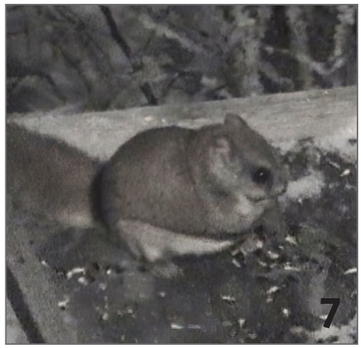
WINTER 2024 VOLUME 82.4

BLUE JAY



In *A Guide to Saskatchewan Mammals* (1958), the Northern Flying Squirrel's distribution was depicted as primarily restricted to the "wooded areas of northern Saskatchewan." The Battlefords area was not among the localities, but mammals collected from 1958 to 1961, followed by bouts of collecting in subsequent decades and recent observations at a farm near Denholm, confirmed the species' rarity in this area.

Several decades of population declines among swallows and other birds that rely on flying insects suggests that the insect communities on which they depend may be changing. Specifically, in the prairies, it is possible that intensifying agricultural practices — such as wetland loss and greater pesticide use — could be altering the habitats where swallows forage for insect prey.

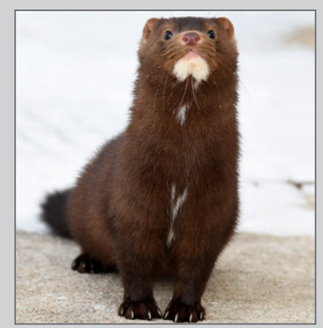
As part of our 75th Anniversary celebrations, we are highlighting members who have had a significant impact on Nature Saskatchewan. Hear from Alan Smith, who has been a member since 1965.

Nature Saskatchewan's Stewards of Saskatchewan (SOS) programs received a lot of attention from small papers and radio stations this year! Read more about the SOS banner program, Shrubs for Shrikes, Plovers on Shore, Operation Burrowing Owl, and Rare Plant Rescue!

Robert E. Wrigley shares the evolution and migration of ancient and modern Bison from Eurasia and North America, accompanied by art from Saskatchewan wildlife artist and museum dioramist Dwayne Harty (studio currently in Jackson Hole, Wyoming).

In celebrating 75 years of Nature Saskatchewan, it is only fitting to acknowledge member Spencer Sealy, who has been contributing to the *Blue Jay* for nearly 65 years.

WHAT'S INSIDE



ON THE FRONT COVER
A chin up pose from a curious mink standing atop a bridge abutment on the Montreal River.

Photo credit: Randy McCulloch.

ON THE BACK COVER
A Snow Bunting in Prince Albert National Park.

Photo credit: Annie McLeod.

FROM THE PRESIDENT

Lorne Scott
President, Nature Saskatchewan

Memberships in organizations have changed over the years and take many forms. Sixty years ago, before there was computer technology, a member in an organization paid a membership fee that provided the benefits of supporting an organization. Back then, people were proud to support an organization that shared their values. Renewal notices were responded to quickly as the members did not want to miss a publication or recent happenings. The only way of communicating was by the mail (Canada Post).

Back in the 1960s and 70s, Nature Saskatchewan boasted a membership of close to 3,000! I know as I was Circulation Manager. At one time we used stick-on labels or metal plates that were imprinted with names and addresses. These plates were run through a manually operated machine, stamping each issue of the *Blue Jay*. There were frequent problems with the machine and the plates. For a time, we resorted to recruiting school kids and hand addressed over 2,800 copies of the *Blue Jay*. After I moved on, more reliable printer addressing systems were available.

Over the decades, the membership in Nature Saskatchewan, and many other organizations, has dropped. Today the *Blue Jay* is sent to some 700 households. Another change was at least 60 universities across North America and abroad subscribed to the *Blue Jay*. There were more rural members than urban. Many members learned about the *Blue Jay* through long time *Western Producer* columnist Doug Gilroy's weekly Prairie Wildlife column. The *Western Producer* was the main source of news in rural Saskatchewan and was in almost every household. A number of youngsters received a membership to Nature Saskatchewan as a gift from a relative. To this day, some of these people are still members and receive the *Blue Jay*.

In recent decades, as our rural population has declined and computer technology has blossomed, our membership has steadily declined. Even though birdwatching is the fastest growing outdoor activity in North America, memberships in nature conservation organizations have declined to the point that some organizations do not even have a set membership fee. Rather, they solicit donations and refer to their base as "supporters".

Nature Saskatchewan recently conducted a membership survey, which received a very good response rate of 220 individuals. I was shocked to see that 70 per cent of the 220 responses were from people over 70! Only four per cent of respondents were from the 25 to 34 age group.

There are likely many reasons for the decline and interest in Nature Saskatchewan, one being the readily

Lorne Scott

available technology. People can simply go to eBird and other sites and find whatever they want about birds. Younger families are busier with at least two jobs and children involved with several activities. Most people live in urban centres and are not as exposed to or in touch with nature. I find it disappointing that a few ardent birdwatchers travel thousands of miles annually to see a rare bird, but do little to support a nature-based society. Over the years, I have gifted a handful of young people with Nature Saskatchewan memberships. In casually checking to see if they are still members, some are and some are not.

The ironic part is that according to surveys, people say that nature and birds are important to them. More people than ever are feeding birds. When there is an issue such as the selling of public lands, a coyote bounty, development in city parks, the breaking of native grasslands, etc., Nature Saskatchewan receives calls from people saying "What are you going to do?"

Nature Saskatchewan has just celebrated its 75th anniversary. We have a proud history with many accomplishments. Hopefully the next 25 years will build on our successes. It will be up to all of us to recruit new members. Everyone's ideas of how we can do this are welcome. We have excellent staff and a diverse Board of Directors dedicated to being A Voice for Nature. In the coming years, we are counting on new and non-members to step forward to continue our legacy.

BLUE JAY

Blue Jay, founded in 1942 by Isabel M. Priestly, is a journal of natural history and conservation for Saskatchewan and adjacent regions. It is published quarterly by Nature Saskatchewan.

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Editorial Information

Blue Jay welcomes all submissions, preferably by email (although hand-written or typed manuscripts will be considered to accommodate those who do not have access to computer equipment), polished or in need of some editorial assistance. All items for publication should be sent to the editor electronically (in a Microsoft Word document) by email. Hard copies can be mailed to the editor at the address above.

Submission deadlines

January 1 for the Spring issue, April 1 for the Summer issue, July 1 for the Fall issue, and October 1 for the Winter issue. For detailed information, please see the "Guidelines for Authors" under the Publications section of the Nature Saskatchewan website.

RED-OSIER DOGWOOD REVEALS ITS INNER STRUCTURE

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Ripping a red-osier dogwood (*Cornus sericea*) leaf in half, very, very, slowly often produces a fine white thread-like material stemming from the end of a severed vein (Figures 1 and 2).

A photograph of the thread taken through a light microscope reveals helical structures (Figure 3). Each of these helices are wall thickenings that act as reinforcing secondary cell wall of a tracheary elements. Tracheary elements are specialized cells that form part of the vascular conducting tissue found in the veins of leaves, among other tissues.

To explain the presence of these secondary cell wall thickenings, I refer to a scientific study on plant vascular development by De Rybel, Mähönen and Harietta.[1] Although the plant used in that study was thale cress (*Arabidopsis thaliana*), I am assuming that the process of tracheary element development is largely similar across taxa.

As a tracheary element nears the end of its developmental stages, two processes are initiated by the cell. One involves the appearance of digestive vacuoles that will consume the remaining soluble cellular metabolites, leaving a full mature element hollow and dead at maturity. Only then can it perform its intended duties of transporting water and nutrients from the environment. The second process occurring during this latter developmental stage is the deposition of lignin, a phenolic polymer, in the apoplastic (wall) spaces of the spiral thickenings. The spiral thickenings provide the rigidity needed to withstand the tensional forces created by water transportation in the plant vascular and prevent the water conducting cells from collapsing. These hollow cells, connected end to end, form long tubes through which water and nutrients are directed to foliar tissue from the roots.

The helical thickenings, because of their inherent strength often remain intact while the rest of the cell wall is destroyed by the gentle force used to pull the leaf apart. There are no other cell parts, such as chloroplasts, a nucleus, etc. in the microscope photograph because mature tracheary elements are devoid of all organelles.

The midvein, being the largest vein in leaves, would have considerably more tracheal elements than any of the smaller branching veins. This would explain why there is a large white mass emanating from the ends of the midvein, while fewer tracheary elements appear protruding from the ends of the small veins.

The existence of these unique thread-like structures had been known by the author for at least 30 years, but their structure and origin had remained a mystery to me until now. If it was not for Sandy Jasieniuk's curiosity and her insightfulness to use a microscope, the mystery may never have been solved.

1. De Rybel B, Mähönen A, Helariutta Y et al (2016) Plant vascular development: from early specification to differentiation. *Nature Reviews Molecular Cell Biology* 17:30-40. https://doi.org/10.1038/nrm.2015.6

FIGURE 1. White threads protruding from both ends of the midvein of a red-osier dogwood leaf. Photo credit: Doug Adams.

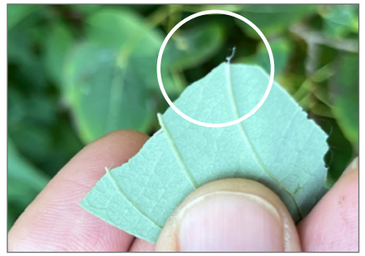

FIGURE 2. A fine, white thread protruding from the end of a small leaf vein. Photo credit: Doug Adams.

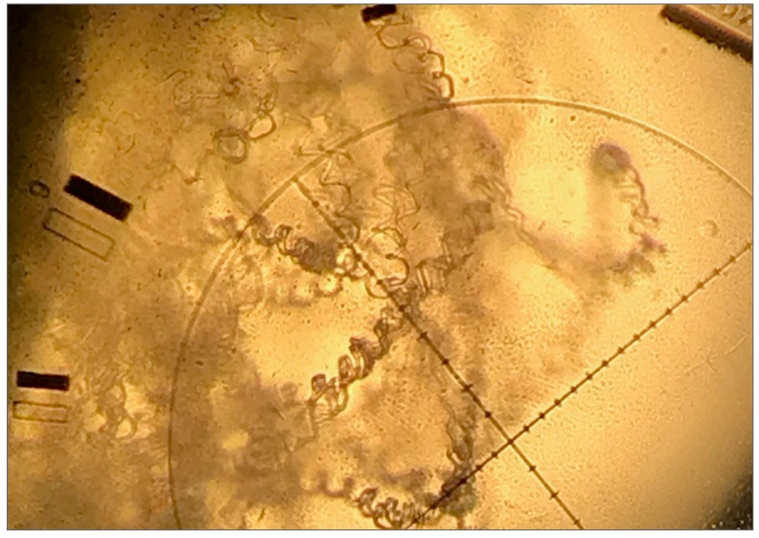

FIGURE 3. Sandy Jasieniuk was looking at the white threads through a microscope on loan from Dale Parker. She then held her cellphone up to the ocular lens and took this picture. Each helical structure is the wall thickening coming from separate tracheal elements.

NORTHERN FLYING SQUIRRELS IN THE BATTLEFORDS REGION, SASKATCHEWAN: RARE OR LOCALLY DISTRIBUTED?

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The shy and nocturnal habits of the Northern Flying Squirrel make it appear scarce and even rare. This is not the case over most of the range, although it is usually well dispersed and seldom abundant. Populations are often common in well-forested areas in cities and towns without residents knowing of their presence.

– Donna Naughton in *The Natural History of Canadian Mammals* (2012)

Introduction

In *A Guide to Saskatchewan Mammals*, Beck plotted the available records of the Northern Flying Squirrel (*Glaucomys sabrinus*), suggesting a distribution restricted primarily to the "wooded areas of northern Saskatchewan."[1] The Battlefords area was not among those localities[1], but knowledge of the distribution of mammals in the province was sparse at that time. Observations and collections of mammals made while I was a high school student in Battleford from 1958 to 1961, followed by additional bouts of collecting in subsequent decades, confirmed this species' rarity in this area of the aspen parkland. One specimen was recorded on 18 August 1961 — a male killed by a cat on the farm of the late Richard Johnson, located on the northern edge of Winniford Lake (N52.681939°, W108.42545°), about 8 km south of Battleford.[2] The skin and skull were preserved in the mammal collection of the Saskatchewan Museum of Natural History (now Royal Saskatchewan Museum) as RSKM_MAMM_M-1464. Johnson had not encountered this species during 35 years of farming in the area, nor had several other long-time residents in the area whom I contacted. I wondered, naively in retrospect, whether this individual had "wandered down from the north."[2]

Four years later, with additional records of Northern Flying Squirrels in Saskatchewan compiled during a study of the species' ecology[3], Davis noted that the Battleford specimen remained the only one collected outside the Canadian Life Zone, although he acknowledged an observation of a flying squirrel in the Moose Mountain area of southeastern Saskatchewan.[4] In an editor's note appended to Davis's article[5], however, Nero mentioned two overlooked specimens: a mounted specimen, captured in a weasel trap in aspen parkland near Punnichy on 21 December 1956, and one collected at Carlyle in 1926. The latter specimen cannot be located, but it may be RSKM_MAMM_M-624, which was taken at Carlyle on 14 March 1927 (Appendix I). An undated specimen (RSKM_MAMM_M-1010) collected in Moose Mountain Provincial Park is possibly the one to which Beck[2] and Soper [6] referred.

