

# NATURE ALBERTA

MAGAZINE

WINTER 2024  
VOLUME 53 | NUMBER 4



A COMMUNITY  
CONNECTED BY A  
LOVE OF NATURE



## Urban Coyotes

Conflict and  
Coexistence

There's a Lot  
to Like About  
Lichens

The Future  
of Forest  
Fires

Welcome Five  
New Firsts to the  
Alberta Bird Record



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## 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.



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## SHARING OUR SPACE

### Wildlife-Friendly Fences: Part 3

Fencing has a significant impact on the natural landscape, as discussed in this space in recent issues (Winter and Fall 2023). Replacing barbed wire, adjusting wire heights, increasing fence visibility, and creating seasonal openings are mitigation strategies that permit wildlife access to necessary habitat and do not disadvantage predators or prey species. This time, let's look at the issues particular to page wire.

Page wire is knotted into rectangles to form a continuous mesh and is most often used for sheep pasturing. It is a complete barrier to certain wildlife — especially fawns, pronghorns, and medium-sized animals incapable of jumping over it — and can even be a hazard to livestock. Animals trying to get through it often get their heads stuck in the rectangles. When combined with a barbed top wire, it has the highest wildlife entanglement rate.

As an alternative to page wire, a low, four-strand wire fence, no higher than 80 cm, with at least 25 cm between the top two wires and between the bottom wire and the ground, should suffice in containing sheep while allowing other wildlife to climb through or jump over.

There are wildlife-friendly fencing options for every pasture, taking into consideration unique combinations of topographical features, wildlife present, and livestock to contain. For more information and tips, visit [bit.ly/aca-fencing](http://bit.ly/aca-fencing) and [bit.ly/aca-underthewire](http://bit.ly/aca-underthewire).

—ERIN MCCLOSKEY, ASSISTANT EDITOR



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# Nature Alberta News

## Welcome Our New Executive Director

Dr. Richard Schneider retired as Nature Alberta's Executive Director at last November's Annual General Meeting, having generously volunteered his time and expertise in the role for nearly four years. His selfless contributions were critical in directing Nature Alberta on a path of renewed impact, effectiveness, and sustainable success. Richard will continue to guide Nature Alberta as our Treasurer, Advisor, and Editor-in-Chief of *Nature Alberta Magazine*. During his tenure, he mentored our new Executive Director, Stephanie Weizenbach, to prepare for this succession. Stephanie has a strong background working in the environmental non-profit sector, with creative energy and a passion

for furthering nature appreciation and conservation in Alberta.

"I was welcomed to Nature Alberta in 2021 with great enthusiasm and am still empowered every day by the immense passion our community shares for nature. It is truly extraordinary. I am excited to lead Nature Alberta in our important mission of being a strong voice and active champion for the greater appreciation and conservation of nature in Alberta, incorporating perspectives and priorities from the past and present, with an emphasis on the future."  
—Stephanie Weizenbach, *Nature Alberta Executive Director*



## Nature Network Speaker Series

The 2022-23 Nature Network Speaker Series was a wild success, broadcasting 16 educational online presentations on a variety of conservation topics to 1,405 total live audience members. Presenters were recruited and featured by Nature Alberta and seven member clubs to be shared with the entire Nature Network and general public. The series included a thought-provoking presentation by Dr. Richard Schneider on The Long and Winding Road to Caribou Recovery in

Alberta, and an inspiring presentation by our Patron, John Acorn, on Counting Winter Bugs.

Many presentations were recorded and continue to educate audiences through our Nature Network Speaker Series YouTube Playlist ([bit.ly/naturenetworkseries](https://bit.ly/naturenetworkseries)), where the videos collectively have over 2,780 views. The 2023-24 Nature Network Speaker Series is well underway — view the upcoming lineup at [naturealberta.ca/events](https://naturealberta.ca/events) and make sure to catch the next informative presentation!



Nature Alberta has accomplished a great deal in the past year. Read all about our exciting achievements in our 2022-2023 Annual Report at [naturealberta.ca/annual-reports](https://naturealberta.ca/annual-reports)

## Save the Date



The 2024 Snow Goose Festival in Tofield will take place the weekend of April 27-28. Watch for all the exciting details at [naturealberta.ca/snow-goose-festival](https://naturealberta.ca/snow-goose-festival).

Experience a whole different side of the festival by participating as a Nature Alberta volunteer. Reach out to Kethu at [naturekids@naturealberta.ca](mailto:naturekids@naturealberta.ca) for opportunities to get involved.

# The Impacts of Impact Assessment

BY RICHARD SCHNEIDER

**T**he Supreme Court recently ruled that the new federal *Impact Assessment Act* was unconstitutional. Premier Danielle Smith was triumphant and said she'll tell companies who delayed putting forth project proposals: "Start now, because we're going to approve them. We have the constitutional authority to do it." Smith declared that it was "a great day" for Alberta. Was it?

The kerfuffle over the *Impact Assessment Act* has its origins in the decisions made when Canada became a country in 1867. In the constitution, provinces were given responsibility for managing natural resources, while the federal government retained authority over matters of national concern. The federal role in managing the environment was left undefined, mainly because the concept of environmental protection had not yet developed. Over time, legal interpretations of federal powers led to it having authority over fisheries, migratory birds, species at risk, air pollution, and several other items. As a result, there is plenty of overlap in authority, especially when it comes to larger industrial projects, and plenty of potential for squabbling.

The reason the *Impact Assessment Act* was ruled unconstitutional by the

Supreme Court was that it encroached upon the constitutionally defined rights of provinces to manage their natural resources. The court's concern was that the expanded scope of the law would allow federal officials to assess the broader public interest of a project, rather than just the points of federal authority. In short, the court said the feds should stick to their knitting.

Whether the law actually serves the broad public interest is an entirely different matter, one that was never examined by the court. For Smith, the answer is an emphatic "No!" In her view, the *Impact Assessment Act* is simply a barrier to development, throttling Alberta's economy and overall well-being. Given that Albertans awarded the UCP a majority government, we might reasonably conclude that this reflects the views of Albertans in general.

Not so fast. Albertans know that they live in a resource-based economy; however, there is a strong expectation of sound, sustainable environmental management, as well as widespread support for creating additional protected areas. You would be hard-pressed to find anyone in Alberta who supports permanent damage to the environment.

Instead, Albertans expect a balanced approach, where trade-offs between economic objectives and environmental objectives are carefully weighed, along with mitigation options, before any development proceeds. There is a term for that: environmental impact assessment.

Impact assessments take considerable time and effort, with good reason. Not only do the local impacts of project construction have to be assessed, but also the long-term effects on the environment and human health. Let's take coal mining as an example. The mine site and related access roads require extensive land clearing, potentially affecting the viability of species at risk such as whitebark pine. Off-site impacts also need to be considered. With coal mines, the leaching of selenium and other contaminants into waterways, and ultimately drinking water, is a perennial problem. There are also risks associated with retention ponds and spoil piles, which have a habit of failing over time. Lorne Fitch's article on page 8 of this issue illustrates the impacts such failures can have on local fish stocks.

In principle, the Alberta government could do an effective job of environmental





assessment on its own, without federal involvement. In practice, this is not happening. In fact, the UCP government has been progressively unwinding existing policies — put in place by previous conservative governments — that were designed to balance economic and environmental objectives, in favour of a development-first agenda. We saw this with the 2020 decision to rescind the *Alberta Coal Policy* and the proposal to delist 164 parks from the provincial parks system. The government was forced to walk back both decisions in the face of massive public backlash. Another indication is the abandonment of the *Land-use Framework* and its associated regional planning process.

The government's disregard of the public interest is not accidental. Smith's UCP is beholden to those who facilitated her rise to leadership of the party. This political base's agenda leans heavily

towards and profits from unfettered development. This government is adept at identifying divisive wedge issues, such as western alienation and “woke” cultural change, and exploiting them to draw attention away other aspects of governance, such as environmental protection.

Where does this leave us? The Supreme Court did not diminish existing federal oversight powers, it just curtailed their expansion. Therefore, the federal government will continue to play a role in environmental assessments using its existing powers, as it has for decades. The *Species at Risk Act* and other federal legislation will also continue to support environmental protection.

Within Alberta, we need to become less susceptible to populist misdirection (“Look! There’s Trudeau!”). Instead of allowing wedge issues to dictate our politics, we need to pay attention to

overall governance and demand policies that serve the broad public interest. As a case in point, instead of demonizing environmental assessment, we need to fix its flaws and implement it more rigorously (which, in part, was what the federal act was intended to do). We also need to bring the *Land-use Framework* out of cold storage and finish the regional planning process. This is the only way to achieve balanced land-use decisions.

You can help by learning more about what the government is doing and writing your MLA and the premier when the government is pursuing policies you do not support. Too much is currently driven by small but vocal special interest groups like Take Back Alberta. The rest of us need to make our voices heard. ■

Richard Schneider is a conservation biologist who has worked on species at risk and land-use planning in Alberta for the past 30 years.



The Athabasca oil sands, open for business.



# Canada Jays: Grey Ghosts of the Northern Woods

BY NICK CARTER



With their harsh calls and iridescent plumage, Alberta's corvid species tend to stand out. But if there is one corvid that has a special place in our hearts, it must be the Canada jay. Its vocalizations are just as varied as other members of the crow family, but more subtle. The song of the Canada jay is known as a "whisper song," a soft, babbling melody of warbling chirps. It also makes a variety of gentle squeaks and squawks and is skilled at imitating the calls of birds of prey.

The Canada jay is relatively large for a songbird and is perhaps best described as sombre looking. It is pale grey underneath and dark, smoky grey from the eyes to the back of the head and down the back, wings, and tail. The bill, eyes, and feet are black. Juveniles are dark, sooty grey overall with a subtle mustache. Compared to the crested head of the blue jay and Steller's jay, the head of the Canada jay is more rounded.

Like other corvids, the Canada jay is an intelligent opportunist when it comes to feeding. Invertebrates, berries, and even small mammals and other birds make up much of this species' diet. Basically, anything edible is fair game. Canada jays even land on moose and feed on blood-gorged winter ticks.<sup>1</sup> Campers and hikers often share their food with Canada jays, either willingly or by having it stolen from picnic tables.

During the summer, the Canada jay works hard at caching food for the winter in safe spots, such as tree crevices or under bark or lichen, and it remembers the location of its caches months after placing them.<sup>2</sup> The jay has an interesting habit of securing its cached food in place with sticky saliva.

When it comes to mating, Canada jays are monogamous. Males choose well-lit nesting sites in conifer trees, and both parents work together to build a cup-shaped nest of twigs, bark, and lichens. Because they don't migrate, Canada jays breed earlier in the year than most other birds — as early as February in southern regions and as late as April farther north. The female incubates the eggs, staying put even during late-winter snowstorms, while the male brings her food. Two to five pale green, brown-flecked eggs hatch after 18 to 19 days. The chicks grow quickly, fed by both parents with a paste of partially digested food. After 22 to 24 days, the chicks fledge and leave the nest.

