



FALL 2020 VOLUME 78.3

# BLUE JAY







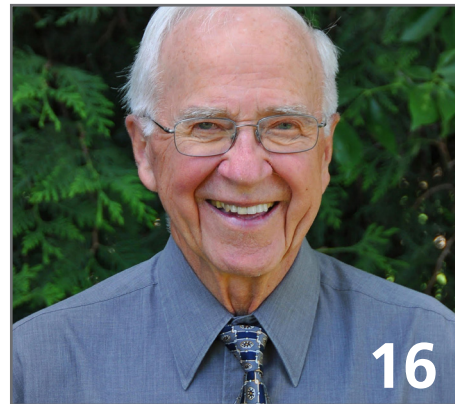
6  
In 2016, a small carbonate-rich glacial erratic that had been chewed by rodents was found in the vicinity of Points North Landing, SK. The rodents were mainly consuming the rock for its high calcium content.



8  
While attempting to attract solitary bees to their back yard, Teresa Dolman and husband Doug instead attracted the solitary mason wasp. Over a four-year period, observations were made of the spring emergence and mating of the wasps, and especially of the provisioning of brood cells by the females. The mutualistic relationship between the wasp and the mites it carries was also noted.



14  
This year marks 30 years of consecutive banding at the Last Mountain Bird Observatory (LMBO). See page 14 for a brief history of LMBO and how the COVID-19 pandemic has given Nature Saskatchewan a unique opportunity to bring LMBO to the public.



16  
With the recent passing of J. Frank Roy, Saskatchewan's nature societies have lost a long-time member, a talented volunteer, a great friend and a wonderful mentor. One of Frank's great gifts was his generous interest in others, and his desire to bring people and nature together.



19  
Spencer G. Sealy focuses on the photograph of two Whooping Cranes in Saskatchewan that William Rowan used as a basis of a stamp issued by Canada Post in 1955. Details of the proposal submitted in support of this issue are also outlined.



30  
Previous attempts to provide purpose-built artificial chimneys in Manitoba for the threatened Chimney Swift have not attracted swifts. A new design of artificial chimney was constructed in Winnipeg and moved to the Assiniboine Park Zoo. Chimney Swifts bred in this tower during the summer of 2019, the first confirmed use of purpose-built artificial habitat in western Canada.

# FROM THE PRESIDENT

Ed Rodger  
President, Nature Saskatchewan  
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Hello everyone,  
This issue of *Blue Jay* includes a tribute to J. Frank Roy, the very accomplished Saskatchewan naturalist who passed away in April. Frank Roy was a long-time supporter and contributor to Nature Saskatchewan, and an important builder of the organization in its early



ON THE FRONT COVER  
A first year female Bay-breasted Warbler photographed in A.E. Wilson Park on August 19, 2017. Photo credit: Annie McLeod.



ON THE BACK COVER  
On June 13, 2020, Bill and Audrey MacKenzie found and photographed a Calypso Orchid (*Calypso bulbosa*) on the Boundary Bog Trail in Prince Albert National Park. Photo credit: Bill MacKenzie.

days, including a term as President. I had the pleasure of meeting with Frank back in February, and as we talked about Nature Saskatchewan, he mentioned our flagship publication, *Blue Jay*, and its importance in the story of Nature Saskatchewan. He praised its current appearance and content, saying it was as good as it had ever been.

It was a good time to reflect on the story of *Blue Jay* because of the completion of an important project this year: creating an online archive of every edition of *Blue Jay*, back to its origins as the bulletin of the Yorkton Natural History Society in 1942. This archive (found at <https://bluejayjournal.ca/index.php/bluejay>) was made possible through an open access publishing program of the University of Alberta Library. As well as electronic copies of the actual journals, the archive includes a publication description, a table of contents directory, submission guidelines and contact information, and an index accessible through a good search engine.

*Blue Jay* has always been a key part of the identity of Nature Saskatchewan, and the preservation and promotion of *Blue Jay* was part of the original impetus to create a provincial natural history society. The new online archive provides not only a vast store of information, but a tribute to the efforts of many people who love nature. Although Nature Saskatchewan now has several other channels for communicating with members, supporters, and the naturalist community in general, *Blue Jay* should continue to be an important part of our role as a publisher. It should also continue to develop with the changes in the



Ed Rodger

publishing world and the wishes of members, contributors and staff. If anyone wants to share opinions or suggestions regarding *Blue Jay*, please feel free to contact me, editor Annie McLeod, or Nature Saskatchewan staff. Contributions to the journal are very welcome, and Annie is happy to work with all authors as they prepare and revise their submissions.

I hope you will take the time to explore the *Blue Jay* online archive, and discover all the knowledge it has to offer about nature in our part of the world, and about the story of Nature Saskatchewan. I'd like to thank all the people who have worked on, and contributed to, *Blue Jay* in many different ways over the years. I'd also like to thank the University of Alberta Library for its support of scholarly publishing through projects such as this, and especially thank current editor Annie McLeod for producing a publication that long-time Nature Saskatchewan members such as Frank Roy can be proud of. 🐦

## WHAT'S INSIDE

- 5 **Nature Saskatchewan Welcomes New Board Members + Staff Update**
- 6 **An Instance of Rodent Geophagy from Northern Saskatchewan**
- 7 **Poetry: Of The Field**
- 8 **Mason Wasps in Our Back Yard**
- 11 **The Unintended Consequences of Species Reintroduction**
- 14 **LMBO Celebrates 30 Consecutive Years of Banding**
- 16 **In Memoriam: J. Frank Roy**
- 18 **Naturehood Adaptations During COVID-19 Pandemic**
- 19 **William Rowan and Canada's 5¢ Whooping Crane Stamp: The Proposal and a Saskatchewan Photograph**
- 27 **Prairie Potholes and Swallows: A Case for Conservation in Prairie Agriculture**
- 29 **Poetry: The Circle**
- 30 **The First Use of Purpose-built Artificial Chimney Swift Habitat in Manitoba**
- 34 **Wood Ducks Breeding Along the North Saskatchewan River Near Fort Carlton**
- 34 **Poetry: Third Day of Autumn**
- 36 **Book Review: The Raptors of North America**
- 37 **Dr. Ajaypal Singh Kahlon Receives 2020 Graduate Student Scholarship**
- 38 **Human Nature**
- 39 **Mystery Photo**



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 e-mail (although handwritten 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 e-mail or on CD. Hard copies and CDs 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.

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## NATURE SASKATCHEWAN WELCOMES NEW BOARD MEMBERS

The following new board members were elected at the Annual General Meeting, which took place virtually on June 22 over Zoom. We welcome their expertise and energy to help advance the vision and mission of Nature Saskatchewan.

### Jacquie Bolton

Jacquie's post secondary training includes a diploma from Olds College in Land Resource Management as well as a Bachelor of Science degree in Range Science from the Montana State University. From 1994 to 2012, she worked with Agriculture and Agri-Food Canada at the research centre in Swift Current. Jacquie began her work there in the soil research programs and the remaining 15 years were spent with the plant ecology research program.

Since 2012, she has been working in the field of natural health but continues to regularly enjoy time out in nature and stays involved with conservation work. Her most recent endeavor is training to become a guide with the Association of Nature and Forest Therapy.

Jacquie has previous experience serving on the Nature Saskatchewan Board (from 2006 to 2010) and is also currently on the Board of Directors for the Native Plant Society of Saskatchewan. In addition, she has been involved with her local society, The Southwest Naturalists, since the late 90s. She served as President of that society from 2003 to 2006 and is currently the Vice President.

### Josef (Joe) K. Schmutz

Joe is retired from the University of Saskatchewan where he held positions in Biology, the Centre for Agriculture Law and the Environment, and the School of Environment and Sustainability. He has studied prairie raptors for 30 years and led

Saskatchewan's Important Bird Areas Program for Nature Canada and Nature Saskatchewan from 1999 to 2002.

Joe lives with his wife, Sheila, on an acreage west of Saskatoon. They have a Passivhaus retro-fitted home, their own solar installation and their main form of transportation is by electric vehicle. Joe is also an avid bird hunter. Joe has stated that he is impressed by Nature Saskatchewan's long history of providing a voice for nature in the province, for nature interpretation, for enabling citizen science shared via the *Blue Jay*, and Nature Saskatchewan's excellent conservation programs. He believes that these strengths deserve to be maintained.

### John Patterson

Having worked in the field of environment in both the private and public sectors, John brings some useful experience to Nature Saskatchewan.

His family has ranched in the Cactus Hills, south of Moose Jaw, for 60 years. It was in these hills of native grasslands and coulees that John came to appreciate the beauty and diversity of nature in this province.

John completed a Diploma in Vocational Agriculture at the University of Saskatchewan in the early 1970s and with that joined the Sarawak, Malaysia, Department of Agriculture as a CUSO volunteer. In the 1980s, he completed a Master of Environmental Science Degree at the University of Calgary and joined an Alberta oilfield consulting firm that remediated and reclaimed batteries, well sites, access roads and pipelines. After a few years in the field, John became manager of Environmental Assessments for regulated oil and gas seismic, drilling, pipeline and production projects.

John began work overseas in 1989, and completed assignments

and projects with Environment Ministries in Indonesia, Vietnam, Philippines, Bhutan and Republics of the former Soviet Union, returning to Saskatchewan in 2010.

Since then he has undertaken some short-term assignments, taught a Project Management course at the School of Environment and Sustainability at the University of Saskatchewan, and served on the Board of Public Pastures Public Interest (PPPI), an ENGO that advocates for protection of native grassland ecosystems in Saskatchewan. 🦅

## STAFF UPDATE

**Rebecca Magnus**  
Nature Saskatchewan

We are happy to announce that Lacey Weekes has returned to her Conservation and Education Manager role, and that Ashley Vass is returning to her Rare Plant Rescue Coordinator role in September. Please join us in welcoming them back.

We would like to thank Shirely Bartz and Emily Putz for their hard work and dedication to the Stewards of Saskatchewan programs. Shirley kept the programs going while I was in Lacey's role, and Emily has been keeping Rare Plant Rescue going while Ashley is away. We would like to give a special thank you to Emily for continuing to fill roles over the past few years. We know this will not be the last you hear from them.

I am now, once again, back to my permanent role as the Habitat Stewardship Coordinator for the Shrubs for Shrikes, Plovers on Shore, and Stewards of Saskatchewan banner programs. I encourage you to reach out to any of us at any time. We look forward to continuing our important work together with your support. 🦅



# AN INSTANCE OF RODENT GEOPHAGY FROM NORTHERN SASKATCHEWAN

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In 2006, I was looking after mining exploration projects in the general area around Points North Landing in northern Saskatchewan.

Points North Landing lies 25 km west of Wollaston Lake. One day, a member of one of the field crews brought in a piece of rock that he had found while working on one of the mining properties. The rock (Figure 1) bore an odd texture on the surface that he thought was

a spinifex texture at first. Spinifex texture is often found in ultramafic volcanic rocks, which are rich in the mineral olivine, and the texture occurs when this mineral forms dendritic plates. Upon examining the specimen, I realized that the surface texture was actually due to rodent chewing. I had seen the same pattern on the surface of deer antlers that had been chewed by rodents that were after minerals like calcium.

Even though the piece of rock had been found in glacial till deposits, I recognized its likely bedrock source area. In 1971, I had worked with the Saskatchewan Geological Survey, as part of a crew mapping the geology of the east half of the Dutton Lake map sheet. This map area lies along the Saskatchewan-Manitoba border, and extends from 27.5 to 55 km south of the North West Territories border. The north half of the area that was mapped is underlain by bedrock of the Many Islands Lake belt (Figure 2). This belt of metasedimentary rocks is part of the Precambrian age Hurwitz Group. These rocks contain abundant units of carbonate-rich calc-silicates, and pure carbonate beds that in some cases occur as pure white marble. The carbonates usually weather to a brownish hue with bands of the less-weathered calc-silicates standing out from the surface due to differential weathering. The rock with the rodent chewing was identical to much of the carbonate bedrock exposed in the Dutton Lake map area. The rodent incisor marks are confined to the softer brown and more easily weathered parts of the specimen, while the more resistant silicate rich bands are not affected. Analysis done on 10 samples of the more pure



FIGURE 1: Rodent chewed carbonate-rich rock found in the glacial till in the general area of Points North Landing, Saskatchewan.

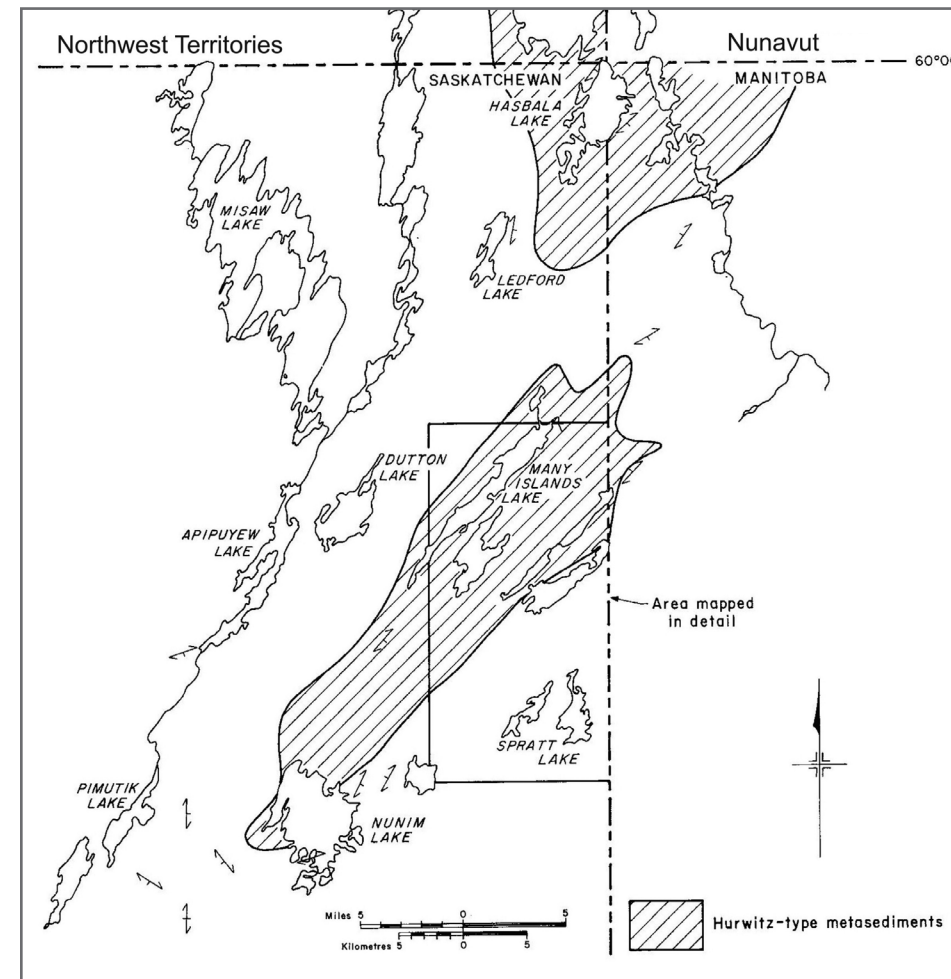


FIGURE 2: Location of Dutton Lake map sheet showing the likely bedrock source of the carbonate rich rock in cross hatched area. Map is modified from previous work on the region.<sup>1</sup>

carbonates (marble) from the 1971 geological survey and presented in the resulting report (#155) shows their calcium content varies from 8.4 to 16.8 per cent. This is a high content of calcium and is likely the main element that the rodents were acquiring from the rock. Other elements such as iron may also be present in smaller concentrations but a whole rock analysis of the carbonates is not available.