As noted by Naughton, the nocturnally active Northern Flying Squirrel is infrequently observed[7], but if present or even locally distributed in the Battlefords area, it should have been recorded during extensive trapping of small mammals and fur-bearers I conducted during all seasons and in all habitats from 1958 to 1961, and intermittently in subsequent decades. Collections were made in response to Beck's plea for additional specimens to extend knowledge of the distribution of Saskatchewan mammals.[1] No flying squirrels were taken, however, and the cat-killed specimen remained the only record from the Battlefords area. Commercial trappers elsewhere in Saskatchewan have complained about flying squirrels entering traps set for commercially valuable species.[5,8]

Trapping is not the only means of determining the presence of a seldom-observed species such as the Northern Flying Squirrel. This may be accomplished by dissection of the contents of pellets cast by roosting Great Horned Owls (*Bubo virginianus*), a method dubbed more effective for broad-scale studies of small mammals than conventional trapping.[9] The first record of Preble's Shrew (*Sorex preblei*) for Saskatchewan was based on a mandible dissected from an owl pellet.[10] Prey dissected from Great Horned Owl pellets by Raymond Poulin and colleagues at the Royal Saskatchewan Museum yielded remains of 859 individuals of 13 species of small mammal, but Northern Flying Squirrel was not among them.[11] Northern Flying Squirrels were not among prey remains recorded in 210 Great Horned Owl nests visited for banding in different parts of the province in 2008[12], and I did not record the flying squirrel as prey in more than three dozen nests visited for banding south of Battleford between 1960 and 1962. Despite the flying squirrel's agility, it has been reported to be taken as prey by owls elsewhere.[13] Nevertheless, the question remained: is the Northern Flying Squirrel rare in the Battlefords area, or locally distributed, possibly reflecting low population densities in Saskatchewan?[14,15]

Recent observations

Is the Battleford record an outlier, something that would be considered a vagrant if it had been a bird? Possibly not, because among reports of Northern Flying Squirrels on Christmas Mammal Counts (CMCs) conducted in Saskatchewan, several were submitted by Bev and Orval Beland of flying squirrels observed on their property 6 km south of Denholm from 2010[16] through 2023.[17] Aided by a yard lamp, which the squirrels generally tolerated, regular observations were made of one or two flying squirrels that fed and interacted at a suet feeder and sunflower seed feeders (Figure 1) placed near their home in an aspen bluff, north of the North Saskatchewan River, about 27 km southeast of North Battleford. Although they had observed visitors to their feeders since prior to 2000, the first flying squirrel was observed on 13 November 2010. Usually one flying squirrel, but sometimes two, intermittently fed at the feeders, or sought refuge in a nearby shed and among trees in all seasons through winter 2023-24. Excerpts from their field notes, accompanied by intuitive inferences about the squirrels' behaviour, were extracted (Table 1), which augment information on the natural history of this species in Saskatchewan. These observations confirm the occurrence of flying squirrels at this site in aspen parkland.

FIGURE 1. Northern Flying Squirrel at sunflower seed feeder, 21:00 h, near Denholm, 7 December 2010. Photo credit: Orval Beland.

Discussion

The cat-killed Northern Flying Squirrel salvaged south of Battleford in 1961 remains the only record from that locality, south of the North Saskatchewan River. Observations north of the North Saskatchewan River made since prior to 2000, however, suggest the establishment of a small population near Denholm within the last 15 years. Further observations are required to confirm whether this species has expanded its range more broadly in the aspen parkland, or whether these flying squirrels represent a local population. Previous compilations of records portray the Northern Flying Squirrel's range in Saskatchewan as generally falling outside the aspen parkland[2,4], and this species was not mentioned in Bird's comprehensive study of the ecology of the aspen parkland in western Canada, as were other species that regularly occur there.[18]

The juvenile flying squirrel observed at a feeder in July provided the only direct evidence of reproduction, and jives with the breeding schedule of this species described for Saskatchewan, with young born during late April or early May.[3] A flying squirrel found in a nest box in May 2021 suggested the presence of a litter, but this was not confirmed. This was the only nest box that showed signs of occupancy by flying squirrels, despite the availability of other nest boxes in the vicinity. Having cleaned nest boxes each year for more than 20 years, Orval Beland recognized the uniqueness of the contents of the above box compared with those used with varying regularity by Tree Swallows (*Tachycineta bicolor*), House Wrens (*Troglodtyes aedon*), Mountain Bluebirds (*Sialia currucoides*), House Sparrows (*Passer domesticus*) and mice. Presumably, squirrels roosted and, if breeding, reared young in abandoned woodpecker holes or in natural cavities, but adult squirrels, usually by themselves were observed at feeders during all seasons. At Emma Lake, Davis speculated that flying squirrels sought food in his cabin in winter, undaunted by the presence of a lantern, and probably nested in nearby snags or woodpecker holes, whereas other individuals nested in cabins, but moved outside in early spring.[3]

The Northern Flying Squirrel generally has been recorded during CMCs at one or two localities in Saskatchewan each year, including at Denholm over the last 15 years, despite the species' broad distribution in the boreal forest. Exceptional in this regard, however, were five flying squirrels recorded on the count at Greenwater, four at Grenfell and three at Kinloch during the 2023 count period.[17] That flying squirrels are active predominantly at night probably renders them unseen by most observers, but if present in an area, their tracks in

YEAR	DAY	NOTES AND COMMENTS
2010	13 November	05:00 h: single flying squirrel observed for first time at suet feeder… not encountered before by Beland or any member of his family or friends, despite growing up on a nearby farm
	18 November	04:45 h: fed on suet and sunflower seeds for about 15 minutes… large, dark eyes, short, pugnose face visible, skin flap connecting front and rear legs… glided for short distances between feeders and trees (6 or 7 feet)
	2 December	Usually single, occasionally two flying squirrels attended feeders most nights throughout remainder of the year, a pattern maintained through the end of observations (see Figure 1)
	30 December	23:30 h: two individuals on feeder, but one jumped to the ground and ran off
2011	11 March	23:00 h: Great Horned Owl attempt to capture flying squirrel; owl focused on open hut to which the squirrel usually glided when it left feeder; outcome of encounter not determined, but by 07:30 h the next morning, sunflower seeds were shelled, which suggests squirrel survived
	20 July	After 24:00 h: first observation of juvenile, this one a "¾-grown" squirrel at feeder for about 20 min during a thunderstorm
	22 August	Squirrel visits feeders every night
2013	28 January	19:30 h: only visit to feeder by three flying squirrels
	13 May	First squirrel at feeder in six nights, longest gap in 2½ years; feeding less, tending young?
	31 May	Squirrel regular again, after mid-May absence
	21 September	10:00 h: at feeder during daylight, again on 23 September
2014	31 August	Chipmunks all day, every day; flying squirrel every night
2016	1 September	Visited every night since sunflower seed feeder moved several weeks ago
	7 October	Visited feeder during snow storm
	8 December	Seed source attended regularly by flying squirrel, Downy and Hairy woodpeckers, Black-capped Chickadee, and Snowshoe Hare; Ermine(s) also seen near feeder
2019	19 February	21:00 h: at feeder, did not flush when Beland walked by the feeder
2020	21 October	Only observation of tracks in snow, for hundreds of yards… skin flap (patagia) left marks in the powdery snow
2021	23 February	05:00 h: on feeder, tolerated Beland's presence as a new and adjacent feeder was hung
	17 May	Flying squirrel in nest box erected for Saw-whet Owls (*Aegolius acadicus*); young not confirmed. Only record of nest box use by a flying squirrel, despite many nest boxes available. Contents removed from this box on 13 March 2022 contained "soft hay and fine fibres", unlike contents removed from boxes over 20 years. Daytime roost sites not determined
2022	18 March	05:30 h: left feeder, rapidly climbed three trees in succession, gliding from tree to tree
2023	9 April	Absent through 27 April, the longest (and unexplained) absence between recorded visits to feeders since observations began. On this date, sunflower seeds were eaten from a basket, but 'preferred' feeder was untouched until 19 May (different flying squirrel?)
	7 September	Flying squirrel killed by a cat at neighbour's property 1.6 km south on edge of the North Saskatchewan River valley
	8 December	One flying squirrel fed on corn scattered on the ground for Snowshoe Hares (*Lepus americana*)

TABLE 1. Observations of Northern Flying Squirrels, made with the aid of floodlights, extracted from Orval Beland's field notes, 6 km south of Denholm, Saskatchewan, 2010 to 2023. References are to single Northern Flying Squirrels, unless otherwise noted.

snow should alert observers — that is, if they regularly venture to the ground in winter, and whether observers can distinguish their tracks from those of the Red Squirrel (*Tamiasciurus hudsonicus*)[19], which is not always the case. The Belands observed flying squirrel tracks in the snow only once, following a snowfall in the Denholm area in late October 2020 (Table 1). The squirrels moved between feeders and outbuildings and among trees, all above ground. Nevertheless, flying squirrels have been reported on CMCs in Saskatchewan based on diggings (e.g., Turtleford)[20] and tracks in the snow (e.g., Christopher Lake)[21], and pre-dating CMCs, sliding in the snow.[22] Images derived from motion-activated trail cameras[24,25] may be used to augment some of these observations.

Acknowledgements

It is a pleasure to acknowledge Bev and Orval Beland's diligence in observing and recording nature, and for permission to extract excerpts from their detailed notes on flying squirrels observed at and near feeders at all hours of the day. Their observations continue. To update the list of specimens and collecting localities of Northern Flying Squirrels in Saskatchewan, I thank museum personnel for checking the collections under their care: Anna Chinn (Royal British Columbia Museum), Danae Frier (Royal Saskatchewan Museum), Jocelyn Hudon (Royal Alberta Museum), Burton Lim (Royal Ontario Museum), Tracy Marchant (University of Saskatchewan Biological Museum), Randle Mooi (Manitoba Museum), and Gregory Rand (Canadian Museum of Nature).

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6. Soper JD (1946) Mammals of the northern Great Plains along the International Boundary in Canada. *Journal of Mammalogy* 27:127-153.

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10. Poulin RG, Schowalter DT (2011) First record of Preble's Shrew in prairie Canada. *Blue Jay* 69:117-119.

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12. Gerrard M, Clarke JB, Kozij K, Zazelenchuk D (2009) A sample of prey remains found in Great Horned Owl nests in Saskatchewan in 2008. *Blue Jay* 67:71-76.

13. Wells-Gosling N, Heaney LR (1984) *Glaucomys sabrinus*. *Mammalian Species* 229:1-8.

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16. Smith AR (2011) 38th annual Saskatchewan Christmas mammal [count] – 2010. *Blue Jay* 69:23-30.

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APPENDIX 1. Specimens of Northern Flying Squirrel collected in Saskatchewan that were overlooked, or not yet catalogued in museums, in Beck's[2] initial compilation of records and Davis's[4] update; also included are specimens collected since those updates were published.

Canadian Museum of Nature (CMNMA)

CMNMA 17237: Bjorkdale, October 1942.

CMNMA 19517-21: Flotten Lake, 26, 27 July and 4 August 1948. Specimens were collected during a faunal survey at Flotten Lake by the (now) Canadian Museum of Nature led by W. Earl Godfrey during summer 1948.[23]

CMNMA 52458-59: McLennan Lake, 12 June 1978; Montreal River, 3 July 1978.

Royal Saskatchewan Museum (RSKM_MAMM_M)

RSKM_MAMM_M-624: Carlyle, 14 March 1927; a specimen noted by Nero[5] taken by a different collector at Carlyle in 1926 is not catalogued in the RSM.

RSKM_MAMM_M-724: Arborfield, 22 November 1941.

RSKM_MAMM_M-924-26: Wapati Lake, 29 March 1952.

RSKM_MAMM_M-1644: Okla, December 1995.

RSKM_MAMM_M-1652: Hazel Dell, January 1999.

RSKM_MAMM_M-3420, 3498: Candle Lake, 24 January 2009.

The Manitoba Museum (MM)

MM 3418: Amisk Lake, 4 September 1971.

University of Saskatchewan Biological Museum (USBM-M)

Davis augmented this collection during research focused on the breeding ecology of the Northern Flying Squirrel conducted primarily out of the University of Saskatchewan's Biological Station at Emma Lake, 1960-61[3,4]: most specimens were collected at Emma Lake, but also at Candle Lake, La Ronge and Stony Rapids.

TO PROTECT PRAIRIE SWALLOWS, WE MUST CONSERVE PRAIRIE WETLANDS

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Everyone in Saskatchewan seems to have a story about swallows. Whether it's about being dive-bombed by Barn Swallows at a family farm, or having a family of Tree Swallows in a nest box, people are eager to chat when they hear that I work with swallows. I enjoy trading swallow stories with people, but have noticed that when my accounts relate to swallows in and around wetlands, people are often surprised. *Swallows spend time around wetlands? Why are these little terrestrial birds hanging out with ducks?!*

These questions serve as an excellent launching point for me to share my stories of studying the feeding ecology of swallows in Saskatchewan. In the spring and summer, swallows fill Saskatchewan's skies, swooping left and right in pursuit of flying insects. These movements are more than an aerial ballet, however, as adult swallows must forage nearly constantly for insects to feed their growing nestlings. Unfortunately, several decades of population declines among swallows and other birds that rely on flying insects suggests that the insect communities on which they depend may be changing.[1] Specifically, here in the prairies, it is possible that intensifying agricultural practices — such as wetland loss and greater pesticide use — could be altering the habitats where swallows forage for insect prey.

Now, if you're scratching your head and thinking "don't I remember a *Blue Jay* article on this very topic back in 2020?", you're correct! My interest in the impacts of agriculture on swallows stems from the previous work by a graduate student named Andrew Elgin at the University of Saskatchewan, who did one of the first projects on Tree Swallow foraging in the prairies.[2] As such, the goal for my master's research at the University of Saskatchewan was to expand upon Andrew's work by comparing how agriculture affects the foraging of *multiple* species of swallows. Specifically, I chose to study the foraging habitat use of not only Tree Swallows (*Tachycineta bicolor*) but also Barn Swallows (*Hirundo rustica*). In eastern North America, research has demonstrated that Barn and Tree Swallows use different types of foraging habitat, with Tree Swallows foraging near wetlands, and Barn Swallows spending most of their time foraging in crop fields and meadows.[3,4] However, foraging by both species is less well known in the prairies, and I was curious to see whether these species would exhibit different foraging habitats, and if any such differences would translate into their being differentially affected by agriculture.

