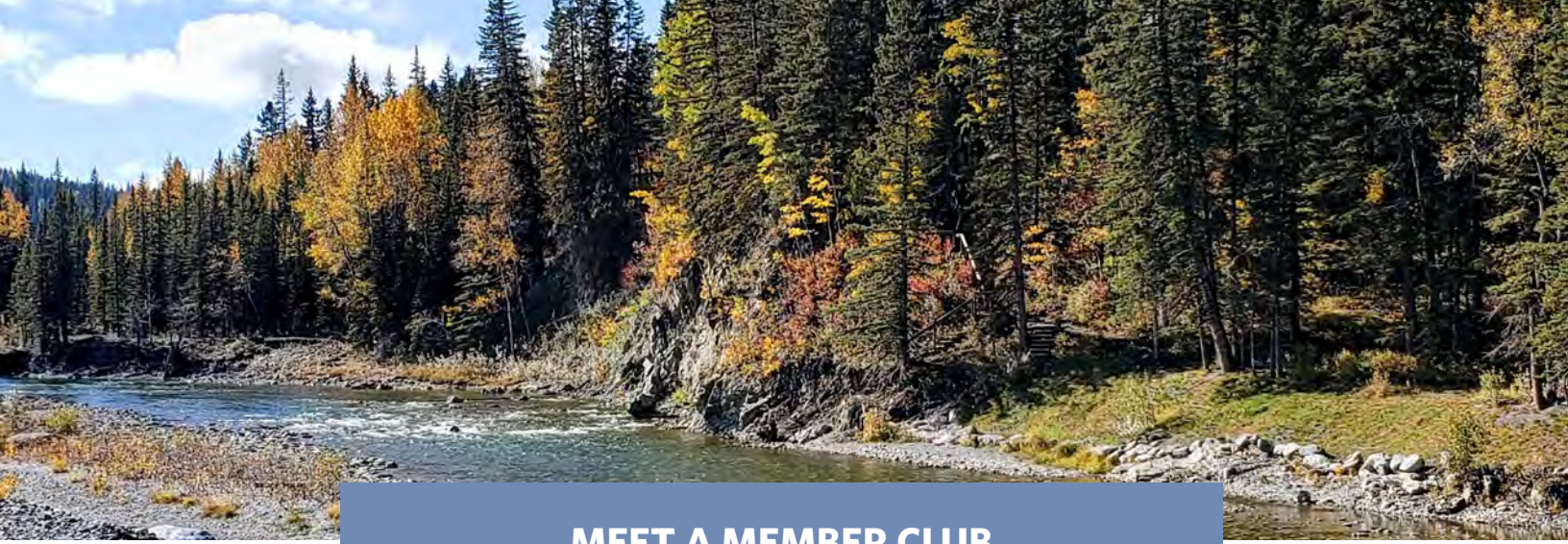
The cones of coniferous trees can also affect a tree's silhouette. Spruce cones are clustered near the top of the tree, while the cones of lodgepole and jack pine are spread out along the branches and will often stay on the tree for years. The smaller, erect cones of the larch are also scattered along the branches and are very visible when the needles have dropped.

Not all tree shapes are created by the tree itself. In mature forests, lichens like old man's beard cover the lower branches of pine, spruce, and larch, making the trees appear much denser than they really are. Diseases and parasites can also affect a tree's growth. Dwarf mistletoe, a parasitic plant, causes witch's broom in pine, while a fungus causes similar growths in spruce.

The next time you head outdoors, take note of the trees growing around you. Whether its shape comes from competing with neighbours for room in a forest or spreading its branches wide in an open field, there is something special about a tree outlined against the changing colours of the sky. ■

Margot Hervieux is a founding member of the Peace Parkland Naturalists and an honorary member of Nature Alberta. A version of this article originally appeared in her "Naturally Yours" column in the *Peace Country Sun*, which she wrote for 15 years. You can read more of her archived columns at [peacecountrysun.com](http://peacecountrysun.com).





## MEET A MEMBER CLUB

BY TERRILL GORDON

### Bragg Creek Wild

The increasing influx of visitors and proximity of homes to dense forests in the Bragg Creek area, about 30 km west of Calgary, have led to a rise in wildlife-vehicle collisions and increased residential encounters with cougars and bears. Unfortunately, some bears habituated to human garbage have been euthanized.

