NATURE ALBERTA MAGAZINE

SPRING 2025
VOLUME 55 | NUMBER 1

A COMMUNITY CONNECTED BY A LOVE OF NATURE

Arthropods Among Us
Unseen Ecosystem Architects

The State of Alberta's Birds

Instant Recognition: AI-Powered ID

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photo: ACA, Charmaine Brunes

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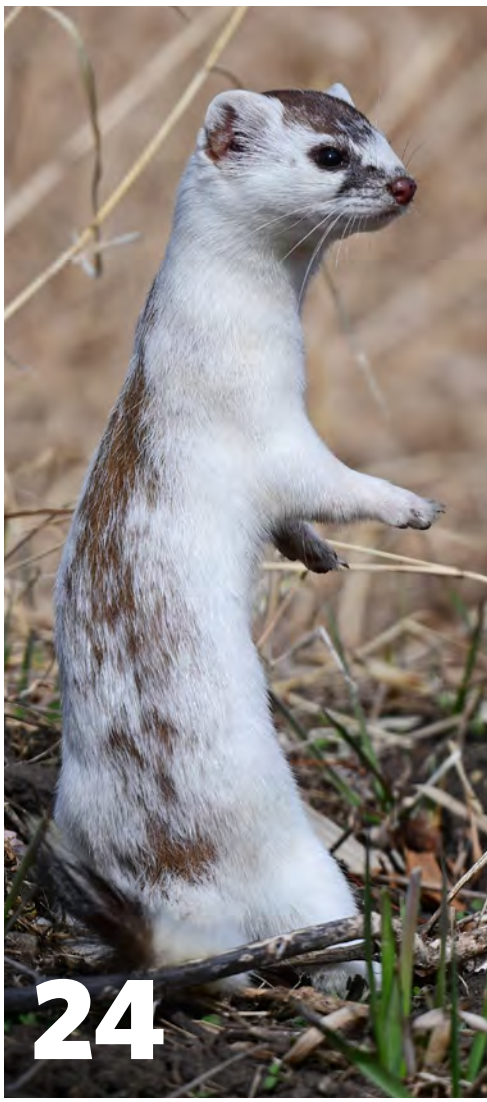

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About Nature Alberta
Alberta is home to incredible natural spaces comprised of beautiful and varied landscapes, and rich biodiversity reflected in our abundant and diverse flora and fauna. Across the province, natural history clubs and their members 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.

NATURE ALBERTA

A COMMUNITY CONNECTED BY A LOVE OF NATURE

NATUREALBERTA.CA

PRESIDENT'S MESSAGE

As daylight hours increase and Alberta slowly shakes off the chill of winter, we welcome the arrival of spring — the season of renewal and reawakening. With the return of our beloved migratory birds, the first wildflowers breaking through the thawing earth, and newborn wildlife emerging from their mothers' dens, we are reminded of the resilience and beauty of Alberta's natural heritage.

This year is particularly special for Nature Alberta, as we mark our 55th Anniversary! What started as a small group of grassroots naturalists has grown into a network of over 50 nature-based organizations throughout the province. For over five decades, Nature Alberta has been dedicated to the appreciation and protection of the incredible wealth of biodiversity found in our vast boreal forest, aspen parkland, rugged Rocky Mountain slopes, open prairie grasslands, and treasured rivers and wetlands. Thanks to our dedicated members, volunteers, and partner organizations, we continue to advocate for the conservation of Alberta's natural spaces, educate future generations, and inspire people to connect with nature.

As we reflect on our achievements, we also recognize the many challenges ahead. Of most pressing concern are the recent changes to Alberta's coal policy, which invite coal mining on our Eastern Slopes and threaten watersheds that are vital to millions of Albertans. The areas now open to coal development are not only ecologically significant, but also serve as critical habitat for species at risk and provide essential clean water resources to many downstream users. The expansion of coal development raises serious concerns regarding water contamination, bioaccumulation of toxic selenium, habitat destruction, and long-term impacts on biodiversity. As stewards of Alberta's natural heritage, we must prioritize environmental integrity.

This spring, I encourage you to connect with nature while also standing up for the places we love, through citizen science, volunteerism, or advocacy. I encourage everyone to please voice your concerns to your local elected officials and policy-makers. Thank you for being part of Nature Alberta's journey — together we can protect Alberta's landscapes for generations to come.

CHERYL BOZARTH SOLL

Nature Alberta News

Celebrate Nature Alberta's 55th Anniversary

Nature Alberta was formed in 1970 when six naturalist clubs from across Alberta came together, seeing the need for a united provincial organization. Today, in our 55th anniversary year, we support a network of 50 grassroots nature organizations across the province.

You're invited to join us in celebrating 55 years of being a strong voice and active champion for the greater appreciation and conservation of nature in Alberta. On Sunday, September 21 at The Lodge at Snow Valley in Edmonton, enjoy inspiring discussion, interactive nature activities, and great food! Proceeds from this event will go directly to Nature Alberta's Endowment Fund — and be matched by the Edmonton Community Foundation's Endowment Matching Program for Environmental Organizations (EMPEO), helping to secure our future for the next 55 years.

Explore all the exciting event details and get your tickets at **naturealberta.ca/55**.

At Nature Alberta's 50th anniversary celebration, we welcomed speakers including Nature Alberta Patron John Acorn and his son Benny, seen here with Executive Director Stephanie Weizenbach. You won't want to miss our 55th anniversary event!

Birding for Nature

Nature Alberta's peer-to-peer fundraiser, **Birding for Nature**, returns this spring! It's like a marathon, but instead of running, you get to go birding! Participation is easy, fun, and on your own schedule. Individually or as a team, you collect pledges on your Birding for Nature fundraising page to raise crucial funds to support Nature Alberta's important work. Visit **naturealberta.ca/birding-for-nature** to register your birding adventure!

Get Involved in Citizen Science

Visit **naturealberta.ca/citizen-science** for details on these upcoming bio blitzes!

City Nature Challenge
April 25–28

Nature Alberta's May Species Count
Late May

Cypress Hills BioBlitz
June 8

Alberta Biodiversity Challenge
June 12–15

Upcoming Events

It's going to be another fun and active season for Nature Alberta, leading events across the province. Find all the details at **naturealberta.ca/events**.

Migratory Bird Day
Lois Hole Centennial Provincial Park, Sturgeon County
May 10, 10 a.m.–3 p.m.

Fish Fin-atics
Hermitage Park, Edmonton
June 5, 6:30 p.m.

Tree Planting for Biodiversity
Rundle Park, Edmonton
June 12, 6 p.m.

Family Nature Nights
July 9 in Red Deer

July 16 in Calgary

July 23 through August 20 in the Edmonton region

Correction: The print version of Nikki Heim's Winter 2025 article "Badgers with Benefits" incorrectly stated badgers' length as 13 to 16 cm due to a text editing error. Adorable as that would be, badgers' total body length is actually 60 to 90 cm, including their 13- to 16-cm-long tail. The digital version was published with the correct measurements and can be read online at **bit.ly/namag_badgers**.

If Trout Could Talk:
Coal and the Eastern Slopes

BY LORNE FITCH

In the coal saga, there's more to mine than the mountain. Despite protestations of due diligence and highest engineering standards, every coal mine in the Eastern Slopes has had spectacular environmental failures; most of them on a regular basis. This is a function of topography, engineering failures, and an inability to incorporate the effects of weather events into mine design. For a lesson about future mines, all one must do is review past mines.

Pit wall collapses, settling pond failures, conveyance system upsets, and mine road washouts are the most visible evidence of problems. But it is the liberation of a witches' brew of toxic chemicals that creates legacy issues. Selenium, antimony, cobalt, lithium, manganese, molybdenum, nickel, strontium, thallium, uranium, and many others are released for decades by the weathering of the shattered caprock overburden.

Hidden in the labyrinth of the Benga environmental impact assessment report for the proposed Grassy Mountain mine is a cryptic note on the analysis of selenium in the flesh of trout from Gold and Blairmore creeks.[1] Selenium concentrations in the trout were significantly higher than limits adopted by both B.C. and Alberta[2] to protect fish populations from collapse, despite selenium concentrations in these streams being lower than guidelines. This information never came up in the Joint Review Panel hearing although there was evidence enough to damn the project.

Contamination of fish isn't restricted to the Crowsnest watershed. Evidence from other watersheds with coal strip mines show similar results for elevated selenium concentrations in fish, including the coal industry's much-promoted reclaimed mine pit lakes.[3]

Furthermore, contamination isn't restricted to fish. Bighorn sheep living on reclaimed coal mines in the Coal Branch region of Alberta have selenium concentrations in their tissues higher than bighorns in any other place in North America.

Tent Mountain coal strip mine in the Crowsnest Pass. LORNE FITCH

Native cutthroat trout used to exist in East Crowsnest Creek and the headwaters of Crowsnest Creek, beneath the Tent Mountain coal mine. Very high selenium concentrations from the mine spoil, coupled with excessive sediment loadings to these streams, is implicated in trout disappearance.[4]

The selenium guideline values adopted by past B.C. and Alberta governments were developed after multiple fish populations collapsed after exceeding these values. The population crashes informed us that there is a limit to the amount of selenium pollution fish populations can absorb before they disappear.

Trout aren't just the quarry for a few anglers. Like the canary in the coal mine, trout alert us to the impacts of coal mining by being an early warning indicator and the bellwethers of danger. To ignore their message is to ignore our own peril.

A fundamental message from the selenium contamination of trout is that we need to look beyond what is found in the water, to how it bioaccumulates up the food chain, to levels of significant health concern. Remember that we are at the top of that food chain.

Above: Rainbow trout from the Crowsnest River with a missing operculum, a sign of selenium poisoning. ROBERT COSTA

These are some of the things to mine in our deliberations over coal mining in the Eastern Slopes. We might also reflect on the misinformation and distortion coated in the fairy dust of illusionary economic benefits. Overseeing this is an arm's-length regulator being politically manipulated.

Arrayed against this are the clearly articulated wishes of most Albertans who are passionate about a mine-free Eastern Slopes. Alberta recently went through a review of coal policy by an independent panel. This panel was responsible for the largest public engagement process in Alberta's history to define a path forward for coal. Their recommendations have yet to be implemented.

We have recently witnessed a muddled, barely coherent "clarification" of coal policy from the Minister of Energy to the Alberta Energy Regulator (AER). The letter was issued during an ongoing AER hearing into a coal exploration application, and it opens a question of whether it was attempting to fetter that process.

This retreat from the wishes of Albertans effectivity winds the clock back, reinstates exploration permits, and opens new exploration, including construction of new roads that will erode for years. Nothing else has changed, including the continual leaching of selenium into Eastern Slope rivers; no timely, effective reclamation of coal exploration roads; and growing citizen frustration.