Canada jays can be found throughout Canada's boreal forest and mountainous regions. Their range also extends into Alaska and the mountainous parts of the western United States. They specialize in coniferous woods, where they softly glide like smoky ghosts from tree to tree. In the words of the great Albertan zoologists W. Ray Salt and Jim Salt: "They are part of the stillness of the forest." On occasion, they may venture into the central parklands during winter. Any mountain park





Above: Canada jays have a subdued appearance, with colouration limited to white, grey, and black. Their heads are rounder than the crested heads of blue jays. ANNE BELTON

Top right: Canada jays can be found throughout Canada's boreal forest and mountainous regions. They are frequent picnic table visitors at woodland campgrounds. RICHARD SCHNEIDER

Right: Peekaboo! Canada jays flit quietly from tree to tree and are not particularly shy. NICK CARTER

campground or coniferous woodland can be a good place to catch a glimpse of this bird. When I would drive through the northern foothills between Grande Prairie and Grande Cache, I would sometimes see Canada jays boldly perched on road signs and construction equipment.

Humans share a long history with Canada jays. Formerly known as the grey jay, another of its names is "whisky jack," derived from Wisakedjak, a trickster figure in stories told by several Indigenous nations. A fitting comparison, as the Canada jay is well known as a mischievous little thief. In 2016, a poll conducted by the Royal Canadian Geographical Society chose the Canada jay as the unofficial "Bird of Canada." People saw this tough yet friendly resident of the northern woods as a fitting symbol of our national spirit. The Canadian government has not yet made this designation official.

Being a common and widespread bird, the Canada jay population is secure in Alberta, but not to be taken for granted. This species relies on coniferous forests as a home, and the more of that we cut down, the less habitat there is for Canada jays. A more long-term threat to this bird is climate change. Their strategy of stashing food for the winter and breeding early in the year can be derailed when a warm autumn causes their food to spoil, which in turn negatively affects their reproductive success.<sup>3</sup> If we want to give this charming little camp robber the best chance of survival, we must keep our coniferous woods intact and our climate cool. ■



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Nick Carter is a writer, photographer, and naturalist from Edmonton. From birds and bugs to flowers and fossils, Nick is always seeking out the natural wonders of this province and sharing his enthusiasm with others.

# The Currency of Angler Citizen Science

BY LORNE FITCH

Some anglers are relentless recorders of the minutiae of fishing. This is a way to note important moments, provide bragging rights, and gauge the condition of streams and rivers for repeat engagements. It's also a way to ensure memories reflect what actually happened. Like how big the fish really were, how many were caught, and how long it took to catch them. As Mark Twain said, "If you tell the truth, you don't have to remember anything."

Is this obsessive behaviour? Maybe. But when it comes to better understanding the range of variability in a fish population and fish habitat, and to documenting when things come unglued, the records anglers maintain are priceless.

I encountered this when trying to determine the status of bull trout in southwestern Alberta streams as a fisheries biologist. Systematic fisheries inventories are a recent phenomenon and only provide detailed information on fish stocks, growth rates, and distribution for the last few decades. This information does not provide any insight into what fish populations were like before settlement and subsequent developments. Without that critical benchmark, we don't have an adequate starting point against which to measure changes.

The oldest angler I interviewed for information on bull trout was born in 1910, and all were born before 1940. These anglers had an average of 60 years of fishing experience, mostly occurring between 1920 and the 1960s. Many had fishing diaries and photographs to back up their memories and convince me they

were not relating typical "fish stories." These proved to be a treasure trove of information, not just on fish caught and sizes, but also reflections on the land. Without these remembrances, I could not have correctly assessed the changes in populations — an approximately 70% loss in bull trout distribution in the Oldman watershed.

Another example of how angler diaries have benefited fish management involves the proposed Grassy Mountain coal mine. When coal company consultants assessed the trout population of Gold Creek, beneath the proposed mine, they had no benchmarks. Their information allowed the company to term the trout population of the stream as "depauperate," apparently containing too few trout to impede mining. This might have been enough to allow the joint federal/provincial panel to conclude there was nothing to be


concerned about and coal mining might proceed.

But coal interests hadn't counted on Jim Rennie, a long-term angler of Gold Creek (one of his favorite streams) and his prodigious recordkeeping. Although bull trout have long been lost from this creek, westslope cutthroat trout have hung on. Jim had records of his trout catch rates, measured in fish caught per hour, that dated from 1993, with minor breaks until recently. Catch rates are a surrogate for population size, the assumption being that the greater the population, the greater the catch rate. For Jim, an accomplished, consistent angler and disciplined recordkeeper, his information eliminates much of the bias in reporting.

In a simple, hand-drawn graph presented to the panel, Jim showed annual peaks and valleys in the westslope cutthroat trout population in Gold Creek. Often the valleys were associated with floods, with recovery in the following year. Despite these fluctuations, Jim's catch rates stayed steady around ten trout (caught and released) per hour.

Except in 2015, when a coal spoil pile failed because of high rainfall and perhaps exploration activity, unleashing a slurry of sediment into Gold Creek. Jim's catch rate plummeted to nearly nil, virtually overnight. His estimate, based on this precipitous decline in catch rates, was



A man in a camouflage jacket and cap is fishing with a long rod, silhouetted against a bright sunset over a body of water. The sun is low on the horizon, creating a strong reflection on the water and a warm, golden glow across the sky. The man is standing on a rocky shore, and his reflection is clearly visible in the calm water.

that Gold Creek had suffered a 95% loss of trout. His point, tellingly made to the panel, was that the consultant's work had all been done from 2016 to 2019, after the spill and the population crash. No wonder the coal company was willing to write off the trout of Gold Creek, what few remained.

When no one is watching, and apparently the coal company wasn't, significant losses in fish populations can occur. But Jim was, and his data were irrefutable.

It's easy to discount angler tales. In creel surveys of the Oldman and Livingstone Rivers, everyone we asked said they had caught at least one fish. But, in actual measurements of fish in the creel, it was apparent that a handful of anglers had caught most of the fish. In reality, most people catch nothing. It leaves you wondering who to believe. Fish tales wither in the face of long-term, written records.

When I talked with Jim about his angling records, he obligingly pulled out his fishing diaries, a small pile of them. In those diaries are found his history of fishing, of fish, and of habitat conditions painstakingly accumulated from more than 25 streams, rivers, and lakes over a period of five decades. Most include repeat visits over the years to the same streams, the same stream reaches, to the same pools and runs and riffles. Detailed notes on water and air temperatures, flow

rates, water quality impressions, insect hatches, species of fish caught, numbers of fish caught per hour, fish health, and best flies used paint a picture of the stream over time.

I asked Jim, "Why take such detailed notes?" His answer was telling: "I knew the fishing I experienced wasn't going to last with the developments I could see encroaching on each watershed. If records aren't kept, how do we know if changes, including trout population crashes, have happened?" What Jim was expressing is, if you've never encountered yesterday, you may think today hasn't changed a bit, and tomorrow will be much the same.

It was clear to me that Jim's detailed records were establishing biological benchmarks, so changes in these streams and their fish populations could be recognized. So often we don't see or measure changes and we accept that whatever the current condition is, it is the one that has always persisted. That's how we lose watershed integrity, fish and wildlife populations, and recreational opportunity—they slip through our insensitive fingers.

Often, governments we think are monitoring, measuring, and regulating simply aren't. Systematic inventories, collected by resource professionals, are absolutely important. But if the inventory data isn't current, contains substantial gaps, and provides only single snapshots





The meticulous record-keeping of angler Jim Rennie provided a clear account of the population crash of westslope cutthroat trout in Gold Creek following the failure of a coal spoil pile that released sediment into the waterway.

of conditions, its value at showing change is watered down.

This is where the citizen science of people like Jim provides the best available information to chart changes. Jim's long-term records show that the amount of sediment is rising in Eastern Slopes streams, water is getting warmer, there are fewer deep pools, and habitat complexity is being homogenized into long reaches with little or no holding water for trout. This translates into fewer fish.

I had to ask Jim how this made him feel as he looked back through his diaries. Not surprisingly, he said it saddened him and made him feel "sick" to know how much had changed on his favourite waters.

This was especially so since he had fished Gold Creek just a couple of days after the failure of the coal spoil pile. It motivated him to make a submission to the panel holding a hearing over the proposed Grassy Mountain coal mine in the Crowsnest Pass.

The panel was very receptive to Jim's message on the trout crash, with the long-term angling record he was able to display. The coal company had no rebuttal, except to downplay the significance of the coal pile failure. The panel clearly saw through this subterfuge because of Jim's evidence.

Unfortunately, much of this essential information contained in angler diaries is squirreled away and not available for review. Many anglers treat this information as proprietary and secret. Jim mentioned he wrestled with whether or not to share his angling records of Gold Creek, since they show what a productive fishery it was before the spoil pile failure. The risk was that if the fishery recovered, it might be overwhelmed by too many other anglers (his recent experiences show little recovery). It's normal to be tight-lipped on good angling spots, but

Jim reasoned the public needed to know what had happened, and what could persist if mining proceeded.

Our watersheds, our water, and our fish and wildlife populations need more engaged citizen scientists like Jim and consistent, repeated observations, taken over long periods of time. Otherwise so many changes go unrecognized or get swept under bureaucratic rugs, and the ecosystem declines in integrity.

Memory alone is always another country of imperfect landmarks, but records are a good roadmap of reality. Those who manage our landscapes and our biodiversity assets might find a treasure trove of information in these citizen science observations to inform better outcomes for our watersheds. It can't happen soon enough for the fish. ■

Lorne Fitch is a Professional Biologist, a retired Fish and Wildlife Biologist and a former Adjunct Professor with the University of Calgary. His new book, *Streams of Consequence: Dispatches from the Conservation World*, is available from Rocky Mountain Books ([rmbooks.com](http://rmbooks.com)).





# Coexisting With Coyotes

## Ten-Year Study Details the Experiences of Edmontonians with Urban Coyotes

BY JONATHAN FARR AND COLLEEN CASSADY ST. CLAIR



CONNAR L'ECUYER

Coyote sightings in cities across North America have been steadily increasing, leading many city-dwellers to believe that conflict with urban coyotes is on the rise. This inspired University of Alberta researchers to start the Edmonton Urban Coyote Project, aimed at improving our understanding of these wily urban carnivores and how we can coexist with them. As part of the project, we encouraged Edmontonians to submit firsthand reports of their coyote encounters to our project website. Between January 2012 and December 2021, we received 9,134 reports, which included the location, date, time, and type of encounter. In addition, 97% of participants provided highly detailed comments about their observations.

With help from a team of dedicated volunteers, we analyzed the website reports to extract insights into how coyotes and people interact, how people perceive coyotes, and how these patterns

vary across seasons, years, and types of land use. A key question was whether human-coyote conflict has increased over time in Edmonton, as indicated by bold coyote behaviour and people's level of concern about coyotes. We also sought to unravel the circumstances surrounding negative coyote encounters.