To address these issues, a group of residents formed **Bragg Creek Wild** in 2020, incorporating as a not-for-profit organization in 2022. Bragg Creek Wild has since grown to 87 members with 1,400 social media followers.

Bragg Creek Wild envisions a safe and sustainable environment where wildlife and humans coexist. Our mission is to advocate for the protection of wildlife and their habitats by preserving connectivity, promoting safe wildlife routes, and providing public education to reduce human-wildlife conflict.

The organization's current priorities are to protect local wildlife habitats amid growing land-use pressures, ensure safe passage for wildlife and reduce human-wildlife conflicts, and teach visitors wildlife-friendly behaviours. Bragg Creek Wild engages the public on these priorities through our website, social media, monthly articles in Alberta's *High Country News*, wildlife-related signage,

public events, and collaborations with schools and community organizations.

Increasingly, like-minded individuals are joining Bragg Creek Wild, submitting local interest articles, reporting wildlife sightings, offering skills, and volunteering to promote safe coexistence with wildlife. Citizen scientists have contributed to a multi-year wildlife mapping study by recording local large animal sightings (living and deceased), providing valuable insights that will help to inform future initiatives.



Bragg Creek Wild is building relationships with regional environmental and community groups, and is working with Rocky View County on developing a garbage bylaw, creating wildlife-friendly berm access points along the Elbow River, and improving road signage in busy wildlife crossing areas.

Biologists and outdoor specialists regularly contribute to Bragg Creek Wild publications, offering valuable information on wildlife preservation, sustainable land

use, and safe human-wildlife interactions. Topics have included the role of beavers, pollinators, rewilding properties, bear-smart tips, e-biking in the wild, and proper garbage handling. Experts have also been featured through the organization's live speaker events, including Dr. Brad Stelfox, who presented "Re-Imagining Bragg Creek: Past - Present - Future"; Guy Greenaway with the Corvus Centre for Conservation Policy, who presented "Natural Assets, Yours to Protect"; and Brian Keating, former Calgary Zoo curator, who shared stories from his adventures.

Bragg Creek Wild advocates for responsible land use, tourism, and development to ensure long-term sustainability of the area. We actively engage with policy-makers to support these goals. A board member is part of the Visioning Committee for a revised Area Structure Plan, tasked with shaping the community's land-use future.

You can learn more about Bragg Creek Wild's initiatives, explore resources, submit a wild animal sighting, and join an upcoming event by visiting our website: [braggcreekwild.ca](http://braggcreekwild.ca).

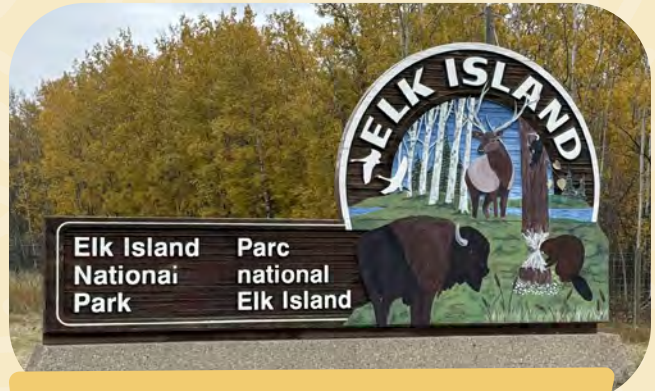
Terrill Gordon is an active member of Bragg Creek Wild and resides in the greater Bragg Creek area.



**A**lberta is a great place to live. It's a big, beautiful province full of all kinds of natural wonders. In **My Big Alberta Backyard**, we introduce you to the unique and interesting wild spaces that you can find in your province, and the diverse wildlife that live there. This time, let's explore the beautiful scenery of **Elk Island National Park!**

## A Unique Landscape

Elk Island National Park is about a half-hour drive east of Edmonton. It's located within a special area of Alberta called the Beaver Hills, which is a region of low, forested hills that span from just north of Elk Island down to Miquelon Lake Provincial Park. The Beaver Hills were formed when huge ice sheets known as glaciers, which covered most of Alberta during the Ice Age, receded (melted and shrank). Sediment (rocks and dirt) left behind created hills that became covered with dense forests, while the lower parts of



The Elk Island National Park sign offers a hint of what kinds of animals you might see! NICK CARTER

the landscape filled with water, forming hundreds of lakes, ponds, and wetlands. The Beaver Hills are a sort of "island" of boreal forest amid the central Alberta farmland, and all these features can be seen at Elk Island National Park.