Utah Phillips was a folk singer and philosopher who is credited with once saying: "The Earth is not dying — it is being killed. And the people who are killing it have names and addresses." These names are writ large on this public policy failure to protect the Eastern Slopes. ■

Lorne Fitch is a Professional Biologist, a retired Fish and Wildlife Biologist and a former Adjunct Professor with the University of Calgary. He is the author of *Streams of Consequence* and *Travels Up the Creek*.

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Bear-y Good Neighbours

BY LOREENA NIEUWENHOUT AND STEPHANIE WEIZENBACH

Bears are on the minds of many this time of year, as these iconic mammals emerge from their winter dens and roam the valleys of Alberta's mountain ranges and forage in northern forests.

There are only two species of bear found in the province: black bears and grizzly bears. Human-wildlife conflict management has been a hot topic since the 2024 amendment to the *Wildlife Act* allowed threatened grizzly bears to be hunted as a means to address conflict. There are numerous ways you can help reduce conflicts with bears without hunting them.

The Alberta Grizzly Bear Recovery Plan prioritizes reducing human-caused mortality to support the recovery of the species; to do so, we must reduce conflicts with bears. The biggest way individuals can make a difference is by reducing food attractants. Bears have an incredible sense of smell and are attracted to human food and garbage from great distances. While camping in bear country, make sure to keep your food secure inside a vehicle or bear locker while not in use, and tidy up your cooking area promptly, never leaving it unattended. Always dispose of garbage in bear-proof bins. People living in bear country have to be extra diligent about attractants: guarding livestock, feeding pets indoors, storing feed in bear-proof containers or buildings, and reconsidering placing fruit trees and bird feeders in proximity to your home. Understanding bear behaviour helps us recognize when we might be unintentionally attracting them to our yards; once a bear discovers a new food source, they will continue to return to that place. Eliminating attractants will reduce the frequency of bears approaching human spaces.

Encounters can also occur inadvertently as we participate in outdoor activities in bear country. There are a number of ways you can reduce the likelihood of an encounter or prevent an encounter from becoming a conflict. Firstly, hiking in groups of three or more helps prevent a bear attack when encountered. Secondly, it is always important to stay aware of your surroundings while hiking. Keep an eye on the trail. If you see a steaming pile of bear scat or a big, fresh bear track in the mud, turn around, head back to the trailhead, and warn all fellow hikers you pass. Thirdly, it is important to make noise as you hike to avoid surprising any wild animals. And last but certainly not least, always carry bear spray when hiking in bear country. Make sure you can reach it easily and know how to use it properly. If you do encounter a bear, be sure to stick together with your hiking companions in a tight group, do not run, and when it is safe to do so, slowly make your way back out the way you came. When we enjoy the great outdoors, we're the ones entering the bears' space, and it's up to us to be mindful and respectful of that.

For more information on how you can reduce human-bear conflicts, visit **alberta.ca/alberta-bearsmart**. ■

Loreena Nieuwenhout is Nature Alberta's Nature Kids Program Assistant. Stephanie Weizenbach is Nature Alberta's Executive Director.

RICK PRICE

SAGE RAYMOND

Alberta's Wrens

BY NICK CARTER

Birders use a nickname to refer to the many small, brownish songbirds that are tricky to distinguish from each other: "little brown jobs," or LBJs. Perhaps no birds are more deserving of the moniker than the wrens of Alberta.

Wrens are exclusively distributed throughout North and South America, with the sole exception of the Eurasian wren. Wrens are generally small, brownish birds with round bodies, pointed, down-curved bills, and square-tipped, erect tails. Their legs are long relative to body size, giving wrens a somewhat disproportioned look. Wren wings are short because they spend little time in flight. Some tropical species can be relatively large, bold, and colourful, but in Alberta our species are typically small and cryptic. There are six species of wren in Alberta that have a few distinguishing features and varied habitat preferences between them, so they aren't too much of a challenge to identify with a little practice.

The wren family is Troglodytidae, derived from troglodyte, meaning "cave-dweller," making wrens sound like they should be carrying spears and feasting on mammoths. Wrens are insect-eaters, and their small size allows them to access tight spaces, where they catch small invertebrates and find shelter. Wrens are therefore not conspicuous, and are often first noticed by their loud and varied calls.

Northern House Wren

The wren that many Albertans are likely most familiar with is the northern house wren. South of the deep boreal forest and below the mountain slopes, this species can be found just about anywhere with proper shelter. Dense trees, bushy shrubs, and old wood piles are attractive habitats to these skulking little birds. This species is drab, even for a wren; it has an overall brown body with fine barring, a pale throat, and a faint hint of a pale eyebrow. The bill is long and thin, with a dark brown upper half and a pale yellow bottom half. The song of the northern house wren is an easily recognizable series of chattery, bubbling phrases. They also produce a harsh, scolding call they direct at intruders.

Ranging from suburban parks and neighborhoods to barnyard woodpiles and open woodlands, the northern house wren lives where shrubby hiding places can be found. NICK CARTER

Northern house wrens migrate into the province in May and head down to the southern United States and northern Mexico again by mid-September. Like house sparrows and house finches, northern house wrens are comfortable in close proximity to people. Older suburban neighborhoods and wooded rural properties will often host a pair of them. They are cavity nesters and will readily use bird boxes as well as other human-made nooks and crannies, filling nest cavities with small sticks. As with all wrens, the male makes several different nests within its territory, and the female will choose her preferred nest within which to lay her eggs. This behaviour can annoy people with multiple bird boxes on their property, because a single pair of northern house wrens fill all the boxes with sticks and then leave them vacant but unusable to other birds.

Winter Wren and Pacific Wren

The winter wren is a scampering dweller of the tangled forest undergrowth. This species was given the name winter wren because it winters in the eastern United States, and so it is encountered by American birdwatchers during the winter. In the warmer months, this is a species of the north woods. In Alberta, they breed in the boreal forest, nesting among the roots of fallen logs or abandoned woodpecker holes. People in central and southeastern Alberta can hope to see this species in spruce woodlots as it passes through during its late-summer migration.

Winter wrens are small and round, even by wren standards. The bill is dark, thin, and straight. The tail is short and stubby and upheld in characteristic wren posture. Winter wrens are darker brown than house wrens, with barring on the belly, wings, and tail. The face and throat are pale in colour, and there's a noticeable white eyebrow. The male produces a tumbling, whistling call that can last for up to 10 seconds. Males and females both give chirping, sparrow-like calls when agitated. Their vocalizations are often the only way of knowing that one is nearby; thankfully, winter wrens are loud. Patient birdwatchers must hold still and watch for a little brown flash of movement among the jumbled vegetation.

The winter wren is closely related to the extremely similar Pacific wren, a species of the coniferous forests between the Rocky Mountains and the Pacific coast. The best way to tell these two species apart where their ranges overlap is differences in voice, which also prevent them from interbreeding. Pacific and winter wrens, along with the Eurasian wren, look so similar that they were formerly considered to be the same species until studies of their DNA and vocalizations proved otherwise.[1]

Not only is the secretive winter wren nearly identical to the Pacific wren, but it's also very similar to the Eurasian wren, the only wren species found outside the Americas. NICK CARTER

Like so many other wetland birds, the marsh wren is much easier to hear than it is to see. It takes some patience to get a good look at this little acrobat among the cattails. NICK CARTER

Marsh Wren and Sedge Wren

Not all wrens lurk in nooks and undergrowth. Two Alberta species prefer open meadows and wetlands. The far more common species is the marsh wren. True to its name, this is a bird of cattail marshes. From about late May to early October, most of Alberta east of the Rockies is home to this wren, which is best seen at any sizable wetland in the prairies and parkland.

In true wren fashion, the marsh wren is much easier to hear than it is to see. The body is rusty brown on top, paler below, with a white throat and breast. The bill is relatively long and down-curved. Noticeable streaks of black and white down the back and distinct white eyebrows make the marsh wren easy to tell apart from the species covered here so far, but it disappears remarkably well amidst dense, brown and green wetland plants.

The song of the marsh wren is a trilling, gurgling chatter. By keeping a patient watch on the source of this song, wetland birdwatchers can hope to catch a look at this pugnacious little wren as it confidently flits through the cattails or perches with legs splayed wide between two bulrush stems. The nest is a hollow ball of vegetation woven among the plant stems, and the marsh wren is so territorial that it will destroy the eggs and nestlings of other marsh wrens that breed nearby.

Similar in appearance and lifestyle to the marsh wren is the sedge wren. While it can be found in wetlands, the sedge wren favours long-grass fields and wet meadows. From a cursory glance in the field, a sedge wren can be hard to tell apart from a marsh wren. The sedge wren has a completely barred back as opposed to the plain rusty shoulders of the marsh wren. The brown stripe on the crown of the sedge wren's head is streaked as opposed to solid, and the bill of the sedge wren is shorter than that of the marsh wren. The sedge wren differs in voice as well, giving off a few dry chirps followed by a short trill.

Sedge wrens are also more geographically restricted than marsh wrens, with the western extent of their range falling within east-central Alberta. They don't stick around as late as marsh wrens, generally moving south in August.

Rock Wren

The rock wren makes its home in the dry prairie badlands and mountain cliffs of southern Alberta and nests in stony crooks and crevices. With its greyish-brown upper side and pale, finely streaked underside, this species blends in well with the rock exposures it lives on. The bill is long and downturned, well suited to prying insects and spiders out of their hiding places. The song of the rock wren, delivered

Like an Alberta cowboy, the dusty little rock wren is at home in the prairie badlands and mountain slopes. NICK CARTER

with gusto from a stony perch, is a varied series of dry chirps and trills.

Rock wrens spend May through August in Alberta, but their specific habitat requirements make them relatively uncommon. The badlands of Dinosaur and Writing-on-Stone Provincial Parks are among the more reliable places to see this species.

Wren Wrap-Up

So that's the rundown on wrens for you. While they might lack the majesty of larger birds like raptors or waterfowl, for those who appreciate the smaller things in nature, watching wrens brings no end of joy. These small, energetic songbirds are worth listening and watching for. Whether it be in the tangled forest brambles, an endless cattail maze, or the arid badlands, when the time is right, the wrens will be out there. ■

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

Singing Insects of Alberta

BY KEVIN JUDGE

It can be difficult to identify grasshopper species solely based on their noisy songs, but this is one of the easier ones. Male graceful sedge grasshoppers make a distinctive call that, at least to the author's ears, sounds like a hairdresser's scissors as they trim your hair. JASON DOMBROSKIE

It's a warm, early July evening in William A. Switzer Provincial Park. My students and I stand motionless on the soft mat of *Sphagnum* on the forest floor, lodgepole pine and spruce scattered about us. All is quiet apart from the occasional truck travelling along Highway 40 in the distance, the intermittent drone of mosquitos buzzing about our heads, or the melodious song of a solitary hermit thrush. Then I hear it — a short, harsh trill off to our left. "There!" I exclaim, but I can tell by their excited whispers that the students noticed it too. Then we hear another trill to our right, longer and closer this time. The opening bars of the chorus of great grigs ring out into the darkening mountain air. Soon the sound from these singing insects will fill this leafy cathedral.