To study foraging, I used miniature GPS tags affixed to the back of birds using a harness to track where swallows traveled during the weeks when they were busy feeding nestlings (Figure 1). I studied nesting swallows at 17 different sites during both 2020 and 2021. The tags allowed me to identify where a bird traveled, and to determine what habitat they were feeding over — for example, whether they were flying over cropland, pasture, or wetlands. Talk about spying on birds! Using the GPS data, I compared how frequently birds were detected in different habitats relative to how abundant the habitat was. For example, if 20 per cent of a bird's GPS points were over wetlands, but wetlands covered only 10 per cent of the local area, I concluded that the bird had a preference for wetland habitat.

My data from the GPS tags clearly showed that wetlands were important for both Barn Swallows and Tree Swallows. Both species selectively used wetland habitat, and even though Tree Swallows spent a greater total per cent of their time foraging in wetlands, it was actually Barn Swallows that appeared to more strongly prefer wetlands. My analysis indicated that if all other landscape characteristics were the same, a Barn Swallow was 6.5 times more likely to forage over wetland habitat than over an area of pastureland (Figure 2). Wetlands also had an important influence on how far Tree Swallows traveled to feed; Tree Swallows whose nests were in areas of lower agricultural intensity with many wetlands did not travel as far as birds in more agriculturally intensive areas with fewer wetlands. This reinforces the idea that wetlands are valuable foraging areas, because we expect that birds surrounded by high-quality foraging habitat (like wetlands!) would stay closer to their nests than birds who must travel far to reach high-quality foraging habitat.

In contrast, the GPS data revealed that both species appeared to avoid foraging in areas planted in annual crops. When all other landscape characteristics were the same, Tree Swallows and Barn Swallows were about two times less likely to forage over crops than in pastureland. These results indicate a clear preference among foraging habitats: wetlands are the most preferred, pastures and other uncropped upland habitats are in the middle, and cropped areas appear to be the least desirable.

So what does this all mean for swallows?

Firstly, prairie wetlands appear to be important foraging habitat for swallows, even for species that we don't "traditionally" associate with wetlands, such as Barn Swallows. Even in highly agriculturally intensive landscapes, both swallow species seemed to prefer wetland habitat, suggesting that wetlands are important sources of insect prey. Secondly, my study suggests that agriculturally intensive cropped habitat is poor foraging habitat for both Barn and Tree Swallows. It is well documented that cropped habitats often have lower insect abundance, so birds may simply be avoiding areas where there is less prey. Cropped landscapes are often also highly simplified, with features like wetlands having been drained or contaminated with pesticides.[5] To be clear, this is not to say that swallows nesting in highly intensive areas will have poorer breeding success; that is a different question that a fellow master's student has investigated (results will hopefully be published soon!). My findings simply suggest that in terms of foraging, highly intensive landscapes are less desirable places for swallows to search for insects.

FIGURE 1. A female Tree Swallow with a GPS tag. The tag recorded an individual bird's location every 10 minutes for one day. Tag deployment followed procedures approved by the University of Saskatchewan Animal Care Committee.

The results of my study, combined with other research, highlight the importance of wetlands to swallows in Saskatchewan. Research has shown that insects that emerge from wetlands, like mosquitoes, contain high levels of compounds called fatty acids that are important for the growth of young birds.[6] Building on this, research from near Humboldt, SK has suggested that in areas with high wetland presence, Tree Swallows are able to selectively forage on enough highly nutritious insects that contain fatty acids to help offset the negative impacts of highly intensive agriculture.[7] My study complements these findings by underscoring how strongly both Barn and Tree Swallows preferred wetlands for foraging; even though I collected data at 17 different study sites and during two different years, swallows reliably showed the same pattern of wetland use and crop avoidance.

My work joins multitudes of studies that highlight the importance of prairie wetland conservation. Conservation of wetland habitats, as well as uncropped uplands, is likely important for the maintenance of aerial insectivore populations in the Canadian prairies. Given that prairie populations of Barn and Tree Swallows constitute large proportions of their respective Canadian populations, conserving important foraging habitats in the prairie region should be a continent-wide conservation priority. Additionally, my project is the first research to show the importance of prairie wetlands for Barn Swallows — just think how many other species there may be for which we do not yet appreciate the importance of wetlands!

Taken together, these points underscore the urgent need for wetland conservation incentives and enforcement of stronger legal protections. Saskatchewan is the only province without a comprehensive wetland conservation policy and, as a result, the province continues to lose approximately 4,125 hectares of wetland annually.[8] Sadly, the wetland drainage guidelines recently proposed by the Water Security Agency would only accelerate wetland loss. If adopted in 2025, this policy would permit farmers to drain up to 80 per cent of the wetlands on their property, which could total approximately two million acres — an area that is 1.4 times the size of Prince Edward Island! While the economic pressures on farmers that are used to justify this policy are certainly real, wetland drainage is not the answer. Instead of implementing regressive

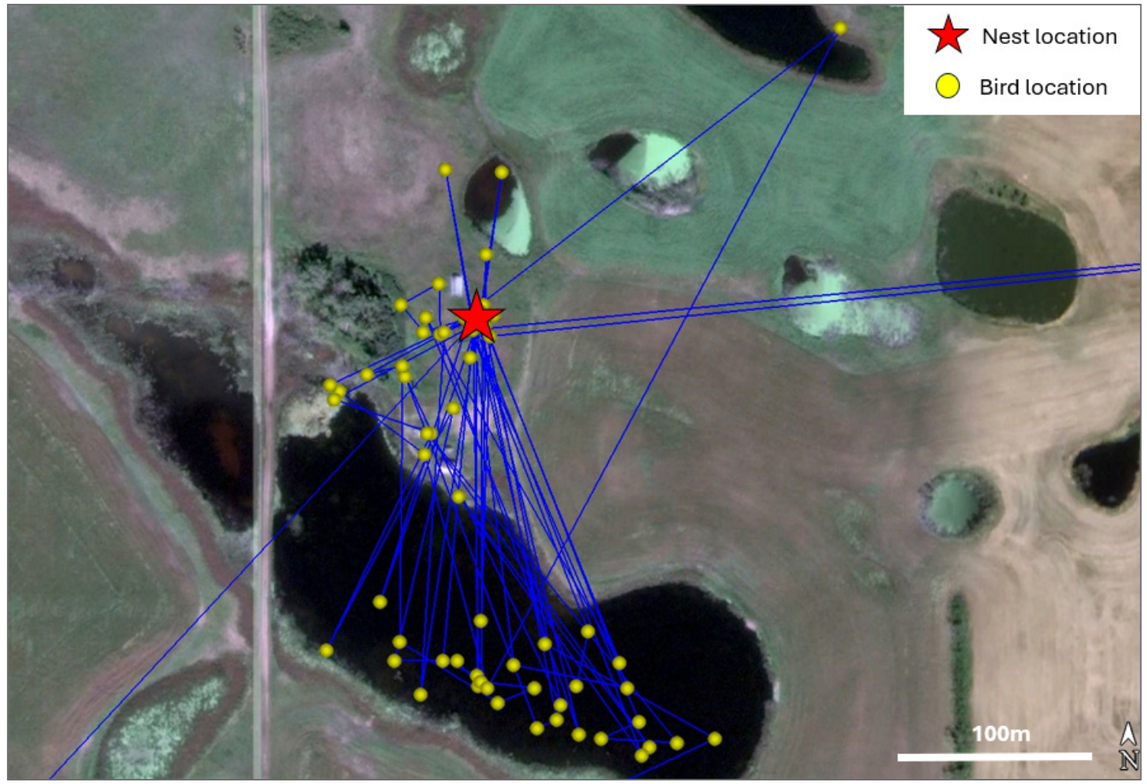

FIGURE 2. Map of points where a GPS tag recorded an individual female Barn Swallow on a single day in 2020. A star marks the Barn Swallow's nest location, and each yellow circle represents a location where the bird was recorded. The lines mark the route traveled. Two GPS points far from the nest are not shown on this map for visualization purposes. Even though Barn Swallows are not typically considered to be associated with wetland habitats, this Barn Swallow showed a clear pattern of traveling over, and presumably foraging above, the large wetland south of her nesting location. Points overlain on Google Earth imagery, © 2024 Maxar Technologies.

policies, including charging a $1,000 fee to file a claims of illegal wetland drainage, our leaders should strive to adopt modern wetland conservation policies like those in Manitoba and Alberta. If wetland destruction is allowed to continue unchecked, and indeed worsen under the proposed policy, swallows and other wildlife will certainly suffer due to our leaders' short-sightedness.

As I reflect on my time studying swallows, one thing that particularly sticks with me is how these birds connect people to the natural world. Everyone can appreciate the beauty of these nimble aerial acrobats, and people are usually genuinely interested when I talk about the importance of wetlands for swallows and other wildlife. When my stories about swallows help people realize that wetlands are a key habitat for more than just ducks and geese, that's an exhilarating feeling! I hope that next time you see a swallow, you will think not only about how beautiful they are, but also about wetlands. And, if this article has made you ponder other questions about swallows — say you are wondering what swallows actually eat as a result of their wetland foraging — stay tuned! Diet composition and dietary insecticide exposure were two other aspects of my master's thesis, and I hope to share the results of those studies in a future *Blue Jay* article.

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WILDLIFE, LANDSCAPES, AND GEOLOGY: AN ALBERTA AND SASKATCHEWAN TOURING GUIDE

DALE LECKIE. APRIL 2024. BROKEN POPLARS. 216 PP. ISBN: 9780995908260. $29.95.

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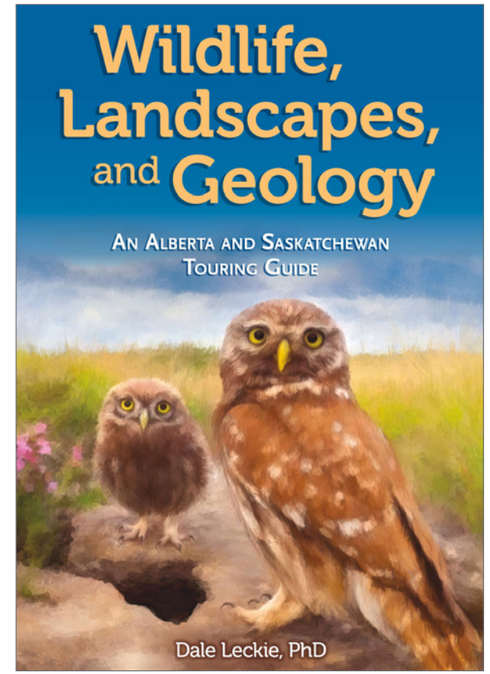


The biologist D'Arcy Wentworth Thompson famously and humorously said that "everything is the way it is because it got that way." Today, Saskatchewan and Alberta are a tapestry of grassy prairie, parkland, and boreal forest, populated by a dazzling variety of birds, mammals, amphibians, insects and other creatures. So, how did it get that way?

In *Wildlife, Landscapes, and Geology*, author Dale Leckie weaves the geology of the Canadian great plains together with species accounts to explain how wildlife habitats formed in the shadow of the Rocky Mountains and in the wake of retreating glaciers.

Leckie, who is a professional geologist and an adjunct professor with the University of Calgary, takes a no-nonsense and user-friendly approach to this unique touring guide, which is illustrated with photography as well as images by artists Dean Francis and Sergio Gaytán.

In his introduction, Leckie lays out four potential road trips (centred on Alberta Highways 36 and 41 and Saskatchewan Highways 4 and 35) that he says would take a total of two weeks to complete, but there are enough potential "treasure hunts" in this book to fill many summers.

Wildlife entries include widespread and familiar species such as the Canadian Beaver or Snowy Owl, as well as more obscure animals such as the Ord's Kangaroo Rat or Mountain Plover (good luck finding that one in Saskatchewan!). In addition to a geological explanation for the climate, vegetation and other factors that make habitats attractive to the species, there are lots of useful tips for when and where to find the animals. A helpful, quick summary of the key facts is also included for easy reference at the end of each section.

While the writing is clear and easy to understand, readers who are less versed in geology are likely to learn a few new terms while reading the book — thankfully there is a helpful glossary in case you forget what glaciolacustrine is or how isostatic uplift works.

Beyond being a touring guide, *Wildlife, Landscapes, and Geology* provides an excellent overview of climate changes, sea level rise and fall, and other factors that led to wildlife migration and shaped the landscapes that we see today.

Perhaps it's because I took no post-secondary education in geology, but I found myself having more "lightbulb" moments while reading this small book than almost any other in recent memory. On every other page I found some kernel of information that left me wanting to ask anyone within earshot "did you know this?" Did you know elk and moose have only been present in North America since the end of the last ice age? Did you know the critically endangered Banff Springs Snail's entire range could fit into a tennis court?

I was in a state of almost childlike wonder to learn how exactly our familiar lakes and prairie pothole landscape emerged from the decaying glaciers, which were covered in debris and often left giant isolated blocks of ice behind as they retreated north. The geological facts are driven home by references to actual land features that I know and love, such as the Missouri Coteau and the Great Sandhills.

Taking a look back deep into the geological history of our region made me think about people as well. This is a book about wildlife and not humans, but I couldn't help but think of how the first peoples also migrated from Eurasia across the Bering land bridge during the last Ice Age. Only 20,000 years ago, what is now Saskatchewan (with the exception of the Cypress Hills) was completely covered in ice, and nothing lived here, not even grass. That Indigenous people have been here as long as the moose or the elk is awe-inspiring.