Our analysis of the website reports revealed that encounters with bold

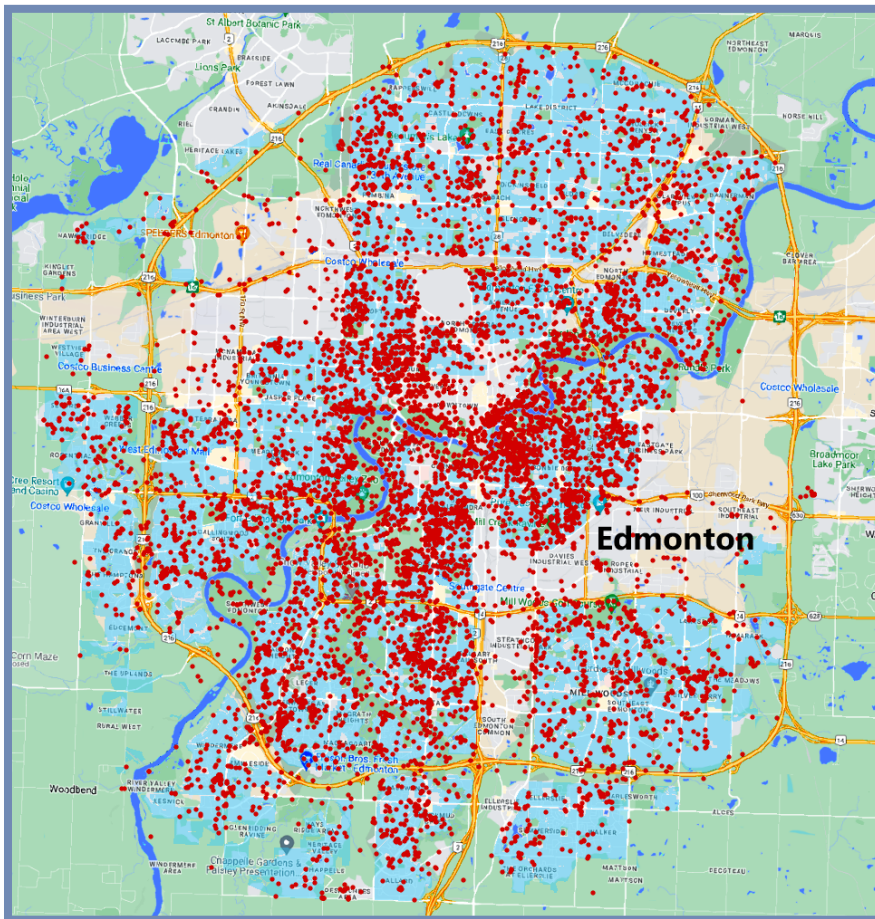
coyotes increased from 8% in 2012 to 27% in 2021, which equates to an average increase of 2.2% per year. Reports expressing negative or fearful attitudes about coyotes rose by 1% annually. Both patterns suggest an increase in concern about human-coyote conflict among Edmontonians.

The spatial distribution of the reports showed that the odds of encountering a bold coyote increased in open areas, perhaps because coyotes are less able to hide from dogs or people in such environments and therefore choose fight over flight. Conflict in open areas can be reduced by ensuring dogs are leashed and owners are observant. Coyotes were less bold in areas with higher building density. However, this did not translate into a lower level of concern about coyotes among people in residential neighbourhoods. In fact, the opposite was true. For this reason, it is particularly important to avoid attracting coyotes to



Coyote encounters increase in the fall, when juvenile coyotes are dispersing.





Distribution of 9,134 coyote reports (red dots) across the City of Edmonton submitted by community members between 2012 and 2021. Most coyote sightings are in residential parts of the city, which are highlighted in light blue on the map.

urban neighbourhoods, where they are more likely to be perceived negatively, even if they do not exhibit bold behaviour.

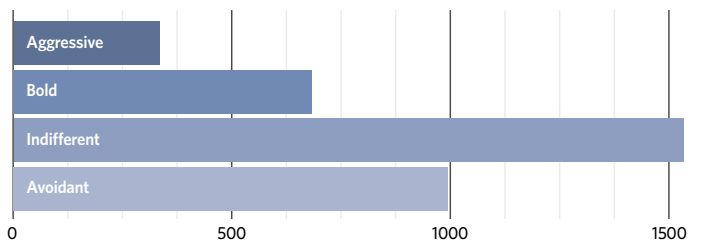
As for the timing of encounters, reports of bold coyotes were highest from May to August, though the total number of reports was actually lowest in that season. The spring and summer seasons are when coyote parents are rearing their pups. Therefore, it may be that adult coyotes generally try to avoid human encounters when rearing pups, but act aggressively if they feel their pups are being threatened, especially near den sites. Conflict could be reduced by preventing coyotes from denning in residential neighbourhoods and other areas with high human use, while encouraging people to be cautious in natural areas like the Edmonton river valley, where coyotes are known to den.

The period from September to December had the highest total encounters, as well as the highest level of human concern about coyotes. The fall season



Most encounters with aggressive coyotes occur in the spring, when adults are rearing their pups. RICK PRICE





Coyote boldness, derived from comments made by report contributors. Avoidance means coyotes ran or walked away from people; indifference means coyotes did not respond to human presence; bold means coyotes approached or followed people or pets; and aggressive means coyotes chased, charged, or contacted people or pets.



Most cities have a sizeable coyote population, and coyote encounters have been steadily increasing in recent years.  
TONY LEPRIEUR

is when young coyotes disperse and explore new areas, including residential neighbourhoods, and this likely is the cause of increased encounters.

Finally, we found that encounters with bold coyotes were more likely if dogs or cats were present, especially if off-leash. This pattern suggests that the exploratory behaviour of off-leash pets increases their chances of encountering a coyote. In some cases, they may even be perceived as prey (several people reported seeing coyotes carrying dead cats). The presence of children was not associated with higher bold encounters. Nevertheless, observers understandably had a more negative perception of coyotes if children or pets were present.

To summarize, our analysis confirms that human-coyote conflict has been slowly increasing in Edmonton. Encounters with bold coyotes occur most commonly during the spring, when pups are being raised, but total encounters are highest in the fall, when juveniles are dispersing. The chances of an aggressive

encounter are highest when an off-leash pet is present.

Several strategies are available to reduce conflicts between coyotes and people. First, residents should avoid attracting coyotes to residential neighbourhoods with food or shelter. Second, hazing (which can include yelling, using noisemakers, waving arms to appear larger, and throwing small rocks or tennis balls toward but not at the coyote) should be used to deter bold animals from residential areas. Third, it is important to maintain control of pets, especially in areas where coyotes are likely to den. Precautions like these have been used successfully to prevent conflict between humans and wildlife in national

parks, and applying these same principles in our cities will help people and pets to coexist with the wild and wily urban coyotes. Coexisting with coyotes requires that we keep them wild by treating them with the respect that they deserve, and in doing so we can gain better outcomes for people, pets, and coyotes.

We encourage readers who are keen to learn more to visit our website, [edmontonurbancoyotes.ca](http://edmontonurbancoyotes.ca). You can also read the scientific report we recently published about this study at [ecologyandsociety.org/vol28/iss2/art19/](http://ecologyandsociety.org/vol28/iss2/art19/). Additional aspects of the Edmonton Urban Coyote Project were reviewed in the Winter 2021 issue of *Nature Alberta Magazine*. ■

Jonathan Farr completed his undergraduate degree in Ecology, Evolution and Environmental Biology at the University of Alberta in 2021. He is currently a graduate student at the University of Montana, where he is studying the ecology of reintroduced bison in Banff National Park.

Colleen Cassady St. Clair is a professor of Biological Sciences at the University of Alberta. The Edmonton Urban Coyote Project has garnered national attention from the CBC ([bit.ly/cbc-coyote](http://bit.ly/cbc-coyote)) and a light-hearted look from The Beaverton ([bit.ly/beaverton-coyote](http://bit.ly/beaverton-coyote)).

# Motus: The Latest Advance in Tracking Bird Migration

BY GEOFF HOLROYD AND ETHAN DENTON

**A** new technology is allowing us to track small birds, bats, and even insects as they move around the world. It goes by the name Motus, which means “movement” in Latin. The Beaverhill Bird Observatory (BBO) has started using this new approach to track northern saw-whet owls, with exciting early results that we are pleased to share in this article.

## The Evolution of Bird Tracking

Beginning with early experiments in the 1800s, ornithologists have used leg bands to study birds and the great migrations they undertake each year. Banding has also revealed a lot about other aspects of the avian world, from nestling survivorship and population dynamics to habitat usage and site fidelity. Discoveries have steadily accumulated over the past 200 years as methodologies have improved and the scale of the research has increased. Modern-day research techniques include satellite transmitters, geolocators, VHF telemetry, and stable isotope analysis.

Regrettably, the application of modern tracking technology to small organisms has been limited to date, because they

are too tiny to support the satellite backpacks used on larger birds and mammals. Many of the birds we band at the BBO weigh less than 15 grams. The Motus approach utilizes a new form of radio telemetry that makes tracking small animals possible. Rather than a heavy backpack, each bird is fitted with a tiny nanotag transmitter, which contains a unique electronic code — much like a metal leg band. The nanotags are so lightweight they are even being used on insects like dragonflies and butterflies without impeding flight.

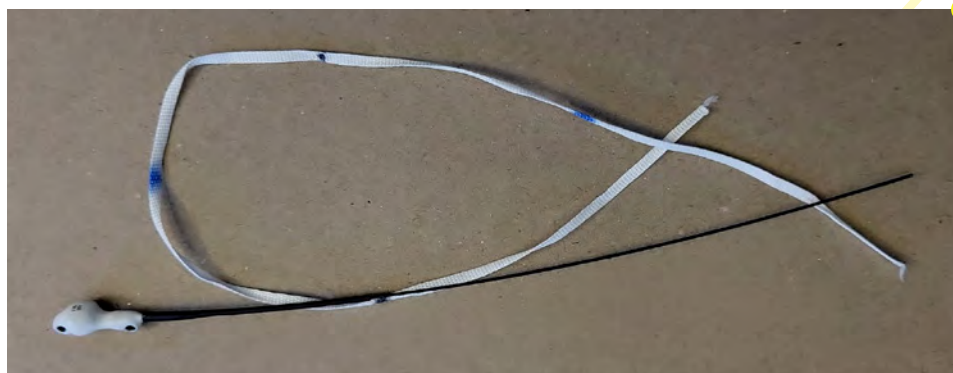
Nanotags send out consistent “pings” that can be picked up by an antenna tower connected to a receiver called a



Leg bands, such as the one on this common yellowthroat, have long been the mainstay of bird migration research. WILL PARSON

Motus station. Whenever a tagged bird comes within 15 km of a tower, the bird's unique code and location are relayed to the Motus server at Birds Canada.

The Motus initiative has now taken wing, and towers are being installed throughout the Americas, from northern Canada to Tierra del Fuego, and all around the world. One big advantage of the Motus network is that it is a collaborative project; everyone who tags a bird, bat, or insect benefits from the towers deployed by everyone else. As the network of towers grows, it becomes



New tracking nanotags are approximately 20 cm long (including the antenna) and are light enough to be carried by small birds. The blue ribbon is used to attach the tag to the bird. GEOFF HOLROYD





The BBO built a 24-metre communications tower to host its Motus antenna.  
GEOFF HOLROYD

increasingly likely that tagged animals will be detected one or more times along their migration route. Many of the towers are connected to the Internet, allowing the information to be instantly uploaded to the Motus website, [motus.org](https://motus.org). This makes it possible to see live updates on the migrations of hundreds of birds. In other stations, the information is stored on SD cards which have to be manually uploaded by the station host.

As with any technology, there are some drawbacks. Motus tags have a limited lifespan, lasting anywhere from a day to a few years, depending on the size of the tag and the frequency of pings. Also, because the location of tagged animals is only recorded when they come within the 15-km range of a tower, migration tracks are not precise. Lastly, the tags and towers are significantly



Early Motus results have shown that bank swallows can travel over 2,000 km in four days, which works out to an average flying speed of almost 30 km/h. MARK PECK

more expensive than traditional metal leg bands, though they are much cheaper than satellite transmitters. All in all, the pros far outweigh the cons. With Motus, the rate of recoveries and the richness of the resultant data are notably higher than from conventional bird bands.