Great grigs are just one species of insect that sings. The term "singing" is usually applied to animals that produce sounds that either attract potential mates or deter rivals (or both) over distances. For most people, birds come quickly to mind — their melodic songs brighten the predawn in springtime. Familiar too are the songs of frogs and toads; think of the trilling of chorus frogs from ponds across the prairies. Less familiar are the singing insects. But when the forests, swamps, and plains of primordial Earth first resonated to the chorus of mating songs, the first performers were almost certainly not vertebrates, but insects.

A male great grig perches, head down, on the side of a tree, which he will aggressively defend from intruding males but allow females to climb up for mating. KEVIN JUDGE

How Insects Sing

It is no wonder that insects evolved song first; their bodies are covered by a hardened cuticle that almost inevitably makes noise during movement (think of a medieval knight walking in a suit of armour). Many insects do indeed produce noises during motion or while feeding, but only two orders have evolved the special ability to produce long-distance song: order Orthoptera, which includes

The aptly named club-horned grasshopper. Locating stridulating males can be frustrating as they seem to be constantly on the move and will stop singing when you get close, only to start up again a metre or two away. JASON HEADLEY

crickets, katydids, grasshoppers, and relatives like the great grig; and the order Hemiptera, which includes cicadas.

Orthopterans produce sound by rubbing parts of their chitinous exoskeleton together in a process called stridulation.

A male slender meadow katydid rubs his forewings together to sing. The forewings of male katydids, crickets, and grigs are modified to efficiently radiate the vibrations produced by that rubbing (stridulation) via two thin regions of the wing called the harp and mirror, both visible in this photo. CARROLL PERKINS

Crickets, katydids, and great grigs rub their forewings together, whereas grasshoppers rub their legs against their bodies and wings or snap their hind wings together during crepitation flights. Cicadas sing by rapidly popping flexible parts of their exoskeleton in and out, a process called tymbalation; think of the clicking sound when you press the button on the lid of a juice bottle, only at thousands of times per second. The fields, wetlands, forests, and urban areas of Alberta are alive with the songs of these insects from soon after the snow clears until the first hard frost in the fall.

Opening Act: Springtime Singers

Spring field crickets are among the earliest songsters to make themselves known in the grasslands of southern Alberta. These large, shiny-black crickets sing from burrows or cracks in the ground. But not just one song! Male spring field crickets, like several other singing insects, produce distinct types

Musical vs. Noisy Songs

Cricket songs are musical, and grasshopper sounds are noisy. This isn't a matter of subjective taste; these two terms have specific meanings in the context of insect song.

Musical refers to the dominance of one frequency or a narrow band of frequencies in a sound. Musical insect songs are ones where you can hear a distinct note in the song and, provided you have the range, you would be able to whistle or sing along with it. Crickets and grigs sing musical songs, and we often use words like chirp and trill to describe them.

Noisy insect songs, on the other hand, have a broad range of frequencies present with none dominating. In this context, noisy does not equate with loud; many grasshopper songs are quite soft. Instead of distinct notes, you hear sibilant sounds like "sss" or "sh" or "ch" — we describe these sounds with words like buzz, rattle, hiss, and tick. Grasshoppers, cicadas, and katydids sing noisy songs.

Whether a song is musical or noisy can be used in combination with the location of the singer to help you identify what kind of singing insect you are hearing. For example, a musical song coming from the ground is likely a field or ground cricket, but if it's coming from shrubs, it is likely a tree cricket, and from the trees in the mountains, it is a grig. A noisy song coming from the trees is almost certainly a cicada, from shrubs or tall grasses is likely a katydid, and from the ground or while flying is often a grasshopper.

Species' ranges can change, sometimes drastically. Roesel's katydid is native to Europe, but was discovered in Montreal, Quebec in the 1950s and is now common across eastern North America. My students and I discovered it for the first time west of Iowa in 2017 at Wagner Natural Area. Although observations have since been made in Alberta and Manitoba, none have turned up in Saskatchewan... yet. DAN JOHNSON

Look closely! Broad-winged bush katydids are extremely well camouflaged, and males are very cautious singers, making short calls only a few times a minute or only once every few minutes. MATTHIAS BUCK

of song depending on the context. First, they produce a rhythmic, musical chirp that attracts females and repels rival males; this is the calling or advertisement song. Second, when a potential mate approaches closely, they switch to a courtship song: a softer, more raspy and continuous song punctuated by sharp "ticks" and the occasional chirp. Third, if a rival male intrudes, they will aggressively defend their territories, and the two males will often fight for supremacy. During the battle, one or both males may sing an aggressive song, which is a longer, drawn-out musical chirp that precedes all-out wrestling if neither male is intimidated enough to back off. Spring field crickets provide an example of how listening to song gives us a window into the complexities of insect social life.

The other early-season musicians are all grasshoppers, which are distinct from crickets in several important ways. Grasshoppers are from a different branch of the Orthoptera family tree, one that is characterized by having relatively short antennae, as opposed to the long, thin antennae of crickets and their closer relatives, the katydids and grigs. Grasshoppers are active during the daytime, whereas crickets and their kin are active in the dark, making vision much more important for the former than the latter. Perhaps because of the combination of these traits, grasshopper mating displays are often colourful affairs paired with acoustic signals.

The speckle-winged rangeland grasshopper, perhaps the most common of the early-season breeders, offers an excellent example of the combined visual and acoustic mating display. At first glance it is the opposite of showy; its textured brown body blends in almost perfectly with the bare ground and dead grass of the spring. But this is a ruse. On a hot, sunny spring day, males leap into the air, snapping their brightly coloured yellow or reddish hind wings together — crepitation — to produce a noisy buzz that announces, "Here I am!" to the audience of receptive females and rival males. Males make long crepitation flights when alone, and short ones when approaching a female. Once a male has approached a female, he stridulates by rubbing his hind legs up and down against the outside of his forewings, simultaneously producing a noisy acoustic display and showing off a distinctive contrasting banding pattern on the inside of those hind legs. Grasshopper mating displays are often complex, varied, and, unfortunately, poorly studied in most species because of the difficulty of observing a highly visual and mobile insect in the wild.

Warming Up

Because singing is a metabolically demanding activity and insect metabolism varies with body temperature, which is largely determined by the surrounding environment, some species' rate of singing has a strong relationship with environmental temperature. For example, the prairie tree cricket's song tends to be faster in warmer temperatures and slower when it's cool. It's possible to analyze recordings of prairie tree cricket song and accurately calculate the temperature at the time of recording. So if the crickets are singing *adagio*, grab a jacket!

Open, dry, sandy areas are great places to observe behavioural interactions between bandwing grasshoppers, including both visual and acoustic displays by males. This male dusky grasshopper has either just landed from or is about to take off on a short crepitation flight in the hopes of catching the notice of a nearby female. LAUREN PITT

Tree crickets have an unusual mating system. While singing with his forewings raised, a male four-spotted tree cricket reveals a soup bowl-like depression in the middle of his back from which a receptive female (top) feeds during mating. This metanotal gland provides the female with a nutritional benefit in exchange for receiving the male's sperm. DAN JOHNSON

Songs of Summer

In between the spring-singing breeders and late-summer singers lie two groups that take advantage of the midsummer to engage in their mating season: the great grigs that you met in the introduction and cicadas, whose noisy, buzzing song is the soundtrack of hot, sunny midsummer days across Canada. Rarely seen because they usually sing from high in the trees, they nevertheless are widespread and relatively common. I've recorded males in the middle of downtown Edmonton, singing from the canopy of boulevard trees. Then, as the summer marches on, the last and largest cohort of singing insects takes centre stage.

Late summer days and warm evenings ring out with the trills and chirps of ground crickets, tree crickets, and the fall field cricket. This is also the season when we first encounter the persistent, noisy songs of katydids. How many of us have driven down a range road with the windows down and heard a constant rattling buzz from the grassy verge? This is the song of the gladiator meadow katydid. Males are spaced out by territorial aggression so that their individual loud calls appear to be constant as we drive past. More common, but less noticeable, are the calls of the slender meadow katydid — barely perceptible to adult ears because their noisy songs occupy frequencies in the upper range of human hearing — and the cautious, staccato calls of the broad-winged bush katydid, our only representative of the leaf-mimicking katydids. Common too, and possibly spreading, are the fascinating but confusingly named Mormon cricket and the non-native Roesel's katydid. Finally, there are the myriad songs and displays of grasshoppers, such as the ubiquitous, soft churring of the marsh meadow grasshopper, the scissor-like rasping of the graceful sedge grasshopper, and the loud clacking crepitation flights of bandwing grasshoppers (wrangler, crackling forest, and Carolina bandwings, among others).

At this time of year, the air is truly filled with the music of an insect choir, each species singing its part. My fervent hope is that you will take some time to slow down, tarry a little on the walk, and listen to the insect symphony unfolding around us. ■

Kevin Judge, PhD, is an Associate Professor and the Resident Bug Guy in the Department of Biological Sciences at MacEwan University.

Concert Schedule

Find a list of Alberta's common singing insects, and when you can hear them, at **naturealberta.ca/singing-insects-of-alberta**

Insect Playlist

Give several species of singing insects a listen at **youtube.com/@singinginsectsalberta5556**

A Brave New (Natural) World

How Artificial Intelligence Can Supercharge Your Interactions with Nature

BY RICHARD HEDLEY

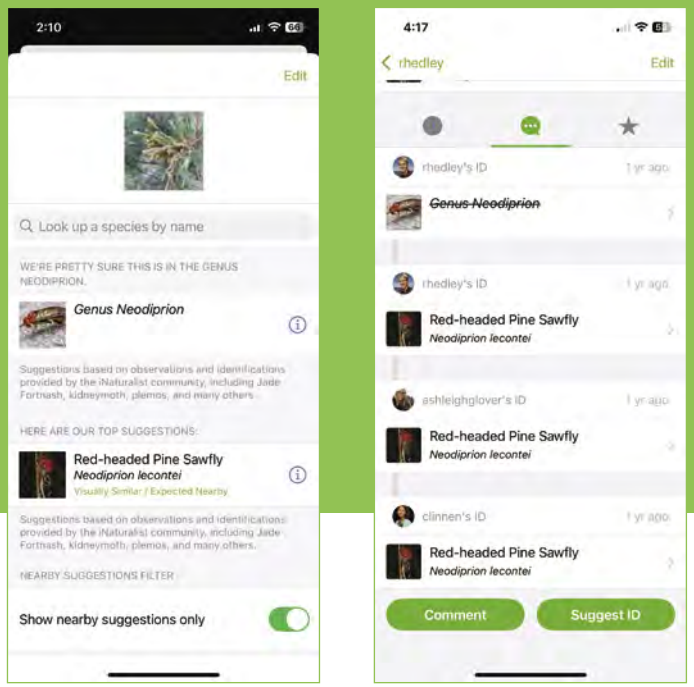
Artificial intelligence (AI) is a hot topic these days, its emergence receiving daily media attention for its potential to disrupt many aspects of our day-to-day lives. At the extreme, commentators have warned that AI will usher in widespread job losses — or possibly even the end of society as we know it. Less dramatic predictions contend that AI will amplify social media algorithms to keep us glued to our screens more than ever. Although these predictions may have merit, AI also has the potential to do the opposite: to encourage us to take our eyes off our screens to learn, appreciate, and rekindle lost connections with the natural world. An array of smartphone apps, such as iNaturalist and Merlin, freely available for download, can turn your phone into a pocket nature expert, ready to guide you through your backyard or nearby wilderness and reveal the secrets of the natural world.