The Dutton Lake area lies 150 km or more north-northeast of the location where the specimen was found. The direction of Pleistocene glacial ice flow in this area is from north-northeast to south-southwest. This suggests that the location where the chewed rock was found is directly down-ice of the Many Islands Lake belt. As the source area

is fairly extensive, it is likely that a considerable amount of these carbonate-rich rocks occur in the down-ice glacial till deposits.<sup>1</sup> In the area where the bedrock deposits are exposed, the rodents would have an unlimited supply source. However, in the down-ice till deposits, these rocks would form a diminishing source of calcium and other minerals to supplement the rodents' usual dietary sources, such as bones and antlers.

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## POETRY

### Of The Field

Too hot,  
Too windy,  
Too many rocks,  
Where I'm pounding posts.

And yet,  
The most desirable courtesan  
In Solomon's palace  
Could not smell  
So fresh  
Could not smell  
So sweet  
As the Wolf Willow  
Where I work.

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# MASON WASPS IN OUR BACK YARD

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For over 40 years my husband, Doug, and I have lived in a suburb of Lethbridge, Alberta. Our back yard has a variety of trees and shrubs, many perennial flowers and a garden, so it was a logical decision to buy and erect a bee house in order to attract native pollinators such as mason bees and leafcutter bees. The box we chose has holes of different diameters, and, in late 2014, we attached it to a trellis on the east-facing wall of our unheated garage.

Spring 2015 came and went, with no bees taking up residence.

But in 2016 we noticed some wasps entering the cavities. They turned out not to be social wasps such as yellowjackets (*Vespula* spp.) but rather solitary wasps in the family Vespidae, subfamily Eumeninae.<sup>1</sup> Some species in this subfamily build freestanding gourd or pot nests made of mud, and they are generally referred to as potter wasps. Other species use existing cavities such as hollow stems or beetle borings, and they are referred to as mason wasps. The wasps attracted to our box fit the latter category. It should be noted that, in the literature, the descriptors “potter” and “mason” are often used interchangeably. I posted photos of the wasps on iNaturalist.ca and on BugGuide.net.<sup>2</sup> From those photos and others, Matthias Buck, Assistant Curator of Invertebrate Zoology at the Royal Alberta Museum, identified our wasp as *Ancistrocerus antilope* ssp. *spenceri*.

We learned<sup>3,4</sup> that the female mason wasp stings and paralyzes prey such as moth caterpillars and beetle larvae and takes them to a brood cell she has prepared and

in which she has already laid an egg. She then seals the chamber with mud made by mixing soil with regurgitated water or saliva (hence the name “mason”). If there is room in the linear nest she prepares another brood cell. In such linear nests with multiple cells, female eggs are laid in the inner chambers while male eggs are laid in the outer chambers. The eggs hatch and the larvae feed on the paralyzed prey, grow to mature size and then overwinter. In spring they pupate and shortly thereafter emerge as winged adults. Males, which are smaller and have a shorter development time, emerge first to await females with which they will mate. Males apparently outnumber females by a ratio of 2:1.

We watched with interest that summer as most of the bee box tubes were filled and capped. The wasps seemed to take little notice of us as they were flying to and from the nest box. Although they do have a venomous sting, mason wasps are apparently very tolerant of humans. Even though we weren’t attracting our desired bees, these adult wasps feed on nectar and pollen, and in so doing perform valuable pollinating services. In addition, if one assumes that they fly only as far as they have to in order to capture prey, then they might also be helping to control insect pests in our back yard. All nesting activity occurred during June and July; by early August the majority of adult mason wasps had disappeared.

During the winter of 2016-17, Doug built a nest box from a solid block of wood into which he drilled holes 15 cm deep by 1 cm in diameter. The box was designed for mason or leafcutter bees, which we still had hopes of attracting. The holes were lined

with parchment paper, allowing for easy cleanout and also allowing for collection of bee pupae. The larvae of mason and leafcutter bees pupate in late summer and are often removed in the fall to limit mortality due to predators or low winter temperatures, and to clean them of any mites.

Our hope of attracting pollinating bees was dashed again in spring 2017 when the mason wasps returned and showed interest in both boxes. Over the summer all cavities they could enter were provisioned and sealed. Figure 1 shows a wasp bringing in a paralyzed caterpillar, ferrying in a load of soil and constructing a cap over the entrance of the hole. When the female’s head was imbedded in the mud, I could hear a very high frequency whine. Could that be her mouthparts vibrating rapidly to render the soil-saliva mixture into a liquid slurry of the proper consistency?

In early June 2018 we decided to clean the homemade nest box and so pulled out the parchment paper cylinders. There were multiple brood cells in each cylinder, some empty and some with adults ready to burst forth. We had obviously interrupted the natural emergence process. Doug inserted fresh parchment into each tube and re-attached the box to the trellis. Soon female wasps began entering the cavities to begin another nesting season. All cavities of acceptable diameter in both boxes were provisioned and capped by late summer. That autumn we bought a much larger bee house with bamboo cylinders of various sizes and positioned it close to the other two boxes in anticipation of the next nesting season.

We cleaned out the homemade nest box in early June 2019 and, once more, wasps were emerging

as we did so. Figure 2 shows a parchment cylinder with six brood cells, an adult wasp wriggling out of a cell and a mating pair. After a short period, nesting activity commenced. By the end of July the majority of holes, roughly 215, were capped (Figure 3). Those too large or too small in diameter remained empty. If each capped cylinder produces two adults (a conservative estimate for reasons explained below), more than 400 adults could be added to the local population in 2020.

Not every egg laid by female mason wasps survives. In winter we have seen Northern Flickers (*Colaptes auratus*) and Black-capped Chickadees (*Poecile atricapillus*) tearing open capped cells. In mid-July 2019, I watched an ichneumon wasp (Hymenoptera: Ichneumonidae) probe several mud caps with its antennae. When it detected something within, it inserted its ovipositor to lay an egg on the mason wasp. The ichneumon larva will feed on and eventually kill the mason wasp larva. I have also seen a variety of flies and small species of wasps entering uncapped nest holes to, I suspect, lay their eggs on either mason wasp larvae or stored food items.

One final observation concerns mites. It has long been known that mason wasps are hosts of mites, carrying them in either specialized pouches or simple depressions on their exoskeleton.<sup>3</sup> The male wasp seen in Figure 2 is carrying a large load of mites on its thorax. In the adult stage, it is only males that carry mites, as female wasp larvae kill any mites prior to spinning their cocoons.<sup>4</sup> During mating some mites will move from the male to the female. As the female subsequently provisions brood chambers, up to 20 of her mites are transferred to each cell. The mites complete their life cycle on the wasp larva, feeding on it but not

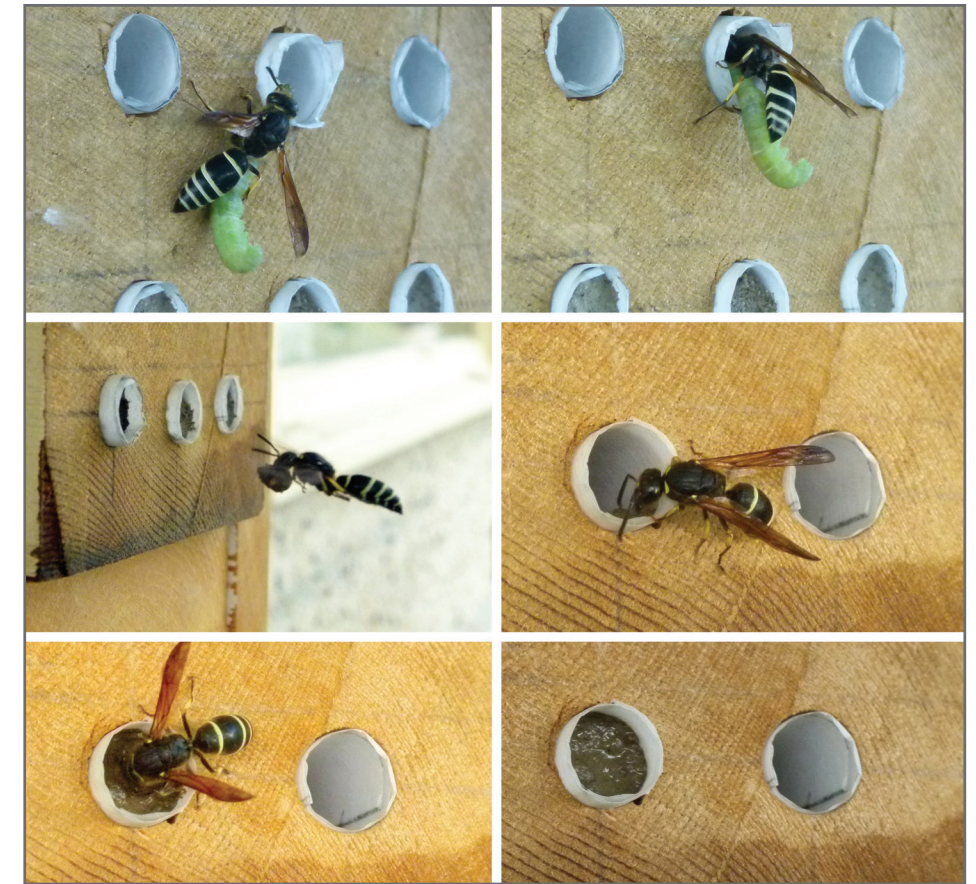


FIGURE 1: A paralyzed caterpillar is brought into one of the nest box holes. When the tube is full of provisioned cells, the wasp brings in more soil to seal the entrance. All photos courtesy of Teresa Dolman.



FIGURE 2: Brood cells fill a parchment cylinder. One wasp is emerging from a cell. Mating takes place immediately after emergence.





FIGURE 3: Original round bee house at lower left, homemade box at upper left and the newest, largest, bee house at right. Most of the tubes have been capped.

killing it. Researchers often wondered if the mason wasp received any benefit from this seemingly parasitic association. This was answered in 2008 by a study in Japan<sup>5,6</sup> where it was revealed that if a predator happened to gain access to a brood cell, the mites would swarm and bite it. If six mites were present, there was a 70 per cent chance that the predator would be killed; if 10 or more were present, the predator was always killed. By protecting their food source the mites are thereby ensuring their own survival.

Although no bees accepted our boxes, that disappointment has been more than offset by the marvelous opportunities we've had to 'sneak a peek' into the nesting behaviour

and life cycle of a native wasp that provides important back yard and ecosystem services of pollination and pest control.

### Acknowledgements

Thanks to reviewers Matthias Buck and Terry Galloway for very helpful comments and suggestions on drafts of the article.

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# THE UNINTENDED CONSEQUENCES OF SPECIES REINTRODUCTION

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One of Parks Canada's fundamental goals is to maintain Ecological Integrity (EI) in representative protected areas (National Parks) across the country.<sup>1</sup> The on-the-ground meaning of ecological integrity is regularly debated by ecologists and Park managers, and is often in the eye of the beholder. I prefer the simpler view that Parks are considered to have ecological integrity if they have the right species, in the right number, doing (and impacted by) the right thing. While simplistic, my statement suggests that a National Park has EI if it has neither too few nor too many of all the native regional species (and no non-native species) while maintaining the natural processes that govern these species, such as predation, fire, drought, and flooding.

Given that many protected areas in southern Canada occur in areas where extensive resource extraction had previously taken place, restoring EI can be challenging. A case in point is Riding Mountain National Park (RMNP), where Fisher (*Martes pennanti*) were re-introduced in 1994. Fisher, like its close relative the Pine Marten (*Martes americana*), were originally native to the area of the Park but were heavily trapped throughout the region during the fur trade era, and were considered extirpated, or locally extinct, from RMNP when it was established in 1929.<sup>2,3</sup>

Fishers are a mid-sized carnivore belonging to the weasel family,

with males having a total length, including the tail, of up to 1 metre, while females are slightly shorter in length.<sup>4</sup> The average mass of adult female Fishers range from 1.4 to 3.2 kg, while adult males range from 2.7 to 5.4 kg. Unlike the Pine Marten, which prefer conifer stands where they specialise in hunting red squirrels, Fishers are considered to be generalists, and in the Prairie Provinces, they will inhabit both boreal mixed forest and aspen (*Populus tremuloides*) stands (author, personal observation). Their main prey are Snowshoe Hares, squirrels, and grouse, but also included are small mammals and porcupines.

The reintroduction process into RMNP was relatively straight forward. A study on the feasibility of reintroducing Fisher was conducted by Park staff in 1993. This study relied heavily on previous work that was completed for the assessment of the reintroduction of Pine Marten, that, as mentioned, had also been extirpated from the Park.<sup>5</sup> The feasibility study included both an analysis of forest cover as well as a small mammal survey, ensuring that the Park had sufficient amounts of habitat and prey to support a newly introduced population. It also relied on expert opinion from trappers and officials from the Province of Manitoba.

The report concluded that both the habitat (vegetation structure) and prey base existed for a successful re-introduction and the plan was approved, and then undertaken in the fall of 1994. Fishers were live-trapped by professional trappers in communities close to the Park boundary, including from the aptly named community of Fisher Branch

in Manitoba's Interlake region.

Over two years, a total of 45 animals were introduced, consisting of 24 males and 21 females. Prior to release, all introduced animals were checked by veterinarians, and estimated age and reproductive health were assessed.

The introduction was successful and, by 2000, anecdotal reports of Fisher tracks were recorded by Park staff in most parts of RMNP. During the first formal RMNP winter track survey in 2008, Fisher tracks were located on nearly every transect in the Park.<sup>6</sup>

Within five years of release, Fishers were being captured by trappers on lands adjacent to the Park and by 2005 they made up an important percentage of trapping income for these trappers (Daniel Chranowski, pers. comm.).

The first time that I heard of Fishers leaving the Park was on April 17, 2000. A local resident who lived approximately 2 km south of the park called me about having a strange animal treed near their residence. It turned out to be a Fisher that had taken refuge in an aspen tree after being chased by the resident's dog. The Fisher remained stationary about 5 metres above the ground and we watched it for about 10 minutes. After the dog was put away and we moved back from the base of the tree, the Fisher vacated the tree and bounded into a stand of small spruce trees, where we quickly lost sight of it.

As a result of the success of the re-introduction program, Park staff began to notice an impact on certain prey species. Of particular interest was the decline in the Park's porcupine population.



Riding Mountain National Park, with its extensive aspen-white spruce mixed wood forest and abundant willow-lined wetlands, is prime habitat for this species.<sup>7</sup> This is borne out by observations made by Park staff during the 1970s. During the 10 years between 1970 and 1979, Park wardens were asked to record and report all wildlife sightings. While effort, including miles/kilometres travelled and time spent on the trails was not recorded, porcupines were relatively common, with a total of 269 individuals observed in 236 records. While no formal analysis has been completed on these observations, they represent an average of nearly 27 porcupines/year (ranging from five to 43).<sup>8</sup>

In contrast, during the 10 years of winter track survey from 2008 to 2017, no (zero) porcupine tracks were recorded on surveys of trail segments totalling 16.2 km long up to three different times each year (for a possible total of more than 48 km) in different regions of the Park. No live animals were seen during these surveys.<sup>6</sup>

I first noticed the change in the porcupine population by the early 2000s. Beginning with my arrival in the region in 1987, I remember many observations of porcupines in the Park up to 2002. Due to the relative abundance, I generally didn't consider them to be noteworthy, and many of my observations went unrecorded. However, I did record two records of young porcupines prior to, and following, the introduction of Fishers.