### Motus in Action

The BBO hosts one of 11 Motus stations operating in Alberta (as of the time of writing). The early results have been fascinating. For example, four white-throated sparrows tagged near Prince George, B.C. in May 2023 were detected by the BBO tower in the fall. Two of these sparrows were later detected by Motus stations in the Midwest U.S. in October.

A most remarkable set of pings was recorded in late July 2023, when a group of bank swallows visited the BBO. These bank swallows had been tagged by two research teams working in several locations in B.C. and Alaska, including Fort St. John, Whitehorse, and Fairbanks.

Out of 178 swallows tagged by these teams, 25 visited Beaverhill Lake on their southward migration.

The flying prowess of swallows, as revealed through Motus, is impressive. One swallow flew 2,326 km from Fairbanks to the BBO in four days, an average speed of 27 km/h. Other swallows did the same flight in a still impressive five or six days. The swallows from Whitehorse and Fort St. John were not as fast, presumably because they stopped somewhere en route.

Some of the swallows appeared to stay for a few days at Beaverhill Lake, but most were only detected briefly. Two that were just passing through were detected 25 and 27 hours later near Brandon, Manitoba, implying an overnight flight across Saskatchewan! Another swallow made it to a tower south of Saskatoon, 282 km from BBO, in nine hours, an average speed of 29 km/h. These records demonstrate that Beaverhill Lake is an important migration site for the western populations of bank swallows.





## Studying Saw-Whet Owls

In the fall of 2023, the BBO fitted 48 northern saw-whet owls with Motus nanotags. In this, we were breaking new ground because the techniques for attaching nanotags to small birds are still being developed. These tags cannot be attached like conventional leg bands; they have to be placed on the bird's back using a miniature harness. Geoff Holroyd was able to develop a workable approach, drawing on his experience in building backpacks for satellite transmitters on larger birds. It took three weeks of trials with different materials to perfect the design, and by September 16 we were able to deploy the first tag. With some practice, we were able to reduce the attachment time to about ten minutes. At the World Owl Conference in Wisconsin in October, we confirmed that we had hit upon a novel attachment technique, improving on other designs.

We have already learned a lot. For example, we had always assumed that the migrating owls we caught in the fall were just passing through and would leave the Beaverhill Natural Area within a day or two. The nanotags tell a different story. Two tagged birds stayed within the 15-km range of BBO's tower for over a month. Other owls remained for a week or so before heading further on their migration. During this time, the owls are completing their body moult. Saw-whet owls moult progressively over the summer, and in September most owls are still moulting body feathers. The occasional adult is still regrowing wing feathers. By October, the body moults are complete and the owls are ready for migration. Some have already migrated!

Additional surprises were in store after the tagged birds left our area.

Earlier studies based on bird banding recoveries had suggested that most saw-whet owls from Alberta migrate to eastern Canada and then south into the U.S. However, most owl banding stations are located to the east, and very few banding stations are south and west of us. This may have skewed the results — it could be that we have been seeing an eastward migration because that is where we have been looking. The early Motus findings certainly paint a different picture, with the birds heading directly south (see the map on the next page).

Two of our tagged owls traveled southwest to Sylvan Lake. Another owl was detected on the shore of Koocanusa Lake, 500 km southwest of BBO on the B.C.-Montana border. This owl continued further south and was detected by a tower in southern Idaho a few days later. Four other birds were detected in Montana: one south of Waterton Lakes National Park, two south of Missoula, and the other in northeast Montana. The longest movement was an owl that flew to central Washington state. In summary, eight of our tagged owls were detected in the first month of the project and all eight flew south. None have flown east as predicted by bird band recoveries. This story will continue to develop, since the nanotags are designed to last for two years.

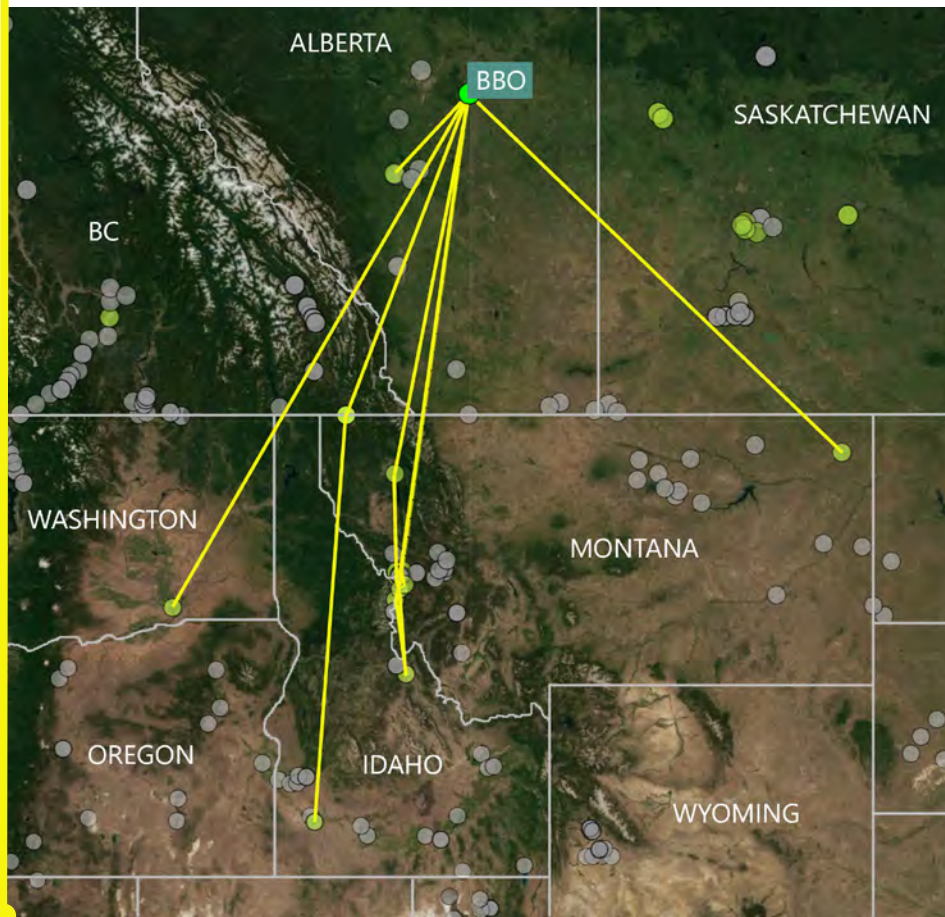
In the coming months, the new Motus tags will help us fill important information gaps about the spring movements of northern saw-whet owls in our region. Currently, all of our owl monitoring is done in the fall because the spring migration occurs when conditions are far too cold (and often snowy) to safely operate our banding station. With Motus, that's all about to change. The



Top: The BBO bands 200–500 saw-whet owls each fall. In the fall of 2023, we fitted 48 owls with Motus nanotags. RICK LECHE

Above: The author (Geoff Holroyd) with a saw-whet owl, ready for release after the attachment of a nanotag. JANA TEEFY





Left: The migration tracks of saw-whet owls fitted with nanotags by the BBO in the fall of 2023. The birds travelled south into the western U.S.A. instead of flying eastward as expected on the basis of leg band studies.

Above: Saw-whet chicks have a different colouration than adults, and are nothing short of adorable. MYRNA PEARMAN

towers will pick up tagged owls without us having to worry about the inclement conditions of March and April in Alberta.

## Get Involved

Anyone interested in becoming involved with Motus in Alberta can start by sponsoring an owl's tag at the BBO. The tags cost \$300 each. Sponsors get to name their owl and receive updates on where and when the owl pings throughout the bird's travels. The first 48 tags were all sponsored by individuals. Our tower was sponsored by the Edmonton Nature Club, Environment Canada, and by donations. Another great way to further this research is to install a Motus tower at your home, work, recreational property, or elsewhere. The hardware for a station costs about \$5,000, not including a tower, power, and Wi-Fi. Anyone interested in supporting Motus research in Alberta is encouraged to visit

the motus.org website or contact Geoff Holroyd at [chair@beaverhillbirds.com](mailto:chair@beaverhillbirds.com).

Ongoing efforts to install a string of towers across southern Alberta will help ensure that as many birds as possible are detected when they enter the province (not only owls, but other species as well). Also, the more tags deployed the better, as every additional bird tagged vastly increases the odds of having a tagged bird pass by a tower. Whether it's a local bird pinging off the same tower year after year, or a migrant registering a 3,000-km migration and ending up in an entirely different breeding ground, each and every data point collected by Motus helps create a mosaic of scientifically valuable maps. Already, tagged birds are bringing to light new areas of focus for crucial migration stopovers, threatened wintering grounds, and some of the many hazards posed by the birds' biannual trek across the continent, and beyond. ■

## Acknowledgements

We acknowledge the collaboration of the researchers who tagged the songbirds in this article, including Ken Otter (University of Northern B.C.), who tagged the white-throated sparrows, and Sarah Endenburg (Carleton University) and Julie Hagelin (Alaska Fish and Game), who tagged the bank swallows.

Geoff Holroyd is a retired research scientist with Environment and Climate Change Canada and adjunct professor at the University of Alberta. He is currently chair of the Beaverhill Bird Observatory. He published his first scientific article about saw-whet owls in 1975.

Ethan Denton is one of the top young birders in Alberta and currently in first year at Lethbridge College. In 2023 he was an assistant biologist at Beaverhill Bird Observatory.





# For the LOVE of LICHENS

BY DIANE HAUGHLAND



**H**ave you ever stepped back and looked at your life and thought, “Huh, this is not what I thought I’d be doing?” If so, I can sympathize. I’ve long loved lichens, but I am a generalist and an ecologist by temperament and training. And yet, here I sit, a full-fledged lichen taxonomist, trying to describe the tiny, root-like attachments on the bottom of a recalcitrant pelt lichen. Are they more mullet-like? Bed-head? Bundled or paintbrush-like? At the end of the day, what a privilege — I wouldn’t have it any other way.

Lichens are fundamentally different from plants or animals. A lichen is not a single organism, but rather an amalgam of multiple organisms involved in a transformative relationship. At their most basic, lichens are a symbiosis of two partners: a photosynthetic organism

that makes sugar and a fungus that provides structure through the knitting of their thread-like cells. Added to each lichen body are diverse communities

*Lichens are fundamentally different from plants or animals. A lichen is not a single organism, but rather an amalgam of multiple organisms involved in a transformative relationship.*

of additional fungi, photosynthesizers, and microorganisms. Together, these communities form the crusts, leaves, wefts of hair, and pixie-sized goblets that make up lichens.

Lichens are all around us, yet few of us know and appreciate them. I leaned into my love of lichens while working with the Alberta Biodiversity Monitoring Institute (ABMI), a provincewide program dedicated to tracking changes in biodiversity. Lichens were one of the lucky groups selected by ABMI to “speak” on behalf of other species. Their selective habitat requirements, long life, and slow growth make them sensitive ambassadors for the many species we can’t monitor.