Snapshot to ID in 60 Seconds

A recent personal experience opened my eyes to AI's potential as a powerful learning tool. One morning last summer, as I was vacationing with my family in Ontario, I noticed a mass of more than a hundred of what looked like caterpillars devouring a pine tree. The sheer number of insects caught my eye, their weight causing the small branch to sag. Besides their numbers, it also struck me as unusual that caterpillars would so eagerly feast on an unpalatable pine tree, rather than the more appetizing deciduous foliage nearby.

"Huh," I thought. "Interesting!" I took out my phone and snapped a photo.

Seek by iNaturalist uses image recognition to identify plants and animals on your mobile devices from a single snapshot. WILLIAM WEIZENBACH



A picture taken by the author of a cluster of red-headed pine sawflies in Ontario. The second image is a screenshot of iNaturalist's AI-based recommendations for the species identification. In this case, the AI made the correct suggestion, which was later confirmed by other iNaturalist users, as seen in the third image. RICHARD HEDLEY

Not so long ago, "Huh, interesting" is where the experience would have started and ended. What else could one do when faced with an unidentified agglomeration of insects? Spend hours in vain on Google Images trying to identify them? Send emails to an entomologist or a nearby natural history club with faint hopes of receiving a response, who knows how many days or weeks later? Perhaps a trip to the nearest library or bookstore to find an invertebrate field guide to search through. All options were tedious and unappealing. Undoubtedly, I would have gone for a swim instead, forgetting all about the insects I had encountered.

Today, advances in AI have presented us with an incredible new option of automatic identification. After snapping the photo, I uploaded it to the citizen science app iNaturalist. Moments later, the app provided me with a few identification suggestions. Red-headed pine sawfly popped up as the top suggestion. I'm no entomologist, but after perusing a few other photos of the species, I concluded that the suggestion was likely correct. Satisfied, I clicked submit, adding the observation to iNaturalist's massive database.

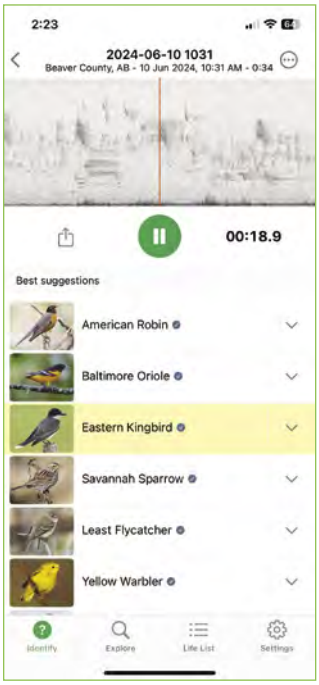
Photographing and identifying this insect took about one minute. How long would it have taken me to identify it the old-fashioned way? I can only imagine, especially considering I began with a misguided belief that the insects were caterpillars — entirely the wrong insect order. Most importantly, by pointing out my error, the AI presented me with the opportunity to learn more about insect identification, a topic I have always found intimidating. I have since read (admittedly casually) about the ecology of red-headed pine sawflies, as well as articles explaining how to differentiate between caterpillars and sawfly larvae.

Thus, with very little fanfare, our phones have become personal assistants with specializations in entomology, not to mention botany, ornithology, ichthyology, herpetology, and just about any other "ology" you can imagine. As a biologist, I am surrounded by experienced experts in my professional and social life, and I am not exaggerating when I say my phone can now identify a greater array of species than anyone I know. This development has reduced an enormous historical barrier to entry faced by those newly interested in nature. Identification skills are, after all, the most fundamental skills of a naturalist, and only once they are acquired can one really start to discern patterns in the natural world: which species occur in which habitats, what eats what, which have declined or increased over time, and so on.

Identifying flora and fauna just got a whole lot easier. But how did this happen?

A Brief History of Automated Classification of Plants and Animals

Most media coverage of AI focuses on its applications in buzzworthy fields such as self-driving vehicles, facial recognition, workflow automation, and chatbots like ChatGPT. Diverse as these applications may be, many AI tools are just high-performing image recognizers. It is in this realm — image classification — that AI saw its first major success in 2012, when an AI model named AlexNet crushed its competitors in a computer image recognition competition, transforming the field forever. The AlexNet model was based on a method called deep learning, a method that was first proposed decades prior, but was viewed as impractical and unwieldy. However, with sufficient computing power and access to enough data, AlexNet turned out to be far superior to the other competing algorithms. This success spurred intense research interest in the subsequent years, which in turn has led to the resurgent hype around AI that we see today.



A screengrab of the Merlin app, which can identify bird sounds. The grayscale image at the top shows a spectrogram: a visual representation of the sounds that are audible to the phone's microphone. Below that appears a list of species identified during that recording session, with the currently audible species highlighted in yellow.

The 2012 image recognition competition won by AlexNet focused on classifying photographs into 1,000 eclectic categories, everything from guitars to sundials. Identifying these objects may seem a far cry from identifying a bird, a plant, or my red-headed pine sawfly, which clearly requires significant attention to detail and memorization of field marks. Fortunately, computer scientists and biologists had been holding competitions of their own to automatically classify flora and fauna, and just a few years later, in 2015, the AI revolution spilled over into these competitions and dramatically improved the performance of the state-of-the-art algorithms. It turned out that, to a computer, pixels on a screen are pixels on a screen, regardless of whether they depict a plant, an animal, or a human-created object.

Around this time, the prospect of producing useful, real-world tools became tractable. Several such tools have since emerged. Popular nature-based apps include iNaturalist and Merlin. iNaturalist, the app that helped me identify the sawfly, has a truly impressive ability to identify photographs of a mind-boggling number of plants and animals. A related app called Seek turns nature enjoyment into a game by issuing challenges to users (for example, the insect challenge: find 10 different insects). Merlin, created by the Cornell Lab of Ornithology, is equally impressive in its ability to identify bird songs. To use it, simply press record and hold your phone up to the bird in question, and the app will suggest an identification. Despite my 15 years as a working ornithologist, this app has humbled me on at least a few occasions by identifying a bird song I was struggling with.

These apps are by no means perfect. In many cases, iNaturalist only suggests an identification to the family or genus level, which may not satisfy a diehard nature lover. That may not always be the algorithm's fault; some photos may simply lack the detail needed to go further. In other instances, the suggested identification may not be correct, in which case expert reviewers may correct it. And if for some reason today's AI doesn't impress you, you can always wait a while. It has often been noted that the AI tools we use today are the worst we will ever use, so rapid is the development of the technology. What the next iterations may be capable of is anybody's guess.

A Win-Win-Win for Biologists, Nature Lovers, and Conservation

Whether you are employed as a career biologist, enjoy nature with a casual curiosity on weekends, or simply care about the conservation of nature, the advent of AI-based identification tools is a watershed moment in the centuries-long history of the natural sciences. It is now possible to go outside and learn without cumbersome reference material or experts (possibly even more cumbersome) in tow.

For biologists, these tools can help collect more accurate data sets, for example by reducing the number of species that are written on datasheets simply as "unknown." I know I've had my share of unknowns over the years. Less time flipping through field guides means more time doing the work that matters. AI also promises to dramatically increase the amount of data that biologists can collect, such as automatically processing images from camera traps or identifying sounds from acoustic recording devices placed in remote locations.

For nature lovers, apps can increase your enjoyment by opening your eyes to plants and animals you never knew existed. Your backyard, local green space, or favourite campsite contains a riot of diversity to be discovered. With patience and dedication,

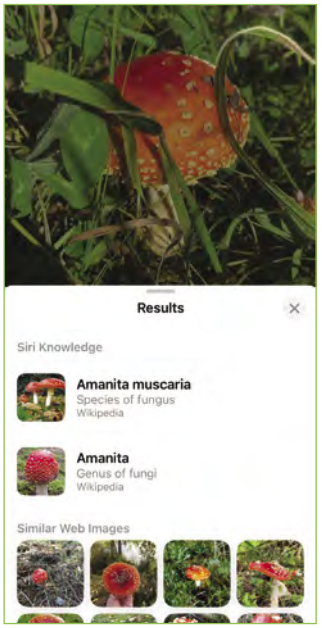
you can begin to disentangle a drama of predation, herbivory, pollination, and who knows what else, right under your nose.

From a conservation perspective, AI has transformative potential. Many species, especially species of conservation concern, can be difficult to find, in some cases known from just a few locations in the province. Their elusive nature means information on their distribution and abundance is often lacking. Filling in these basic data gaps can greatly facilitate efforts to conserve rare species, since you can only conserve something if you know where to find it. Fortunately, the best AI tools are designed to not only identify photos and sound, but also add the records to public databases for use by researchers, government agencies, and other interested parties. Observations made by citizen scientists can help reveal new populations or monitor trends over time. Many species, notably plants and invertebrates, also suffer from a small and dwindling pool of experts with the skills needed to identify them. With AI helping you tackle the learning curve, the next expert might be you!

The technology is free to use, so you can head outside and start snapping photos or making recordings at any time. Or, if you want to participate in something bigger and more targeted, there are also several citizen science programs operating in the province, many of which are increasingly leveraging this technology. (See Nature Alberta News on page 3 for some upcoming citizen science initiatives.)

So, in an era when time on screens is vilified and time in nature revered, maybe it's time to combine them to get the best of both worlds. Open one of these apps and see what they have to say about the plants and animals around you. You might just realize that modern technology is not so incompatible with the enjoyment of nature after all. Indeed, you might start to view your phone as a valued companion: the expert sidekick you never knew you needed. ■

Richard Hedley is a biologist and nature enthusiast who lives and works in Edmonton.



Some smartphones have AI tools built into their default photo app. This screenshot shows a mushroom that was automatically identified as *Amanita muscaria* by an iPhone's Photos app. Please note that the mycologist community advises you never rely solely on AI identification when foraging. Different mushroom species can look very similar and a snapshot alone is not sufficient to confirm it is safe to eat.