The first sighting of note occurred in October 1990, before Fishers were introduced. A young of year porcupine was observed walking toward my then fiancée and I on a trail in RMNP. The porcupine didn't detect us, and walked up to where we were standing on the trail.

Once it noticed our boots, it then looked up at us (reminding us of the opening scene of the Friendly Giant... "look up, look way up"), and then beat a hasty retreat, trundling off down the trail, where we later discovered it poorly hidden in thin brush beside the trail.

My second record occurred on 22 August 1999, five years following the Fisher reintroduction. I observed a female porcupine nursing its young. The adult was covered by a significant amount of white guard hairs, and I initially mistook her for a clump of grass in the sunlight. The young porcupine was black in colour and one-half to three-quarters the size of the adult. The two porcupines were approximately 15 m apart when I first noticed them, and they called to each other with whimpers while moving towards each other. Once together, I assumed the young porcupine was nursing as I could hear sucking sounds, plus sounds of contentment from the young. Nursing was accomplished by the female sitting upright on her haunches, exposing her unprotected belly and chest, allowing her young to approach, presumably without being stabbed by quills. This was my last observation of a live porcupine inside RMNP.

Beginning in the late 1990s, my records indicate finding the remains of porcupines rather than living animals. The first I observed that had been killed by a Fisher was near the Park boundary in 2000, with a second found in the winter of 2002 near the townsite of Wasagaming. Both porcupines had apparently been killed by Fishers, as indicated by the presence of tracks, but also by the tell-tale signs left behind, including the hide and the skinned-out porcupine skulls with relatively small, surgical-like holes in the base of the skull where the Fisher evidently

accessed the brains. A third record included the remains of an individual reported by a co-worker on the north shore of Clear Lake on 14 April 2005. The most recent remains of porcupine were discovered on the Park's Arrowhead trail but less than 2 km from the Park boundary, in 2014.

It's important to note that the entire regional porcupine population has not been extirpated. I have observed several porcupines outside the park boundary, including one in 2011, within 200 m of the boundary. Several have been observed within 1 km of the park, often grazing in harvested fields. For example, a former Park employee reported seeing two porcupines in a harvested canola field in 2011. Of interest, however, is that these porcupines were occupying habitats — open fields — that Fisher would typically avoid.

A single porcupine was observed inside the Park, walking down one of the access roads on 1 May 2015. As of January 2020, there have been no further reports of live porcupines inside the Park (Sean Frey. pers. comm.).

The possible extirpation of porcupines from RMNP might not be the only unintended consequence of the Fisher reintroduction program. Beginning in about 2000, Park staff began to get reports of domestic cats (*Felis catus*), primarily kept as barn cats, disappearing from farms adjacent to the Park. Among the first reports was from a warden who lived in a warden station on the north boundary.

On 18 December 2002, Gordon Pylypuik reported that a Fisher captured and killed three house cats in his yard in at the Vermillion Warden Station. "I heard a little activity at 0200 hours. A Fisher came into the yard and in turn hunted down each of my three cats, killing

them and dragging them east onto Stoney Creek and then south. I couldn't find any remnants of any of the cats, just blood along the trail. I lost the tracks along Stoney Creek as the fresh falling snow obliterated them. The Fisher was likely hauling the kills away and stashing them, as it returned three times."<sup>9</sup>

At about the same time, reports of cats disappearing from farms began to be shared with park ecologists, including incidents occurring at the residences of Park staff. The loss of cats around the Park boundary is quite contentious based on conversations with homeowners. The situation is so widespread that it is not known if barn cats can be sustained in areas of contiguous forest linking farms to the Park.

While Fishers appear to have fully adapted to life in RMNP, recent anecdotal reports suggest that the success of Fisher trapping outside the Park has declined slightly over the past several years.<sup>6</sup>

The probability of detecting Fisher on winter track survey routes remains high at approximately 42 per cent. The conclusion of the 2018 annual track survey report is that the Fisher population has peaked, and has reached an equilibrium slightly below the highest numbers observed in the mid 2000s.

The Park's Fisher population reflects a classic population growth curve seen for invasive species. While recognising that Fisher were historically present in the region, their re-introduction acted very much like the introduction of a novel or invasive species. The population growth rate mirrors that of a species moving into a new area, quickly attaining high densities as they fill all available habitat, with high reproductive and survival rates. Once the species exceeds its carrying capacity, increasing intra-

specific competition for resources, the population size tends to be reduced to a lower, but dynamic equilibrium.<sup>10</sup>

It is a mystery why porcupines have been extirpated with the re-arrival of Fishers. The range of the two species overlap throughout Canada's boreal forest.<sup>5</sup> While porcupines could be considered to be naive when re-encountering Fishers for the first time in many generations, there is no reason to believe that they wouldn't quickly adapt to the presence of this historic predator.

I propose that the extirpation of porcupines is the result of the Fisher's initial population growth, and high population in the 2000s. It is possible that high densities of Fishers were able to effectively hunt down and kill all the porcupines within the Park.

If Fishers have now reached an equilibrium population in RMNP at lower levels than the early 2000s, it is possible that a population of porcupines may recolonize the Park. While not necessarily attaining the population levels that existed prior to Fisher re-introduction, porcupines should be able to persist, reflecting the situation in most areas of the Canadian boreal forest.

In conclusion, the reintroduction of Fishers to RMNP has been successful. If porcupines have been pushed to extirpation as a result of it, however, it is a question whether we can claim that RMNP has improved ecological integrity. Only time, and continued surveillance will tell whether a lower Fisher population will allow porcupines to re-establish in RMNP.

### Acknowledgements

I would like to thank Sean Frey and Roger Baird for their work and input into both the winter track monitoring program in RMNP, as

well as Sean's quest for collecting and preserving historic species observation databases. I would also like to thank an anonymous reviewer, and the *Blue Jay* editor, for improving the text and flow of the article.

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# LMBO CELEBRATES 30 CONSECUTIVE YEARS OF BANDING

Rebecca Magnus  
Nature Saskatchewan

This year marks 30 years of consecutive banding for the Last Mountain Bird Observatory (LMBO). This great accomplishment and contribution to science is largely thanks to the tireless efforts of Alan R. Smith. In the late 1980s, Al was working on a number of projects with the Canadian Wildlife Service (CWS). One of them was to establish a migration monitoring program for boreal passerines in the province. After much searching, Al found an oasis for boreal migrants within Last Mountain Regional Park (LMRP) at the north end of Last Mountain Lake. This area also happened to be surrounded by the Last Mountain Lake National Wildlife Area, and within a Migratory Bird Sanctuary and Western Hemisphere Shorebird

Reserve Network Site. A true oasis for birds!

In 2007, Nature Saskatchewan took over the management of LMBO. The transition in management was seamless with Al staying on as the Bander-In-Charge (BIC), after retiring from CWS.

Thirty years into monitoring, with many wonderful banders assisting along the way, LMBO is still the only bird observatory in Saskatchewan that, since 1992, is a part of the Canadian Migration Monitoring Network (CMMN). LMBO is part of a great effort to better understand the migration and health of many wonderful migrants. The observatory's annual *Black and White Warbler* newsletter shared a trends analysis article showcasing the great contribution that LMBO has made to understand the movement of our fall migrants over the decades. While

most of the trends are not positive, the wealth of data collected is.

Due to the COVID-19 pandemic, we were presented with a unique opportunity to bring LMBO to the public through videos and social media. Through a series called Migration Monday, we have largely showcased LMBO and what a visit may look like, and what a visitor may learn. Through our social media channels, we are also showcasing 30 years of memories and are launching a merchandise campaign to raise funds for LMBO. The Nature Saskatchewan Fall Meet will be held, albeit a little different this year, at LMBO. Please follow Nature Saskatchewan on Facebook, Instagram, and Twitter, and subscribe to our YouTube channel for videos and celebrations.

Cheers to 30 successful years and cheers to the next great 30 years! 🐦

## Nature SASKATCHEWAN FALL MEET 2020

### CELEBRATING 30 YEARS OF THE LAST MOUNTAIN BIRD OBSERVATORY

Due to ongoing concerns related to the COVID-19 pandemic, Nature Saskatchewan has had to adjust its plans for the Fall Meet.

On Saturday, September 19 and Sunday, September 20, we invite you to join us at the Last Mountain Bird Observatory (LMBO) station for guided and self-guided tours. Transportation to and from the station, as well as lunch and refreshments, will be your own responsibility. There is no registration fee for this meet. For the safety of both our guests and the birds, there will be no admittance into the banding station. However, tours along the mist nets and presentations on the processing of the birds will be provided.

A birding tour along the lake, and a trip to the National Wildlife Area at the north end of the lake, will also be available.

To help manage group numbers so as to ensure the best possible experience, and maintain everyone's safety, please call 1-800-667-4668 or email the office at [info@naturesask.ca](mailto:info@naturesask.ca) to register for the tours. The tours will run on Saturday and Sunday at 8:30 a.m., 10:30 a.m., 12:30 p.m. and 2:30 p.m.

On Saturday evening at 7:00 p.m., via Zoom webinar, Al Smith, bander-in-charge since the inception of the station, will give a presentation on the history of the station and the information collected over the past 30 years. To attend the virtual presentation, please inform the office of your interest. You will then receive unique Zoom login information to join.

**Please note: these plans are subject to change based on the current restrictions in place due to the pandemic.**



Cedar Waxwings invade Dan Loran's bird bath in Indian Head, SK on June 9, 2020. Photo credit: Dan Loran.



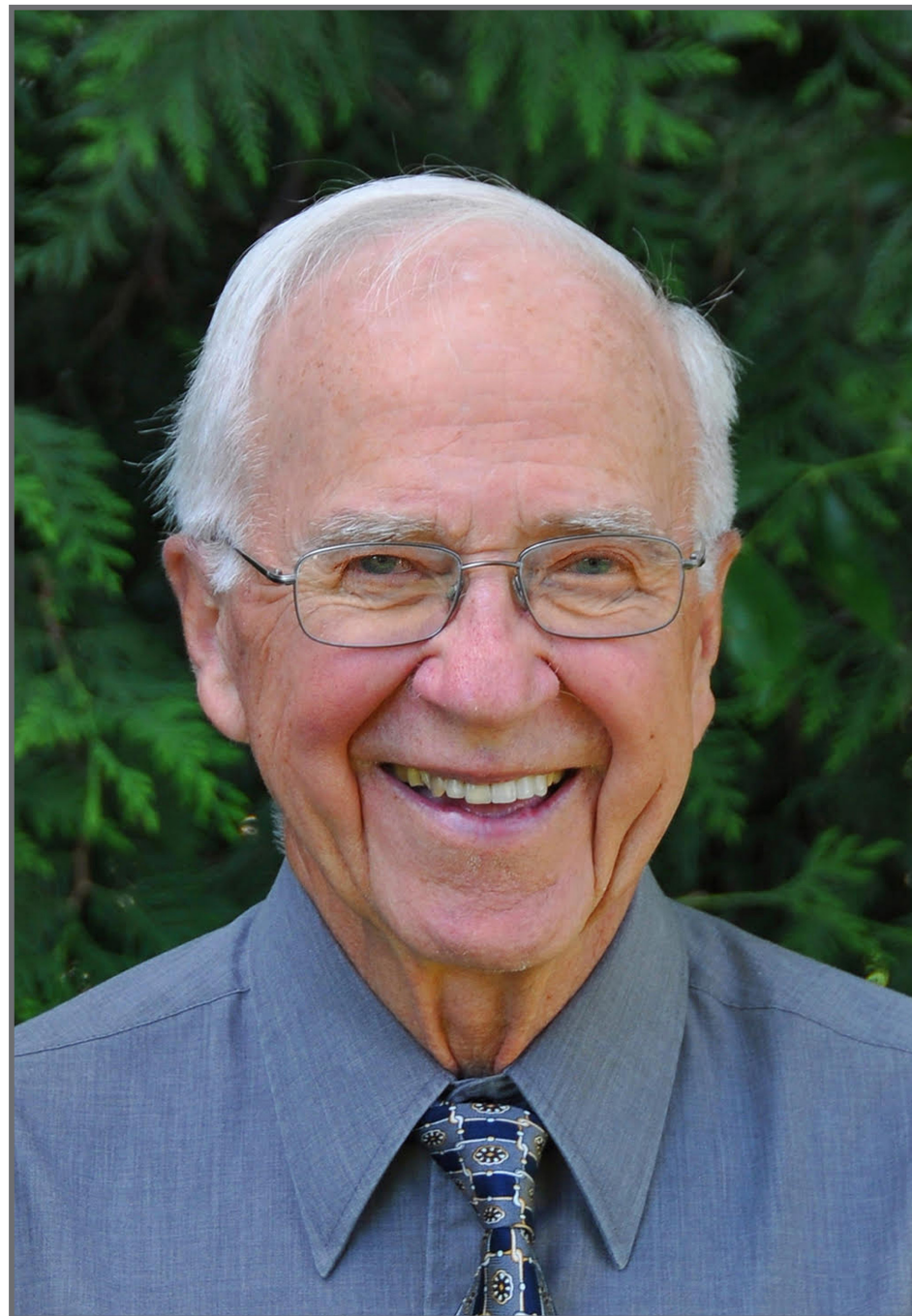
# IN MEMORIAM: J. FRANK ROY

Donna Bruce with help from  
C. Stuart Houston  
Saskatoon, SK

With the recent passing of Frank Roy, the society has lost a long-time member, a talented volunteer, a great friend, and a wonderful mentor.

Born and raised on a farm near Tullis, Saskatchewan in 1928, Frank was always fascinated by birds. He credited his parents, his uncle Steve West, aunt Lill Verrault and the local pharmacist, Frank Grose, for encouraging and nurturing his interest. In 1942, His aunt Lill happened to read a column by A.G. Lawrence in the Winnipeg Free Press, lauding a bird list written by Isabel Priestly in Yorkton. Aunt Lill was one of hundreds that week who sent 25 cents to the address provided, Box 642, Yorkton, SK, to obtain a copy of the Yorkton list. She added a second 25 cents for her nephew, Frank. Many people also sent in interesting notes about their observations, which the Grade 10 boy at Box 642 Yorkton (Stuart Houston), who had mimeographed the requested bird list, passed on to Isabel Priestly. She felt they merited printing in a new magazine, which she called *Blue Jay*. Frank treasured each issue of *Blue Jay*, and he and Stuart (who had hand-coloured the title on the first few issues in blue pencil crayon) soon became pen pals and lifelong friends. When the Saskatchewan Natural History Society was established in 1949 and took over responsibility for *Blue Jay*, Frank's membership was a given.

Frank's other love was teaching. With a B.A. from the University of Saskatchewan and a year in the College of Education, he took a teaching position in Meadow Lake in 1949. He finished his B.Ed.



while teaching there, then moved to Saskatoon in 1954, moved to Saskatoon. Frank's teaching career was rounded out with the completion of an M.A. in English in 1968, a three-year placement at the Canadian Military Base in Lahr, West Germany in 1978, three more years back in Saskatoon at Walter Murray Collegiate, as well as lecturing in English teaching methods at the university and serving on

the provincial Rhodes scholarship committee.

One of Frank's great gifts was his generous interest in others, and desire to bring people and nature together. In addition to teaching English, he developed and delivered outdoor education programs at City Park for 25 years, and students were always welcome to join him on bird hikes around the edges of classes. He also found many kindred spirits in

Saskatoon, and helped to establish the Saskatoon Natural History Society, becoming its first Vice-President in 1956. The following year he became second Vice-President of the provincial society and, in 1958, he served as President of both the provincial and the Saskatoon society.