I am hopeful that this book will find its way to many others who love nature but have perhaps weaker knowledge of geology. (Come for the wildlife, stay for the geology?) Even a basic understanding of the vast forces that have slowly shaped our local environment can only add richness to our appreciation of the world outside our doors, and the many living things with whom we share it.

Joel Cherry is a birder, communications professional, and former journalist. He is a regular contributor to the Blue Jay.

NATURE SASKATCHEWAN MEMBER SPOTLIGHT: A Q&A WITH ALAN (AL) SMITH

Jordan Rustad
Bander in Charge
Last Mountain Bird Observatory

The following is a question and answer between Jordan and Al Smith, who has been a member of Nature Saskatchewan since 1965.

How has being a member of Nature Saskatchewan impacted your life?
It has made me aware of the importance of an organization like NS in promoting the conservation of wildlife. It brought into focus the conservation issues in the province. In the early days it was the killing of hawks and owls. It was an issue that needed to be tackled — it was tackled and raptors were protected. More recently it's been habitat conservation.

What are some of your fondest memories from your time as a part of Nature Saskatchewan?
Sharing field trips with people like Frank Roy and Dr. Stuart Houston, and the many other people who mentored me. My first May Day bird count was in the spring of 1963 with Frank Roy. I saw the joy that Frank had for seeing new birds for the year. This rubbed off on me, and that was the beginning of my addiction to birding. Going out bird banding with Dr. Houston inspired my passion for bird banding.

How have you seen the organization evolve and change over the years?
It has shifted from a natural history society that passively documented wildlife to an organization that has become more aggressive in advocating for wildlife. It has become much more of a political organization. It has been able to promote conservation of wildlife without, in most cases, provoking the ire of provincial and federal governments. This has required courage on the part of the Society in taking on governments (where and when needed) to champion the protection of wildlife and important wildlife areas.

Alan Smith.

Can you speak to the sense of community and friendship within the organization?
It is a great place to learn firsthand about wildlife. There are so many different people that have things to offer, whether it be about bird banding or someone who with knowledge of flowers, to specialists who know mushrooms or lichens. This is important, as we have to represent all living things. We can get caught up in vertebrate bias, but Nature Saskatchewan has always had a broad interest in all forms of wildlife.

How do you think Nature Saskatchewan can continue to grow and thrive?
I think they have to continue on the track they are on. No matter the government in power, no matter the prevailing political situation. A good example is our support of the Duncairn Reservoir Migratory Bird Sanctuary Stakeholders, who are fighting and advocating for the people and wildlife of the reservoir, an area which could be negatively impacted by current irrigation plans.

What do you think has been the biggest accomplishment of Nature Saskatchewan in its 75 years?
The establishment of Grasslands National Park. It is large enough to be a viable tract of grassland, as it has the potential to have the full suite of grassland wildlife (as far as is practical in this day and age). It can support Bison, Swift Fox, Prairie Dogs and Burrowing Owls, and hopefully Black-footed Ferrets someday again.

What do you think is the biggest environmental challenge facing Saskatchewan, and how can we address it?
Water: we have to quit draining wetlands in the province. We have to maintain as much water on the land as possible. Water begets water. I've always had a saying "if you want it to act like a desert, make it look like a desert". We have to be more assertive in our promotion of an approach that would encourage landowners to maintain wetlands on their property. I'm not sure the best way to do it, whether it be a wetland policy or tax incentives. We need to be far more aggressive about preventing illegal draining of wetlands.

What are you most looking forward to in the future of Nature Saskatchewan?
There are some really interesting publications coming out soon on a wide spectrum of topics from butterflies to plants. Currently there are publications available on history of conservation, shelterbelts, plants, lichen, insects, and of course birds.

What advice would you give to someone who is interested in getting involved with Nature Saskatchewan?
Go to Last Mountain Bird Observatory and learn about migration. It's not just about banding, but about all aspects of migration. As much as I like the science, I am at the point where I believe it is just as important to get people involved and tuned into the miracle of migration. We have records of Yellow Warblers going to Central America at least seven times (a round trip of about 12,000 km); it is absolutely amazing.

When it comes to the Last Mountain Bird Observatory (LMBO), why did you choose Nature Saskatchewan to help take over the station after retiring from Canadian Wildlife Service (CWS)?
When I was working for CWS, I always had financial assistance for hiring assistants from Nature Saskatchewan. When I retired, NS broadened their support to include me. The support the Regional Park and NS have given the Observatory has been amazing and has been solidified due everyone's strong commitment to LMBO.

Where do you see the station going in the future?
There is room to broaden programs. The location is perfect as it is in the geographic center of the population of Saskatchewan. We have a good potential to bring in urban, rural, and First Nation peoples. I think that all three sectors of our population need to be indoctrinated in the importance of wildlife. I believe, through the Observatory, Nature Saskatchewan has the opportunity do that. We need people to do policy, but Last Mountain Bird Observatory allows people to see day-to-day what we're doing and why it's important. We could do more summer activities, and more targeted projects looking at bird movements in and out of the area.

As part of our 75th anniversary celebrations, we are interviewing and writing articles that highlight active members who have had a significant impact on Nature Saskatchewan, as nominated by fellow members.

STEWARDS OF SASKATCHEWAN IN THE SPOTLIGHT

Emily Putz
Habitat Stewardship Coordinator
Nature Saskatchewan

Stewards of Saskatchewan (SOS) was a favourite in Saskatchewan's small papers and radio stations this year! The program released many news releases, and the uptake was fantastic! We were also approached to give interviews on topics outside of our news releases, with everything from Swift Foxes to Bullsnakes being covered. Highlights include a CBC radio interview on Monarch butterflies and a podcast interview on Saskatchewan snakes for Discover Moose Jaw. We were very happy with the attention and glad to put some of these little-known species into the spotlight while sharing the great work our stewards are doing.

Our SOS banner program census is also underway, with 26 per cent of program participants responding with their species sightings so far. This year, Barn Swallows continue to take the lead in reports, with 343 adults, 197 chicks, and 120 nests reported. Other species reported in the census so far include 105 Common Nighthawks, 104 Northern Leopard Frogs, 36 adult Ferruginous Hawks, 25 chicks, and nine nests, 50 American Badgers, 39 Tiger Salamanders, 22 Sprague's Pipits, 14 Bobolink, four Short-eared Owls and lastly 15 adult Monarch butterflies and two caterpillars reported! Many more of each of these species were also reported by the public through our toll-free HOOT Line. Once again, a big thank you to everyone that acted as our eyes and ears this year!

The SOS banner program now has 310 participants with just over 375,000 acres enrolled. Thanks for a wonderful year! If you have questions or would like more information on the Stewards of Saskatchewan banner program, please contact me at 306-780-9832 or outreach@naturesask.ca.

Loggerhead Shrike. Photo credit: Annie McLeod.

GREAT YEAR FOR SHRIKE SIGHTINGS!

Emily Putz
Habitat Stewardship Coordinator
Nature Saskatchewan

Loggerhead Shrikes can be a conspicuous species when nesting on farms. Between their hungry chicks' loud begging calls come July, their territory-marking and prey storing impalement behaviours, and their bold grey, black, and white colouring, shrikes don't often go unnoticed if they are cozying up as neighbours in a yard site. That was certainly the case this year — the flash of their wings caught the eye of a number of folks, which contributed to an uptick in new sightings over the 2024 season.

This year's HOOT Line was abuzz with shrike activity. Between the spring and fall, more than 90 public calls and emails were received as the public reported Loggerhead Shrike sightings. A total of 34 pairs, 66 individuals, and 21 confirmed juveniles were reported. It's hard to say whether the sightings were a result of increased shrike presence or increased public awareness, but regardless, it's a win for the species recovery! Thank you to everyone who reported shrikes and keep up the fantastic work! Every call contributes to the understanding of the population and range of the Loggerhead Shrike in Saskatchewan.

Our stewards were also hard at work this summer keeping an eye out and reporting any shrikes they saw on their census! The Shrubs for Shrikes program currently has 350 participants conserving almost 160,000 acres of habitat. Our Shrubs for Shrikes census is only 27 per cent complete and already 42 pairs, 68 singles, and 25 juvenile shrikes have been reported by our participants! It is looking like it was a successful summer for these unique birds.

If you have any questions about Loggerhead Shrikes, or would like more information on our Shrubs for Shrikes program, please call or text me at 306-780-9832, or email outreach@naturesask.ca.

PLOVERS PIPING UP ALONG SASKATCHEWAN'S SHORES

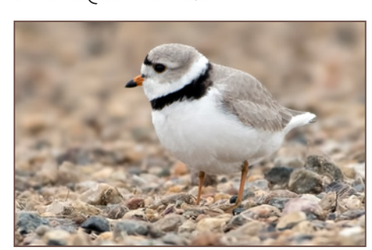
Emily Putz
Habitat Stewardship Coordinator
Nature Saskatchewan

Piping Plovers are a federally-listed endangered shorebird species that are hard to spot, often joked about as "moving rocks" due to their superb camouflage on Saskatchewan's shorelines. Their sandy grey backs, white chests, and black banding blends in perfectly with rocky and gravelly terrain. Their chicks' colouration is broken up even more, with mottling patterns helping them to blend in perfectly against a sandy backdrop.

While spotting them can be a challenge, Nature Saskatchewan staff stepped up this summer, getting our boots (and sometimes pants!) muddy, to help out with the Canada Prairie-wide Piping Plover Census! For two weeks in early June, we surveyed basins for this elusive bird. Our efforts were rewarded with a few sightings, and our work contributed to this important census.

With the large majority of our Plovers on Shore participants conserving shorelines surveyed by this year's Prairie-wide census, we are excited for the census report results so we can see how the Piping Plovers fared this breeding season.

Plovers on Shore has 76 participants conserving 217 miles of shoreline for Piping Plovers. For more information on the Plovers on Shore program, or if you have any questions or comments, please call or text me at 306-780-9832 or email outreach@naturesask.ca.



Piping Plover. Photo credit: Annie McLeod.

Burrowing Owl. Photo credit: Nick Saunders.

OPERATION BURROWING OWL UPDATE: READ "OWL" ABOUT IT!

Grace Pidborchynski
Habitat Stewardship Coordinator
Nature Saskatchewan

What a great and successful field season Nature Saskatchewan's Operation Burrowing Owl (OBO) program had! With the help of our Habitat Stewardship Assistants, Nathaniel Hak and Kim Sowa, we were able to visit 31 current OBO participants and 13 potential program participants to discuss OBO, how Burrowing Owls are faring, and what participants can do to help. We are thrilled to welcome eight new program participants who are helping us monitor the Burrowing Owl population and conserve their habitat in Saskatchewan. Thank you to everyone who welcomed us into your homes and land this summer, and who charmed us with your stories!

Currently, OBO has 350 participants conserving almost 221,000 acres of Burrowing Owl habitat across southern and central Saskatchewan. We are working hard on following up with participants for the 2024 Burrowing Owl census and, so far, we have reached 25 per cent of participants (90 percent being the goal). These participants have already reported 14 pairs, three singles, and 16 young! We still have a ways to go to meet the goal, so I am optimistic that we will receive more sightings as we reach more participants! Our annual census helps monitor Burrowing Owl population, track any changes, and determine distribution across the province.

We have also had several sightings reported through Nature Saskatchewan's toll-free HOOT Line (1-800-667-4668) during the spring and summer. Eighteen members of the public called in to report 11 pairs, eight singles and 10 young. Early in the field season, there seemed to be a bit of a hot spot — we were able to check on two reports of owl pairs that were nesting in a ditch during our summer staff training week. It was a fantastic opportunity to help our staff learn what to look for to identify a Burrowing Owl. We later got word that one of the owl pairs successfully raised a family of seven young! I am always thrilled to receive a Burrowing Owl report and every call helps us track and monitor all species at risk across Saskatchewan.

The toll-free HOOT Line is a great and easy way to report species at risk sightings and we thank every person who calls in to report. Rest assured, we take privacy seriously and we never share personal information.

As always, if you have any questions or comments, please don't hesitate to reach out and give me a call at (306) 780-9833, call our HOOT Line at 1-800-667-4668, or email me at obo@naturesask.ca. I would love to hear from you!

RARE PLANT RESCUE: AN APPRECIATION FOR THE LANDSCAPE, THE LANDHOLDERS, AND THE MOST ELUSIVE PLANTS

Tory Frankl and Vanessa Wagner
Conservation Database Technicians
Nature Saskatchewan

The role of Nature Saskatchewan's Rare Plant Rescue (RPR) Search and Monitoring crew is to venture out to specific habitats in search of elusive plant species. Since 2002, the RPR program has extended across southern Saskatchewan to work with landholders that are keeping native landscapes thriving. Our dedication to conserving nature includes our respect and openness to understanding every operation and landholder is different and that, without them, these rare plants would not be accessible. We are grateful for their interest in conservation and for their support in our search for these species.

This past field season, we had the opportunity to visit with seven current RPR participants and eight potential participants — three of which signed into RPR, adding 8,824 new acres with suitable habitat for rare plants! The RPR team searched for and monitored seven federally protected rare species: Slender Mouse-ear-cress (*Crucihimalaya virgata*), Buffalo grass (*Bouteloua dactyloides*), Smooth Goosefoot (*Chenopodium subglabrum*), Small-flowered Sand-verbena (*Tripterocalyx micranthus*), Hairy Prairie-clover (*Dalea villosa*), Tiny Cryptantha (*Cryptantha minima*), and Dwarf Woolly-heads (*Psilocarphus brevissimus* var. *brevissimus*). To the search and monitoring crew's excitement, six out of the seven species were found!