ARTHROPODS AMONG US: Unseen Ecosystem Architects

The bright colors of the spotted tussock moth add beauty and biodiversity to botanical gardens. DARA OJO

Underneath the foliage, in the quiet corners of gardens and parks, and along the banks of rivers, a hidden community is hard at work — one we rarely notice but can't live without. These tiny architects — arthropods like beetles, spiders, ants, and wasps — are the unseen backbone of our local environment. From the tiniest insect creeping along a petal to a spider camouflaged against tree bark, arthropods form the foundation of life, playing vital roles in pollination, pest control, and nutrient cycling.

While these creatures are found throughout my city of Edmonton, I set out to capture them in three distinct locations: the University of Alberta Botanic Garden, residential neighbourhoods, and Hermitage Park, nestled within the North Saskatchewan River Valley. Through my lens, I was able to reveal how these small, often-overlooked beings not only survive but flourish in these settings, quietly sustaining the ecosystems that, in turn, support us all.

The Value of Urban Arthropod Biodiversity

Urban spaces may seem unlikely habitats for such diverse species, but studies show that cities in Alberta are vibrant with arthropod life.[1] These creatures create stability in urban ecosystems by providing services we often take for granted: pollination, waste decomposition, and natural pest control.[2] Together, they add up to a hidden yet essential network that supports not just natural but also human-modified environments. Urban

A rare sight: one wolf spider preying on another. This behavior highlights complex survival dynamics. DARA OJO

A resilient wasp faces changing weather, showcasing its adaptability. DARA OJO

biodiversity studies reveal how cities can foster niches for these adaptable creatures, even as urbanization and climate change reshape their habitats.[3] By understanding and appreciating these tiny yet powerful contributors, we see just how resilient and valuable they are to our world. Each habitat offers a unique glimpse into the ways arthropods live and interact with their environments.

Outdoor Botanical Gardens

I explored my local University of Alberta Botanic Garden, where there's a subtle hum of life in every corner. From bees to hoverflies, pollinators flit between vibrant blooms, sustaining the delicate ecosystem of this cultivated space. Botanical gardens in urban settings, like this one, significantly support pollinator populations by offering reliable food sources year-round. For arthropods, these carefully cultivated beds provide a blend of native and exotic plants, creating a complex mosaic of food and shelter that nurtures biodiversity. As I observed hoverflies darting from petal to petal, I realized how these gardens act as urban sanctuaries, sustaining delicate yet vital lives.

Urban Neighbourhoods

Arthropods have learned to coexist with us, adapting to the human-modified landscapes of our neighborhoods. From flowerbeds to well-tended lawns, every green space is a potential microhabitat. Here, bees, ants, and beetles quietly carry on, adding texture and resilience to the ecosystem right outside our doors. Research shows that urban gardens, especially those with native plants and minimal pesticide use, play a critical role in supporting biodiversity.[4] While capturing these creatures on camera in urban spaces, I saw how these quiet workers thrive beside us, maintaining the delicate balance of our shared environment.

A jumping spider captures a damselfly, revealing the intricate food web. DARA OJO

A cuckoo wasp glistens in the sunlight, its metallic sheen catching the eye in an urban garden. Known for laying eggs in the nests of other insects, this wasp plays a fascinating role in urban ecosystems. DARA OJO

River Valley Park

With its lush vegetation and proximity to water, the river valley park offers refuge for various arthropods, such as dragonflies skimming the river or spiders spinning webs between tree branches. Riparian zones are vital for urban biodiversity, offering a blend of aquatic and terrestrial habitats that support complex food webs. Arthropods control pest insect populations and pollinate riverside vegetation, essential functions that reverberate throughout the ecosystem. In this natural setting, I observed the wild side of a city, where nature's smallest predators and pollinators thrive amidst the backdrop of a river valley.

Ecological Contributions and Broader Implications

Arthropods play critical roles in ecosystems, connecting species across various trophic levels and fostering ecological stability in surprising ways. Their contributions are not just fascinating, they are essential for several ecological processes.

Pollination and food web support: Without arthropods like hoverflies and bees, pollination would decline, reducing the plants' abilities to produce fruits and seeds. This would ripple through the food web, affecting organisms that rely on these plants and their fruits for sustenance. These pollinators ensure not just the survival of plants but also the species that depend on them.

Soil health and nutrient cycling: Arthropods such as ants and beetles are nature's decomposers, breaking down organic matter into nutrients that enrich the soil. This ongoing recycling keeps soil healthy and productive, a critical factor in the growth of plants that serve as the foundation of all land-based ecosystems.

Seasonal adaptations: Arthropods are masters of survival, showcasing remarkable adaptations to Alberta's challenging winter climate. Some produce antifreeze proteins that enable them to endure freezing temperatures, while others enter a state of dormancy called diapause. These adaptations are key to their resilience, allowing them to maintain their roles in the ecosystem even in the harsh grip of winter.

In these ways, arthropods support the ecosystems we depend on and the green spaces that make cities livable.

Conservation, Citizen Science, and Community Engagement

Embracing a city's diverse arthropod residents both benefits ecological health and enhances public awareness. The importance of conservation and citizen science initiatives cannot be overstated in sustaining these small but significant creatures.

Urban green spaces, such as outdoor botanic gardens and city parks, are adopting conservation practices that reduce pesticide use and enhance arthropod habitats. Research underscores how even small conservation measures can lead to significant biodiversity gains, supporting the delicate balance of urban ecosystems.[4]

Citizen science activities, such as capturing images and documenting sightings of arthropods around town, invites residents

Two weevils engage in a mating ritual, captured in a delicate moment of connection. These tiny beetles, often overlooked, play a role in biodiversity, reminding us of the hidden lives that thrive even in the heart of a city. DARA OJO

Against a warm orange backdrop, this damselfly peers directly into the camera lens, embodying the resilience and quiet beauty of urban green spaces. DARA OJO

to contribute to scientific understanding of urban biodiversity.[5] These community-based projects provide essential data and foster ecological literacy, empowering the public to connect with nature while supporting scientific research.[6]

Creating insect-friendly habitats calls for small adjustments in our own backyards, such as planting native flowers or letting parts of our gardens grow wild. These adjustments make a big difference for arthropods. Studies indicate that urban gardens designed with native plants not only support biodiversity but also act as "stepping stones" for species movement across cities, helping arthropods survive in fragmented urban environments.[7]

Urban landscapes may seem familiar, but a closer look reveals an ecosystem buzzing

A mother wolf spider carries her spiderlings, showing maternal instincts in the arthropod world. DARA OJO

with life. Arthropods, small as they are, play large roles in sustaining the greenery and biodiversity we cherish. As I explored, I was reminded of how interconnected our lives are with these tiny titans. By appreciating and protecting their habitats, we contribute to an ecological legacy that benefits all residents — no matter how many legs they have. It's a call to see our world through a new lens, one that values the unseen and cherishes the small but mighty. ■

Dara Ojo is an internationally recognized macro photographer and conservation advocate whose work has been showcased on platforms such as the United Nations Conference on Biodiversity and Adobe Lightroom. Through exhibitions, media features, and community engagement, he highlights the beauty and ecological importance of arthropods to inspire conservation efforts.

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Book Review

REVIEW BY LORNE FITCH

Good stories bear retelling. Such is the reason for an updated edition of Kevin Van Tighem's 2021 book, *Wild Roses Are Worth It*. Many will recognize the stories from the pages of *Alberta Views* magazine, where Van Tighem had a regular column for many years.

Important stories about Alberta — wild Alberta and her stewards — need to be retold and reread, to remind us of some fundamental truths. As Van Tighem states in the final paragraph of the book: "...it might be well to revisit the stories by which we define ourselves."

Stories are a part of who we are — the better the story, the better it can interpret and guide us, and the better we can become. And, as Van Tighem points out, the better we need to be if we want an Alberta that isn't just more of the economically driven "Alberta Advantage."

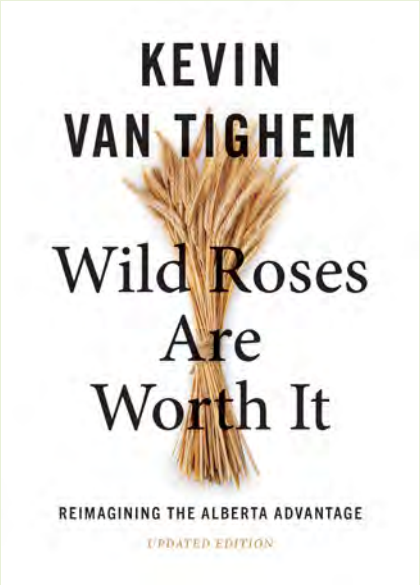
In this book, a literary smorgasbord of stories, Van Tighem variously preaches, hectors, entertains, inspires, embarrasses, applauds, eviscerates, censures, warns, and enlightens us. If it makes some of us uncomfortable, so be it.

Each story is a cogent explanation, sometimes subtly delivered, sometimes not, telling us where we are and where we need to be if the legacy provided by this province will survive to enrapture, motivate, and condition future Albertans to appreciate that they don't need to make a fortune to make a living. If we don't heed Van Tighem's warnings, we will remain on a short-term path of being takers, not givers.

Anecdotes, historical vignettes, expert voices, and voices from the land provide a pathway to be recognized and followed. This concept is encapsulated in this passage: "Wild Rose Country's best stories — Alberta's true genesis stories — don't derive from exploitation; they come from the kind of deep commitment to our home place that expresses itself in caring stewardship of its lands, water, fish, wildlife, and communities."

"Reimagining the Alberta Advantage" is a step in that difficult but necessary conversation. Van Tighem is a longtime biologist, retired resource manager in the National Parks system (including superintendent of Banff National Park), award-winning writer, and renowned conservationist. With deep, multi-generational roots in Alberta, he is well placed to tell these stories. He relentlessly tackles tough and contentious topics with a literary style designed to bring people together and make them think. If ever there was a challenge in creating a shared vision, Alberta represents it. *Wild Roses Are Worth It* is the kind of inspired writing that probes where the points of intersection exist.

Read the book, reread the stories, ponder the wisdom, and ask yourself: What can I do to reimagine an Alberta that is not focused on oil, lumber, French fries, urban sprawl, and motorized recreation? Van Tighem asks us to consider the possibility of an Alberta that values wild space, wild creatures, quiet and intact landscapes, and stewardship. And it's worth it! ■



Wild Roses Are Worth It: Reimagining the Alberta Advantage – Updated Edition

By Kevin Van Tighem

Rocky Mountain Books, 2024, 296 pp.

Available at rmbooks.com

Lorne Fitch is a Professional Biologist, a retired Fish and Wildlife Biologist and a former Adjunct Professor with the University of Calgary. He is the author of *Streams of Consequence* and *Travels Up the Creek*.