Throughout his life, Frank continued as an active volunteer and supporter of both societies. As business manager of the provincial society, he was the "expeditor of mails" — distributing *Blue Jay*, which he considered a critical part of the society's operations. He was an active member of the Grasslands National Park committee and worked for the establishment of Athabasca Sand Dunes Provincial Park. At the local level, he organized the first May Bird Count, and was an active count participant and promoter. Frank is one of Saskatchewan's top three participants in the annual Breeding Bird Survey, having completed 59 counts, and also spent four summers working on bird surveys in the southern prairies and the Canadian Arctic for the Canadian Wildlife Service.

Frank treasured nature outings, and was much loved as a leader or companion. Beyond having a "good ear" and tremendous knowledge of birds, Frank was an enthusiastic mentor. As one member aptly described it, "taking a walk with Frank was like taking a master class in birding." In retirement, the frequency of Frank's outings increased with the emergence of the Golden Eagles, whose Thursday outings have continued since 1984. Frank also led innumerable bird hikes and tours of Western Canada, worked with guides in Kenya and teachers in Gambia to expand their knowledge of African birds, and gave many memorable presentations about nature and his travels. He also chaired the 1987 Canadian Nature

Federation conference, held in Saskatoon.

The majority of Frank's time after retirement was devoted to sharing his interests with others. The Saskatoon Society's Nature Notes, which began in 1989, benefitted both from his fine writing skills and his enthusiastic mentorship. *Birds of the Elbow*, published by Nature Saskatchewan in 1996, was Frank's homage to his home territory — a wonderfully written account of 301 species, with a historical perspective on the region's environment, wildlife, and loss of habitat. This was the first of the provincial society publications to use colour photographs, something Frank valued greatly as a way to engage readers. He then spent six years as one of the editors of *Birds of the Saskatoon Area*, published in 2002. Most significant was the achievement of something he had envisioned back in September 1958, during his presidency of the provincial society — publication of *Birds of Saskatchewan*. With Al Smith and Stuart Houston, and supported by a host of other volunteers, Frank spent 10 years working through species accounts and, to his delight, through hundreds of wonderful photos that would accompany them. He wanted the book to be beautiful as well as informative, and believed it would be of even greater value in 100 years than in 2019, as a record of the past and a benchmark of environmental change.

Frank didn't like to draw attention to his awards, but there were many. In 1983, he received the first Joseph Duffy Memorial Award for excellence in the teaching of language arts; in 1992, the first St. Thomas More Distinguished Alumnus Award, and the Meewasin Conservation Award (for leadership in conservation and environmental education); in 1993, Fellow of the Saskatchewan

Natural History Society; in 1998, the Saskatchewan Natural History Society's Conservation Award; in 2002, the Queen's Jubilee Medal; in 2005, an honorary Doctor of Laws from the University of Saskatchewan, and Saskatchewan's highest honour, the Order of Merit. In 2009, he was selected as one of 100 most distinguished graduates of the College of Arts and Science, University of Saskatchewan. In 2018, Frank, together with *Birds of Saskatchewan* co-editors Al Smith and Stuart Houston, was again a recipient of Nature Saskatchewan's Conservation Award. 🐦

I first met Frank on 18 May 1963, a day that will be indelibly etched in my mind. My mother, the late Emma Legge Smith, was always eager to cultivate my interests by enlisting the help of those who could be mentors. As she saw my attention turn from horses to birds, she asked the Saskatoon Natural History Society if I could participate in the annual Saskatoon May Day Count. I was assigned to the area southwest of Saskatoon under the leadership of Frank Roy. One of the first birds we saw was a Golden-crowned Sparrow — a significant rarity even to this day. If I was not fully aware of its scarcity, I was soon made aware by the tremendous enthusiasm of our leader. If it wasn't for the combination of seeing many wonderful birds that day, and the boundless joy that Frank exuded, I may have written the day off as "sort of fun". Instead I was hooked! I owe him so very much.

— Al Smith



# NATUREHOOD ADAPTATIONS DURING COVID-19 PANDEMIC



**Rebecca Magnus**  
Nature Saskatchewan

Normally NatureHood programming would happen hands-on in green spaces such as Wascana Lake Migratory Bird Sanctuary in Regina and the Last Mountain Bird Observatory (LMBO) in Last Mountain Regional Park. This year, we would have had eight schools visit LMBO in May and another six schools taking part in Naturehood programming in green spaces around Regina in early June.

Instead, we were challenged to come up with a different way to reach out to youth and their families and adapted our programs to be brought into families' homes. We have engaged with the general public using webinars, YouTube videos, and social media posts — taking advantage of all the online tools available to help folks continue to connect with the green spaces in their own NatureHoods. In addition, we were able to create nature packages filled with some of the activities we would have done in person, out in nature.

It was recognized that not every family would have the ability to access the videos and webinars, so we created 150 packages that went out to families through the schools we were working with.

Families also learn how they can contribute to protecting breeding and foraging habitat for birds and wildlife near their home through our Migration Monday series. This includes virtual tours of LMBO in which viewers can learn about the bird banding process. We've also been talking to families about bird migration and introducing them to different species of grassland and boreal birds, shorebirds, and waterbirds.

We have also taken some of our activities and games online. So far, this includes Nature Bingo and family treasure hunts to find nature-related observations.

Our hope is that parents can continue encouraging a connection to nature at home. The best way to do this is for parents themselves to be present and enthusiastic about the natural world — enthusiasm and joy is contagious! During this pandemic it has been heartwarming to hear about families appreciating that they've had this time to explore and learn about their NatureHoods.

We can't wait to hear stories and share the ways people have adapted to enjoying their NatureHoods, so please follow and subscribe to Nature Saskatchewan on Facebook, Instagram, Twitter, and YouTube. 🐦



# WILLIAM ROWAN AND CANADA'S 5¢ WHOOPING CRANE STAMP: THE PROPOSAL AND A SASKATCHEWAN PHOTOGRAPH

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On April 4, 1955, Canada Post issued a 5¢ stamp that featured two Whooping Cranes (*Grus americana*) in flight (Figure 1). The timing of the issue of this stamp was at a pivotal juncture in the history of this critically endangered species. By 1942, the number of Whooping Cranes had declined to only 15 or 16 individuals, although that number had risen to 21<sup>1,2</sup> when the stamp was issued. The considerable publicity that surrounded the issue of the "Whooper" stamp gave a boost to the campaign to save this rare bird from extinction. The story of the Whooping Crane's struggle back from the brink of extinction and the cooperative effort between wildlife agencies in Canada and the United States to arrest the decline and manage the species' remarkable comeback has been told many times<sup>1-5</sup>, including at least one account published in the philatelic literature.<sup>6</sup> Less known are the activities of individuals and groups, initially working independently but later together, during the development of the proposal submitted to the Post Office Department in support of a Whooping Crane stamp, and the circumstances that surrounded the photograph on which the stamp's design was based. What emerges are cooperative efforts of members of natural history societies, support from a philatelic society, and photographs

taken by museum biologists — under the eventual guidance of an artist/scientist's strong conservation ethic to lobby for the production of the stamp.



**FIGURE 1:** 5¢ Whooping Crane stamp.

The Whooping Crane is perhaps the best known of Canada's endangered species, and is a flagship species of North American wildlife conservation, symbolizing endangered species worldwide.<sup>2</sup> Although never common, Whooping Cranes once nested in the parklands of the Prairie Provinces south through North Dakota, Minnesota, and Iowa and Illinois.<sup>1</sup> The species was last recorded nesting in Saskatchewan in the 1920s.<sup>7</sup> The individuals that remained were known to winter along the Gulf Coast of Texas, most in the Aransas National Wildlife Refuge<sup>1</sup>, but for decades the whereabouts of the nesting grounds remained obscure. That ended in 1954, when the Canadian Wildlife Service (CWS) initiated aerial surveys of Wood Buffalo National Park, during which biologist William A. Fuller discovered a pair of Whooping Cranes attending a nest in the Sass River area in the Northwest Territories section of the Park.<sup>8,9</sup> Subsequent surveys confirmed the region that straddled the border between northeastern

Alberta and the Northwest Territories as the nesting area for individuals in the wild population. The number of breeding pairs recorded and young produced on the breeding ground in subsequent years could be confirmed after the birds arrived on the wintering ground, thus facilitating tracking of the population over time.

Although Whooping Cranes may live in the wild for more than 20 years, they generally do not produce young until they are at least four years of age, whether in the wild or in captivity.<sup>2,3</sup> As in most species of crane, Whooping Cranes generally lay two eggs per nesting attempt<sup>10,11</sup>, but usually only one chick, or colt, survives, as was the case of the family group photographed near Viscount, Saskatchewan, in 2017 (Figure 2). One of the eggs may be infertile, or the other chick depredated, killed by its sibling, or succumbed to inclement weather.<sup>12</sup> This brood reduction puzzled ornithologists, but in the case of the Whooping Crane, it provided a hopeful opportunity to increase the number of young produced each year. By removing one egg from some of the nests (it did not matter which egg), and incubating it artificially, either under a captive female or cross-fostered with a Sandhill Crane (*Antigone canadensis*), two Whooping Cranes could be produced from a nest instead of one. Back at the original nest, adults incubate the remaining egg and eventually rear the single colt. Ornithologists have shown experimentally that in many species two-egg clutches provide insurance against infertility of one egg or early death of the second young.<sup>13,14</sup>



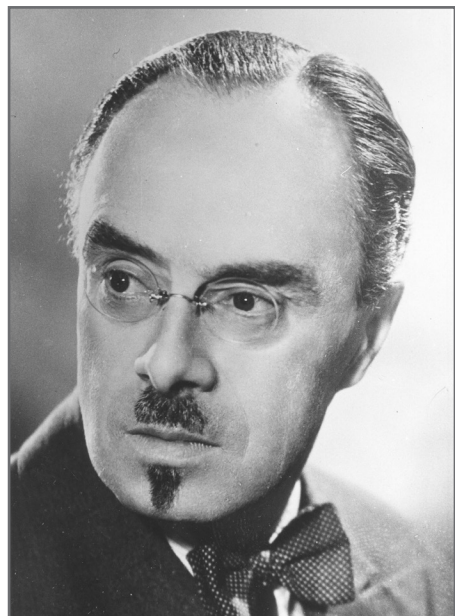


**FIGURE 2:** A pair of Whooping Cranes accompanied by a single colt, photographed near Viscount, Saskatchewan, October 11, 2017. Photo credit: V. Mann.

### The proposal and the designer

The proposal to issue a Whooping Crane stamp involved a written submission endorsed by the members of natural history societies and backed by an artist's sketch of the desired stamp. The proposal was overseen by the stamp's eventual designer, Dr. William Rowan, F.R.S.C. (Figure 3), a renowned artist and zoologist at the University of Alberta, who signed the first-day-of-issue cover (April 4, 1955) shown in Figure 4. Also issued on that date was a stamp that portrayed the Muskox (*Ovibos moschatos*), an ungulate that inhabits northern regions. These issues supported Canada's National Wildlife Week.

Although Rowan never saw a Whooping Crane, among the many



**FIGURE 3:** Stamp designer, William Rowan. Photograph courtesy of the University of Alberta Archives.



**FIGURE 4:** Cover post-marked April 4, 1955, the first day of issue of the stamp, commemorating the decline of the Whooping Crane. Mailed at Edmonton and cancelled AIR PARCEL POST FOR SPEED, the envelope is signed by William Rowan, designer of the stamp. (Archived in the Royal Saskatchewan Museum, whose field biologists played important roles in the early recognition of the Whooping Crane's decline and the initial steps in its recovery.)

places he sought birds for study in their natural habitats was the muskeg region north of Edmonton where the possibility that the cranes nested was never far from his mind. Publicity before the stamp was issued incorrectly credited him with the discovery of the Whooping Crane's current nesting ground<sup>15</sup>, but his observations and those of others over the years revealed an urgency to publicize the plight of this majestic species. In the 1920s, with the help of field companions, Rowan spent many summers exploring the muskeg region in search of the breeding ground of a little-known shorebird, the Short-billed Dowitcher (*Limnodromus scolopaceus*). The dowitcher's nest was eventually discovered and Rowan described a new subspecies<sup>16,17</sup>, but the Whooping Crane eluded him despite investigating first hand numerous reports of nesting in the region that came his way over the years, some considered reliable.<sup>18</sup> One of Rowan's correspondents was Percy A. Taverner of the National Museum of Canada in Ottawa (now Canadian Museum of Nature), to whom, in a letter dated October 26, 1939, Rowan related a conversation with several local

residents who were picking berries in a marsh. They told him how they had encountered a whooper, but without a gun, they "were done out of a first-class feed."<sup>19</sup> The widespread Sandhill Crane, however, nested in the muskeg region and a new subspecies was eventually named in Rowan's honour based on specimens he collected.<sup>17,20</sup>

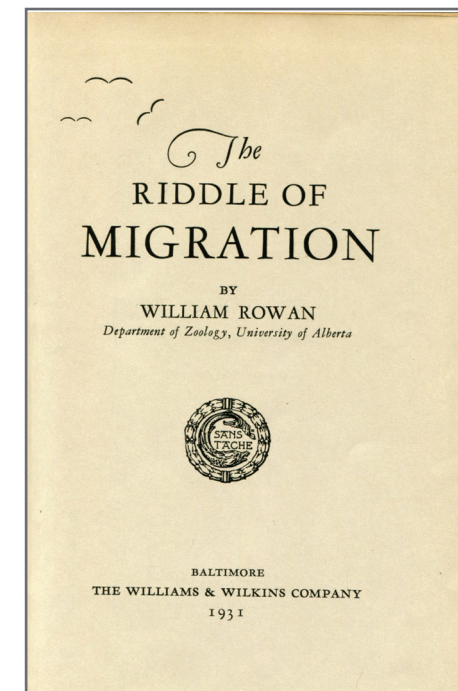
William Rowan combined expertise as a field biologist and laboratory zoologist, and showed that the two approaches can be brought together successfully at a time when field studies were struggling to be accepted, particularly by the President of the U of A.<sup>18</sup> Armed with many talents and interests — avian physiology and reproduction, migration of birds and fishes, avian taxonomy, variation in birds' eggs, biological cycles, and nature art — Rowan became an early champion for the conservation of wildlife and its habitats. In scientific circles, Rowan was best known for pioneering studies of the influence of increasing periods of day light — photoperiod — on initiation of migration at high latitudes. He conducted experiments in the 1920s in aviaries erected in

his own backyard in Edmonton. He wondered whether the northward movement of migratory birds in spring was stimulated internally by the gradual increase in the amount of light each day, whereas the southward movement in fall for many species occurred under conditions of ever-decreasing daylight. He also wondered whether seasonal reproductive activities of these birds were similarly influenced. Rowan initially focused on the Dark-eyed Junco (*Junco hyemalis*)<sup>21</sup> for the experiment, but later also studied the American Crow (*Corvus brachyrhynchos*)<sup>22</sup>, both species abundant spring and fall migrants in the Edmonton area.

Rowan hypothesized that if seasonal trends in photoperiod influenced migratory behaviour, subjecting birds artificially to decreasing photoperiod in spring and increases in fall would upset their normal migratory habits. The birds would be predicted to fly in the opposite, that is, the "wrong" direction — south in spring, north in fall. The results were inconclusive. Immediately upon release birds were observed flying south in spring and north in fall, but none of the banded and, hence, identifiable birds were encountered by members of the public late enough following release to support the predicted misdirection of movements. Nevertheless, Rowan became known as the man who made "crows fly backwards." He published his initial findings in 1926, in one of the prestigious journals in his field of the day.<sup>21</sup> Additional papers followed before he summarized this work in *The Riddle of Migration*<sup>23</sup> (Figure 5), published in 1931 and written to appeal to a wider readership.