Tiny Cryptantha was surveyed and four populations were found on three of the four quarter sections surveyed. We searched 22 quarter sections for Dwarf Woolly-heads and 10 quarter sections for Slender Mouse-ear-cress. Only one quarter had Dwarf Woolly-heads, but this small success is still important for this ephemeral wetland specialist, as its habitat can be at risk of being ploughed in some areas in dry years. We once again did not find Slender Mouse-ear-cress, but we are still hopeful to find a new population one day.

The rest of the target species were present across the prairie ecozone. A total of 21 quarter sections with previously known populations were monitored and 61 quarter sections were searched for new populations. There were 35 new populations of Smooth Goosefoot and 37 revisited populations that were all doing well! Small-flowered Sand-verbena was absent at two out of the 21 population revisits, but 11 new occurrences were found. In addition, there were 21 new populations of Hairy Prairie-clover with seven previous locations re-confirmed. Buffalograss was also monitored and found at four locations.

While searching for our target species as mentioned above, we came across 10 provincially rare species! These were Least Mousetail (*Myosurus minimus*), Rocky Mountain Pincushion Plant (*Navarretia saximontana*), Rocky-round Sandwort (*Eremogone congesta* var. *lithophila*), Schweinitz's Flatsedge (*Cyperus schweinitzii*), Flat-spine Sheepbur (*Lappula occidentalis* var. *cupulata*), Beaked Annual Skeleton-weed (*Shinnersoseris rostrata*), Kelsey's Cryptantha (*Cryptantha kelseyana*), Dakota Stinking Goosefoot (*Chenopodium watsonii*), Gumbo Evening Primrose (*Oenothera cespitosa*), and Small Lupine (*Lupinus pusillus* ssp. *pusillus*).

Although our team is on the lookout for plants, we often encounter interesting wildlife on the way to some of our search sites. One particular highlight of this summer was coming across a pair of Ferruginous Hawks utilizing an artificial nesting platform. As we drove by each morning to get to our search site, we got to see the birds in action, as well as a few babies in the nest! It is always so nice to see landholders' efforts pay off, and to know that we are working in the right direction to conserve these species.

We are ending the field season grateful to Brandon Melnechenko for organizing and leading the field season, and wishing him well as he continues his university studies. We are excited to welcome Ashley Vass back to the RPR Coordinator position after a term organizing, running and writing the report for the Canada prairie-wide Piping Plover Census. Welcome back, Ashley!

For more information about the Rare Plant Rescue program or if you have seen a rare plant, please reach out to Ashley at (306) 780-9417 or through email at rpr@naturesask.ca. You can also call our toll-free Hoot Line, at 1-800-667-HOOT (4668).

Gumbo evening primrose (pink and white). Photo credit: Tory Frankl.

BISON EVOLUTION AND MIGRATION

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Paintings by Dwayne Harty
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This article, on the evolution and migration of ancient and modern bison from Eurasia and North America, was prepared to augment a major international travelling exhibit (125 canvasses, sketches, and bronzes) on bison by noted Saskatchewan wildlife artist and museum dioramist Dwayne Harty (studio currently in Jackson Hole, Wyoming). The exhibit opened at the Whyte Museum of the Canadian Rockies in Banff in October 2024. Dwayne has previously illustrated five of Robert's books, including *Mammals in North America: From Arctic Ocean to Tropical Rainforest*, *Manitoba's Big Cat; The Story of the Cougar in Manitoba* (with Robert Nero), *Large Mammals, Canadian Album Series, Volume 1-2*, and *Mammals in the Qu'Appelle Valley* (with David R.M. Hatch).

Introduction

Although we think of the Plains Bison as being the quintessential large mammal of North America, its ancestral lineage actually derives far away on another continent — Eurasia. A member of the cattle-sheep-antelope family Bovidae, the oldest-known bison-like animals were described in the genus *Leptobos*, at least eight species of which were distributed from the Iberian Peninsula to China 3.6 million years ago (late Pliocene). Resembling a modern steer, they weighed up to 500 kg and reached a shoulder height of 1.4 m. *Leptobos* gave rise to both the cattle genus *Bos* and *Bison*. The earliest bison was *Bison sivalensis* from the Indian subcontinent dated to 2.8 million years ago. Subsequent descendants included the Steppe Bison (*Bison priscus*) distributed from Europe to China and later to North America, and the mid-Pleistocene Woodland Bison (*Bison schoetensacki*) of Europe and Beringia (i.e., Bering Land Bridge).

From 240,000 to 195,000 years ago, the Steppe Bison (*Bison priscus*) gave rise to *Bison alaskensis* in Asia and the two species made their way across Beringia into Alaska. This was possible due to a drop in sea level of up to 120 m (394 ft) during glacial episodes, resulting in a 1600-km (994-mi)-wide tundra-steppe corridor. In time, both species spread all the way south through woodlands and plains to southern Mexico. A second wave of immigration of *Bison priscus* occurred into North America by the same route around 45,000 years ago. *Bison priscus* may also be the ancestor of the Wisent or European Bison (*Bison bonasus*), which survives to this day in Eurasia. Although there were many large-mammal exchanges across Beringia at various times, there is no compelling evidence that any bison species from North America emigrated to Eurasia. Remarkably, Beringia (including the unglaciated refugium in Alaska and Yukon) was occupied by several kinds of bison continuously for 300,000 years, while the rest of North America has supported bison for around 200,000 years. Given the dominant roles bison species have played within many of this continent's ecosystems, they and *Homo sapiens* represent the most successful natural mammalian dispersals into North America during the last couple of million years.

Great fluctuations in climate over the last three million years, multiple advances and retreats of glaciers, major shifts of vegetational composition and zones, and the presence of habitat refugia all convened to greatly influence the evolution and migration of bison lineages.

During the latter part of the Pleistocene Ice Age, *Bison priscus* and its descendants evolved into several other species in North America. Based on limited skeletal evidence (especially skull and horn cores), numerous species of bison have been described over the decades, however most of these are no longer recognized. The following six species are currently accepted, all of which have inhabited various landscapes from Alaska to Mexico (in successive, overlapping periods): *Bison priscus, B. alaskensis, B. latifrons, B. antiquus, B. occidentalis,* and most recently *Bison bison* — the modern species, which is the smallest in the bison lineage.

It is remarkable that the ancestor of the North American Plains Bison passed successfully through the mass extinction event that swept away most of the large mammals 12,000 to 10,000 years ago. This major loss of fauna was caused by rapid climate/vegetation changes and persistent hunting pressure from growing numbers of Paleoindians. Likely, massive herd sizes and their extensive distribution over the continent were factors in the species' survival up to the 1800s, when it then suffered mass slaughter by hunters with firearms.

Controversial relationships among bison species

Currently, there are many uncertainties regarding species status and lineage of bison species in both Eurasia and North America. Yet to be resolved are the following. Since 1849, the genus *Bison* has been widely recognized. However, an alternative view is that *Bison* should be reassigned as a subgenus under the genus *Bos* (Linnaeus 1758), indicative of Bison's close relationship to other wild cattle such as the Aurochs (*Bos primigenius*) and Yak (*Bos mutus*). There has been a long-standing debate over the genetic relationship of the European and North American bisons. A recent DNA analysis questioned the validity of recognizing the North American Plains and Wood Bisons as distinct subspecies (designated in 1897), although these two races differ physically, behaviorally and ecologically; other researchers even proposed separate ancestors. With ever-improving techniques for extracting and studying ancient DNA, relationships among extinct and current species of bison should become clearer.

Size difference between the sexes

All bison species are thought to have featured strong sexual dimorphism, meaning the size of the body (especially the head, shoulders and front legs) and horns of the bull were much larger than those of the cow. These traits likely evolved due to sexual selection by females, and to success in battles between mature bulls. The biggest, most powerful bull tended to be more successful in gathering and protecting a harem of cows, thereby providing improved mating opportunities.

Size differences among North American bison species

Inferring body size from horn, skull and postcranial traits, the largest to smallest species were: *Bison latifrons*, *B. alaskensis*, *B. priscus*, (possibly *B. schoetensacki*), *B. antiquus*, *B. occidentalis*, *B. bison athabascae*, and *B. bison bison*. In the late-Pleistocene, northern species in cool climates had larger body mass and longer legs, and occurred in small herds, while warm-adapted species were smaller, lived in grasslands, and gathered in large herds. It has been hypothesized that hunting pressure by Paleoindians was a significant selective force leading to dwarfing of the Plains Bison. Smaller individuals would attain reproductive age before larger ones, thereby providing an advantage in number of offspring produced over its lifetime.

Horns

Both sexes carry horns in all species of bison. A horn consists of a long, solid core of living bone covered in a thick sheath of extremely hard keratin (a polymer of fibrous structural proteins). This sheath extends many centimeters beyond the core tip. A bull's horn has a greater basal circumference, is bulkier, and curves less near the tip than a cow's. Horns are not shed like antlers, but grow from the animal's birth to maturity. Horn-core length in females of various species is 60 to 70 per cent that of a bull, and northern species tend to have longer horns than southern species. The horns of an old bull show multiple, rough expansion ridges at the base and significant wear at the tip, leaving only a stump and possibly a new horn tip exposed.

The horns serve as the main offensive and defense armature for intimidating and fighting off rivals and predators. Extinct species had to contend with powerful predators such as Dire Wolf, Sabertooth Cat, American Lion and Giant Short-faced Bear. Horns also come into play during display and combat between rutting bulls, and increase competitiveness with other large mammalian grazers and browsers. Horns in the Plains Bison extend laterally in a calf, and then progressively turn upward and inward with maturity. The horns help prevent head and eye injury during aggressive encounters by absorbing or deflecting strikes and hooks from a combatant. Constructed of very hard bone, the horn core and teeth are the most often found parts of a bison skeleton. Horn length, curvature, cross-section shape, and angle from the skull all vary among extinct and living species, and so play the major role in identification of fossil material.

Cave art

Aurochs, the Steppe Bison, and possibly a third species are featured prominently in the cave art of *Homo sapiens* in France and Spain (dated 38,500 to 12,000 years ago). More than 320 bison paintings have been recorded (around 21 per cent of all cave ornamentation), most in sufficient detail to identify the species. For example, the Chauvet-Pont d'Arc cave in Ardeche, France clearly portrays both the Steppe Bison (*Bison priscus*) and Wisent (*Bison bonasus*), radiocarbon dated at 38,500 and 36,300 years ago, respectively. Such attention demonstrates the importance of bison to the physical and spiritual life of these early people.

The symbolic bison

For many Indigenous peoples of North America, the Plains Bison has for millennia been honoured in ceremonies for its great spiritual value, and recognized as the very symbol of respect for creation and life. It offered all parts of its body to provide humans with food, shelter, clothing, fuel, tools, weapons, and ornaments. In more recent times, images of bison have appeared in countless official and unofficial capacities (emblems, seals, flags, certificates, money, team names). As examples, it was selected for the Great Seal of Manitoba in 1870, and for the badge and motto of the Royal Canadian Mounted Police (NWMP likely in 1877). It adorned several stamps of the United States Postal Service (e.g., 1898 Trans-Mississippi Exposition 4 cent orange), the $10 USA Lewis and Clark banknote of 1901, and the USA nickel from 1913-1938. In 1916, the National Bison Legacy Act named the Bison as the United States Official National Mammal, chosen to represent the spirit of the nation. Subsequently, the Plains Bison was chosen as the State Mammal for Kansas (1955), Oklahoma (1972) and Wyoming (1985), and as the Official Mammal Emblem of Manitoba (2014). The Wisent is the unofficial symbol of Belarus, representing nobleness, power and persistence.

Aurochs or ancient cattle *(Bos primigenius)*

The Aurochs (*Bos primigenius*) evolved from a species of *Leptobos* (as did the genus *Bison*) around 1.3 million years ago in Asia. The oldest fossils are known from 0.8 million years ago from India and northern Africa. It spread into Europe by 230,000 years ago, where it is believed to have interbred with the Steppe Bison (*Bison priscus*) 120,000 years ago. The European Bison (*Bison bonasus*) contains 10 per cent of Aurochs DNA, evidence of this ancient relationship. The Aurochs' massive body differed in shape from modern breeds of cattle, with longer legs, larger head, sideways/forward-directed horns, and with well-developed shoulder and neck musculature. The skull was also longer and narrower than bison. Males were much larger than females. It ranged in steppe, open forests and wetlands from Finland and North Africa to Siberia and Korea. Occurring contemporarily with the woodland dwelling (i.e., browsing) Wisent (*Bison bonasus*), it has been suggested that the Aurochs (a grazer) became extinct, while the Wisent survived, because the former depended more on grassland habitat, which was usurped by humans for agriculture. Both species were subjected to heavy hunting pressure for millennia by humans.

Aurochs Bos primigenius

Four subspecies of Aurochs have been described from Eurasia, India, Greece and Africa. This is the bull that is so beautifully portrayed in colourful Paleolithic cave paintings in France and Spain, and later on Greek vases. Domestication occurred around 12,000 years ago (Neolithic Period) in the Middle East, leading to modern cattle breeds through selective breeding. Julius Caesar observed wild Aurochs in forests of Germania in 53 BCE, and specimens were captured or raised for combat as entertainment in Roman amphitheaters. The last surviving herd lived in a royal hunting ground in Poland, and with the poaching of the last breeding pair in 1627, the species was declared extinct, the result of over-hunting, habitat loss, and disease in the remnant herd. Projects have been proposed to 'recreate' the species using ancient DNA.