A Nod to the Long-tailed Weasel

BY MYRNA PEARMAN

Between the end of March and beginning of May 2022, I had the exciting and unexpected opportunity to observe and photograph a long-tailed weasel that frequented a friend's yard west of Calgary. It was a most remarkable experience, as the weasel, a male they named Nod, put in only random appearances. Some of my visits, which entailed a 400-km round-trip drive, resulted in many chilly hours of being treated to a no-show. On other occasions, Nod would magically appear and then — *poof*! — vanish again. Rarely, he would grace us with his presence for an hour or two, darting frenetically around the yard.

Nod was not frightened of his adoring human neighbours, but he was both fast and furtive. Ever curious and cautious, he weaved up willow trees, darted in and out of ground squirrel holes, zigzagged at dizzying speed across open expanses of lawn, scampered about in a wood pile, and even explored the nooks and crannies of garden furniture and parked vehicles. His rests were brief, as were his occasional sips at the bird bath.

Capturing photographs inevitably meant a wild weasel chase. When reviewing my images, I was dismayed to see that most of them were of blurs, cut-off body parts, or nothing at all. Thankfully, however, there were enough decent shots that documented, over a period of six weeks, the rapid and remarkable transition from Nod's snow-white winter pelage to his regal, caramel-brown summer coat.

In northern climates, weasels, like hares and ptarmigan, undergo seasonal moults to better camouflage with their surroundings. These colour changes are triggered by photoperiodism. In the fall, reduced light slows the influence of

Like Alberta's hares, weasels undergo cyclical moults to blend in with their seasonal surroundings. MYRNA PEARMAN

The long-tailed weasel's winter pelage may help keep it warm as the white hair has air, not pigment, trapped within its structure. MYRNA PEARMAN

By mid-April, Nod's colour transformation is only half complete, a blaze of the summertime caramel colour showing on his back. MYRNA PEARMAN

melanocyte-stimulating hormone (MSH), which in turn reduces the production of melanin, a pigment produced by specialized melanocyte cells found in the hair follicle. It is thought that an inhibitor either prevents the pituitary gland from producing MSH or prevents the follicles from responding to it. Come spring, the opposite process occurs. In addition to affording camouflage, it is thought that their white winter pelage might provide some thermoregulatory advantage, since white hair has air, not pigment, trapped within its structure. White hair, which is also thinner, may also be denser and thus warmer.

There are three species of weasels in Alberta: the long-tailed, short-tailed, and least weasel. All are ferocious carnivores. Streamlined in shape, they are thin, remarkably flexible, and move at astonishing speeds. Dependent on maintaining their svelte bodies to easily enter small holes and burrows in pursuit of prey, they do not, like other northern mammals, put on an insulating layer of fat. Not only must they compensate for this lack of fat, but their high metabolic rates, sustained high levels of activity, and large surface area to body volume (which results in excess heat loss) mean that they must consume large quantities of food each day. And, since they have relatively small stomachs, they must eat often; it is estimated that they consume about one third of their body weight every 24 hours. Excess food is sometimes cached and then accessed up to months later, thanks to their excellent olfactory abilities and impressive spatial memories. During the spring and summer, weasels consume eggs, nestlings, and small mammals. During the winter, mice, voles, and red squirrels become their main prey items. Interestingly, weasels will sometimes usurp the burrows of their prey and will even line their new homes with their victims' skins. Nod didn't

Curious yet cautious, Nod was almost constantly on the move, only stopping briefly to rest near cover for safety, or for the occasional gulp of snow from a snowbank. MYRNA PEARMAN

capture any prey while I was observing him, but other observers often saw him race around with dead voles and mice in his jaws.

Out in the winter woods, the characteristic two-by-two footprints make weasel tracks easy to identify. I have often followed the meandering trail of a weasel in the snow, just to see where it leads. It sometimes ends at a small hole where the weasel has darted down through the snowpack to terrorize the mice and voles that remain active all winter in the pukak layer, the interface between the ground and the snow.

Long-tailed weasels have an interesting reproductive strategy. Sexes are solitary for most of the year, but when breeding season arrives, males must locate the females. Their male parts also enlarge at this time, a process we observed with Nod. Males will often travel long distances, using their keen sense of smell

Sporting his summer coat, Nod zigzagged at dizzying speed across open expanses of lawn. MYRNA PEARMAN

to follow the odour of female urine. Females come into estrus once a year, and then only for three to four days. Mating, which induces ovulation, is aggressive and can take up to four hours. The eggs, once fertilized, pass down the fallopian tubes to the uterus. They divide into a blastocyst that, due to low levels of progesterone, floats within the uterus for up to nine months. As the daylight hours lengthen in the spring, progesterone levels increase, causing the blastocyst to implant. This process of delayed implantation ensures that the young are born in late spring to early summer, when food is plentiful.

While my friends were fortunate to also observe both a female and another male weasel in their yard, I was grateful to have witnessed and photographed Nod over the course of his remarkable transformation. ■

Myrna Pearman is a retired biologist as well as a bestselling author, enthusiastic nature photographer and writer, kayaker, and backroads rambler.

YOUR SHOT Images of Alberta's Natural Heritage

QUICK AS A FOX

"I was out in Bluerock Wildland Provincial Park very early on a June morning. The sun was just coming up. This little fox appeared on a slope not far off the road. As I lifted my camera, it gazed at me for about five seconds, seemingly as mesmerized by me as I was by it, just as the sun peeked through the trees. Then it was gone! Timing and luck were on my side for this photo!"
—Brenda Vath

HEY, NEIGHBOUR

"You never know what you'll find on a walk in Calgary! Last November, I saw this young moose taking a stroll through a suburban residential area, munching on some leaves, with its mother keeping a watchful eye nearby. Sharing the city with such awe-inspiring animals is certainly a testament to the unrivalled natural scenery of Calgary, but also a telling consequence of the rapid encroachment of urban development on wildlife habitat."
—Amir Said

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

THE STATE OF ALBERTA'S BIRDS

BY NICK CARTER

In October of 2024, Birds Canada released their *State of Canada's Birds* report, which tracked changes in the populations of different species categories based on shared lifestyles — such as birds of prey, grassland birds, aerial insectivores, etc. — from 1970 to 2024.[1] While some population trends showed stability or even notable increases, the report shows that most of Canada's bird populations are in decline. This data has mixed implications for Alberta and the birds that live here; some promising, and some concerning.

To get a more Alberta-centric view of changes in bird populations over time, we can use the report's population trends in the species Distribution and Occurrence maps and explore public data on different species in the Status and Trends page on eBird.[2] The latter resource provides trends in a narrower timeframe, generally from 2012–2022, and doesn't include data on certain species during the time of year they are found in Alberta; however, we can see recent trends in many bird populations across different parts of the province.

WHILE SOME POPULATION TRENDS SHOWED STABILITY OR EVEN NOTABLE INCREASES, THE REPORT SHOWS THAT MOST OF CANADA'S BIRD POPULATIONS ARE IN DECLINE.

First, the good news. Nationwide, waterfowl populations have increased by 46%, and all native goose and swan populations are increasing in Canada. Birds Canada found that freshwater ducks on average have increased by 38%, and that most species are either stable or increasing. What breeding season data there is on eBird does show good increases in things like gadwalls and cinnamon teals in the province, but Birds Canada found declines in species such as the American wigeon and white-winged scoter. Dry conditions in the prairies could be making this worse, according to Birds Canada.

The next biggest increase in Canada, at 35%, has been the birds of prey category. From 2012–2022, eBird shows that turkey vultures increased by 36.2% and seem to be expanding their range northwards. Since 1970, the osprey has seen a nationwide increase, perhaps in part because of artificial nest platforms; however, data from 2012–2022 shows a slight decline of this species in Alberta.

Our population of golden eagles remains stable, and bald eagles have increased by 16.5% over the past 10 years.

Northern harriers are decreasing both in Alberta and nationwide, likely because of grassland and wetland habitat loss, as well as pesticides in their prey. The accipitrine hawks have been reported as stable since 1970 in Canada, but eBird data from Alberta shows recent declines of all three species, with a worrying 37.2% decline in the sharp-shinned hawk. The soaring *Buteo* hawks show either stability or population increases. Some owls, such as the barred owl, show increases both nationwide and in Alberta; others, such as the snowy, short-eared, and burrowing owls, are in decline. Some owls are either data deficient, like the boreal owl, or show nationwide increases overall since 1970, but with recent local declines, including the northern saw-whet and northern hawk owls. In falcons, merlin populations are increasing, and peregrines have improved since their threatened days in 1970, but do show a recent decline on eBird of 21.8% in Alberta. Prairie falcons are relatively stable here, but American kestrels and gyrfalcons continue to decline.

In the category of wetland birds, including a variety of disparate groups, some already discussed, there has been a 21% increase nationwide since 1970. Many wetland songbirds are either stable or increasing. Grebes have largely remained stable since 1970, though the western grebe remains sensitive and both it and the pied-billed grebe show declines in Alberta. The Virginia rail has increased here by 30.8%. American coots, on the other hand, have decreased by a startling 37.4% after a record high in the 2010s. This may be because of dry conditions in the prairie wetlands.

Left: Trumpeter swans have recovered well in Alberta since their near extinction a century ago, and this province remains an important breeding region for this species. LEO DE GROOT

Below left: For certain owls of more remote areas, such as the boreal owl, we need more data to get a better understanding of how their populations are doing. NICK CARTER

Below right: Black-crowned night herons have steeply declined in recent years in Alberta. TONY LEPRIEUR

Despite often being seen in huge flocks, bohemian waxwings declined by an alarming 43.6% between 2011 and 2021 in Alberta. TONY LEPRIEUR

All of Alberta's tern species have declined. Aside from the ring-billed gull, our gull species are in decline. White-faced ibises, once only known in the far south of Alberta, are on the rise and expanding their range northwards. Double-crested cormorants and American white pelicans have increased, and great blue herons have remained stable. However, the American bittern and black-crowned night heron have decreased alarmingly, by 43.5% and 44.8% respectively, in the past decade.

Following an increase in the '80s and '90s, forest birds have essentially returned to 1970 levels. Spruce grouse in Alberta have slightly declined in the north and parts of the foothills, but they are increasing in the protected mountain parks. Our woodpeckers are in good shape, aside from the American three-toed, which is decreasing in Canada. Most flycatchers are decreasing in Alberta, especially the olive-sided flycatcher and western wood-pewee. While the boreal chickadee has declined by 17.1% in the past decade, our other chickadees, vireos, jays, and kinglets are secure, and both nuthatches have increased. The hermit thrush is in decline and has decreased in Alberta by a concerning 40.5% over the last decade. The bohemian waxwing has also decreased by a similar degree. Alberta's urban areas show the worst level of population decrease, which is puzzling given the modern abundance of ornamental trees in towns and cities that provide winter fruit for this species. The evening grosbeak has been doing poorly in eastern and Pacific Canada but remains relatively stable, if uncommon, in Alberta. Along with many other finches, the evening grosbeak tends to have erratic distributions from one year to the next; but, overall, most of our finches are in decline. The warblers are stable, though the populations of some species fluctuate. Some, like the blackpoll, have been hit hard both nationally and in Alberta.