Taverner directed Rowan to the work on Whooping Crane conservation being conducted in Saskatchewan by personnel at

the Saskatchewan Museum of Natural History (hereafter Royal Saskatchewan Museum [RSM]) and by members of the Saskatchewan Natural History Society (SNHS, now Nature Saskatchewan).<sup>24</sup> Rowan had collected what information he could on this species' status in Alberta, and by 1930 he was supplying information to Fred Bradshaw, chief Game Guardian of Saskatchewan and director of the Museum.<sup>18</sup> Bradshaw was well placed to coordinate this work and initiated a campaign to increase the public's awareness of the plight of the Whooping Crane, given that the chief migration route passed through Saskatchewan. Where the birds went after travelling north of the settled region was unclear. With the discovery of the wintering ground in Texas, Bradshaw assumed the task of locating the crane's summer home, and its safe keeping in Canada.<sup>18</sup> Bradshaw was among those who recorded the last known Whooping Crane nests in Saskatchewan, in the early 1920s.<sup>5,7</sup> It would be another 20 years before the importance of Wood



**FIGURE 5:** Title-page of *The Riddle of Migration* by William Rowan in which he summarized successes and failures of pioneering experiments on the influence of photoperiod on reproduction and timing of bird migration, conducted in the 1920s.

Buffalo was discovered.

On November 3, 1950, the Post Office Department invited Canadian artists to submit designs for possible use on Canadian stamps.<sup>26</sup> In response, Rowan submitted sketches of big game animals to the stamp competition, but all were rejected in a form letter on June 28, 1951, that stated "... the Selection Committee did not recommend [his] work for acceptance ... However, the interest you have displayed in this matter and the work done is greatly appreciated."<sup>27</sup> Noticing that the Right Honourable Vincent Massey, whom Rowan had met a few years earlier in London while on leave from his University, had chaired the stamp competition, he wrote to Massey on September 23, 1951, to inquire whether it would be possible to learn why his sketches "didn't suit the judges."<sup>28</sup> There was apparently no response, but Rowan was undaunted. He wrote to Massey again on January 31, 1953, this time exploring the idea of a stamp featuring the rare Whooping Crane: "I would be most grateful if you would give this idea your careful consideration, and if you are in sympathy, to inform me how to proceed. During the past few months I have made this suggestion to numerous people, including two well-known stamp collectors, and they seem agreed that it would be popular as a stamp and both unique and timely as a conservation measure."

Rowan had already envisioned an image of a stamp, showing Whooping Cranes migrating over a bend in the Athabasca River, over which he had recently flown in a light aircraft, and he assumed over which at least some of the few remaining cranes would fly. He offered to send a rough sketch.<sup>29</sup> Massey must have been encouraging, because Rowan set about to prepare a submission to the Post Office to issue a Whooping



Crane stamp, but he needed societal support and a photograph on which to base the design. Letters followed to naturalist and philatelic societies in western Canada, soliciting support for a stamp.<sup>30</sup> Backed by his University, and with considerable input from the Vancouver Natural History Society and the SNHS, Rowan submitted a proposal for a stamp featuring the Whooping Crane.<sup>31</sup> The photograph he used was taken in Saskatchewan during the Whooping Crane's migration in the fall of 1953.

The level of support for this conservation initiative, and for the stamp, is illustrated by the following announcement to members of the Vancouver Natural History Society, from the honorary secretary, C.B.W. Rogers<sup>30</sup>:

The Vancouver Natural History Society is sponsoring a plan to assist in solving the mystery of the nesting grounds of the Whooping Crane, and help save it from imminent extinction. We wish an air-mail stamp and cancellation to be made for Canada and the United States, so that by such public notice everyone may be aroused to this danger...

We want every interested individual and organization in Canada to write a letter addressed to myself, .... and to stress the value such a stamp would be in saving this magnificent bird. When all the letters are finally received, they will be bound into a folio, supporting an accompanying letter we will send to the proper authorities in Ottawa, requesting that consideration be given to the issuing of such a stamp ... Once the request is granted, steps will be taken to have the stamp made.

We believe this idea will appeal to you, and that you will wish to help us in the way we have suggested.

### The design – Whooping Cranes in flight

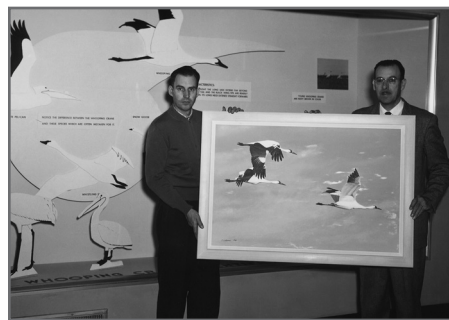
In an early note filed in the

RSM, Fred G. Bard told of an encounter with Whooping Cranes he experienced with his father (Fred Bard, Sr.) and Fred W. Lahrman at the sanctuary at the north end of Last Mountain Lake, Saskatchewan, on September 29, 1949. The population was near its all-time low and the threat of extinction was on their minds:

Sept 29/49 (Dad's birthday) – 3 seen (5:40 pm) feeding on cultivated land in stubble in sanctuary N end of Last M[ountain] Lake [by] F. Bard Sr, Fred G. Bard, and F. W. Lahrman. They remained only about 3 minutes at 300 yards and then flew south into arms of lake, passed one arm settling on 2nd arm from east side. No calls at all. This sight was impressive. The three majestic creatures rose into the light of the setting sun. All three of us drank in their ra[re] beauty, perhaps these will be the last we'll ever see.

Bard and Lahrman saw Whooping Cranes again. The photograph of the birds in flight, on which the stamp's design was based, was taken by Fred Lahrman, a field worker, artist and photographer at the RSM who, with then director, Fred G. Bard<sup>32,33</sup>, had extended Bradshaw's efforts to monitor the species' migration through Saskatchewan. The photograph was taken at a body of water near Herbert, Saskatchewan, on the 5th of November, 1953<sup>24</sup>, not on the 3rd, as stated on a framed copy of the photograph archived in the RSM (Figure 6). The discrepancy in the date apparently arose because both men actually left Regina on November 4 (see field notes below), whereas the birds were not located until the next day, after an overnight stay in Herbert.

The following afternoon, the men returned to the site where the cranes had been sighted the previous day, accompanied by a high school student interested in sketching the



**FIGURE 6:** Fred W. Lahrman (left) and Fred G. Bard holding the photograph of Whooping Cranes taken by Lahrman near Herbert, Saskatchewan, on November 5, 1953. The photograph formed the basis of the design of the first Whooping Crane stamp issued by Canada Post. Image courtesy of the RSM.

birds. Bard spent the afternoon making plaster molds of the footprints and gathering sedge for the crane case in the museum. Bard's handwritten notes, filed in the RSM and transcribed verbatim below, describe the encounter with the Whooping Cranes, and also reveal challenges faced using cameras of the day.

Nov 4/53 – Mr. Len Chase of Herbert phoned to say birds are the whooping cranes. Fred [Lahrman] and I leave about 2:30 for Herbert, we stop overnight at Hotel. See Fred Lietz who has land on north side of Francis Lake (East 1/s of 5, 18, 9A). At 6:30 Fred Lahrman and I drove to north side of lake and stopped at the school which overlooks the lake. This was 7 am. The birds were immediately spotted feeding in the stubble. We observed them for a few minutes and circled north and East to approach for pictures when the light was more suitable. We were within 300 yards when they suddenly took flight and lit about ¾ mile West.

Lahrman walked down to the lake and circled the shore following the draws. I retraced in a circle to approach from the north and west. We met at the washed out road allowance about ¼ mile east of the feeding cranes. We were planning our approach as we lay in the ditch – when the birds took off again. This time they flew towards us and continued until they came within 100 yards and they turned,

passing north of us to within 50 yards with perfect light on them. They continued their flight until they were ¾ of a mile [e]ast. We circled to within 400 yards and then crawled towards them.

Fred Lahrman and I crawled to within 200 yards of them – he then found he had 2 more exposures left. I continued on until I reached the mud flat. Here there was no cover but sparse clumps of rushes. I dodged from one to the other to within 100 yards. The birds stood erect and all three trumpeted loudly, higher at times and different to Sandhill cranes. This beautiful display was performed about 6 times. As I retraced my steps they flew [w]est again.

Rowan was aware of the publicity this photograph had garnered and contacted Bard in late 1953 about possibly using it in the stamp's design. On January 26, 1954, Bard wrote to Rowan, stating "I had given your letter to Mr. Fred Lahrman to acknowledge the request for a Whooping Crane picture. He was handling this and I regret I have left your correspondence until now to answer your inquiry." Bard stated further that "When we photographed the Whooping Cranes at Herbert on November 5th, we wondered whether or not these three would safely make the journey south. At this time, we know they did."<sup>34</sup>

Several years later, the RSM highlighted its special role in the conservation of the Whooping Crane, which was centred on Lahrman's famous photograph. The accompanying caption read:

Fred Lahrman, a noted artist who worked at the [RSM], helped to raise awareness about Whoopers by featuring them in museum diorama paintings, and by capturing them on film. One photo of three flying Whooping Cranes taken by Mr. Lahrman was called "the most exceptional photograph of the week" by

Associated Press and was used by most Canadian and U.S. newspapers. This photo won an award of the "Most Outstanding Wildlife Picture of the Year" and was used on a Canadian postage stamp.

Lahrman was involved with Whooping Crane conservation for more than 50 years<sup>35</sup>, and many of his photographs of Whooping Cranes appeared in the pages of *Blue Jay*, the journal of the SNHS.<sup>36</sup> Lahrman's work continued with the preparation of a diorama at the RSM that featured a pair of Whooping Cranes at a nest with the typical clutch of two eggs (Figure 7).<sup>37</sup> According to Museum records uncovered by Glenn Sutter and Marlon Janzen, the diorama may have been based on Valeport marsh at the south end of Last Mountain Lake. The caption on a reference photo noted it was "looking W and N, before the railroad went through the marsh" — which presumably happened sometime in the 1950s (Sutter, *email*, March 11, 2019). The exhibit apparently was based on two of the last nests confirmed in Saskatchewan, found by Fred Bradshaw in the Kindersley-Kerrobot area in 1922.<sup>7</sup> Sutter presumed that the real nests were used as guides to determine how the display nest was presented, whereas the depicted landscape was based on the Valeport marsh.

### The stamp is issued

Drafts of several sketches of the stamp are archived at the University of Alberta (WR papers, box 48, folder 1088), with one shown in Figure 8. The stamp was initially proposed as an airmail stamp, with a value of 10¢, but it was eventually issued with a value of 5¢. One change in the final version involved correction of the shapes and proportions of black in the cranes' outer primaries, or flight

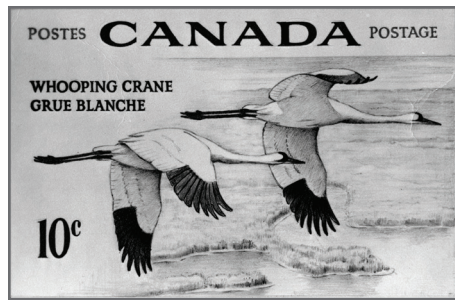


**FIGURE 7:** Diorama featured in the Royal Saskatchewan Museum that depicted a pair of Whooping Cranes and nest containing the typical clutch of two eggs. Image courtesy of the RSM.

feathers. Rowan indicated that the birds, as depicted in Lahrman's photograph, were sketched against a background of the Athabasca River in northern Alberta. In his words, "This is a sketch design which has taken some note of engraving requirements, but is open to modification. The scene below represents the valley of the Athabasca River as seen from a plane at about 5,000 feet. This is one of the known fly-lines of the whooping crane."<sup>38</sup>

Also proposed was a cancel to be used to promote awareness of the Whooping Crane's plight. On March 29, 1955, Rowan wrote to Bard stating, "On Monday next my whooping crane stamp is coming out. I have been in touch with the Post Office at Ottawa to find out what I can about cancelling devices with a suitable slogan and the situation is this. They will only permit one cancelling die in a single city in each of the three prairie provinces and the obvious places seem to be Winnipeg, Regina and Edmonton."<sup>39</sup> Ducks Unlimited and the Edmonton Bird Club covered the cost of the dies used at Winnipeg and Edmonton, respectively; eventually the RSM paid for the cancel used at Regina. Two days after the stamp was issued, Bard congratulated Rowan, stating "... it's a nice tribute to have something like this appear for distribution on our postage stamp to appear during Wildlife Week and to contribute





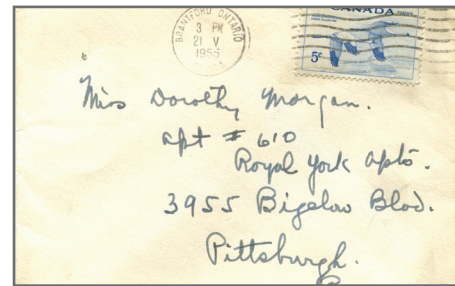
**FIGURE 8:** Rowan's pencil sketch of the Whooping Crane stamp was reproduced as shown, except for the denomination (University of Alberta Archives Accession UAA 69-16 1084).

coinciding with the migration of these rare birds. I hope we are successful in holding the line and some indication will be that the birds can increase, although it seems too much to hope for."<sup>40</sup>

On March 30, 1955, Rowan asked David Adamson of the Post Office Department: "... [to] kindly send a die to each of the Post Masters in Winnipeg, Regina and Edmonton. If you could get them through at your earliest convenience, I would appreciate the effort. The cranes could get north here in a matter of between two and three weeks and I gather from your comments the dies could be manufactured and delivered in about that time."<sup>41</sup> The preferred, and final wording, as it turned out, was: "PROTECT WHOOPING CRANES NOW FACING EXTINCTION"

Adamson wrote to Rowan on the day of issue that the "Purchasing and Stationery Division was ordering three special cancelling dies to be distributed to Winnipeg, Regina and Edmonton, with instructions to have the dies placed in operation immediately upon receipt. In order that we may advise the Postmasters concerned, will you please let us know when these dies should be removed from the cancelling machines."<sup>41</sup> The dies were first used several days after the stamp was issued, to coincide with the average spring-arrival of the migrating cranes on the Canadian Prairies.<sup>42</sup> A cover cancelled at Winnipeg on April 25,

1955 (shown in reference #6, p. 88), illustrates this use. Whether this slogan cancel was used again in late September and October to coincide with the Whooping Crane's fall migration, as planned, was not confirmed.<sup>43,44</sup> As expected for a letter mailed outside the three cities, one mailed at Brantford, Ontario, on May 21, 1955 (Figure 9), was machine cancelled, although by that date most or all of the birds would have migrated through Saskatchewan.



**FIGURE 9:** Cover bearing the 5c Whooping Crane stamp postmarked at Brantford, ON, on May 25, 1955.

Rowan's extensive correspondence with natural history societies and Canada Post during the submission of the proposal and selection of the design of the Whooping Crane stamp is archived at the University of Alberta.<sup>30</sup> The stamp garnered widespread publicity and generated considerable interest among stamp collectors and philatelists, and Rowan was widely praised for his efforts. He received numerous requests for autographed first-day covers, articles were published in philatelic journals, newspapers and magazines, and media requests for interviews were granted in the weeks and months that followed. As hoped, the stamp helped carry the conservation message across the country.