BULL SIZE (maxima):
- **WEIGHT** 1,500 kg (3,307 lb)
- **HEIGHT AT SHOULDER** 1.8 m (6 ft)
- **LENGTH OF HORN CORE** (outer curve) 1.2 m (3.9 ft)

Bison sivalensis

Bison sivalensis was the first in the bison lineage, believed to have evolved from a species of *Leptobos* around 3.4 million years ago (late Pliocene). Fossils have been found in India, Pakistan and China. There is speculation that it inhabited Beringia and then entered northwestern North America, but no fossil evidence has yet been uncovered. This species is pivotal because it was ancestral to both Eurasian and North American bison lineages. It gave rise to the Steppe Bison (*Bison priscus*) around 2 million years ago, which became widespread throughout both continents. *Bison sivalensis* inhabited grassland and open broadleaf forest, which were widespread across southern and eastern Asia. It coexisted with elephants, horses, and rhinoceros, all typical of open, arid habitats. It is thought to have closely resembled the Plains Bison in body size, but its horn cores were straight before curving, aligned away from the cranium.

Bison sivalensis

BULL SIZE (maxima):
- **WEIGHT** Unknown
- **LENGTH OF HORN CORE** 45 cm (18 in)

Bison palaeosinensis

Fossils of this species have been reported from sites in northern China dated 2.6 million years ago. It was characterized by dental characteristics and small size. It also evolved from ancient *Leptobos*, with the two species overlapping in time. This bison expanded its range into northern Russia, so it must have developed a dense coat and physiological adaptations to cold. It lived alongside mammoth, rhinoceros and horse. It has been proposed that populations of *Bison paleosinensis* gave rise to both the Steppe Bison (*Bison priscus*) and Menner's Bison (*Bison menneri*).

BULL SIZE (maxima):
- **WEIGHT** 1,000 kg (2,200 lb)
- **HEIGHT AT SHOULDER** 1.7 m (5.6 ft)
- **LENGTH OF HORN CORE** 41 cm (16 in)

Bison paleosinensis

Pleistocene Woodland Bison *(Bison schoetensacki)*

The Pleistocene Woodland Bison is known from 1.2 million to 50,000 (possibly 36,000) years ago with a distribution from the British Isles, France and Spain to southern Siberia. Fossil bones and dung (coprolites) have been recovered from more than 21 caves and excavated sites. Remarkably large numbers of this ancient Bison have been found at two sites in southern Spain. Additional fossils dated 700,000 years ago in Italy indicate that this species was the most heavily targeted prey of human hunters, since it was the only bison species in the region at the time. Other hunted species were rhinoceros, elephant, deer and bear. Cracked Bison bones revealed they had been gnawed on by hyaena. Formerly thought to have arisen from *Bison priscus*, recent genetic evidence indicates it is a related 'sister' species to the Wisent, to which it likely resembled closely. Its horn cores are shorter and heavier than *Bison priscus*. The Pleistocene Woodland Bison exhibited a high degree of sexual dimorphism, a common trait in bison lineages on both Eurasian and North America continents. Dental wear suggests its diet included both grasses and shrubs in open forests.

BULL SIZE (maxima):
- **WEIGHT** 1,000 kg (2,200 lb)
- **HEIGHT AT SHOULDER** 2 m (6.6 ft)

Menner's Bison *(Bison menneri)*

This early European bison was tall with long and slim legs, but was not heavily built. Its short horns had a backward and upward curvature. Based on the wear of its molars, it appears to have included a significant mixture of broad-leaved forest plants in its diet, in addition to grasses of open landscapes. It lived from 1.2 to 0.8 million years ago in a temperate-to-cooling boreal climate. It is known mainly from a major fossil site in Germany where numerous individuals perished in mud flows caused by catastrophic flood events, along with ancient hippopotamus and other species of large mammals. Crushing and gnaw marks on some of these bison bones indicate that the animal carcasses were devoured by hyaena (*Pachycrocuta brevirostris*). Cut marks and stone and bone tools demonstrate that early people included Menner's Bison in their diet. Fossils were also discovered in southern Russia with another early bison named *Eobison*. An ankle bone was dredged up from the North Sea (previously land) along with bones of mammoth, two-horned rhino, horse and hippopotamus, indicating that Menner's Bison was part of a rich large-mammal fauna around 800,000 years ago in Europe.

Bison menneri

BULL SIZE (maxima):
- **WEIGHT** 600 kg (1,323 lb)
- **HEIGHT AT SHOULDER** 2 m (6.6 ft)
- **LENGTH OF HORN CORE** 20 cm (8 in)

Steppe Bison *(Bison priscus)*

With fossils first found in northern China, this large-sized, long-legged species evolved from *Bison sivalensis* on the 'mammoth steppe' in Asia two million years ago (early Pleistocene). It spread throughout northern Eurasia (west to the British Isles) by 700,000 years ago. Numerous fossils of this bison have been dredged up from the southern part of the North Sea, which was formerly land. The Steppe Bison gave rise to the woodland-dwelling *Bison alaskensis*, and both species subsequently entered North America via the Bering Land Bridge around 230,000 to 200,000 years ago. Most fossils of *B. priscus* come from Alaska and the Yukon (more than 80 per cent of fossil mammal bones from Klondike gold mines are *B. priscus*), however a few have been recovered east to Manitoba and Iowa, and as far south as southern Mexico. It likely evolved into the Long-horned Bison (*Bison latifrons*) around 160,000 years ago.

A second wave of *Bison priscus* immigration occurred about 45,000 years ago, and may have given rise to *Bison antiquus*, as revealed by molecular studies. Many fossils from Beringia initially described as *Bison crassicornis* may in fact be hybrids between *Bison priscus* and *Bison antiquus*. The greatest distribution and numbers of *Bison priscus* occurred from 90,000 to 10,000 years ago, with the southern plains population separated from the northwestern population in Beringia by the Wisconsin Glacier. The last Eurasian herd became extinct 8,700 years ago in a steppe-forest refugium in southeastern Siberia, and frozen mummies have been discovered there thawing out of the permafrost. The latest North American fossils were discovered in North Dakota dated 8,000 years ago, and in Alaska and Whitehorse, Yukon, dated 5,400 years ago. The rapidly changing climate and habitats at the end of the last glaciation resulted in the species' optimal cold-steppe habitat being replaced by boreal forest and tundra. Its restriction into islands of remaining habitat probably resulted in small isolated herds becoming inbred and highly vulnerable to human hunters. This is a bison species depicted dramatically in the cave art of France and Spain.

BULL SIZE (maxima):
- **WEIGHT** 1,200 kg (2,645 lb)
- **HEIGHT AT SHOULDER** 2.2 m (7.2 ft)
- **LENGTH OF HORN CORE** 50 cm (20 in)

Bison priscus

Bison alaskensis

Bison alaskensis evolved in eastern Asia from *Bison priscus* (or possibly *Bison sivalensis*), and entered North America via Beringia around 230,000 to 200,000 years ago. Well-preserved fossils have been recovered from sediments in the Yukon (dated 40,000 years ago), and in southeastern Idaho (26,000 years ago). Interestingly, it occurred around the same time in Idaho with three other species of bison (*B. priscus*, *B. latifrons* and *B. antiquus*). It had slender horns intermediate is size between the long-horned *B. latifrons* and shorter-horned *B. priscus*. It inhabited cool woodland and forest in Alaska and the Yukon, but also spread south to coastal California, and in the plains to central Mexico. Likely it reached its greatest populations numbers and distribution during the last interglacial period about 125,000 years ago, when woodland was widespread in North America. This species apparently became extinct at the end of the Wisconsinan glacial maximum, around 20,000 years ago.

BULL SIZE (maxima):
- **POSSIBLE WEIGHT** 1,200 kg (2,645 lb)
- **LENGTH OF HORN CORE** 80 cm (32 in)

Extinct Long-Horned Bison (Bison latifrons)

This is the first species of bison to have evolved in North America, derived about 160,000 years ago from the Eurasian immigrant Steppe Bison (*Bison priscus*). Inhabiting grassland, woodlands and forests, it ranged over most of the United States, including the Great Plains, Florida and coastal California, and south to the Mexican State of Oaxaca. It likely extended north into south-central Canada as well. Most fossils come from the central plains states from South Dakota to Texas. The least known of North America's bison species, *Bison latifrons* is thought to have lived in family groups, not congregating into immense herds. It was a massive animal, up to 50 per cent larger than the Plains Bison. In fact, it was the largest species and had the longest horns of any member of the cattle family Bovidae. Consequently, it was not built for running long distances or agile movement. Most notable were the pair of elongated upward- and sideways-sweeping horns. Taking into account the extra length of the horn sheath beyond the end of the core, a horn of the bull could have attained a length of 1.1 m (3.6 ft). The tip-to-tip width span of the horns may have reached an astonishing 2.3 m (7.6 ft). This great set of weapons would have been important in defending against large predators like the Giant Short-faced Bear, Sabertooth Cat, American Lion and Dire Wolf, as well as intimidating other large forage competitors such as camels, mammoths, giant deer, horses and muskox.

Bison latifrons reached its greatest numbers during an interglacial period from 130,000 to 115,000 years ago. Both *B. latifrons* and *B. antiquus* fossils have been found in gravel deposits in south Texas dated at 13,000 years ago, and it appears they both went extinct shortly after this date. Excessive hunting pressure by Paleoindians, changing climate, and vegetational shifts are believed to have caused the demise of both species.

BULL SIZE (maxima):
- **WEIGHT** 2,100 kg (4,630 lb)
- **HEIGHT AT SHOULDER** 2.5 m (8.2 ft)
- **LENGTH OF HORN CORE** 1.1 m (3.6 ft)
- **TIP-TO-TIP WIDTH OF HORNS** 2.3 m (7.6 ft)

Extinct Ancient Bison *(Bison antiquus)*

Bison antiquus evolved from *Bison latifrons* by 60,000 years ago in the American Southwest. It was the most widely distributed North America bison species, spreading northward to Alaska,

Bison latifrons

Bison antiquus

Northwest Territories, central Alberta and Manitoba south to Florida, Mexico and Nicaragua. It averaged about 25 per cent heavier than the modern Plains Bison, and had horns that stood out at right angles to the head. This species lived in grasslands with patches of woodland and shrubland, from lowlands to mountains. Its generalist diet consisted more of broad-leaved plants than grasses, as evidenced by lighter wear on the teeth (grasses are more abrasive). The great abundance of fossils (500 individuals at one Nebraska archeological site dated at 10,000 years ago) suggests it reached high numbers on the plains 18,000 years ago. This species was a member of the rich North American megafauna that perished from climate change, vegetational-zone shifts, and mounting hunting pressure by Paleoindians. It became 'extinct' by 10,000 years ago, leaving a population to evolve into the Western Bison, *Bison occidentalis.*

Fossils of this giant species are known from 47 fossil sites. More than 300 individuals (many young) have been recovered so far from the famous La Brea Tar Pits in Los Angeles, and age profiles indicate that this species migrated past here during the same two-month period for many generations. There is evidence that *Bison antiquus* and all megafauna died out in this region of California by 12,900 years ago from a combination of rapid cooling followed by a warming phase, which resulted in drought, habitat changes, and major fires. Following the extinction of other megafauna, Paleoindians of the Clovis and Folsom cultures focused on hunting this bison, which contributed to the species' demise. A fluted projectile point and butchering evidence were found with 13 fossil *Bison antiquus* skeletons at a site in western Kansas (dated 10,400 years ago).

BULL SIZE (maxima):
· WEIGHT 1,580 kg (3,483 lb)
· HEIGHT AT SHOULDER 2.3 m (7.5 ft)
· LENGTH OF HORN CORE 40 cm (15.8 in)

Extinct Western Bison
(Bison occidentalis)

This chronospecies lived on the North American plains for the relatively short period from 13,000 to 4,270 years ago, reaching its highest populations around 8,000 years ago. It descended from *Bison antiquus* and transitioned rapidly into the smaller Plains Bison. This decrease in size is thought to have been caused by increasing global temperature following the end of the Pleistocene Ice Age. Some researchers prefer to recognize it as a subspecies of *Bison antiquus.* The thinner, and upward/rearward extension of the horn core distinguished it from its predecessor. The large herds of this species supported a rapid population increase and spread of Paleoindians across North America. It was subjected to heavy hunting pressure from 11,000 to 9500 years ago. There is a record in Nebraska of *B. occidentalis* skeletal remains associated with an arrow point. Most specimens have been reported from the Great Plains, but records occur from Alaska to northwestern Ontario and south to Florida and southern Mexico.

BULL SIZE (maxima):
· WEIGHT 1,000 kg (2,200 lb)
· HEIGHT AT SHOULDER 1.8 m (6 ft)
· LENGTH OF HORN CORE 41 cm (16 in)

North American Plains Bison
(Bison bison bison)

Originating from the *Bison antiquus—B. occidentalis* lineage as recently as 5,100 years ago (an arbitrary delineation) on the northern Great Plains, the Plains Bison spread over most of North America, from southern Canada to Mexico, the Rocky Mountains to the Mississippi River. Small herds ranged as far east as Ontario, New York, North Carolina and Florida by 2,610 years ago. It was considered a 'Keystone Species,' meaning it played a major role in the functioning of ecosystems, including river valleys, prairies and plains, sagebrush and desert scrub, aspen parkland, and coniferous woodland. This nomadic species' diet is focussed on grasses. The Plains Bison is relatively small compared to its ancestors, with short and highly curved horns. There appears to be a correlation between decrease in body size and warming air temperature (due to metabolic factors and food resources). It has been estimated that average size of the Plains Bison may continue to decrease in the future by 41 kg (88.2 lb) for each degree increase in global temperature.

The Plains Bison successfully adapted to great climatic fluctuations, ecological changes, and heavy hunting pressure from Indigenous tribes of the plains. Suspected to have attained its highest population numbers around 2,500 years ago, early historical estimates exceed 30 million. Although this figure is unreliable, there is no doubt that the Plains Bison was the most-abundant large mammal in North America at the end of the Pleistocene Ice Age. Through over a century of wanton slaughter by people with firearms (especially from 1860 to 1880, mainly for hides but also Indigenous genocide), the herds collapsed to only 541 individuals in the United States, where it was declared extinct in the wild in 1883, and in Canada in 1888.