Top of page: Star-tipped reindeer lichen looks like cauliflower, but don’t make a meal of it. Reindeer lichens provide critical winter nutrition for caribou. DIANE HAUGHLAND

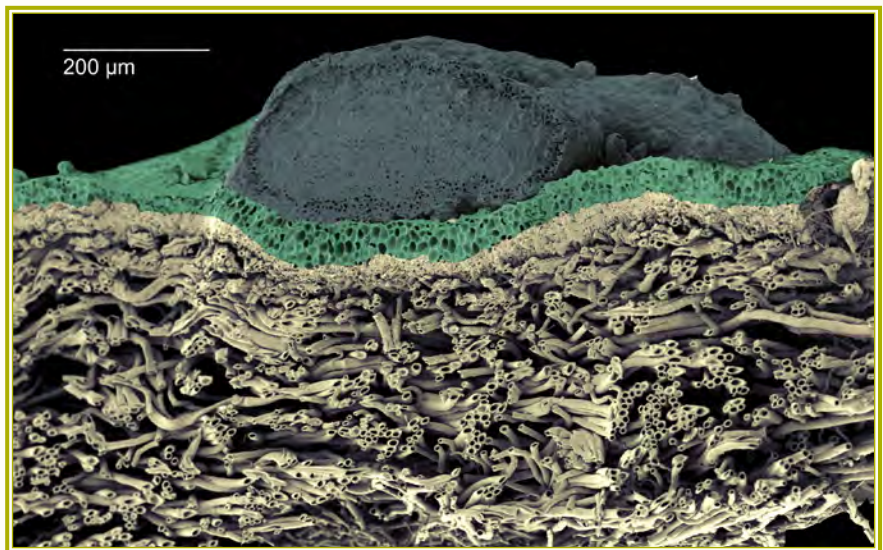


This article is your invitation to join the club — the “enriched.”<sup>1</sup> Your initiation is simple: meet a few of the wondrous lichens that live around you, quiet but colourful, like lovely, long-lived wallflowers. And perhaps learn a few of the lessons they have to teach. My goal is not to overwhelm you with a systematic, scientific review of the lichen groups in Alberta. Instead, you will meet three colourful species our lab has worked on that illustrate key aspects of lichen diversity and ecology.

### *Pelt Lichens Reveal Overlooked Diversity*

To begin, let’s meet the pelt lichens. Frog pelts and dog pelts catch the eye; they form palm-sized, leaf-like bodies, and they can create large, carpet-like colonies. They live in most terrestrial ecosystems in Alberta, from urban river valleys to remote mountaintops. They help retain soil, help the soil retain water, and provide a home and a meal for many a hungry invertebrate. Pelts are the largest and most common lichens in Alberta with a cyanobacterium partner. Cyanobacteria are an evolutionary unicorn. They can do something few others species can — take nitrogen directly from the atmosphere and turn it into compounds the rest of us need. By hosting sheets or colonies of cyanobacteria, pelts are nitrogen-fixing phenomes.

There are many reasons to love pelts, but ease of identification is not one of them. Early on, our ABMI lichenology team realized that many of the pelt lichens we collected did not nicely fit the descriptions of existing species. As a taxonomist, this is a significant source of self-doubt. Were we seeing variation within a species? Or were there new



Top: Don’t be superficial — look below. Concentric pelt is a leafy lichen that can be identified with confidence by its concentric rows of rhizines on the lower surface. DIANE HAUGHLAND

Above: Recoloured scanning electron microscope section of a frog pelt. The blueish top layer is a colony of cyanobacteria, and below that lies a layer of green algae. The bulk of the pelt is made of fungal threads. DIANE HAUGHLAND

species mixed in? To address our doubts, we reached out to an amazing team of lichenologists at Duke University, who have worked for over two decades answering these very questions.<sup>2</sup> By combining boots-on-the-ground field

work around the globe with modern molecular methods, they are redefining what we thought was a well-known genus.

When we started our biodiversity studies, there were 28 pelt lichens





Hooded sunburst brightens up many trees in our cities and parklands. DIANE HAUGHLAND

known in Alberta. After six years and thousands of sequenced collections, we are struggling to understand more than 60 species, many of which are not formally described. Which brings me to my main preoccupation these days: trying to differentiate species that I thought were old friends from outwardly similar but distantly related species. For example, we've found that specimens thought to be members of a single, widely distributed, generalist species actually belong to a mix of species, some of which are very specialized and restricted in range. Unrelated species that appear identical are rampant in lichenology. It seems many lichens come to similar conclusions on how best to knit their symbiotic bodies in response to similar environments.

### *Hooded Sunburst: A Brilliant and Resilient Urbanite*

You don't have to travel to remote areas to find fascinating lichens. Urban

lichens, such as hooded sunburst, are worth meeting too. Like many orange lichens, hooded sunburst thrives in the elevated atmospheric nitrogen typical of urban environments. This brilliant beauty grows on trees across Alberta's urban centres. Its orange, leafy body forms crescent-shaped openings (hoods) that produce tiny, tennis ball-like clones

(each ball is made of a few fungal threads and algal cells). It hugs the bark, where it finds shelter from the wind as well as a source of water from rain running down the trunk of the tree.

The origin of this lichen's orange colour is fascinating. Lichens produce a plethora of chemicals with many different functions. Some make lichens taste bad so that herbivores don't eat them; others regulate the amount of light entering their bodies. Some chemicals have antibacterial and even antifungal properties! In the case of hooded sunburst, the brilliant orange comes from crystals of anthraquinones: chemicals within the lichen that absorb potentially harmful ultraviolet rays. This protects the green algae within the lichen from being overstimulated or damaged — critical when living in open, exposed urban habitats. Chemicals like these to help lichen taxonomists identify otherwise similar species.

Because lichens vary in their ability to adapt to urban life, the distribution



Speckled greenshield thrives in river valleys, forming doily-like colonies on birch and other trees. VARINA CRISFIELD





Left: Soil formation in slow motion. A mosaic of crustose and leafy lichens living shoulder to shoulder on (and in) a rock in the grasslands. DIANE HAUGHLAND

Above: Alberta's (unofficial) provincial lichen, candy dot. DIANE HAUGHLAND

of lichens within a city can tell us about environmental conditions that otherwise are difficult and costly to measure. The range and abundance of each species depends on its tolerance to air- and dust-borne pollutants, as well as its preferred climate. To look at these patterns in Edmonton, in 2019 we were joined by teams of students and volunteers, who at times braved  $-30^{\circ}\text{C}$  weather to get up close and personal with tree-dwelling lichens across the city. We received some curious looks. We also found 114 species, an impressive 10% of the known lichen flora of Alberta (including 14 species not previously documented in the province).<sup>3</sup> The richest lichen flora is in our ravines and river valley, where cool, moist air can be filtered through the forest canopy, creating conditions that many lichens can enjoy. We also found veritable lichen “deserts,” where lichens were largely absent or restricted to a

few hardy species, such as our hooded sunburst. Tracking future changes in these patterns should help us document environmental shifts that also affect human health.

### *Candy Dot and the Power of Small*

While the lichens you have met so far are easily observed, about half of Alberta's approximately 1,100 lichens are true introverts. These are the crust lichens, many of which hide their bodies within the rocks, trees, or soil they grow on. We know them from the limited features they show us, typically small plaques, powdery propagules, or tiny, button-like reproductive structures.

A few crust lichens are more approachable. Meet candy dot, also less elegantly known as fairy puke. Candy dot grows on mosses and logs, visible as a mint-green stain studded with cotton-candy-pink “buttons” that produce fungal spores. What a beauty! Recently, Canadians from coast to coast chose lichens to represent

their respective provinces or territories. Alberta is a geographically diverse province, home to many lovely lichens, so the competition was stiff, but in the end, candy dot won the nomination. It thrives in the bogs that make boreal Alberta a critical area for caribou, carbon capture, and water cycling. And it likes the mountains too — how very Albertan.

The diversity of tiny lichens like candy dot can be an indicator of ecologically important forests. And some tiny lichens play an outsized role in early successional environments, slowly and relentlessly breaking down the substrate they grow on, creating habitat for other species along the way.

### *Lessons Learned*

I have learned so much through working on lichens. It has reinforced the importance of good taxonomy; we shouldn't overlook the small or get complacent about old friends we think we know. We have a responsibility to the species living in our own backyards





Above: Pixie cups and reindeer lichens. Both are Cladonias, which are some of our most charming and taxonomically challenging lichens, resembling miniature goblets, shrubs, or wands. RICHARD SCHNEIDER



Top: A trip to the mountains isn't complete without wolf lichen sightings — but as with many things yellow, no tasting; these lichens are toxic. RICHARD SCHNEIDER

Above: Powdered sunshine is a leafy lichen guaranteed to bring a smile to your face. It takes three separate pigments to achieve that hue. DIANE HAUGHLAND

and an opportunity to learn from them. The bedrock of biodiversity monitoring is knowing what occurs where, and how each species responds to the bewildering array of natural and anthropogenic forces to which they are exposed. Get the basics wrong and our understanding of species' niches and conservation needs are muddled. We may mistakenly conclude that rare species are secure, or assess biologically rich sites as just ho-hum.

There are many more lichens to meet, and no doubt you will find your own meaning as you get to know them. A magnifying glass, a camera, and a few resources can get you started. Curiosity, tenacity, and a willingness to get close to the trunk of a tree and turn your eyes earthward will take you even further. I wish you slower but more rewarding walks, and many beautiful future lichen friendships. Welcome to the club — welcome to “enlichenment.”

Please visit the ABMI lichen website at [bit.ly/abmi-lichens](http://bit.ly/abmi-lichens) for more information.

Additional sources of information are provided in the references that follow. ■

#### References:

1. Trevor Goward coined the term “enlichenment.” Visit [waysofenlichenment.net](http://waysofenlichenment.net) for an eloquent introduction to lichens and many useful resources.
2. Information on the Duke University Peltigera Team and their projects is available at [lutzonilab.org/peltigera/project](http://lutzonilab.org/peltigera/project)
3. Keys, images, and full descriptions of the 114 species known from Edmonton are available at [bit.ly/urban-lichens-edmonton](http://bit.ly/urban-lichens-edmonton)
4. A short booklet with images of common Edmonton lichens is available on the Nature Alberta website: [naturealberta.ca/edmonton-lichens](http://naturealberta.ca/edmonton-lichens)

Diane Haughland is a lichenologist with the Alberta Biodiversity Monitoring Institute, working alongside fellow lichen nerds, er, lichenologists Darcie Thauvette and Jose Maloles. She is also an Adjunct Professor at the University of Alberta in the Department of Renewable Resources. She pinches herself daily to ensure her career in learning, teaching, and applying lichen-related research is not just a dream.





### SNOWY FORAGING

Musk rats spend most of winter sleeping in their well-insulated lodges or burrows, but still forage for food under the ice, sometimes popping up to the surface.

Photo by Tony LePrieur



### HARDY WINTER RESIDENT

Despite their tiny size, boreal chickadees (the heaviest weighing about 12 grams) can withstand the worst winter weather. This small songbird has fluffed up its dense feathers, a key strategy for retaining warmth when temperatures plummet.

Photo by Bob Bowhay

**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 [images@naturealberta.ca](mailto:images@naturealberta.ca). Photos of all native species and natural landscapes within Alberta are welcome.



# Burning Questions

## The Changing Role of Forest Fire in a Warming Climate

BY RICHARD SCHNEIDER

**T**he 2023 wildfire season was unprecedented in modern times. In western Canada, more than 11 million hectares of forest burned, which is over five times the average of 2.2 million hectares.<sup>1</sup> For those of us who spent much of the summer choking on smoke, these fires were a major annoyance. For the tens of thousands who were forced to evacuate their homes, the fires were devastating. Some lost everything.