Particularly interested in the stamp was philatelist Lorne Bentham, who wrote to Rowan on February 12, 1957, requesting information that pertained to the conception of the idea for the stamp and the proposal to the postal authorities, samples of the stamp's design,

nature of support from philatelic groups, details of Rowan's philatelic interests and affiliations with stamp clubs (there were none), and current Whooping Crane numbers (down to only 24).<sup>45</sup> In characteristic fashion, Rowan responded in great detail to Bentham's request in a letter of February 21, 1957.<sup>45</sup> With this information, Bentham published an article in *Scott's Monthly Journal* and other philatelic journals.<sup>46</sup>

Not everyone was so charitable. No one disputed the worthiness of a stamp promoting the conservation of the majestic and declining Whooping Crane, but lapses of fact emerged in several articles. For example, Rowan was compelled to correct several misstatements in an article entitled "Whooping Crane Model for Stamp", published in the *Edmonton Journal* on 11 September 1956.<sup>47</sup> Rowan set the record straight:

I am sorry that Mrs. Barrie doesn't like my whooping crane stamp (to be quite honest, I don't either!) but one can hardly judge the wings of a flying bird from a cabinet example stuffed in a standing pose. The wings of my birds are based on dozens of sketches of and photographs of our large sandhill crane in flight ("sand" crane as it is miscalled in your article) obtained in our local muskegs where it breeds, while the final verdict, just before the finished design went to Ottawa engravers, came from my friend Peter Scott, the world's premier wildfowl artist and doubtless its most competent draughtsman and critic of wings in flight. The wings of all cranes are structurally similar. Mrs. Barrie's crane had no connection whatever with the production of the stamp.<sup>48</sup>

The Whooping Crane to which they referred had been shot by W.H. Barrie at Quill Lake, Saskatchewan, in 1913; the mounted bird was still standing in Mrs. Barrie's living room. Rowan continued, "As for

other specimens of whooping cranes preserved in Canada, so far from numbering only three as stated in your article, the Royal Ontario Museum alone has a long series of them, while the bird in the Luxton Museum at Banff (not mentioned either in your article) is not even surpassed by Mrs. Barrie's fine specimen."<sup>48</sup> This was not the first time that Rowan, as a scientist, had been called upon to respond to criticism and misrepresentation of the facts.

### Beyond Canada

The Whooping Crane was of international concern, however, and Rowan assumed a Canadian stamp featuring the species would carry an even greater message if the United States also featured this species on a stamp. His inquiries were generally received positively. On December 29, 1953, ornithologist Robert A. McCabe of the University of Wisconsin wrote to Rowan, stating "Your suggestion for using the whooping crane on a Canadian and U.S. stamp sounds like an excellent idea to me. I talked over the general idea with [ornithologist] Bill Schorger and we both think your idea of getting the Audubon Society behind it is the best way to exert pressure, at least here in the U.S."<sup>49</sup> Additional support came from the SNHS, which passed a resolution at the 1954 annual meeting to request the National Audubon Society to approach United States postal authorities to issue a Whooping Crane stamp, "like the proposed five-cent Canadian stamp."<sup>24</sup> On November 22, 1957, a 3¢ stamp featuring a family group of Whooping Cranes, which included two recently hatched colts (Figure 10), was issued by the United States Post Office. The population of Whooping Cranes in the wild at that time stood at 26 individuals.<sup>2</sup>



**FIGURE 10:** Three-cent Whooping Crane stamp issued by the United States Postal Service, November 22, 1957.

Canada Post issued a second stamp featuring a somewhat stylized Whooping Crane on August 20, 2018, which completed the "Birds of Canada" series. The individual depicted was likely in its first or second year, as suggested by the brown feathers of the plumage of the back and on the wings. A few months later, a historic total of 505 Whooping Cranes was counted on the wintering grounds in Texas. This number is considered to be the halfway point toward a milestone of 1,000 birds in the migratory Aransas-Wood Buffalo population, which may be reached in 20 years at the population's current growth rate. If that number remains stable for the 10 years that follow, the species' status as endangered may be reassessed.<sup>50</sup>

### Acknowledgements

Many people provided photographs and information filed in archives or in other institutional files, for which I am grateful: Donna Bruce, Jordan Ignatiuk, Val Mann, Stan Shadick, Phillip Taylor (Nature Saskatchewan); Mark Dyck, Robert Grocholski (Regina Philatelic Club); James Franks (William Rowan papers, University of Alberta Archives); Kathy Hartley (Vincent Graves Greene Philatelic Foundation); Glenn Sutter, Marlon Janzen (Royal Saskatchewan Museum); Gregory Rand (Canadian

Museum of Nature); and Janet Snell (Nature Vancouver). Mark Brigham and Glenn Sutter offered comments on the manuscript.

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14. Opinions varied on the advisability of egg removal and its effects on Whooping Crane recruitment, but the program helped to develop captive flocks, supported reintroductions, and reduced variance in reproductive success in the Aransas-Wood Buffalo population. There are no current plans to remove eggs again.<sup>2</sup> As an early supporter of this program, the SNHS found itself in the middle of a controversy, involving the U.S. Fish and Wildlife Service and the National Audubon Society, which was opposed to removing any birds from the wild.<sup>24</sup> The SNHS's stance, however, was clear. In his March 1957 editorial, George A. Ledingham reiterated the Society's support for "any management program that the International Whooping Crane Advisory Group would propose ... "that healthy cranes could [be raised] from fertile eggs more successfully than cranes would in the wild and he thought that the program should begin with captive birds, and extend to rescuing some of the eggs from which young are not raised in the wild" (*Blue Jay* 15(1):1, 1957).

15. Pre-and post-issue publicity was widespread: "Whooping Crane stamp gains western support", *Calgary Herald*, February 15, 1954; "City zoologist's design used for Whooping Crane stamp", *Edmonton Journal*, December 8, 1954, p. 35 (reprinted in *The Canadian Philatelist* 6(1):5, 1955; "News of the World of Stamps", *New York Times*, February 27, 1955, p. 13; "Regina Philatelic Society Whoops it up for Whoopers", *The Canadian Philatelist* 5(6):19, 1954; "Whooping Crane is on New Stamp", *The Canadian Philatelist* 5(10):10, 1955.

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19. William Rowan to P.A. Taverner, October 26, 1939, cited in reference #4 (p. 201). (The letter was not located in the files of the Canadian Museum of Nature.)

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22. Rowan W (1930) Experiments in bird migration. II. Reversed migration. *Proceedings of the National Academy of Sciences* 16:520-525.

23. Rowan W (1931) *The Riddle of Bird Migration*. Williams & Wilkins Co., Baltimore, MD. 151 pp.

24. Belcher M (1996) *The legacy of Isabel Priestly: Saskatchewan Natural History Society 1949-1990*. Saskatchewan Natural History Society, Special Publication, No. 19. 286 pp. (High-lighted were efforts to publicize the plight of the Whooping Crane in Saskatchewan and beyond, initiated from the outset by Isabel Priestly, and to provide support for conservation initiatives, frequently through resolutions at annual meetings of the SNHS. For example, the Society worked with the Whooping Crane Conservation Association, among other groups, and declared 1954, the year that preceded the issue of the stamp, as the "Whooping Crane Year", and adopted the motto "Protect the Whooper."<sup>25</sup>)

25. Stueck RP (1953) A message from the President. *Blue Jay* 11(4):1.

26. Post Office Department. Invitation for postage stamp designs. (University of Alberta Archives [UAA] William Rowan [WR] papers, box 48, folder 1085).

27. L.J. Mills, Director of Financial Services, Post Office Department, Ottawa, to Rowan, June 28, 1951 (UAA, WR papers, box 48, folder 1085, Part 3).

28. Rowan to the Right Honourable Vincent Massey, September 23, 1951 (UAA WR papers, box 48, folder 1086).

29. Rowan to the Right Honourable Vincent Massey, January 31, 1953 (UAA WR papers, box 48, folder 1086).

30. Rowan's letters soliciting support for the proposed stamp, including announcements and correspondence pertaining to the joint proposal, are archived at the University of Alberta (UAA WR papers, box 48, folder 1088).

31. Anonymous (1954) Regina Philatelic Society whoops it up for whoopers. *The Canadian Philatelist* 5(6):10.

32. Bard FG (1958) Whooping Cranes, 1958. *Blue Jay* 16:11-14.

33. Apperley R, Lahrman FW (1990) In memorium— Dr. Frederick George Bard. *Blue Jay* 48:168-170.

34. Fred W. Bard to Rowan, January 26, 1954 (UAA WR papers, box 48, folder 1086).

35. Scott L (2003) Fred W. Lahrman, 1921-2003. *Blue Jay* 61:186-188.

36. Lahrman FW (1972) The Whooping Crane in Saskatchewan. *Blue Jay* 30:146-150.

37. Photograph of the diorama in *Blue Jay* 13(2):16-71, 1955. (Everything but the mounted birds were destroyed in a fire in 1990 [G.C. Sutter, *email*, March 11, 2019].)

38. It was premature for Rowan to describe this region as part of the Whooping Crane's migratory route, because the nesting ground and the route used to reach it had not been confirmed when the proposal was submitted. The photograph was taken about one year before the nesting ground was discovered.

39. Rowan to F.G. Bard, March 29, 1955 (UAA WR papers, box 48, folder 1088).

40. Rowan to D. Adamson, March 30, 1955 (UAA WR papers, box 48, folder 1088).

41. D. Adamson to Rowan, April 5, 1955 (UAA WR papers, box 48, folder 1088).

42. F.G. Bard to Rowan, April 6, 1955 (UAA WR papers, box 48, folder 1088).

43. Rowan to F.G. Bard, May 4, 1955 (UAA WR papers, box 48, folder 1088).

44. Of nine first-day covers of this issue I examined on the Internet, plus one shown in reference #6 (p. 88), nine were postmarked at Ottawa, and one at Ingersoll, Ontario; none was cancelled with this slogan.

45. L.W. Bentham to Rowan, February 12, 1957; Rowan to Bentham, February 21, 1957 (UAA WR papers, box 48, folder 1088).

46. Bentham LW (1957) Dr. Rowan and designed Canada's Whooping Crane 5¢ of 1955. *Scott's Monthly Journal* 38(3):48-49.

47. Anonymous (1956) Whooping Crane Model for Stamp, *Edmonton Journal*, September 11.

48. Rowan to Editor, *Edmonton Journal*, September 20, 1956. (Peter Scott was an ornithologist and artist with the renowned Severn Wildfowl Trust at Slimbridge, England.)

49. Robert A. McCabe to Rowan, December 29, 1953 (UAA WR papers, box 48, folder 1086).

50. Devokaitis, M (2019) Whooping Crane population hits historic high in 2018. <https://www.allaboutbirds.org/whooping-crane-population-hits-historic-high-in-2018> (accessed February 23, 2019). 🐦

# PRAIRIE POTHoles AND SWALLOWS: A CASE FOR CONSERVATION IN PRAIRIE AGRICULTURE

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Wetlands, ponds, potholes, or sloughs — whichever name is used, millions of wetland basins are integral features on the northern prairie landscape. Though it is likely most readers of this article will be familiar with prairie pothole wetlands and their ecological importance, I would be remiss in failing to provide some background. The prairie potholes are glacially-formed basins that can be filled by precipitation, primarily snowmelt, forming wetlands which may contain ephemeral to permanent ponds (i.e., the open water within a wetland).<sup>1</sup> Prairie wetlands and associated ponds provide important habitat for many species of flora and fauna, including a diversity of birds; however, the prairie landscape has been heavily altered by human settlement and extensive agricultural land use, including the drainage and conversion of wetland basins.<sup>2,3</sup> Estimates suggest that 40 to 70 per cent of historical prairie wetland basins have been lost in Canada, though only rough estimates of wetland loss can be inferred from the limited historical information.<sup>2</sup> Nevertheless, remaining prairie wetlands can act as important biodiversity "hotspots" on the predominantly agricultural landscape of the Prairies.<sup>4,5</sup>

Among the birds that make use of wetland ponds are Tree Swallows (*Tachycineta bicolor*), which are a member of the foraging guild known as "aerial insectivores," a group of birds that capture insect prey while in flight. In general, Tree Swallows often feed on aquatic insects emerging from water, including wetland ponds,

and aquatic insects are similarly prevalent in the diet of Tree Swallows nesting at sites with wetland ponds in southcentral Saskatchewan.<sup>6,7</sup> Because Tree Swallows have somewhat "flexible" diets, they may "switch" to feeding on terrestrial insects in areas where aquatic insects are less available.<sup>8-10</sup> Still, such a dietary switch is perhaps not without cost. Recent evidence suggests that not only are aquatic insects a source of energy for swallows, but these insects may also act as an important source of essential nutrients. In particular, aquatic insects can act as a dietary source for omega-3 long-chain polyunsaturated fatty acids, which may increase nestling Tree Swallow growth rates.<sup>11</sup> Similarly, greater availability of aquatic insects has been associated with improved fledging success for Tree Swallow nestlings.<sup>12</sup> These findings collectively suggest that aquatic habitats, such as prairie wetland ponds, might be critical foraging areas for swallows provisioning their nestlings with insects as food.

My graduate research focused on the importance of prairie ponds as foraging habitat and a source of aquatic insect prey for Tree Swallows breeding in nest box colonies at four agricultural sites in southcentral Saskatchewan. Additionally, we examined whether the swallows at these sites were being exposed to agricultural pesticides commonly used on the Prairies, representing a possible negative impact on swallows' diet quality. One of these four study sites, at the St. Denis National Wildlife Area, was primarily dominated by grassland; two sites near Colonsay and Burr were dominated by cropland; and one site near Humboldt was "mixed," with

both non-crop cover and cropland near swallow nest boxes. The "availability" of wetland ponds also varied among sites; in particular, one cropland site near Burr had lower water cover than the other study sites, which was in part attributable to more extensive drainage. These study sites, with differing agricultural land cover (i.e., primarily grassland and semi-natural areas, cropland, or both) and varied densities of prairie wetlands, formed the backdrop for several research questions.

Prior results have suggested Tree Swallows on prairie sites were feeding primarily on aquatic insects that emerge from ponds,<sup>6</sup> but it was not entirely clear whether swallows were relying on the ponds as sites to capture prey. Are breeding swallows taking advantage of ponds as areas to easily capture these newly emerged aquatic insects, or are they simply capturing aquatic insects that have traveled across the landscape? After all, swallows' insect prey have wings, too. To investigate swallow habitat use, we tracked 24 adult female Tree Swallows over the course of a day (from 05:00 h to 22:00 h local time) using miniature GPS tags (Figure 1), weighing ~1.2 g and removed after tracking. The data gleaned from these tags suggested that swallows were selecting ponds as foraging areas more than terrestrial habitats (primarily grassland or cropland); that is, swallows appeared to use wetland ponds disproportionately to pond availability on the landscape, in patterns consistent with foraging.