From a breeding stock of less than 100 founders, currently more than 500,000 Bison (including hybrids with cattle) now exist in reserves and private herds in both countries. These consist of 50 conservation herds, such as national and state parks (42 in USA, eight in Canada) totalling almost 21,000. Ranchers raise over half a million commercially for meat and hides. However, the species remains 'ecologically extinct' in Nature, since it is no longer free-ranging, it has lost its natural role over traditional landscapes, and herd size, range and predation are managed. The largest semi-wild herd of Bison in the USA consists of around 5,700 in Greater Yellowstone National Park area (once down to 23 individuals), where it has existed continuously since prehistoric times. This managed population has been designated as Threatened by the U.S. Fish and Wildlife Service. The species is listed as Threatened in Canada (COSEWIC). The Plains Bison now occupies less than one per cent of its original range from Canada to Mexico. While cross-breeding Bison with cattle has occurred frequently in the past, many herds have culled cattle genes, so the current level of cattle DNA in most Bison is low (0.6-1.8 per cent).

BULL SIZE (maxima):
· WEIGHT 1,270 kg (2,800 lb)
· HEIGHT AT SHOULDER 1.8 m (6 ft)
· LENGTH OF HORN CORE 31 cm (12 in)
· LENGTH OF HORN SHEATH 46 cm (18 in)

North American Wood Bison
(Bison bison athabascae)

Evolving from *Bison antiquus* around 5,000 years ago, the Wood Bison occupied a vast boreal region from Alaska, Yukon and British Columbia east to Alberta and Saskatchewan. From an original estimated 170,000 individuals, only 250 survived the slaughter following the arrival of Europeans. In recent years, populations have varied from 7,000 to 10,000 (most carrying genes of Plains Bison), occurring in nine areas (with 16 conservation herds) located from Alaska, Yukon and British Columbia to Manitoba, with the largest herd in Wood Buffalo National Park (established 1922) in northeastern Alberta and adjacent Northwest Territories. Populations in Manitoba and Siberia were introduced outside the native range. The Manitoba herd was shipped into the Interlake Region in 1984, and offspring were released in 1991. The first of three shipments of Bison to Siberia was released in 2006. The Wood Bison now occupies less than one per cent of its original range. Protected since 1891 in Canada, it was designated Endangered in 1978 (COSEWIC), and since 2013 as Special Concern. The U.S. Fish and Wildlife Service has downlisted the species from Endangered to Threatened.

Compared to the huge numbers and long-distance seasonal migrations of the Plains Bison, the Wood Bison occurs in small scattered herds which move short distances during the seasons. Most travel less than 20 km, although a wandering mature bull may move over 100 km. Wood Bison average larger than the Plains Bison, the shoulder hump is less rounded, and there is less pelage on the head and forequarters. It gallops less, and there are fewer battles between males during the rutting period. It is well adapted to extremely cold conditions, inhabiting lowland meadows interspersed with boreal coniferous forest and aspen parkland, where it feeds on grasses, sedges, rushes, lichens, and the leaves and bark of shrubs and small trees. It copes well even in deep snow, pushing out feeding craters with its huge head. It holds its head higher than the Plains Bison, enabling it to routinely browse on higher vegetation. Likely the Wood Bison interbred routinely with the Plains Bison in contact zones where parkland-boreal forest graded into grassland-steppe.

BULL SIZE (maxima):
· WEIGHT 1,180 kg (2,601 lb)
· HEIGHT AT SHOULDER 2 m (6.6 ft)
· LENGTH OF HORN CORE 33 cm (13 in)

Bison occidentalis

Bison bonasus

Wisent or European Bison
(Bison bonasus)

There is still controversy over when the Wisent first appeared in the European fossil record. Genetic analysis dates its evolution from an unknown ancestor by 395,000 years ago, while other researchers suggest 60,000 years ago. It no doubt lived alongside the ancient Steppe Bison (*Bison priscus*), which has been proposed as its direct ancestor, or possibly arose through hybridization of Steppe Bison and the Aurochs 120,000 years ago. Recent genetic research suggests it may have descended from the Pleistocene Woodland Bison (*Bison schoetensacki*) around 12,000 years ago. The Wisent became widely distributed in Europe, from the British Isles and Scandinavian Peninsula to Italy, by 9,500 years ago, inhabiting both dense and open deciduous forest, open coniferous forest, and forest-steppe. Wisent-like paintings appear in cave art in France dated around 17,000 years ago. Certain Middle East artifacts from the third millennium BCE, Mesopotamia, accurately portray Wisent, so herds appear to have been present there for a period. The Roman naturalist Pliny The Elder first described the Wisent as "iubatos bisontes" in volume III of his *Naturalis Historia* (AD 77). "There are reports of a wild animal in Paeonia [region of modern Kosovo and North Macedonia] called the bonasus, which has the mane of a horse, but in all other aspects resembles a bull; its horns are curved back."

Following extinction of most prehistoric megafauna in Europe, this species became the largest land mammal over this vast region. *Bison bonasus* is taller, has longer legs, longer horns and tail, is less hairy, and less tamable than the American Bison. Its horns point more forward compared to sideways and upwards of the Plains Bison's. Two subspecies have been described: the Carpathian Wisent (*B.b. hungarorum*) of the broadleaf forests on the Carpathian Mountains, Moldova and Transylvania (extinct 1852), and the Caucasian Wisent (*B.b. caucasicus*) of the highland steppes in the Caucasus Mountains of eastern Europe (extinct 1927).

Although extinct in the wild, this species barely survived in captivity with 54 individuals, but only 12 individuals were involved in restoration efforts in zoos. Consequently, genetic variability is precariously low. Recovery efforts began in 1929 at a breeding facility in Bialowieza, Poland. In a remarkable conservation success story, the total number of Wisent has now increased to over 9,200, including 7,000 in 45 free-ranging herds, the largest in Belarus, Poland and Russia. Herds of various sizes are now found in 24 countries from the United Kingdom to Russia. The IUCN listed this species as Endangered in 1996, but with growing populations it has been downlisted to Near Threatened. More than 30 zoos worldwide maintain small herds and most participate in a European Bison Pedigree Book for historic and breeding purposes. As well, the European Association of Zoos and Aquariums (EAZA) operates a studbook program (EEP) for 450 captive Wisent in 77 participating institutions. In North America, the only recent zoo herd was in the Assiniboine Park Zoo in Winnipeg, which was acquired from a 1955 importation from European zoos by the Smithsonian National Zoological Park, Washington, D.C.

BULL SIZE (maxima):
· **WEIGHT** 2,025 kg (4,465 lb)
· **HEIGHT AT SHOULDER** 2.1 m (6.8 ft)
· **LENGTH OF HORN CORE** 65 cm (25.6 in)

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A LOOK BACK ON NATURE SASKATCHEWAN'S 75TH ANNIVERSARY FALL MEET

Rieka Ravenhurst
Nature Saskatchewan Intern

The 75th Anniversary celebration kicked off on Friday night, September 13, with a captivating tour and presentation at the Royal Saskatchewan Museum in Regina. The museum, known for its unique exhibits, had spruced up some of its existing displays. The newest exhibits, featuring a T-Rex, climate change, and endangered species, were particularly noteworthy. The presentation delved into the history and establishment of the green space outside the museum — a project that started on a volunteer basis and has since expanded to cultivate more of their allotted landscape. The presentation also highlighted the early challenges of managing and supporting the growth of this project and its importance to the greater environment.

Saturday morning began with the second part of this celebratory weekend — hiking Nature Regina's Hidden Valley and NCC's Valley View property. Some of the highlights of the hikes included prickly pear cactus, prairie crocus in bloom, and a squadron of pelicans flying overhead. The prairie landscape had many other insects, birds, and plants for participants to enjoy. The lunch break took place at Last Mountain House, a trading post with a single and married man's house, the master's house, and the warehouse for trading goods. Last Mountain House was a sight in and of itself with many historical items, including a ledger, snowshoes, antique furniture, a dog sled, furs and other wares. During our Valley View hike, we feasted on thorny buffalo berries in the company of grouse.

Saturday night's banquet at the Conexus Arts Centre featured a special guest, His Honour the Honourable Russ Mirasty, S.O.M., M.S.M., Lieutenant Governor of Saskatchewan and Her Honour Ms. Donna Mirasty. The evening began with mingling, taking in beautiful photos from different initiatives and programs run by Nature Saskatchewan, historical copies of the *Blue Jay*, and live music provided by the Regina Mandolin Orchestra. The banquet featured a delicious meal provided by the Conexus Arts Centre.

Frasier Hunter, the evening's Master of Ceremonies, started the program by welcoming everyone, introducing the Lieutenant Governor for his remarks, and acknowledging the importance of Nature Saskatchewan's work. Following the introductions, the 2024 awards were presented. Congratulations to Lorne Fitch (Cliff Shaw Award), the Duncairn Reservoir Migratory Bird Sanctuary Stakeholders (Conservation Award), Aura Lee MacPherson (Conservation Award), Donna Bruce (Fellows Award), Nature Canada (Fellows Award) and Ed Rodger (Volunteer Award).

There were two presentations for the evening — one for the history of Nature Saskatchewan, which contained stories of triumph, challenge, and commitment. Some highlights were the first publication of the *Blue Jay*, the Royal Saskatchewan Museum's Native Plant Garden, different conservation initiatives, and the National Heritage Award for work to establish Grasslands National Park. There were membership highlights for a board member, Barry Mitschke, who secured the Saskatchewan Lottery Fund, which greatly aided Nature Saskatchewan. The second presentation was from Nature Canada, which discussed some of their programs, such as the Naturehood initiative and the Young Nature Leaders Grant. Some of their projects include the National Nature Strategy and Nature on the Hill, which features the Nature Accountability Act and involves government officials supporting and funding it.

All in all, the weekend was wonderful! Good food, great friends and beautiful Saskatchewan weather. Thank you to everyone who joined us for the 75th anniversary celebration in Regina. It was a Fall Meet to remember.

NATURE SASKATCHEWAN MEMBER SPOTLIGHT: SPENCER SEALY

Annie McLeod
Editor, Blue Jay

Looking for signs of voles during a field trip in the Qu'Appelle Valley, which took place after an Inland Bird Banding Association meeting in August 2013. Photo credit: Harold Fisher.

In celebrating the 75th anniversary of Nature Saskatchewan, and members who have had a significant impact on the society, it is only fitting to acknowledge the contributions of a Saskatchewan-born ornithologist who has been a regular contributor to the *Blue Jay* for nearly 65 years.

Born in Esterhazy, Spencer Sealy lived in various Saskatchewan towns as a child, as was typical for a child of a country preacher. Growing up in different hamlets and villages, nature was always close at hand and, for a family with little extra money, experiences in the natural world were essentially unlimited and free of cost.

"When I was five years old, living in Wiseton, I discovered a cocoon attached to the branch of a small tree," says Spencer. "I carried it home and placed it on the corner of a shelf in my bedroom. Several days later, my parents called me to my room to look at a large *Cecreopia* moth that was spreading its wings after emerging from the cocoon. With its wings dried, we released the moth outside and it flew away. That experience was forever etched in my memory."

From discovering duck and hawk nests and finding a red bat roosting in a willow to collecting insects in a jar and finding his first cowbird egg in a blackbird's nest, it was these early experiences in nature that cemented Spencer's fate in science.

On the first day of Grade 8, then living in Kindersley, Spencer and his classmates were asked to write a short piece on what they wanted to be when they grew up. Spencer knew then that he wanted to be an ornithologist, and that is what he wrote about. While forest ranger and wildlife manager were options later considered, the scientific study of birds on a full-time basis was what stuck with him.

By the time he began Grade 10, Spencer's family had moved to Battleford — the place that he fondly refers to as his home town. It was during his high school years there that he met his Saskatchewan mentors — Robert (Bob) W. Nero and C. Stuart Houston. Spencer corresponded frequently with Bob, who was then a curator at the Saskatchewan Museum of Natural History (now the Royal Saskatchewan Museum) in Regina.

"Bob always took the time to comment and provide additional explanations for my observations, as well as offering general encouragement," says Spencer, noting that Bob would question some of his statements, always in a constructive way, knowing that Spencer wanted to go into ornithology, as it was important to be able to see other points of view or other ways of expressing something. "He was correct, and I owe him so much for that guidance."

It was Stuart Houston who introduced Spencer to bird banding, and Spencer banded raptors for Stuart as a sub-permittee. Stuart later wrote a letter in support of the application for Spencer's first banding permit and the two maintained contact until Stuart's passing in 2021.

Spencer first heard about Nature Saskatchewan, then known as the Saskatchewan Natural History Society (SNHS), during high school when Harvey Beck's *A Guide to Saskatchewan Mammals* was published in 1958. It was the first special publication of the SNHS. Additional exposure to the society emerged when Spencer attended the 1959 American Ornithologists' Union meeting, which was held at the Saskatchewan Natural History Museum. The meeting was supported by the SNHS and, indeed, the society's presence was everywhere during the event.

With the SNHS on his radar, Spencer's first contribution to the *Blue Jay* was published in 1960 — a note on Big Brown Bats wintering in the attic of his high school. Spencer had summarized his observations in a letter to Bob Nero, who felt them worthy of publication and compiled the observations into a short note.

"Soon after, he did the same for a record of a flying squirrel near Battleford. From that point, I prepared the notes but Nero edited them before publication," says Spencer. "Bob's confidence in me spurred me to write my own notes for publication, and I've never looked back."