Elk Island National Park is split into two sections, divided by Highway 16. The much larger and more popular section is on the north side of the highway, with the smaller section across the road on the south side.

## What Animals Live at Elk Island?

Like the name says, Elk Island National Park is one of the few places where you can see elk east of the Rocky Mountains in Alberta, and it was first created to be a sanctuary for this species. White-tailed deer and moose are very common in the Park. The most famous large grazers here, though, are bison, and the Park is home to two varieties: plains bison, which live in the north section of the Park, and wood bison in the south section. Bison are so big and furry that even during the worst winter storms, they barely feel the cold! Elk Island National Park played a major role in saving this species from extinction over 100 years ago.

Coyotes are the most common predators in the Park, and sometimes black bears or wolves can be found here too.



With no leaves on the trees in winter, many signs of wildlife are revealed, such as this bark stripped by a hungry porcupine. STEPH WEIZENBACH







When the dense forests of Elk Island National Park become bare in the winter, birds like the great grey owl become easier to spot. NICK CARTER

There are plenty of smaller creatures to see as well. Beavers are very common in Elk Island, along with snowshoe hares and porcupines. Keep an eye out for these critters' track in the snow. You can see many different birds in the Park year-round; winter is a good time to see woodpeckers, chickadees, and even the occasional great grey owl!

With so many different types of creatures to see here, it's important to give wildlife enough space. Never get too close to large animals or leave food lying around, and always make sure to throw away your garbage properly (or take it with you when you leave the Park).

### What Is There to Do at Elk Island?

Elk Island National Park is full of hiking trails that take you through the woods and wetlands. Fun winter activities include snowshoeing and cross-country skiing. Astotin Lake is a great spot for a cozy winter bonfire. Elk Island National Park is also part of the Beaver Hills Dark Sky Preserve, making it a great place to admire the starry sky or aurora borealis (northern lights) on a clear night. ■



The tracks of snowshoe hares are easy to spot in the winter. Their big hind feet help them to run fast, even in deep snow! STEPH WEIZENBACH



Nick Carter is Nature Alberta's Nature Kids Coordinator. He studied biology at the University of Alberta and has had a lifelong fascination for all things in the natural world.

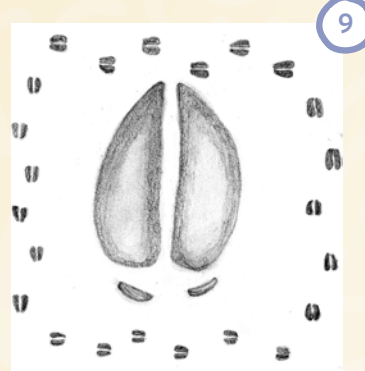
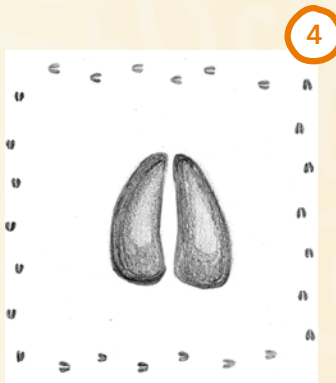


# Nature Kids OUT AND ABOUT

ILLUSTRATIONS BY WILLIAM WEIZENBACH

## MIX AND MATCH TRACKS

You can't always spot animals walking around, but you can see where they've been by spotting their tracks (footprints). Sometimes it's easy to spot tracks left in snow, but they can be tricky to identify. See if you can match these tracks!



Fill in the footprint number to match them to the animals' names. Then see how many you can find on your next winter outdoor adventure!

- |                       |        |                       |      |                       |          |
|-----------------------|--------|-----------------------|------|-----------------------|----------|
| <input type="radio"/> | Bear   | <input type="radio"/> | Deer | <input type="radio"/> | Moose    |
| <input type="radio"/> | Beaver | <input type="radio"/> | Hare | <input type="radio"/> | Mouse    |
| <input type="radio"/> | Coyote | <input type="radio"/> | Lynx | <input type="radio"/> | Squirrel |

### Sizing Them Up

The illustrations on this page are not to scale, which means in real life they're all different sizes – some of these tracks are tiny, and some are HUGE! Download a free copy of the *Nature Heroes Activity Book* at [naturealberta.ca/nature-kids](http://naturealberta.ca/nature-kids) and check page 2 to see the actual sizes of these footprints, from the miniscule mouse to the magnificent moose!