We next asked whether there were differences in swallow diet quality attributable to the availability of wetland ponds and local agricultural practice; namely,





**FIGURE 1:** A female Tree Swallow, equipped with GPS tag (blue arrow), prepares to deliver insect prey to her nestlings. Photo credit: Andrew Elgin.

we examined nestling swallows' omega-3 long-chain polyunsaturated fatty acid "status" and exposure to neonicotinoid insecticides, among other pesticides, using small blood samples and diet sampling. We focused on exposure to neonicotinoid insecticides, in part, because they are widely used in Prairie Canada as a prophylactic seed treatment, and consequently, have been frequently detected in wetland ponds.<sup>13</sup> Our results suggested a pattern of lower omega-3 status in nestlings sampled from the most drained site relative to nestlings sampled at the other sites. More explicitly, these results suggested that wetland ponds (and presumably, aquatic insects) contribute to enhancing nestling swallows' diet quality, regardless of local agricultural practice (i.e., cropping or grazing). Interestingly, and perhaps concerning, we found that blood plasma from all sampled nestlings suggested exposure

to the neonicotinoid insecticide imidacloprid. Although there were some differences in plasma concentrations among sites (nestlings at the Humboldt site tended to have greater plasma imidacloprid than those at the St. Denis or Colonsay site), these differences were not clearly related to local cropping. On the other hand, the concentration of another neonicotinoid, clothianidin, tended to be greater in sampled nestlings on sites with cropland near nests compared to the grassland-dominated site. We further confirmed that these neonicotinoid insecticides, and several other pesticides, were present in some insect prey delivered to nestlings, strongly suggesting that these pesticide exposures were attributable to dietary intake. Though it is not yet clear whether swallows' exposure to various pesticides has negative impacts, such as impacts on growth or other toxic effects, these results confirmed that even

insectivorous birds are among the non-target animals which may experience widespread exposure to neonicotinoids, among other pesticides. Overall, the results of my thesis research support the retention and restoration of prairie ponds to support swallow populations in the Prairies. Our results suggested that, for Tree Swallows, wetland ponds appear to be critical foraging areas and a source of nutrient-rich aquatic insect prey. However, our findings also confirmed Tree Swallows are among several recently documented non-target organisms which are exposed to neonicotinoid insecticides, in addition to other pesticides. The apparent pervasiveness of neonicotinoids, along with their possible effects on non-target organisms, calls into question their extensive prophylactic use. From a personal perspective, I would suggest that these results argue for an improved

balance between human needs and biodiversity conservation in the Prairie Pothole Region. Like prairie ponds, agriculture is now also a fundamental feature of the Prairie landscape, giving rise to social and economic factors (including the livelihoods of farmers) which must also be considered. In my view, neither drainage nor pesticides is the enemy of conservationists. I suggest it is rather the thoughtless application of these and other practices, without consideration of necessity or impacts on nature, which represents the primary obstacle to biodiversity conservation in agricultural landscapes. Though I would not claim to have the ultimate solutions to these problems, I do believe we are all better served by striving toward and promoting a greater balance between the needs of humankind and the preservation of natural ecosystems.

### Acknowledgements

Thanks to the farmers and landowners for allowing access to their land. Thanks to my supervisors, Dr. Christy Morrissey and Dr. Bob Clark, for their extensive support, and to numerous field technicians and others who helped to make this work possible. Funding was provided by grants from the Natural Sciences and Engineering Research Council of Canada (NSERC), Environment and Climate Change Canada (ECCC), and scholarship funding from the University of Saskatchewan and Nature Saskatchewan, whose support I cherish.

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## POETRY

### The Circle

wheatgrass leaves individually  
illuminated by the sun  
green to gold to brown  
senescence writ large  
substrate for the green.....

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# THE FIRST USE OF PURPOSE-BUILT ARTIFICIAL CHIMNEY SWIFT HABITAT IN MANITOBA

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The Chimney Swift (*Chaetura pelagica*) is a long-distant migratory bird that catches insects in flight.<sup>1</sup> Chimney Swifts have adapted to urban environments by breeding in anthropogenic structures, primarily brick chimneys attached to buildings.<sup>1</sup> Prior to the establishment of western settlements, Chimney Swifts nested in cavities in trees, switching to anthropogenic structures as a response to the clearing of riverine forests during urban expansion.<sup>1</sup> A severe decline in the Canadian Chimney Swift population (estimated to be about 90 per cent from 1970-2017<sup>2</sup>) resulted in the species being listed as Threatened under both the federal Species At Risk Act<sup>3</sup> and the Manitoba Endangered Species and Ecosystems Act<sup>3</sup>, and being listed globally as Vulnerable.<sup>4</sup> The likely reasons for this decline include reduced availability of aerial insects<sup>3</sup>, demolishing, capping and lining of brick chimneys<sup>3</sup>, and reduced productivity due to severe weather events.<sup>3</sup> To date, conservation action has been focused on the creation of new habitat by way of artificial chimneys in the form of free-standing towers<sup>5</sup>, retention and restoration of existing habitat, and public outreach.<sup>3</sup>

In Manitoba, the Chimney Swift nests in aspen parklands and along the southern boreal edge from Lac du Bonnet northwest to The Pas.<sup>6</sup> The Manitoba Chimney Swift Initiative (MCSI), a partnership that includes representatives from Nature Manitoba, the Government of Manitoba, the Government of Canada, Birds Canada, and professional biologists, was established in 2007. Its aim was to reverse long-term population declines

by replicating the Chimney Swift tower designs successfully deployed in multiple jurisdictions in the USA.<sup>5,7</sup> Recent data demonstrated a loss of habitable chimneys at a rate of 14.5 per cent over 10 years in southern Manitoba prompting the decision to explore habitat replacement as a reasonable mitigation measure.<sup>8</sup> Seven 12-foot (3.66 m) free-standing chimneys following the design as described by Kyle and Kyle<sup>5</sup> were constructed between 2008 and 2013 but to date there has been no evidence of Chimney Swifts using these structures.<sup>7</sup>

The failure of these towers to attract swifts and provide alternative breeding habitat has presented a challenge to conservationists, most notably in cases where the loss of known Chimney Swift habitat legally must be mitigated under the Manitoba Endangered Species and Ecosystems Act. MCSI believes that the primary reasons that the original towers failed to attract swifts was a lack of internal temperature stability (especially in May when the birds begin to select nesting habitat) and the short tower height.<sup>7</sup> Jurisdictional by-laws in Winnipeg and surrounding towns prevented construction of free-standing structures taller than 12 feet (3.66 m). MCSI noted that rain water would wet the top of the internal wall up to 3 m of the 3.66 m towers, which could potentially threaten a nest constructed on the wall.<sup>7</sup> Designing a tower that could provide temperature stability and be structurally sound at the maximum height became a priority for future mitigation.

An opportunity to construct a larger tower for Chimney Swifts was part of the re-development of a

property in Winnipeg. In fall 2014, a large stack chimney attached to the Old Grace Hospital in the Wolseley neighbourhood which was used for multiple years by a nesting pair of Chimney Swifts, was removed due to structural degradation. A working group was established to design a 'made for Manitoba' Chimney Swift tower to replace the chimney.

The new artificial chimney was designed with a number of added elements lacking in the original plans. The replacement structure needed to be taller than 3.6 m and have added insulation, consequently requiring a variance from the City of Winnipeg and engineered drawings. The tower would also eventually need to be moved to a permanent location; hence, it was constructed in three modules each measuring 3.6 m high. Each module was connected on the outside by metal brackets, and a small internal lip was formed at the joint between sections. When constructed, the 10.8 m tower was set on a cement pad. Due to delays in construction, the tower was not erected until late July 2015, and Chimney Swifts were not observed using the tower ahead of fall migration. Subsequently, it was taken down and a new artificial chimney was incorporated into the new building.

Following the removal of the tower from the Old Grace Hospital site, the Province of Manitoba and MCSI developed a partnership with the Assiniboine Park Conservancy to provide a permanent home for the tower on Assiniboine Park Zoo grounds. The criteria for determining suitable location included proximity to trees as Chimney Swifts require twigs to build their nests<sup>1</sup>, access to foraging grounds around the Assiniboine River, proximity to other Chimney Swift nest and roost locations, and accessibility for volunteers to monitor the tower

outside of zoo operating hours. Zoo staff were able to identify a site to meet the criteria within the grounds of the McFeetors Heavy Horse Centre and along the north perimeter of the zoo.

The tower was reconstructed in spring 2018 before the expected date when Chimney Swifts return to Manitoba (Figure 1). The tower was monitored from late May to mid-August by MCSI volunteers and Zoo staff. While no occupancy was detected in 2018, on 27 May 2018 a pair of Chimney Swifts were observed flying above the tower while 'V-ing' (T. Poole, unpublished data). 'V-ing' is thought to indicate pair bonding and involves the wings snapping upwards at an acute angle.<sup>1,9</sup> Although no swifts were

observed entering the tower in 2018, the observed behaviour indicated that a bonded pair may have shown interest but not selected it as a breeding site.

Monitoring restarted on 16 May 2019. On 7 June, Assiniboine Park Zoo staff observed two Chimney Swifts leaving the tower during the afternoon. This was the first confirmed use of a Chimney Swift tower in Manitoba. Throughout the summer, swifts were observed over, and entering the tower on a regular basis (Table 1, Figure 2). On 1 August, a single Chimney Swift made several failed attempts to enter the tower during daytime. Failed and clumsy attempts at entering a chimney are indicative of an inexperienced bird, associated with



**FIGURE 1.** The tower in its current location at Assiniboine Park Zoo. Note the three distinct sections, the supportive bracket around the base and the concrete pad. Photo credit: T. Poole.



**TABLE 1. Summary of observations of the Chimney Swift Tower at Assiniboine Park Zoo during the 2019 monitoring season. Monitoring sessions were 60 to 90 minutes.**

DATE	TIME OF DAY	NUMBER RECORDED INSIDE TOWER	COMMENTS
16 May	Evening	0	Chimney Swifts in area but no entries
22 May	Evening	0	No Chimney Swifts observed
26 May	Evening	0	No Chimney Swifts observed
30 May	Evening	0	No Chimney Swifts observed
7 June	Morning	2	Exited the tower
8 June	Morning	1	One Chimney Swift entry followed shortly by one exit, indicative of possible nest building
9 June	Afternoon	1	Chimney Swift exited the tower
14 June	Morning	0	Chimney Swifts in area but no entries
14 June	Evening	3	Nest building believed ongoing based on several entries and exits before roosting
20 June	Morning	3	All entered tower
23 June	Evening	3	All entered tower
10 July	Evening	2	Entered tower
16 July	Evening	1	Chimney Swift entered tower
1 August	Morning	1	Multiple failed attempts to enter tower, indicative of a fledgling
8 August	Morning	1	Entered tower
22 August	Morning	0	No Chimney Swifts observed



**FIGURE 2.** Still image taken from a video of a Chimney Swift entering the tower. Photo credit: T. Poole.

fledging.<sup>9</sup> The observer also noted no obvious signs of molted feathers along the primary wing feathers, another indication that this was a fledged swift.<sup>9</sup> This confirms that the Chimney Swifts using the tower successfully raised at least one chick to fledge. Monitoring continued until late August when no Chimney Swifts were observed and it was assumed that the birds had migrated (Table 1).

An inspection of the interior of the tower in September 2019 revealed that three, possibly four eggs hatched inside the tower. There was also a single unhatched egg and the carcass of a deceased adult bird. An inspection of the wall revealed that a nest had been constructed below the lip where the bottom section of the tower connects to the middle section, at a height of approximately 3.6 m from the base of the tower (Figure 3). Zoo staff retrieved the nest from the tower during the winter of 2020. The nest was empty, confirming that a minimum of three chicks fledged during the summer of 2019.

### Discussion

This is the first documented instance of Chimney Swifts using and attempting to breed in an artificial chimney in western Canada.\* The observed behaviour of one bird indicated that at least one chick fledged from the tower in early August. While it is possible that the fledgling observed came from a different nest site, as has been observed for sites within 100 m of each other in St. Adolphe (B. Stewart, per. comm 2019), the physical evidence indicates three to four Chimney Swifts were fledged from this artificial chimney.

The presence of a third Chimney Swift, and the regular observations of

daytime use of the tower suggested that this breeding attempt was being supported by a helper, a non-breeding swift believed to assist with incubation, brooding and feeding.<sup>1</sup> The decomposing carcass of a dead swift in the tower may explain the disappearance of the third adult bird noted during observations. It is unclear as to how the bird died due to the state of decomposition.

### Conclusion

The first example of a successful artificial chimney in Manitoba provides a blueprint for future habitat creation. This tower differed from previous, unsuccessful ones, in being significantly larger in both height and internal dimensions. The data have yet to be analysed but we also suspect the added insulation reduced internal temperature fluctuations. Regardless of which parameters made this tower successful, its success has significant conservation implications. It is possible to provide a suitable alternative breeding structure in Manitoba to mitigate for the loss of chimneys due to urban development,

heating system upgrades, and public safety. This is the second example of the Manitoba *Endangered Species and Ecosystems Act* being used to replace lost habitat. In the first instance, a chimney on an apartment in Winnipeg was unscreened following the lining of a second chimney on the same building.<sup>10</sup> This project also demonstrates the value of partnerships across sectors for successful conservation. Developing such cross-sector partnerships will be key to conserving the Chimney Swift in Manitoba.

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**FIGURE 3.** Nest on the wall of the tower, taken from underneath in September 2019. Photo credit: T. Poole.

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\*Behavioural and physical evidence indicate the tower was also used as a nest site in 2020.



# WOOD DUCKS BREEDING ALONG THE NORTH SASKATCHEWAN RIVER NEAR FORT CARLTON

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During June 2018 my daughter, Estelle Hjertaas, and I spent three days canoeing the North Saskatchewan River from the Borden Bridge to Prince Albert. While canoeing we observed three female Wood Ducks (*Aix sponsa*) with broods, outside the reported breeding range for the Wood Duck in Saskatchewan.

We observed a female with four ducklings on 28 June about 4.5 km upstream of Fort Carlton. The female was identified by the white patch around and extending behind the eye. I referred to my field guide at the time to confirm the identification.<sup>1</sup> I was also familiar with Wood Duck field marks from previous observations. After visiting Fort Carlton, we paddled about 17 km to an island 5.5 km downstream of the Wingard Ferry. On this stretch we observed a female Wood Duck with eight ducklings. On 29 June, as we paddled 65 km to reach Prince Albert, we observed a third brood, a female with nine recently hatched ducklings, somewhere upstream from the major bend in the river near Lily Plain.

Also in 2018, on 21 July, Stan Shadick and John Patterson observed a female with a brood of at least three ducklings about 9 km west of the North Saskatchewan River and 15 km northeast of Borden. The location was "a ditch near a slough near northing 5817000 and easting

360100" (pers comm Stan Shadick 7 April 2020).

In 2013, Harold Fisher located a Wood Duck nest with 11 eggs in a nest box 13 km SE of Prince Albert.<sup>2</sup> The area around the aspen supporting the nest box had been flooded during the wet years, creating suitable habitat for the Wood Duck.

*Birds of Saskatchewan* gives the breeding range of the Wood Duck as "mainly in the Saskatchewan River lowlands and along the Qu'Appelle and Souris rivers".<sup>3</sup> The range map also shows three isolated breeding localities, one near Prince Albert and two along the South Saskatchewan River.

Our observations of three broods on the North Saskatchewan River between Highway 12 and Lily Plain, the observation by Shadick and Patterson and the observation by Fisher indicate an established breeding population, and an extension of the known breeding range, along and adjacent to the North Saskatchewan River from Prince Albert westward as far as Borden.

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## POETRY

### Third Day of Autumn

A cold morning  
Blue-grey and shrouded,  
From the chill rain  
Of the night before  
Just above frost.  
But as the new sun  
Chases off the mist  
Rolling up from the  
lake valley,  
And rising from the  
drenched grasses,  
One lone meadowlark  
From his bare  
buffalo berry perch  
Brazenly pipes his  
Summer song.