Given these statistics, many people see wildfire only as a destructive force, something to be prevented at all costs. However, the determination of whether something is good or bad depends on your frame of reference. When we look at fire through the lens of human infrastructure and the economics of

timber production, fire is clearly a negative force. But from the perspective of forest ecology, fire is a necessary process. In this article we will have a closer look at fire's positive attributes and then consider how its ecological role is going to change under a warmer climate.

### The Life of a Forest Stand

Forest stands get their start after a severe disturbance — usually fire — wipes the slate clean and resets the successional clock, erasing the old stand's boundaries. With the mature trees gone, sunlight and warmth can reach the forest floor, allowing understory plants to flourish. The trees that have been killed





usually remain standing for many years, contributing residual structure to the stand. Remnant islands of living trees are often present and further contribute to local habitat complexity. These changes in stand composition and structure attract animal species adapted to early successional habitats. There is also an increase in species that specialize in using dead wood, such as black-backed woodpeckers and pyrophilous beetles.

With time, stand composition and structure are remodeled by succession. The transition of stands to the mature stage is marked by closure of the canopy. Mature stands feature a dense growth of relatively even-aged trees and reduced understory development. The legacy of dead trees slowly diminishes. Habitat complexity and species diversity are lowest during this stage.

The transition to the old-growth stage is marked by the appearance of canopy gaps from the death of individual trees. In the western boreal forests, this process is usually well underway by 80 years post-fire because tree species in this region are not long-lived. The gaps in the canopy allow sunlight to reach the forest floor, stimulating understory growth. We also see the emergence of secondary canopy species and an accumulation of snags and downed logs. Relative to younger stages, old stands have trees of many ages and have more large canopy trees, large snags, and large downed logs. This high level of habitat diversity is associated with high species richness and the presence of many specialist species.

## From Stand to Forest

In addition to resetting succession, fire has an overriding influence on large-scale forest patterns. Given the images you see in the news, you may have the impression that fire is like



Left: After fire, sunlight and warmth can reach the forest floor, stimulating growth of the understory. Standing dead trees contribute to habitat complexity.

RICHARD SCHNEIDER

Top: Young stands attract species that specialize in using dead wood, such as this black-backed woodpecker.

TONY LEPRIEUR

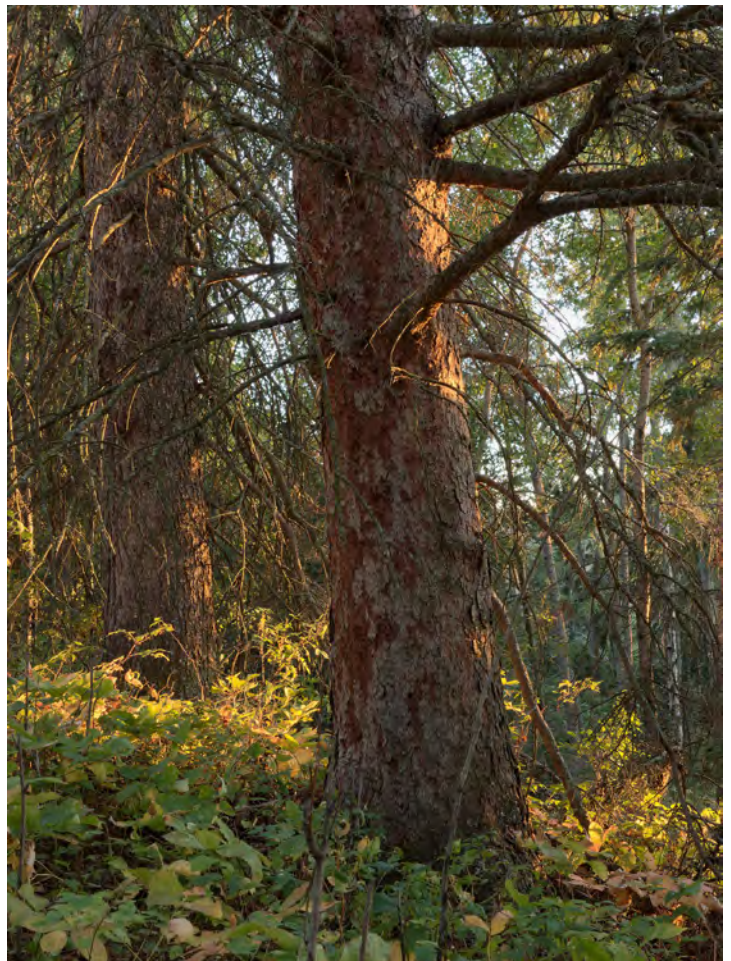


Middle: A variety of insects, such as this pyrophilous beetle, *Sericoda obsoleta*, can sense burned wood and are attracted to it.

AARON BELL

Below: Old-growth stands are characterized by large old trees and gaps in the canopy that allow sunlight to reach the understory.

RICHARD SCHNEIDER







Fire intensity is highly variable, and shifts in direction are common. This creates complex burn patterns. The scale of this fire is immense; the white speck in the lower right area of the photo is a helicopter. CAMERON STRANDBERG

an enormous steamroller, flattening everything in its path. In reality, fire behaviour is highly variable. Its intensity and direction are influenced by local topography, weather, wind, and other factors. Stand age and composition also play a role. As a result, burn patterns are highly complex. Some spots may be utterly destroyed, while other areas may experience only low-grade burning of the forest floor. With changes in wind direction, some spots may be entirely skipped over and remain intact.

Additional complexity arises from variability in the occurrence of fire over time. If you tally the total area burned over

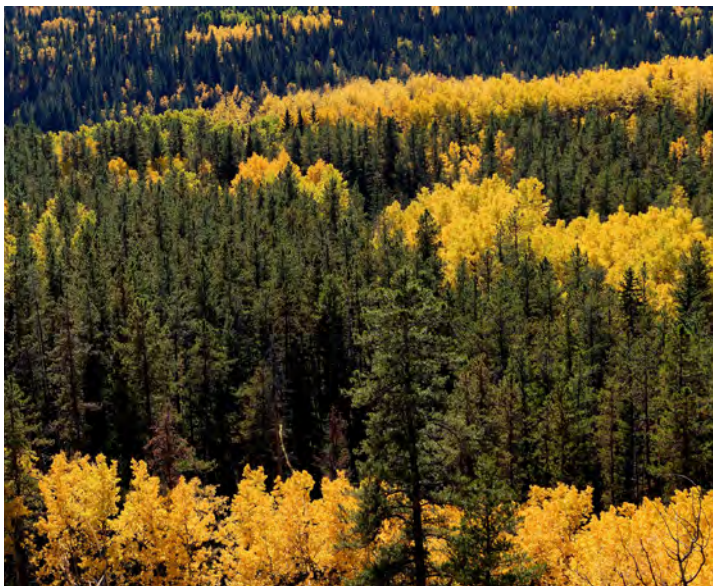
the years, you will find that a relatively small number of fires account for most of the burning. For example, of the roughly 35,000 fires recorded in Alberta's wildfire database since 1980, the 100 largest fires account for 73% of the total area burned.<sup>2</sup> These massive fires are generally driven by unusual weather conditions and are all but unstoppable, as we witnessed in 2023. Because they occur sporadically, they leave a noticeable imprint on the age structure of the forest, similar to the way baby boomers create a blip in Canada's human population.

All this complexity in fire size, distribution, and local behaviour generates complex forest patterns, both at the stand scale and the landscape scale. Forest ecologists describe boreal ecosystems as a "shifting mosaic" of forest stands. The fire-driven variability in forest structure and pattern generates the habitat complexity needed to support a high level of species diversity. The upshot is that, while fire is certainly an agent of destruction, it is also a force of renewal, vital for maintaining forest biodiversity.

### What Does the Future Hold?

If you get in your car in Medicine Hat and drive north to Fort McMurray, you will notice that the vegetation becomes progressively taller the farther north you go. Short, hardy grasses transition to taller grasses, which eventually become dotted with aspen stands. Continuing northward, the aspen trees become taller and coalesce into a closed forest. Finally, the forests become a mixture of aspen and coniferous species.

The primary driver of this ecological sequence is ground moisture. It takes more water to grow a spruce tree than a patch




In boreal mixedwood forests, fire creates a shifting mosaic of stand types and ages. RICHARD SCHNEIDER



of drought-tolerant grass. But wait — the rate of precipitation across most of northern Alberta is no higher than it is in the region between Edmonton and Calgary. So how is it that we find grasslands in the south and boreal forest in the north?

The answer is that ground moisture depends not only on water inputs, but also on water losses, especially from evaporation. The rate of evaporation is much higher on the hot, southern prairie than in cooler northern forests. Thus, we have an ecological gradient that is driven by a moisture gradient that is in turn driven by a temperature gradient. The implication is that the distribution of Alberta's grasslands, parkland, and boreal forest is ultimately controlled by temperature. And we know that average temperatures are steadily rising.



Five of the ten most destructive years on record (dating back to the 1930s) have occurred since 2011.

By this point you might be wondering what this all has to do with fire. We'll make the connection now. As temperatures continue to rise in coming decades, more and more of Alberta's boreal region will fall below the moisture threshold needed to sustain a forest ecosystem. The transition to aspen parkland and grassland will not be immediate because mature trees have considerable resilience and can persist in suboptimal conditions. It is the young seedlings that are highly vulnerable and will die in the absence of sufficient moisture. Consequently, forest ecosystem transitions will manifest mainly as regeneration failures following fire or other severe disturbance.<sup>3</sup> The implication is that fire will change from an agent of forest renewal to a driver of ecosystem transition.

As the boreal region becomes warmer and drier, the rate of fire will also increase, hastening the transition process. Indeed, it already has. In terms of area burned, five of the ten most destructive years on record (dating back to the 1930s) have occurred since 2011.<sup>2</sup> This is no surprise to fire ecologists. Since the 1990s, researchers have been predicting that the rate of wildfire will increase in the western boreal as the climate warms because of a lengthened fire season, increased fire severity, and increased

fire frequency.<sup>4</sup> We have entered a new normal, and the extreme fire season of 2023 will not be the last of its kind.

## How Should We Respond?

Last summer's fires prompted calls for the government to "Do something!" But what? More and better fire suppression? That's easier said than done. Alberta and B.C. both spent close to a billion dollars last year fighting fires, yet the fires raged on. Given last year's climatic conditions, we likely could have allocated our entire provincial budget to firefighting and still failed to stop the burning. At some point, increased fire and soaring costs will likely cause Alberta to throw in the towel and limit its northern firefighting to the protection of human habitation, the way Saskatchewan does now.

Another idea gaining renewed attention is the FireSmart program.<sup>5</sup> This program began as a government initiative to help communities in forested areas learn about and reduce risks from wildfire. It promotes mitigation steps, such as vegetation management and the creation of fire breaks, to keep people safe and minimize the loss of infrastructure.

The basic FireSmart concept, focused on protecting communities, is sound. However, some land managers now want to extend the program to the broader landscape. For example, the B.C. Forest Practices Board recently released a report that says we should decrease tree density and shift the forest to more fire-resistant species and younger age classes in order to boost forest resilience.<sup>6</sup> The same ideas are percolating in Alberta. You can see what this looks like in practice by visiting the FireSmart demonstration site adjacent to the Fish Lake Provincial Recreation Area, west of Nordegg. A hiking trail begins at the Fish Lake campground and then winds its way through the new FireSmart landscape.