Canada's arctic birds have decreased by 28% since 1970. Long-distance migrant species have a lot of overlap with this category and have declined by nearly the same amount at 29%. Many arctic-nesting and/or long-distance migrants that move through Alberta are shorebirds, which in turn have decreased nationally by 42%. It's not exclusively bad news for shorebirds. In recent decades, the black-necked stilt, once a southeastern Alberta rarity, has established itself in the prairies and parkland and continues to increase in Alberta. Their close relative, the American avocet, is also becoming more common in central Alberta. Among upland sandpipers, the prairie population is on the rise, except in the northwest, where it's in decline. For the rest of our shorebirds, it's a mostly bleak affair. Plovers, godwits, dowitchers, and most *Calidris* sandpipers have moderately to substantially declined. Meanwhile, the shanks and tattlers are showing mixed results. In Alberta, the willet has remained stable, and both the solitary sandpiper and greater yellowlegs have modestly increased, but the lesser yellowlegs has declined. The reasons for the state of shorebird and arctic breeders are complicated, but loss of habitat on their migration routes is a contributing factor.

Aerial insectivores have decreased in Alberta to a similar degree as the shorebirds. Already uncommon in Alberta, both the black and Vaux's swift are declining. The eastern phoebe has decreased by 15.7% since 2012, but the group in the most trouble might be swallows. Aside from the recent increase of purple martin, the rest of Alberta's swallows are in decline. Many of these species hunt for insects in and around wetlands, and as these environments

Marbled godwits, one of our largest shorebirds, have experienced a substantial population decrease in the Alberta grasslands. TONY LEPRIEUR

dry out, fewer insects are reproducing, leaving swallows with less to eat. As well, recent high summer temperatures have led to widespread nest failures in cavity-nesting songbirds, such as tree swallows and mountain bluebirds.

By far the hardest-hit group in Canada is the grassland birds, which have declined by 67% since 1970. This not only includes prairie grouse, such as the greater sage-grouse, and birds of prey, such as the burrowing owl, but a variety of grassland songbirds. The chestnut-collared and thick-billed longspurs, prairie sparrows (such as the grasshopper, Brewer's, and vesper sparrows), and western meadowlark are all in decline. In most of our grassland sparrows, the decline has been roughly 25% since 2012, but in that time the lark bunting has dropped by a staggering 61.1% in Alberta. The crisis these grassland birds are experiencing is mostly because of habitat loss. Most of Alberta's grasslands have been cultivated for agriculture, replacing native plant species with crops.

We know what the birds of Alberta are dealing with, and while some problems are multifaceted or hard to understand, there are a few clear takeaways. Firstly, past conservation efforts to save once-endangered species have worked, so there's still hope. Secondly, the drying of Alberta's lakes and wetlands and the broader effects of climate change are negatively affecting a variety of species, from sandpipers to swallows. Lastly, Alberta's native grasslands are a threatened ecosystem; if we lose the grasslands, we will also lose the grassland birds.

We must get more of our native grasslands under protection. Currently less than 2% of this region lies within protected areas. Agricultural methods that are less harmful to wildlife and environments like grasslands and wetlands would also help matters. Albertans can help birds in a variety of ways, such as planting native trees and shrubs instead of grassy lawns; supporting causes, organizations, and politicians that promote ecologically friendly policies; and contributing to citizen science projects (for example, reporting bird sightings on sites like eBird and iNaturalist to help biologists gather more data). Captive breeding, banning pesticides, and eliminating hunting are conservation efforts that have helped save species that were once almost lost, such as the trumpeter swan and peregrine falcon. To a whole generation, these species were icons of avian conservation in North America. Perhaps it's time we focus on some new ones to represent what might be lost tomorrow if we don't act today. ■

Tree swallows are one of many insect-catching songbirds that are declining in Alberta. NICK CARTER

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1. Birds Canada and Environment and Climate Change Canada (2024). The State of Canada's Birds Report. https://naturecounts.ca/nc/socb-epoc/report/2024/en/
2. eBird Status and Trends. https://science.ebird.org/en/status-and-trends

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

TONY LEPRIEUR

Wetland Song: Alberta's Frogs and Toads

BY MARGOT HERVIEUX

Birds aren't the only creatures that sing in the spring. Frogs and toads begin filling our ponds with their calls as soon as the ice starts to melt.

The first frog to start calling is the little boreal chorus frog. This 2- to 4-cm frog may be small, but its calls can be heard a long way off. It sounds like the noise made when you drag your finger along the teeth of comb. You are most likely to hear chorus frogs in shallow ponds, wet meadows, and even roadside ditches.

In deeper marshes, listen for the quack-like call of the wood frog. Both chorus and wood frogs vary in colour from tan to brown to green. The larger, 5- to 8-cm wood frog is easily recognized by the black, mask-like stripe that starts at its snout and runs through its eyes, while the chorus frog has thinner stripes running all the way down its sides.

One of the most amazing things about wood and chorus frogs is that they survive the winter under the leaf litter by freezing solid and then thawing out again in the spring. They produce a high-glycerol antifreeze that allows their bodies to freeze without producing ice crystals that would damage their tissues.

There are only two other species of frog in Alberta: the northern leopard frog and the Columbia spotted frog. Both have much more limited ranges than chorus and wood frogs.

If you hear a repetitive peeping or deep trilling sound coming from a wetland, you are likely listening to a toad. There are four species of toad in Alberta. The most common and largest (reaching 12 cm) is the western (boreal) toad. It has a western distribution in Alberta, while the Canadian toad is found in the eastern part of the province. On the southern prairie you can also find the Great Plains toad and the plains spadefoot toad.

Alberta toads all range in colour from dark brown to tan. Unlike frogs, toads have bumpy glands on their skin, the location of which can be used to identify the species. These glands produce a bad-tasting and slightly toxic liquid that deters predators, but is harmless to humans. Toads can't survive freezing, so they dig a deep burrow or use abandoned rodent tunnels for hibernation in winter.

Male frogs and toads call in the spring to attract mates. Once the male attracts a female, he rides around on her back until she lays her eggs, called spawn, in water, and then he adds his sperm to the water. Frogspawn appears in clumps and toadspawn in strings. It only takes the eggs two to 12 days to hatch, depending on water temperature, and then the tadpoles spend another three to four weeks feeding on algae before they metamorphose into adults. Adult frogs and toads spend most of their lives away from the water and eat a variety of insects and spiders; toads add worms and slugs to their menu.

As Kermit the Frog said, it's not easy being green. At every stage of their life cycle, from egg to adult, frogs and toads are the food of choice for a variety of aquatic insects, fish, snakes, and birds. They are also threatened by diseases, habitat loss, and other human disturbance. All amphibians are particularly sensitive to pesticides and other pollutants because they absorb them directly through their skin.

Amphibians are a sign of healthy wetlands, and those wetlands are great places to enjoy the first days of spring. Be sure to add "listening to frogs and toads singing" to your list of spring activities.

To learn more about Alberta's frogs and toads and how to recognize them, visit the Alberta Conservation Association Amphibian Monitoring website at **ab-conservation.com/avamp**. ■

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

MANNA PARSEYAN

MEET A MEMBER CLUB

BY HUBERT TAUBE

Stewards of Alberta's Protected Areas Association

The **Stewards of Alberta's Protected Areas Association (SAPAA)** has existed since 1999 as a support society for stewards enrolled in the Alberta government's Volunteer Steward Program. Several Alberta Crown lands, set aside for conservation and local recreation within the Protected Areas system, were already being served by stewards as monitors and caretakers. In 1987, the government instituted a formal program of recruiting stewards to be its "eyes and ears" and report at least annually on the status of the protected areas (natural area, ecological reserve, or wildland park). It later created a parallel system of "campground hosts" to spend the summers in popular provincial parks.

Some stewards banded together to form organizations with considerable capacity to increase the value of their sites for visitors, such as installing trails, interpretive signage, fencing, and other government-sanctioned infrastructure. In return, the government provided on-the-ground assistance, educational materials, and workshops to all its stewards, and promoted collegiality with newsletters and annual conferences.

SAPAA, an arm's-length organization sometimes critical of the government, came about when stewards, seeing themselves mostly as conservation-oriented land managers, encountered problems with the government's multi-use policies. Land-use challenges included inappropriate off-highway vehicle operation, legacy industrial uses, and even threats from adjacent development.

Thirty years later, the government steward program had been mostly withdrawn, owing to more stringent provincial health and safety regulations

FRANK POTTER

(which make the government liable for steward safety) and confusion over goals for data collection and management. However, SAPAA continues and remains supported by a small membership of legacy stewards who appreciate the fellowship it provides.

In 2021, SAPAA began a revitalization, revamping its website to achieve a more public profile — updating basic protected area information, adding maps and blogs of recent site visits, and maintaining a regular schedule of newsletters. SAPAA has developed and is testing a site inspection form, which it hopes will be used by seasoned stewards and casual visitors alike to provide monitoring data that will also be useful to the government. Students and youth groups are being invited to participate in SAPAA activities, projects, field visits, and webinar productions. SAPAA continues to communicate with the government and hopes to collaborate on a new initiative of citizen science projects.

Rather than supporting the government's volunteer program, SAPAA now aspires to succeed it in a meaningful way, in cooperation with like-minded steward and naturalist organizations, including Nature Alberta.

You don't have to be a government steward to join SAPAA. We invite all lovers of exploration, the outdoors, and nature to check out our website and discover the natural treasures near you. For more details on any of the above and on becoming a member, please visit our website at **sapaastewards.com**. ■

Hubert Taube is a government steward of Northwest of Bruderheim Natural Area and past president of SAPAA.