Answers: Bear: 8, Beaver: 7, Coyote: 3, Deer: 4, Hare: 6, Lynx: 5, Moose: 9, Mouse: 1, Squirrel: 2





# Nature Kids ASK STUART

WITH HELP FROM NICK CARTER

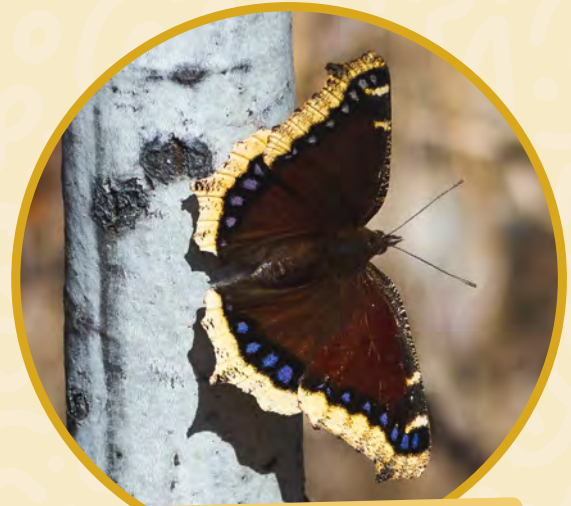
**W**elcome to **Ask Stuart**, in which our Nature Kids mascot, Stuart the swift fox, responds to questions asked by kids across Alberta. If you have a question you would like to ask Stuart, send it to [naturekids@naturealberta.ca](mailto:naturekids@naturealberta.ca) and it may be featured in a future issue.

## **Q** How do birds survive the winter?

While most of Alberta's birds migrate south, plenty of them stick around all winter, and they make it through the cold months of the year in lots of different ways. First of all, birds are warm-blooded, meaning they make their own heat, just like we do. It's important not to lose that heat to the outside cold, and while we use warm coats, hats, and mittens for that, birds use feathers! The fluffy feathers that birds are covered in are great at keeping them warm. Some, like owls and grouse, even have feathers on their feet and toes! To keep making that heat, birds need to eat a lot. Small birds that eat a lot of insects in the summer, like chickadees, focus on seeds in the winter. Others, like woodpeckers, look for insects hibernating in tree bark. Before going to sleep, birds find shelter in the branches and cavities of trees, and on really cold nights they go into a kind of short-term hibernation called torpor until the morning sun wakes them up again. ■



On cold winter days, small songbirds like this boreal chickadee will puff up their feathers to help keep themselves warm. BOB BOWHAY



The mourning cloak spends the winter in hibernation as an adult, so it's usually one of the last butterflies seen in the fall and one of the first seen in the spring! NICK CARTER

## **Q** Where do butterflies go in the winter?

While a few species migrate out of Alberta when the seasons change, most of our butterflies live here all year round! Different types of butterflies wait out the winter in different stages of their life cycle. Some spend the winter as tiny eggs, laid in a safe spot. Others hibernate as caterpillars, tucking in for the winter under dead leaves or old logs. Some spend the winter in their pupa stage, and during the cold winter days the caterpillar inside slowly changes into its adult form. A few species are actually full-grown adult butterflies by the time winter comes around, and spend the cold months hibernating, often under tree bark. These include common types like the mourning cloak and Milbert's tortoiseshell. In the springtime, these adult butterflies that were born the summer before come out to lay eggs and start the cycle all over again. Sometimes, on warm winter days, these butterflies will wake up thinking it's spring, and can be seen flying around! ■



# Your legacy. Our shared future.

Our community is connected by a shared love of nature. We share the desire to preserve the wild spaces and wonderful species that inspire our appreciation of nature, so future generations can share in the experiences we so deeply cherish.

A bequest willed to the Nature Alberta Endowment Fund helps us nurture and protect that future. Your legacy gift is carefully stewarded for long-term growth, providing a stable and sustainable source of funding for our operations and initiatives.

The security of the Endowment Fund ensures that your gift will continue to grow and fund our mission to promote and protect Alberta's natural heritage well into the future.



NATURE  
ALBERTA

*Visit our website to learn  
more about making  
Nature Alberta part of  
your estate planning.*

[naturealberta.ca/planned-giving](http://naturealberta.ca/planned-giving)

Nature Alberta  
3rd Floor, Percy Page Centre  
11759 Groat Road  
Edmonton, AB T5M 3K6