The coniferous forests in the Fish Lake Recreation Area are very old and exhibit habitat complexity and high biodiversity.



The forests within the Fish Lake Provincial Recreation Area exhibit many of the features of old-growth stands, including the abundant growth of mosses and lichens, such as old man's beard.

RICHARD SCHNEIDER





Above: The transition to the FireSmart demonstration site could not be more abrupt. More than a decade after the original old-growth forest was cut, the site remains a large grassy field with minimal biodiversity. RICHARD SCHNEIDER



Left: Interpretive signs in the FireSmart demonstration site promote the concept of forest conversion, even though conversion is directly contrary to provincial forestry policy based on sustainable forest management. RICHARD SCHNEIDER

to maintain natural forest structure, patterns, and composition over time. This is the key to maintaining biodiversity in the face of forest harvesting. Creating firebreaks to protect communities is one thing, transforming the entire forest is another.

Some will argue that it doesn't matter, since it will all transform anyway because

of climate change. We might as well log it before it burns. This line of reasoning misses some important points. First, not all forests are going to transition to parkland and grassland. Wetter areas, such as the foothills around Fish Lake, are predicted to remain forested. Second, forests are more than standing timber. Management objectives are much different when you consider the needs of wildlife.

We know that all species have the ability to shift their range in response to climatic changes because they've done so during past glacial periods. However, the current episode of climate change is much faster than previous episodes, and many species will struggle to shift their ranges quickly enough. Moreover, many wildlife populations have declined and become

Entering the FireSmart landscape is like a gut punch. The landscape is barren, best suited to lawn bowling rather than the maintenance of biodiversity. Interpretive signs along the trail extol the virtues of the FireSmart program and explain how transforming the spruce forest to a less flammable aspen forest will reduce the risk of fire. But more than ten years after the original old-growth forest was logged, the site remains a field of grass littered with a few old stumps. If the site demonstrates anything, it is the folly of ecosystem engineering.

The regeneration failure is disconcerting, but the larger problem is the whole idea of forest conversion. It is directly contrary to Alberta's commitment to the principles of sustainable forest management, which require forest companies





This western toad was spotted in the mossy forest a couple hundred metres from the FireSmart demonstration site. Biodiversity within the demonstration site itself is very low. RICHARD SCHNEIDER

fragmented because of industrial use of the forest, and this has seriously diminished their adaptive capacity. Therefore, our management objective should be to slow forest transitions as much as possible, to give species the time they need to shift northwards. This means reducing the rate of logging, especially of old-growth stands, so that fire is the only disturbance that species have to contend with. Hastening forest transitions under the banner of FireSmart is exactly the wrong thing to do.



Of course, the best management action is to address causes of global warming directly, rather than treating the symptoms. The faster we can achieve net-zero in carbon emissions, the less impact there will be in terms of destructive wildfires and ecosystem transitions. It's too late to forestall all changes;

however, through concerted action we can avoid a future that neither wildlife nor humans can accommodate.

In summary, fire has historically been an agent of both destruction and renewal. By resetting the successional clock and creating complex landscape patterns, fire plays a critical role in supporting forest biodiversity. However, as a consequence of climate change, fire has now become an agent of forest ecosystem transition, threatening both wild species and human communities. Trying to prevent these changes through increased fire suppression is like trying to hold back the tide. We instead need to focus on treating the cause by reining in carbon emissions. Climate mitigation will not be cheap, but as the fire season of 2023 demonstrates, cheap is no longer an option for us. ■

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Richard Schneider is a conservation biologist who has worked on species at risk and land-use planning in Alberta for the past 30 years. A new digital version of his book, *Biodiversity Conservation in Canada: From Theory to Practice*, is now available from the University of Alberta library, at no cost to the public. Richard is the editor-in-chief of *Nature Alberta Magazine*.





# Five New Firsts in Alberta Bird Sightings

BY DAVID SCOTT

**T**he Alberta Bird Record Committee (ABRC) is pleased to announce the publication of its Fourteenth Report ([bit.ly/abrc14threport](https://bit.ly/abrc14threport))!

Established in 1994, the ABRC gathers and evaluates documentation of rare bird observations in Alberta. It classifies records, maintains the Official List of the Birds of Alberta ([bit.ly/ram-birdslist](https://bit.ly/ram-birdslist)), and periodically publishes reports of observations it has recently adjudicated.

The Fourteenth Report lists 108 observations of rare birds in the province. Of these, all but 11 were accepted. Typically, when reports are not accepted, it is because the documentation is insufficient to rule out similar species. Fortunately, most documentation in recent years includes photographs, which

usually leave little doubt concerning the identification. Regardless of whether or not an observation is accepted, we appreciate all those who take the time to submit documentation to the committee.

With this report, Alberta's bird list grows to 438 species! Five provincial firsts have been added since the last report: chimney swift, bar-tailed godwit, glossy ibis, Eurasian tree sparrow, and orchard oriole.

The chimney swift, observed foraging at Calgary's Carburn Park in May 2022, was first thought to be the very similar, and more likely, Vaux's swift. However, closer scrutiny of excellent photos taken by observers revealed that it was in fact our province's first documented record of the Vaux's eastern



Top: These glossy ibises were seen in Camrose County. IAN WALLIS

Above: This chimney swift was spotted in Carburn Park, Calgary. CALVIN SNIDER

counterpart, the chimney swift. Many aerial insectivores, including the chimney swift, are unfortunately in decline across our continent. Conservation efforts in eastern Canada are largely focusing on the maintenance and restoration of human-made structures (such as chimneys) that chimney swifts use for nesting and roosting.

The bar-tailed godwit is a large Eurasian shorebird that nests in western Alaska but rarely turns up elsewhere in North America, especially inland. So it was very much a surprise when one was found at Tyrrell Lake, southeast of Lethbridge, one evening in May 2022.

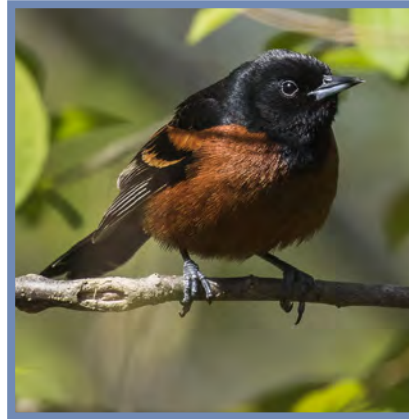
After a couple of close calls, the ABRC has finally accepted its first record of glossy ibis in Alberta, a bird observed at



Pakowki Lake in the province's southeast, again in May 2022. (It was a good month for provincial firsts!) The second record, photographed near Camrose, followed very soon afterward. This dark ibis can appear very similar to our regularly occurring white-faced ibises, and the two species hybridize. It is expected that Alberta will see more glossy ibises and hybrids in the coming years as the species expands in range in western North America.

Eurasian tree sparrows were introduced to our continent in the late 19th century and established themselves in the American Midwest, where they can still be found today. It is likely that a bird photographed in a yard in Fort McMurray in November 2021 came from this population.

Smaller relatives of our common Baltimore orioles, orchard orioles breed in eastern North America, largely south of the Canadian border. However, their range extends well into Saskatchewan, so



Orchard orioles breed in eastern North America but are now being spotted in Alberta. FRANCESCO VERONESI

it's rather curious that it took until June 2021 for Alberta to document its first, near Claresholm. The second record, also a first-year male bird, was found in Lethbridge the following year.

The ABRC has also made revisions to its Review List — the list of those species considered sufficiently rare to warrant adjudication ([bit.ly/abrc-reviewlist-dec2022](https://bit.ly/abrc-reviewlist-dec2022)). The new list includes species for which the ABRC has fewer than 16

accepted records on file. Species that have recently passed the threshold and been removed from the Review List are brant, black scoter, sharp-tailed sandpiper, red phalarope, long-tailed jaeger, yellow-billed loon, snowy egret, western bluebird, and scarlet tanager. If you have observed a bird of a species on the Review List in Alberta that has not been adjudicated by the ABRC (or of a species that would be altogether new to the provincial list), we encourage you to submit documentation to Jocelyn Hudon at [jocelyn.hudon@gov.ab.ca](mailto:jocelyn.hudon@gov.ab.ca) and/or through our online form at [bit.ly/abrc-birdsightings](https://bit.ly/abrc-birdsightings). ■

David Scott has been an avid birder for more than fifteen years, the last nine of which he's spent in southern Alberta where he works as a librarian at the University of Lethbridge. David currently serves on the Alberta Bird Record Committee and the board of Nature Lethbridge.

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# Nature Kids MY BIG ALBERTA BACKYARD

BY STEPH WEIZENBACH

**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 **Jasper National Park**!

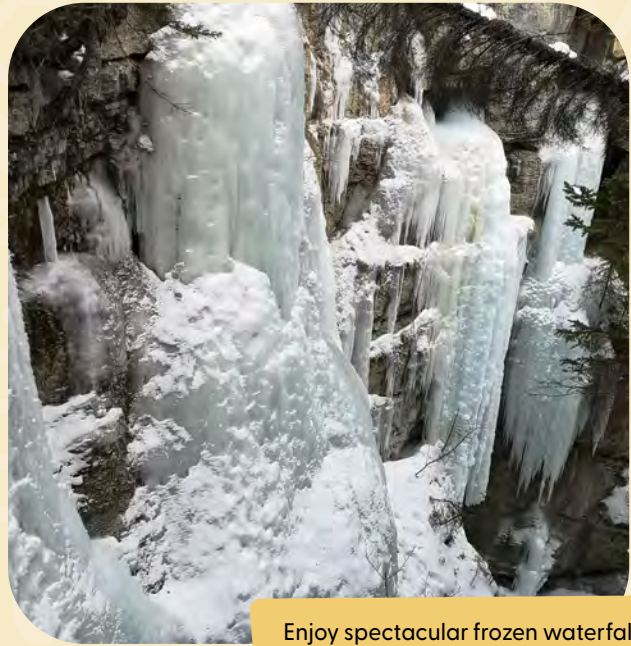
Jasper itself is a big place to explore with lots of fun things to do in the winter. You can go skiing, snowboarding, fat biking, snowshoeing, or simply winter walking and wildlife watching. Some of my favourite places to explore here are down Maligne Lake Road.

## Lake Annette

Lake Annette is a small lake with gorgeous, panoramic views of the mountains! The 2.4-km paved loop trail is an easy walk through the trees, with gentle slopes that dip you right down to the lake's shore. Keep an eye on the trail ahead to make sure you don't run into grazing elk!



Keep an eye out for grazing elk on Lake Annette's paved loop trail. STEPH WEIZENBACH



Enjoy spectacular frozen waterfalls in Maligne Canyon. STEPH WEIZENBACH

## Maligne Canyon

Maligne Canyon is so much fun to explore in every season, but wintertime is my favourite! Make sure you wear ice cleats on your boots here – the trail gets very icy. The canyon walls are covered with hanging galleries of dazzling, frozen waterfalls. It is a fascinating sight to see! Get up even closer by booking a safe guided tour into the bottom of the canyon floor. As you explore the dangling walls of ice, watch for signs of bighorn sheep who frequent the upper trails. Remember to give wildlife space when you spot them.