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# THE RAPTORS OF NORTH AMERICA: A Coloring Book of Eagles, Falcons and Owls

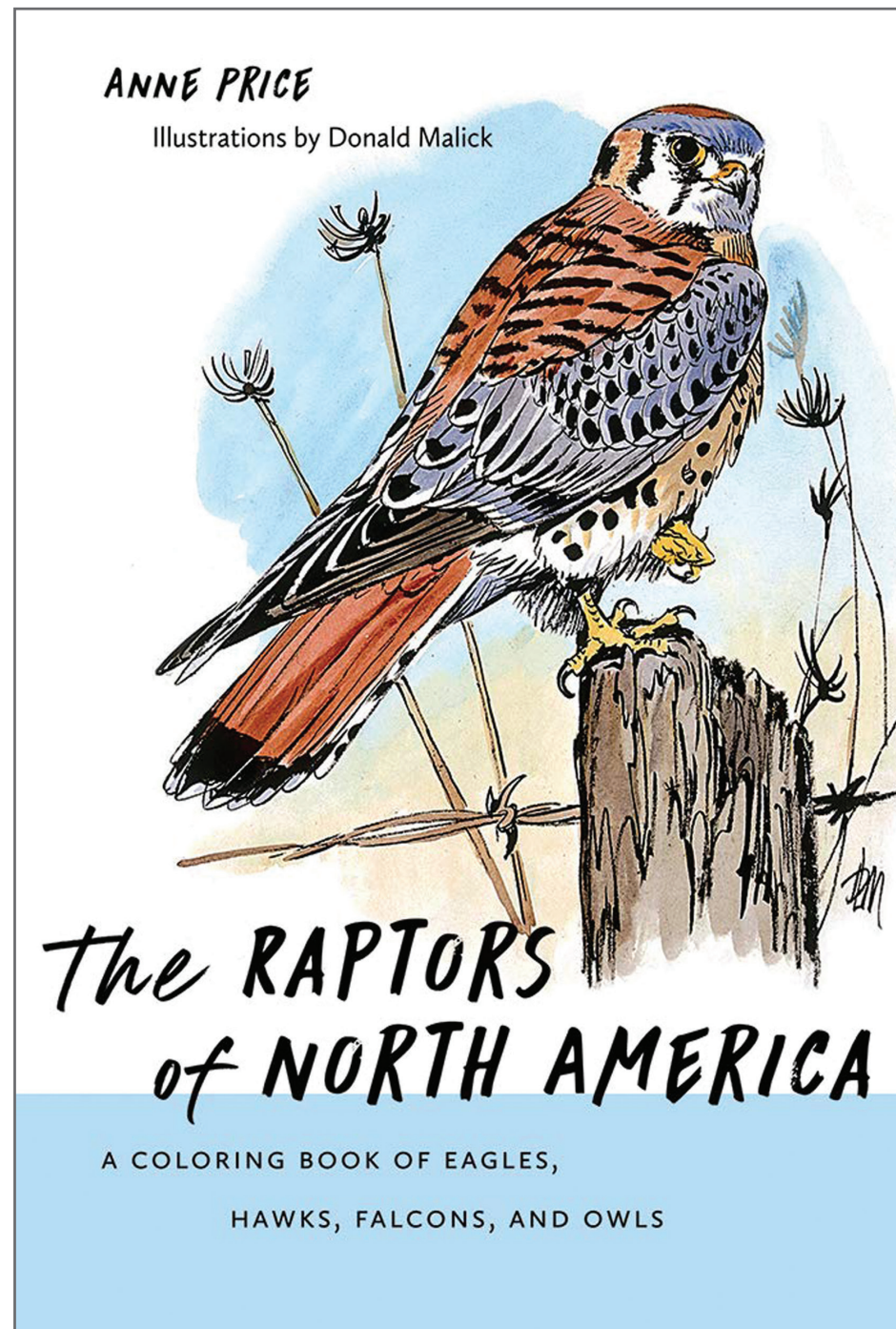
Anne Price, Donald Malick. 2019. University of New Mexico Press. 88 pp. \$14.95 US.

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Does any category of birds capture the popular imagination quite like raptors? The images of eagles, hawks and falcons are common sights on coats of arms and sports uniforms the world over. In TV and movies, the circling of vultures or the piercing cry of a Red-tailed Hawk have become synonymous with the untamed west.

In the introduction to the original 1984 edition of this colouring book, Roger Tory Peterson wrote “raptors are the ideal ‘first bird’ for a child interested in nature.” It’s easy to see why. Warblers, for example, may be unmatched in beauty, but they are small and fast, and all too easily overlooked. Relatively large and conspicuous, raptors have a commanding presence that is harder to miss. Long before I owned a pair of binoculars it always felt like a special, noteworthy occurrence if I caught a glimpse of a Bald Eagle or Great Horned Owl.

This new edition of *The Raptors of North America* contains the late Donald Malick’s timeless illustrations of the regularly occurring vultures, osprey, kites, harriers, eagles, hawks, owls and falcons of the United States and Canada, accompanied by updated text from author Anne Price. Each entry typically includes some information about the species’ range, behaviour, habitat and diet. An additional “cool fact” is listed for each species — a description of the false “eyes” on the back of a Northern Pygmy Owl’s head, or how Ferruginous Hawks hunt cooperatively, with one individual



soaring high above prairie dog habitat to distract the animals while a second flies in low for the kill, to name two examples.

A “how to use” section near the beginning of the book suggests that young children may use the book to learn basics such as the difference

between hawks and owls, and that older children will be interested in the cool facts. Children are certainly the primary target audience of this book, but it’s likely that anyone with an interest in birds will find something to enjoy. During the past decade or so, colouring books

have become a respectable option for adults seeking a relaxing or meditative pastime. Investing time with the fine details, patterns and overall look of the various North American raptor species will no doubt sharpen field identification skills.

While the birds themselves haven’t changed much in the three and a half decades since this book was originally published, the world they live in has. A summary of raptor conservation issues highlights the well-known case of Peregrine Falcons and Bald Eagles recovering after being decimated by DDT, as well as the successful reintroduction of the California Condor to the wild. Not all is well, of course. American Kestrels, once the most common North American falcon species, have experienced a 47 per cent decline during the past 45 years, the cause of which is poorly understood. Near the end of the book there are detailed instructions for building and installing a kestrel nest box, which I thought was a positive and constructive way to approach a depressing subject in an otherwise inspiring book for children.

The book includes short entries on the evolutionary descent of birds from dinosaurs (certain to pique the interest of dinosaur-loving children), as well as an explanation of nomenclature, a short history of falconry, a match game, glossary and a species checklist.

Whether a reader picking up *The Raptors of North America* is an experienced birdwatcher taking a closer look at a favourite species, or a child being introduced to these raptors for the first time, I hope the effect is to inspire them to, in Peterson’s words, “go out, preferably with binoculars, sharpen your vision and let your spirit soar.” 🦅

## DR. AJAYPAL SINGH KAHLON RECEIVES 2020 GRADUATE STUDENT SCHOLARSHIP

Each year, Nature Saskatchewan awards the Margaret Skeel Graduate Student Scholarship in the amount of \$2,000 to assist a graduate student attending a post-secondary institution in Saskatchewan. The scholarship was established with the aim to stimulate research that will increase knowledge of all aspects of the natural world and human relation with nature, and to promote conservation of natural ecosystems and sustainable use of natural resources.

The 2020 scholarship recipient is Dr. Ajaypal Singh Kahlon, who is working toward his Master of Science (M.Sc.) at the University of Saskatchewan. The focus of his research is interactions among climate, stress, and avian influenza, and their impact on survival in migratory waterfowl.

The world is experiencing rapid large-scale environmental changes associated with changing climate, altered land uses, and increasing emerging infectious diseases. Multiple stressors may act synergistically to increase threats to wildlife and human health. The prevalence and spread of avian influenza virus (AIV) is of particular concern due to health, ecological, and economic impacts. Physiological stress has been linked to environmental change, disease susceptibility/risk, and survival, but how these factors interact across the annual cycle is poorly understood.

Ajaypal’s study will examine the relationships among climate, stress, and infection with AIV in migratory waterfowl. How these factors interact to affect survival will also be investigated. To accomplish this, the project team will use archived AIV surveillance data and feather samples collected from Blue-winged teal (*Spatula discors*) in the prairies from 2007 to 2018. Feathers will be



analysed for corticosterone to provide an index of stress during moult. Relationships among ecophysiology, disease, and local weather will be modeled to find the best predictors of AIV infection and survival. This will be the first study to investigate the role of climate in relation to stress responses of dabbling ducks, and how that might impact condition, AIV infection, and ultimately survival.

After completing his veterinary degree in Punjab, India, Ajaypal moved to Canada and began his M.Sc. program in September 2017, under the able supervision of Dr. Catherine Soos, Wildlife Health Specialist/ Research Scientist (Environment and Climate Change Canada) and an Adjunct professor in the Department of Veterinary Pathology, Western College of Veterinary Medicine (WCVM).

Ajaypal is an active volunteer and strongly believes in giving back to the community. He tries his best to utilise his veterinary knowledge and skills for volunteer activities that require such expertise. A few of his volunteer efforts include assisting with spay/neuter clinics in La Ronge, as well as year-round volunteering related to managing the wildlife that require rehabilitation and recovery at Wild and Exotic Animal Medicine Society.

We congratulate Ajaypal and wish him success in pursuit of his studies. 🦅



# HUMAN NATURE



Riley (second from left) and Atticus Magnus (front) on a nature scavenger hunt with their cousins Kayden and Lily Arguin. Photo credit: Tessa Arguin.

## Rebecca Magnus Regina, SK

One of the best things about living in Saskatchewan is that you can go a couple hours in any direction and be in a completely different landscape. My family loves road trips and tenting — we get in the car, drive to a local destination, and explore and learn.

One of my favourite road trips was my youngest's first summer trip to explore the grasslands. A highlight was taking the boys to the T.rex Discovery Centre in Eastend and Castle Butte in the Badlands south of Bengough. My boys were at the perfect ages of four and two.

The T.rex Centre staff were so welcoming and engaged the boys in hands-on paleontologist activities that

set the path for our exploring outside the Centre. As we hiked around, they truly felt like explorers, convinced they would find some dinosaur bones or plant fossils to give the Centre. When they commented about how the grass tickled their legs as they ran around on the paths, this reminded me of one of our favorite family books, *Bobby Bluestem*, which is written and illustrated by Rhonda O'Grady.

At Castle Butte, my two-year-old was on my back in a hiking backpack, and my older son was climbing his first "mountain." So innocently, the first thing he said when we reached the top was that the cars look like Hot Wheels, yet he was quickly taken away from that thought to look out at the valley and be in awe of the magnitude of the Big Muddy Badlands.

Another favorite Saskatchewan road trip is our annual tenting trip to the boreal forest. The boys love adventuring and exploring the endless offerings of hideouts and forts to play in. They always seem to find amazing little creatures or unique plants for which we make up stories about their roles in the forest. We often send the boys on nature scavenger hunt with radios and cameras and they come back showing us different things every time. It really is endless exploring the wonders of the boreal forest.

We truly appreciate the diversity of nature in Saskatchewan, and will spend the rest of our lives exploring and learning about its rich natural history. 🐦

# MYSTERY PHOTO

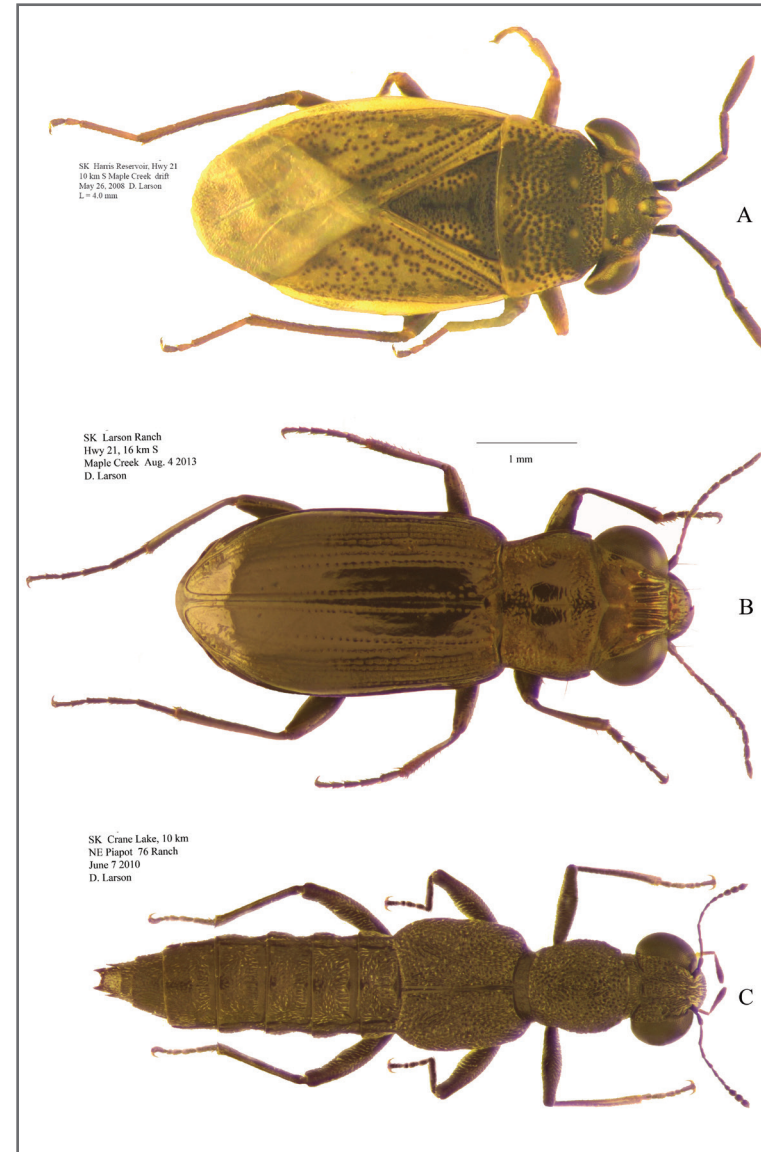


Photo source: Larson, D.J. and G.G.E. Scudder. 2018. *Canadian Journal of Arthropod Identification* No. 34:1-174. doi:10.3752/cjai.2018.34.1.

## Summer 2020 (left)

ANSWER: Many ground dwelling insects are predators, but most of them catch prey by feel or by using chemical senses. However, some ground dwelling predaceous insects are visual hunters, such as the ones shown in the mystery photo. These insects have huge eyes that they use to spot and stalk prey. They have evolved this predation style independently of one another and each has a different way of catching and dealing with prey.

The beetle *Notiophilus* (Order Coleoptera, family Carabidae), shown in the middle of the photo (B), has ordinary mandibles that it uses to grab prey. The long slender beetle *Stenus* (Coleoptera, family Staphylinidae), shown at the bottom of the photo (C), also has mandibles; however, it has developed a protrusible "tongue" with a sticky tip, which it shoots out like a small camelion to catch prey (daubing). The third insect, at the top of the photo (A), is a big-eyed bug (Hemiptera, family Geocoridae), which has the sucking straw type mouth that characterizes members of the order Hemiptera and it uses this to stab prey then suck out the juices.

This group of big-eyed ground dwelling predators contains at least 30 species in southern Saskatchewan and some are among the most common insects in gardens and weedy places near human habitations. They are all active on open ground during sunny days so are easily observed. Thank you to David Larson for providing this information.

Have you taken a picture that may make for a good mystery photo? Send it to the editor for possible inclusion in an upcoming issue.

## Fall 2020 (left)

QUESTION: Small shorebirds, collectively known as 'peeps', are notoriously difficult to identify. However, their differences are noticeable if at looked at carefully and closely. The two peep species shown in this image were photographed at the Quill Lakes in Saskatchewan. Can you identify them?



Photo credit: Annie McLeod.

Please send your answers to the Blue Jay editor, Annie McLeod, by email at bluejay@naturesask.ca or by letter mail (address on page 4). Those with correct answers will be entered into a draw for a prize from Nature Saskatchewan. 🐦





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