Spencer knew that a career in ornithology would require advanced post-secondary education and, upon graduating high school, he completed a Bachelor of Science at the University of Alberta. He then attended the University of British Columbia (UBC) to complete a Master of Science (MSc). In 1967, during his first year of graduate studies at UBC, Spencer published his results of a six-year study of Northern Harrier breeding biology — spurred by several harrier nests that he had found in 1960 — in the *Blue Jay*. And, for his efforts and contributions to the documentation of natural history, he received the Cliff Shaw Award from the SNHS.

"What an honour, and a boost in the knowledge that a career in ornithology was possible for me," says Spencer.

Following the completion of his MSc in 1968, and a thesis based on a study of nesting auklets on an island in the Bering Sea, Spencer attended the University of Michigan to acquire a PhD, this time travelling to Haida Gwaii for further work on seabirds. Upon completion of his PhD, Spencer began his career in the zoology (later biological sciences) department at the University of Manitoba, where he remained until his retirement in 2011.

Along with graduate students, Spencer's research focused on songbird breeding ecology and banding, as well as a long-term study of interactions between cowbirds and hosts at Delta Marsh, MB. Work was also conducted on seabird monitoring and Marbled Murrelet foraging in BC, cloud forest birds and cowbird hosts in Costa Rica, and cowbirds in southern Texas and Argentina.

Throughout his studies, and during his career, Spencer continued to contribute articles to *Blue Jay*. In fact, he's had dozens of articles published so far! Topics have ranged from insect, bird and mammal records to the breeding biology of birds, banding and recoveries, cowbird host records, and historical accounts of the contributions of early naturalists.

As an academic researcher, Spencer's contributions to the study of natural history have not been limited to the *Blue Jay*. He's had articles and papers published in numerous refereed national and international scientific journals. The work he did with seabirds remained a constant throughout his career as well. Just this year, a paper he co-authored with a colleague in BC — on the seasonal use of a freshwater lake by Marbled Murrelets — was published in *Marine Ornithology*.

Spencer stresses the importance of natural history journals such as the *Blue Jay*, too, however, as he feels that the general public needs to hear more from researchers and naturalists alike, particularly when so many environmental issues — such as habitat degradation and climate change — are at play today.

He also encourages all scientists and naturalists to contribute their writing to the *Blue Jay*.

"*Blue Jay* stands alone on the prairies as a journal and outlet for articles that is accessible to people of all walks of life and backgrounds," says Spencer, noting that articles can be technical in nature, written in prose, share opinions, or even be poems.

"In my biased opinion, *Blue Jay* is the voice of Nature Saskatchewan."

Personal note from the author:

Since I became the *Blue Jay* editor in 2016, Spencer has been contributing more than just articles to the journal — he also acts as one of my trusted reviewers of scientific articles that are submitted for publication. With his vast knowledge and extensive experience, Spencer provides suggestions to make articles stronger, flags instances in which additional details or further research or observations are required, and — just like Bob Nero did for him — asks questions, in a constructive way, to highlight a topic or issue that could be looked at from another perspective or expressed in a different way.

Looking toward the edge of the receding 'Galbraith's marsh' south of Battleford, 28 May 2024. Photo credit: Noreen Sealy.

In addition to Spencer's numerous contributions to Nature Saskatchewan and the *Blue Jay*, he has had a marked impact on me as the *Blue Jay* editor. He provides valuable knowledge and insight, congratulations for completed issues, empathy in the challenges that can come with being an editor, and an openness to discuss thoughts and ideas. Spencer's encouragement and insights assist me in doing the best job I can, in continually striving for the highest quality of production, in asking tough questions and making editorial decisions, and to ensuring the *Blue Jay* remains an important part of Nature Saskatchewan's efforts, outreach and sense of community. On top of that, he inspires me and has made me confident that I, too, could write scientific articles for publication in the *Blue Jay*.

In the words of someone who I consider a mentor and am proud to call a friend, "I owe him so much for that guidance."

As part of our 75th anniversary celebrations, we are interviewing and writing articles that highlight active members who have had a significant impact on Nature Saskatchewan, as nominated by fellow members.

NATURE SASKATCHEWAN 2024 AWARD WINNERS

Each year at the Fall Meet, Nature Saskatchewan recognizes outstanding service and contributions that Society members, and/or affiliate and partner organizations have made towards Nature Saskatchewan's objectives and goals.

Recipient of the Nature Saskatchewan 2024 Conservation Award

Duncairn Reservoir Migratory Bird Sanctuary Stakeholders

Duncairn Reservoir was designated a Migratory Bird Sanctuary by the Federal Government in 1948. According to the Canadian Dam Association website, Reid Lake acts as an important breeding, feeding and resting area for a variety of bird species. The Duncairn Reservoir Migratory working group has been dedicated to educating the public about the proposed expansion of irrigation and its effects on the conservation of Reid Lake. The group has been extremely active on many fronts, from social media to local radio stations, as well as giving presentations and initiating a letter writing campaign.

This group has raised considerable awareness in the city of Swift Current and within the southwest of the many concerns associated with the expansion of irrigation at Reid Lake from the fishery and migratory birds to the threats to drinking water for the City of Swift Current.

Aura Lee MacPherson

After an unprecedented weather event in 2014, Aura Lee volunteered to be the first chair of Calling Lakes Ecomuseum (CLEM), a grassroots organization that focuses on water quality in the Qu'Appelle River system. The group has organized cottage owners in the lakes of the Qu'Appelle Valley and beyond to raise concerns about water quality in the lakes. With CLEM she has educated cottagers about nature-friendly practices such as leaving natural vegetation on the shoreline and removing tires from boats and docks. Her environmental work focuses on educating youth, and bridging the gap between community and RM councils, and First Nations and farmers on urban and rural water management practices, climate change, and effects on water quality, flooding, and the health of the environment.

Aura Lee has become a tireless champion for wetland conservation over the past few years, helping Saskatchewan people and communities appreciate the importance of our prairie potholes for climate change resilience, biodiversity, and their role in filtering and breaking down excess nutrients, fertilizers, and pollutants before they reach our lakes and rivers.

Recipient of the Nature Saskatchewan 2024 Volunteer Award

Ed Rodger

Ed joined Nature Saskatchewan's Board in 2014 and immediately accepted the position of Treasurer. He moved into the role of President in 2018 where he served a three-year term. Ed was very involved in the Lands, Conservation, Finance and Special Publications Advisory Committees.

While his Board term came to an end this past June, his work continues. He has agreed to stay on the Conservation Committee in the role of chair. Ed also worked on an agreement with the University of Saskatchewan to access Dr. Stuart Houston's banding notebooks and have them digitized so they are readily available for future research. He is also assisting with the development of MOTUS (a radio transmitter/receiver technology for tracking bird migration) that will be implemented at LMBO.

POETRY

Cycling

There's been more Unkindnesses since the Murders in rising numbers
band up, clamouring mad, to flock off south.

I saw one wee, black band flying. Wee in number, just four,
but all big. Their boss a span near a buzzard's breadth.

And shining, reflecting prismatic, kaleidoscopic, shimmering
light from their jet plumage through my cracked windshield.

Ravens rule winter on the plains. Unhindered by the numbers of
their lesser, persecuting, pushing corvid cousins.

Fit with harshness, darkness, to fill cropped fields, farmyards,
city streets, alleys with their keen wit and black, black beauty.

George Grassick
Box 205, Lumsden, SK S0G 3C0
ggrassick@sasktel.net

Recipient of the Nature Saskatchewan 2024 Fellows Awards

Donna Bruce

Donna joined the Nature Saskatchewan Board in June 2009, quickly accepting the position of Vice President. Upon completing her term as President in 2013 she soon found herself back in the role, as the new President resigned in November. Donna also facilitated a Strategic Planning session for the Board in 2015.

By the end of her 10-year term on the Board, Donna was deeply involved with the publication of *Birds of Saskatchewan*, seeing it through all the edits, photo selections and design layout. She has also been the Special Publications Editor since completing her term on the Board, shepherding through publications such as *Backyard Bird Feeding: A Saskatchewan Guide*, *Conserving the Legacy* and *Trees Against the Wind*.

Nature Canada

Nature Canada has been a long-time partner of Nature Saskatchewan for many years. As a national organization, it is often looked upon as a leader for larger issues impacting the country.

More recently, the organization has developed or coordinated many programs that are accessed by provincial or regional conservation groups. These include the NatureHood education program, Bird Friendly City designations, Engagement Organizing, youth employment programs and most prominently, Nature on the Hill. For the last six years, Nature Canada has organized meetings on Parliament Hill with MLAs (government and non-government) and Senators, in which environmental organizations meet to lobby for specific Nature related issues. Select provincial groups have also had the opportunity to meet with the Environment and Fisheries Ministers to lobby our cause or push to complete legislation they are introducing (most recently the National Biodiversity Strategy).

Nature Canada's current strategic plan is centred on working with others to discover, restore and defend nature. We can't think of a group more deserving of the Fellows Award.

Recipient of the Nature Saskatchewan 2024 Cliff Shaw Award

Lorne Fitch

Each year, the editor of *Blue Jay* selects the recipient of the Cliff Shaw Award. Typically, this award provides special acknowledgement of a single article that appeared in one of the four most recent issues of *Blue Jay* and made a significant contribution to any branch of natural history. For 2024 however, naturalist and author Lorne Fitch was selected for the essays he has contributed to all four of the most recent issues.

In *Being a good ancestor*, Lorne advocates for a society that protects and nurtures the natural world for future generations. *When the Meadowlark sings* discusses the decline of grassland birds through the lens of one of our best-known and most beloved prairie species, while *Villain or victim: the black and white of magpies* addresses the resentment many seem to hold against magpies for their very resilience in the face of efforts to destroy them. Finally, in *Thinking like a Leopold* , Lorne pays tribute to his hero, the great American naturalist Aldo Leopold. Despite the varied topics, all four of these beautifully written and thought-provoking essays share a rootedness in deep concern and care for our ecosystems.

Unlike many of the previous winners of the Cliff Shaw Award, Lorne's works are not peer-reviewed scientific articles. While scientific research is essential to further our understanding of the natural world, so too are contributions that build upon a scientific foundation to advocate for conservation. Passionate, skilled and informed communicators in the tradition of Aldo Leopold and Lorne Fitch will be essential to ensure the meadowlark continues to sing for generations to come.

POETRY

Song Dogs

In the soft winter light
the blood runs
bright, dark, warm
creating a pattern

the bullet entered his skull
just above the eye
I kneel beside him
touch his shoulder
murmuring
my sorrow

this territory was his
this riverbank
a place where he drank
in abundance
mated for life with his partner

the creation in the snow
becomes a larger circle
celebrating the life
before me

my father said they were song dogs
howling their way through winter

a white truck pulls up
on Spadina
beside the Bessborough
two men get out
they walk down the path
to where he lies
they scoop him up
throw him in the back of their truck
take him away

beside the path
a group of children
create snow angels

Sharon Ferguson-Hood
239 – 1622B Acadia Drive
Saskatoon, SK S7H 5H7

2025 MEMBERSHIP RENEWAL

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HUMAN NATURE

Kim Sowa
Summer 2024 Habitat Stewardship Assistant
kimsowa4@gmail.com

Although I have been lucky enough to have the chance to travel to many of the Canadian provinces and U.S. states, my favourite place is just 15 minutes from my house. For the last 20-plus years, my dad and his four siblings have shared custody of a cabin at Fishing Lake. This cabin has been the only place where my entire family has been able to meet up for one weekend in August, which is quite challenging with our growing family. Despite everyone's busy schedules, for the most part we have been able to make it work. And, with everyone continuing to spread out farther and farther, each moment we are together becomes more special. Since it is just one weekend, we try to spend as much time together as we can. Every night we gather for family supper and typically stay up late in the night—with the few exceptions of the kids who can't quite keep up with the busy adults yet.

The cabin also provides a great place to catch up with friends who I don't get to see very often. Most of my time at the cabin is spent out on the lake, or going for a quick walk to someone else's cabin only to realize you forgot something and have to go back. On the days when the lake is quiet, I enjoy going out on the paddle board or just staring at the lake in awe of how relaxing it is.

My cabin holds memories of playing at the park, going for late night swims with my friends, watching the sun set and later rise without even going to sleep, and much more that has taken place during my 21 years of going there. I look at the same pictures on the walls every time I go, but it still takes me down memory lane. My cousin and I always joke that we are under-appreciated because we only made it into two of the family portraits on the wall.

The most recent portrait we took at the lake was more than 15 years ago and every time I look at it, it brings a smile to my face. After a day at the lake, lounging in the sun and with the kids running around, we all gathered on the dock to take our family portrait. However, I don't think anyone considered what the weight limit of the dock might be, and you so can see the dock starting to buckle with all of us on it. I believe this is one of the last pictures we have that includes my grandparents and all of the grandchildren, and for as long as we have the cabin, it will sit above the fireplace for all to admire.

MYSTERY PHOTO

WINTER 2024

QUESTION:
Nature Saskatchewan Board member Morley Maier found these fuzzy growths in the summer of 2023, on the underside of a Bur Oak tree. At first, they looked like something that would crawl away if touched. What are they?

Photo credit: Morley Maier.

FALL 2024

ANSWER:
The bird shown in the photo is Marsh Wren. Other than this bird's habitat of marshes of tall cattails or reeds, there are other characteristics that distinguish it from other Saskatchewan wrens. Small and dark overall, with a white eyebrow, note the Marsh Wren's unmarked shoulders and the black and white streaks down the back. The most similar wren is the Sedge Wren, which prefers grassier habitats, has a streaked crown, and shows heavy barring on the shoulders.

Photo credit: Annie McLeod.

Do you have a photo that would make for a good mystery photo challenge? Send it to the *Blue Jay* editor at bluejay@naturesask.ca!

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SASK LOTTERIES