## Medicine Lake

Medicine Lake is an awe-inspiring scene to explore. The lake is like a big bathtub that fills up in the summertime and empties in the fall. The water drains through sinkholes into a cave system and then resurfaces in the Maligne Canyon area downstream. At the Medicine Lake viewpoint, you can climb down the stairs to the lake for exciting explorations. See if you can spot the giant eagle nest, high up in a tree, on the small island





What a view! Medicine Lake is known as the disappearing lake as it fills in the summer and empties into a cavern system in the fall. STEPH WEIZENBACH

ahead. Go further by bringing your snowshoes to follow the lakeshore, past the rolling boulder field and along the burned treeline. The snow-swept lake is surrounded by sheer mountains.

## Maligne Lake Outlet Bridge and Moose Lake Loop

After parking, venture back out to the bridge you crossed at the Maligne Lake outlet. Look down at the water and you may spot our most extreme songbird: the American dipper. Dippers nest behind waterfalls in the summer and dive into rushing water for breakfast. You may spot them swimming in the water at the outlet, eating water bugs, and popping back out onto a rock. Even when it is  $-20^{\circ}\text{C}$ ! After you enjoy the birds at the outlet, go for a walk along the 2.7-km loop, which takes you over an ancient rockslide to the peaceful Moose Lake.

## Even More to Explore!

Explore on trails groomed by the Friends of Jasper National Park's Snowdog! The Snowdog is a machine run by volunteers that packs down the snow to make a smooth, supportive trail for all users to enjoy! Check current trail conditions at [give.friendsofjasper.com](https://give.friendsofjasper.com). ■



Bighorn sheep are a common sight in Jasper National Park in all seasons. RICK PRICE



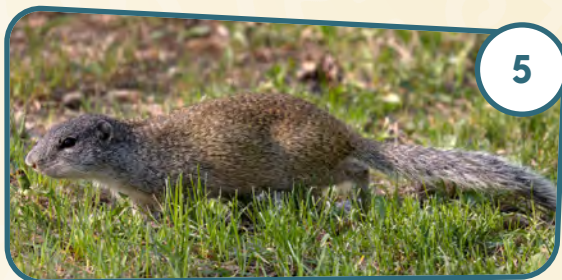
Brrr! American Dippers dive into freezing cold, rushing water in search of aquatic insects and larvae to eat. TONY LEPRIEUR



# Nature Kids OUT AND ABOUT

BY CORA KAPLAN

**G**round squirrels are a common sight in Alberta. Richardson's ground squirrels, also called gophers, are often considered pests because they live in colonies and dig many burrows to hibernate and stay safe underground – including under farmland. Ground squirrels play an important role in their food web. Did you know we have five species of ground squirrel in Alberta? Learn how to identify each species by matching up the photos to the descriptions below.



Fill in the blanks...  
Which photo matches my description?

- ☐ **Franklin's ground squirrel**  
I have a grey head and tail. My tail is bushy, unlike other ground squirrels. I look speckled with a dark brown back and light-coloured belly.
- ☐ **Golden-mantled ground squirrel**  
I have stripes down my back that make me look like a chipmunk, but I don't have stripes on my face. My shoulders are red-brown and I have a light underside.
- ☐ **Thirteen-lined ground squirrel**  
I have stripes and spots down my dark back. My head and tail are dark, but I have a light underside from nose to tail.
- ☐ **Columbian ground squirrel**  
My red-brown belly and face distinguish me from other ground squirrels. My back and tail are dark and speckled.
- ☐ **Richardson's ground squirrel**  
I vary in colour from grey to yellow-brown, which is consistent from nose to tail. I am darker on my speckled back and lighter on my belly, with a short and skinny tail.



To see all 14 species of squirrels that live in Alberta, check out the Squirrels of Alberta ID Guide at [naturealberta.ca/ground-squirrel](http://naturealberta.ca/ground-squirrel)



# Nature Kids ASK STUART

WITH HELP FROM CORA KAPLAN

**W**elcome to **Ask Stuart**, in which our Nature Kids mascot, Stuart the swift fox, responds to questions asked by kids across Alberta. From time to time Stuart will also ask local experts to help him answer these questions. 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. Since Stuart sometimes eats squirrels for lunch, today's questions were answered by our friend Cora Kaplan, who was a research assistant for the Franklin's Ground Squirrel Project this past summer.

## Q What do squirrels do in winter?

Some squirrels, like ground squirrels and marmots, hibernate through the winter. They make dens to hide from the harsh weather outside, because the ground is a great thermal regulator. This means it will keep the squirrels cool in the summer and stay nice and warm in the winter. Typically, these animals will cuddle up in groups for almost nine months during a hibernation period.

Other species, like chipmunks and tree squirrels, will have more active periods during the winter. Chipmunks limit their activity by sleeping in and saying goodnight early, but may occasionally be seen above ground. Once chipmunks run out of food or the weather becomes too harsh, they will enter a state of torpor, similar to hibernation. Tree squirrels are the most likely to be seen outside in the winter months because they stay active. Although they sleep more during the day, they do not experience hibernation like other squirrel species. In really bad weather they hide in their nests, called dreys, only coming out to eat snacks and tend to their young.

Any species that hibernates overeats when there is lots of food supply to put on weight before they go into a torpid state. Squirrels that do not truly hibernate will stash food in locations called caches and can return to them throughout the winter because of their great memory and sense of smell. The fat or food supply built up during summer and fall provides squirrels with the warmth and energy needed to survive Alberta's harsh winters. ■

When it gets really cold, red squirrels go into a state of torpor, which is like a very short hibernation. Red squirrels still come out to play on warmer winter days.



The largest squirrel species in Alberta, the hoary marmot, hibernates by sleeping in a burrow all winter. TONY LEPRIEUR

## Q What is hibernation?

Despite what most people think, hibernation is not just a deep sleep. There are actually different kinds of hibernation, including brumation, torpor, and true hibernation. Brumation is like hibernation for ectothermic or cold-blooded animals (reptiles and amphibians). For example, when the temperature drops, western painted turtles bury themselves in the muddy bottom of a body of water, slowing down their body functions and breathing through their skin. Torpor is what chipmunks rely on to survive the winter months, and why you are still likely to see them out and about in the snow with red squirrels, which are active in all seasons. It is like a mini period of hibernation, allowing the animals to reduce activity but still wake for warmer days. The dormant state is involuntary and only occurs when environmental conditions are too harsh. Finally, true hibernation, like black bears, ground squirrels, and marmots experience, is an extended torpid state. Instead of using extra energy to stay warm and find food when there is not much to eat, hibernation allows these animals to survive Alberta's cold winters by essentially sleeping through the whole winter! ■



# Redpolls: Welcoming Our Wintertime Visitors

BY MARGOT HERVIEUX

While chickadees are by far the most common birds that visit our feeders, every few years you may be lucky enough to get large flocks of redpolls. These winter finches are known as an irruptive species because their numbers cycle over three or four years depending on food supply.

Redpolls are similar in size to chickadees, but they have streaked breasts, a black chin, and their namesake red cap. The males are more lightly streaked than the females and have a rosy chest. By late winter, with the breeding season approaching, that red flush becomes even more pronounced.

There are actually two species of redpoll: common and hoary. Hoary redpolls, which are seen far less often, are slightly larger than their common cousins, are lighter coloured with less streaking, and have white feathers on the rump and under the tail. Redpolls also look a lot like pine siskins, but siskins are heavily streaked, have yellow on the wings and tail, and never have any red on the head.

Redpolls are seed eaters. They will eagerly eat small sunflower and nyjer seeds at feeders, but their favourite wild food is birch and alder seeds. If you go for a winter walk among birch trees, you will notice the remains of catkins dusting the snow after redpolls have dropped by. Redpolls also feed in fields

and hedgerows, picking up grass and weed seeds.

One way that redpolls save energy during the winter is by eating on the go. They have a pouch in their throat that allows them to quickly stash seeds, and then they can move to a warm, safe spot to husk and eat their meal.



Common redpoll. TONY LEPRIEUR

Unlike our many resident winter birds, redpolls come south from their subarctic nesting grounds to take advantage of the abundant seed crops available in the boreal forest and parkland. Seeds are available in different places in different years, so you may have them in your yard one year and not the next. A few

redpolls are also seen in the mountains and northern forests of Alberta during the summer.

Even during the nesting season, redpolls spend their time in loose flocks. There is safety in numbers, but flocking birds are also at greater risk of spreading disease. When lots of redpolls are visiting feeders, you may see inactive birds that appear to be sick. They are likely suffering from a salmonella infection; a naturally occurring bacteria that lives in the soil and is spread through bird droppings. Normally this disease doesn't seriously affect the birds, but during the winter when they are under stress and feeding together in large numbers, some will get sick. You can help prevent the spread of salmonella by keeping your feeder clean and removing excess spilled seed. If you notice sick-looking birds at your feeder, stop feeding for a couple of weeks and clean your feeder with a weak solution of household bleach.

It is always interesting to me that the birds we see at our feeders are dependent on the much larger cycle of tree seed production across our northern forests. When the conditions are right, we can look forward to lots of activity to enjoy. ■

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 has been writing for 15 years. You can read more of her archived columns at [peacecountrysun.com](http://peacecountrysun.com).





## MEET A MEMBER CLUB

BY BLAKE BARTLETT

# Wizard Lake Watershed and Lake Stewardship Association

**W**izard Lake is located 50 km southwest of Edmonton in the North Saskatchewan Watershed. **The Wizard Lake Watershed and Lake Stewardship Association (WLWLSA)** works towards enhancing and protecting the sustainability and enjoyment of Wizard Lake for the benefit of all users and watershed inhabitants.

Formed by a group of motivated residents who wanted to create a forum for community members to take ownership and responsibility for the healthy future of Wizard Lake, WLWLSA became a registered society in March 2006 and qualified to accept donations as a registered charity in September of that year.

Citizen science was part of the group's activities from the very start. WLWLSA

took the lead on a tributary water sampling program, with the assistance of Alberta Environment, that continues to this day. In 2007, four BioHaven Floating Islands were purchased for lake monitoring during open water season. The team also performs in-lake summer and winter sampling along with the spring tributary monitoring program.

To assist WLWLSA in providing the public with credible information, we retained a consultant to provide a plain-language overview document of historical water data. This initiative greatly enhanced communications with respect to lake and water health.

Community engagement has always been key in promoting awareness and action. In early years, the organization hand

delivered documentation to each watershed resident. We still practice the direct approach, recently hand delivering the consultant's *Wizard Lake Data Summary - June 2021* report and the 2022 *Technical Memorandum* update, allowing the WLWLSA Board of Directors the

opportunity for one-on-one conversations with watershed residents.

Community engagement also takes the form of fun activities. In early years, WLWLSA hosted a "Wiz Spiel," a curling bonspiel that took place on the lake. The tradition of enjoying winter activities has grown into the Winter Try-It Festival, a free family event where people can enjoy horse-drawn sleigh rides, snowshoeing, cross-country skiing, ice fishing, curling, skating, wood carving, kick sleds, face painting, and sweet treats in the Sugar Shack. After a two-year absence, the festival returned last year to great success thanks to 28 WLWLSA volunteers. The event is heading into its fourth season this year. Join us on February 10, 2024 for a day of free family fun!

We also host community events in the warmer months, including Canada Day celebrations and Parks Day. These events provide opportunities for us to talk to lake residents and visitors about how they can take an active role in lake stewardship.

To learn more and get involved, visit [wizardlake.ca](http://wizardlake.ca) or email [blake@wizardlake.ca](mailto:blake@wizardlake.ca).

Blake Bartlett is the current chair of the Wizard Lake Watershed and Lake Stewardship Association.





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