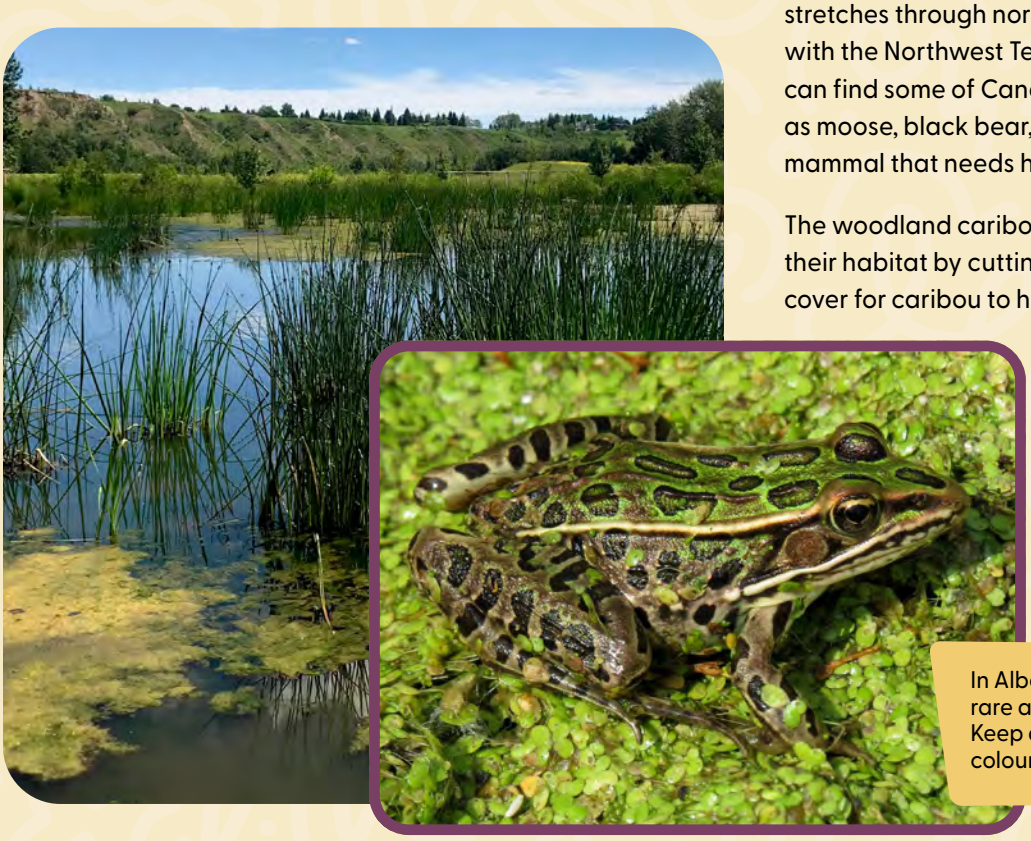
Nature Kids MY BIG ALBERTA BACKYARD

BY ERIN ARNASON

Alberta 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 talk about **species at risk** in different regions of Alberta.

Species at Risk in the Wetlands

Wetlands are "semi-aquatic" ecosystems like swamps, marshes, and fens, where the ground is covered by water, either permanently (all the time) or seasonally (at certain times of year). Wetlands are important to Alberta's landscape. Not only are they home to a large variety of plants and animals, they also help clean polluted waters and prevent floods. Wetlands cover around 21.7% of Alberta and provide habitat for around 400 species, some of which are at risk of disappearing from the province.



In Alberta, northern leopard frogs are now rare and only found in prairie wetlands. Keep an eye out for their spotted green colouring! DAVID SCOTT

One wetland species at risk in Alberta is the northern leopard frog, named for its leopard-like spots. This frog was once common throughout Alberta, but since the late 1970s their numbers have dropped significantly; they have nearly disappeared from most of their historic Alberta range.

You can help this declining species! When visiting wetlands, watch for frogs and other amphibians. With the help of an adult, you can submit observations and pictures through the iNaturalist app, which is used by the Alberta Volunteer Amphibian Monitoring Program to keep track of leopard frogs and other species. Your submissions help people monitor how these species at risk are doing in our province.

Species at Risk in the Boreal Forest

The boreal forest is home to plants and animals that have adapted to survive cold northern temperatures. Covering over 58% of Alberta's land, the boreal forest stretches through northern Alberta up to the border with the Northwest Territories. In this huge region, you can find some of Canada's most iconic mammals, such as moose, black bear, and white-tailed deer. One large mammal that needs help is the woodland caribou.

The woodland caribou is at risk from humans removing their habitat by cutting down trees. Forests provide cover for caribou to hide from predators such as wolves; when forest disappears, so do caribou. We need to take better care of these forests to save declining caribou populations, and this will also help many other animals that live in the boreal forest.

Plains hog-nosed snakes, which inhabit Alberta's grasslands, have recently been reclassified as a species at risk. NICK CAIRNS

The greater sage-grouse looks a bit like a turkey with a fuzzy white scarf. Scientists hope to save this cool-looking species in Alberta by protecting the grasslands they live in. U.S. FISH AND WILDLIFE SERVICE

Species at Risk in the Grasslands

Prairie grasslands are large, flat or gently hilled areas covered mostly in – you guessed it – grasses. Many species have adapted to living on these open plains, but these days they have a lot less room than they used to. In Alberta, 74% of native grasslands have been lost to human activities such as agriculture and urban development, and only 1.25% are in protected areas. This has had a huge impact on grassland species that cannot survive in areas used by humans. One of these species is the greater sage-grouse.

The greater sage-grouse is a large bird that is at risk of disappearing because of habitat loss. Since the 1960s, the population has dropped by 90%. Scientists across the province are working to help these birds by creating breeding programs, which can help boost their populations, and by raising awareness about the importance of protecting their grassland habitats.

You can help preserve species at risk, too. You're taking the first step right now, just by learning about them! When you're out exploring your big Alberta backyard, be respectful of wildlife and their space – take home lots of pictures and memories, but leave wild spaces clean and undisturbed. You'll find more ways you can learn about, explore, and help protect nature at **naturealberta.ca/nature-kids**. ■

Erin Arnason is a recent university biology graduate. She spent most of her childhood outdoors, camping and hiking all over the province, and still loves to spend time in Alberta's natural landscapes.

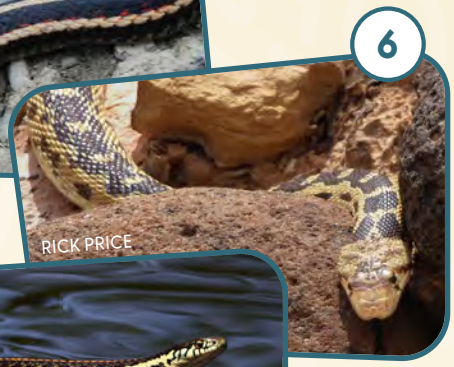
Caribou love to eat lichens, which grow best in old-growth forests that are undisturbed by people. MARK BRADLEY

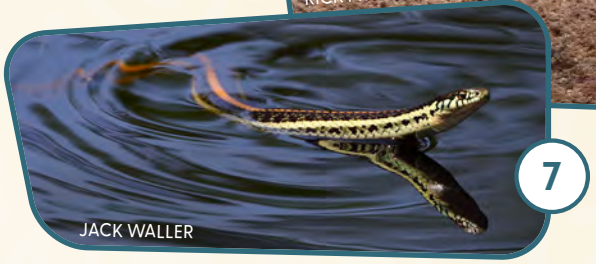
Nature Kids OUT AND ABOUT

BY ERIN ARNASON

Did you know that 2025 is the Year of the Snake according to the Chinese calendar? As spring brings warmer weather, Alberta's snakes become more active, and you may come across one of the seven snake species that live in our province. How well do you know your snakes? See if you can match the photos with the descriptions below.
(Hint: You just met one of these species in My BIG Alberta Backyard!)

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





Bullsnake
Also called a gopher snake, I am light coloured with dark brown or black rectangular patches. I am the largest snake in Alberta and can grow as long as 2 metres!

Plains garter snake
I have an orange streak on the top of my body and yellow streaks running along my sides. You can often find me near water, such as ponds, lakes, or streams.

Red-sided garter snake
While I look similar to the plains garter snake, I have red lines that travel up my sides towards the top of my body. In the spring, you can sometimes spot hundreds or thousands of us grouped together, emerging from hibernation!

Prairie rattlesnake
I am tan coloured with brown patches that run along my back. I am most known for the rattle at the end of my tail that I use to tell others I am near. I am venomous, so please keep your distance if you see me in the wild!

Wandering garter snake
My body is grey with cream-coloured lines that run along my sides. On the grey parts of my skin, I have rows of dark spots. You can find me in the southern half of Alberta, where I live in many different kinds of habitats.

Plains hog-nosed snake
My name comes from my nose being turned up like a pig's snout. I use my nose to burrow into the ground. I am a light brown colour with darker brown dots all over my body. When I feel scared, I will play dead to try and convince predators to leave me alone!

Eastern yellow-bellied racer
I am blueish-grey with a yellow stripe running along the bottom of my body. I am at risk of disappearing from Alberta, and I am quite hard to find. So, if you spot me, please give me space to protect me!

Answers: 6, 7, 5, 2, 1, 4, 3

Nature Kids ASK SHAMEENA

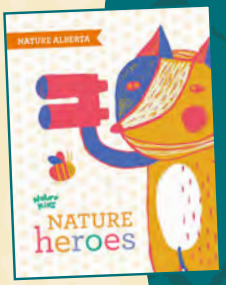
WITH HELP FROM ERIN ARNASON

This is where you usually find **Ask Stuart**, in which Stuart the swift fox responds to questions asked by kids across Alberta. This time, Stuart is turning the page over to Shameena the snake, one of his friends from the *Nature Heroes* Activity Book, for her expertise on all things scaly and slithery! If you have a question you would like to ask Stuart (or one of his pals), send it to **naturekids@naturealberta.ca**, and it may be featured in a future issue.

Q Why do snakes shed their skin?

The ability of snakes to shed their skin in one continuous piece is a fascinating characteristic of these species. Shedding is a regular and lifelong process of removing aging skin and replacing it with healthy new skin. Snakes usually shed their skin four to 12 times a year, with younger snakes shedding more often than adults as they grow. Adults will also shed before reproduction and after giving birth. Did you know that snakes aren't the only species that shed their skin? All animals – even humans! – shed their skin, but because many animals shed their skin in tiny pieces, you can't see it happen as easily as you can with snakes. ■

The shed skins of snakes are usually see-through and can be hard to spot out in nature. KRIS KENDELL



Snakes slither on their bellies. The large, wide scales on their undersides (compared to the small, rounded scales they have on their backs) help them slither quickly and efficiently across the ground. Try out slithering for yourself (and hop like a frog, too!) with the **Nature Heroes: Amphibians and Reptiles** activities from the free ***Nature Heroes* Activity Book! naturealberta.ca/nature-heroes-activity-6**

Q Are all snakes venomous?

Venomous snakes are not very common, with only 7% of snake species around the world being venomous enough to harm us. In Alberta, the prairie rattlesnake is the only snake species with venom harmful to humans. Another important thing to remember is that snakes are not aggressive by nature and are much more likely to hide than risk coming close to predators, including us humans. So, if you see a prairie rattlesnake or hear the rattle of their tail, walk away slowly and give it plenty of room to escape. Snakes are not something you should fear, as they are incredibly fascinating animals, but always make sure you respect them. Even if they are not venomous, give them space and do not pick them up! ■

Prairie rattlesnakes are cool, but don't forget to give them plenty of space! TONY LEPIEUR

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NATURE ALBERTA

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